



scodanibbio.com

Carlo Scodanibbio
Industrial & Business Consultant
Lean Management Consultant

e-courses

Key-words: e-course distance learning e-learning course training education continuing lean manufacturing push pull production method style batch lot flow one piece one-piece kanban continuous quick change over TPM autonomous maintenance 6 sigma ppm stream value waste management mapping current state future storyboard kaizen improvement project cell line multi-skill multi-function worker operator takt time throughput inventory stock 5S project manager plan



e-book: The road to Lean Manufacturing through the Value Stream Mapping technique
January 2010

Copyright: © Carlo Scodanibbio 2010 onwards– All rights reserved

A simple copyright statement: you are authorised to install this e-course in one computer station only.

You are authorised to print this entire course and copy it for exclusive use by employees of your Organisation.

You are not authorised to distribute this e-course - by electronic or other means and supports - outside your Organisation.

<https://www.scodanibbio.com>

“Value Stream Management: the Value Stream Mapping technique” Table of Contents

Introduction	3
Manufacturing Process – Definitions	4
Productive Styles	10
Traditional “Lot” Manufacturing	10
Push and Pull Production Methods	11
Batch (Push) Production vs. Continuous Flow (Pull) Production	12
The Classic 7 requirements for Flow Manufacturing	14
Continuous and “One-piece” Flow Golden Rules	14
Value Stream Management	20
The Value Stream Mapping technique	21
A) Strong Commitment to Lean	22
B) Identify, select and choose Value Streams	23
C) Learn Lean practices	24
D) Map the Current State	25
Process Mapping (Arrow Diagram)	26
E) Determine applicable “Metrics”	33
F) Map the Future State	34
Process Razing/Group Technology	37
G) Set Kaizen-style Lean Improvement Plans	43
H) Implement Improvement Plans	46
I) Monitor	47
Exercise/Case Study	48
Final remarks	53
Solution of Exercise	54
Credits	59
Some excerpts from Carlo Scodanibbio web site	60

Dear e-Participant,

Welcome to this e-Course! I am confident you will find it of interest and beneficial.

To begin with, a quick presentation: I am Carlo Scodanibbio, Italian, Engineer, graduated in 1970, and with over 49 years of post-graduate experience in Project Engineering, Plant Engineering, Project Management, Industrial Engineering and Operations Management Consulting – as at the date of releasing the new version of this e-course.

I have been a free-lance Industrial Consultant for the past 40 years, and a HR Trainer for the past 30.

My field of activity is: World Class Performance in the Small and Medium Enterprises.

I have operated in several Countries, including Italy, Romania, Malta, Turkey, Cyprus, Lebanon, Cape Verde, Kenya, Mauritius, Malaysia, India, Saudi Arabia, South Africa and neighbouring Countries.

My “real-world” training style is very interactive. I am afraid this won’t be possible in the case of an e-Course, such as this one.

And yet, as a participant in this e-Course, you are entitled to contact me for clarifications or further explanations with regard to the topics of this Course.

You may do so by e-mail: mail@scodanibbio.com

And now let’s start.

The title of this Course is:

“Value Stream Management: the Value Stream Mapping technique”

Today’s state-of-the-art discipline for the Manufacturing Industry is **Lean Manufacturing**.

Lean Manufacturing is “lean” because it is synonymous with “waste-less” manufacturing, or manufacturing with no waste, where waste is the “fat” in the operational process.

When we organise our Sunday barbecue we generally select an assortment of meats, lean and not so-lean: lamb chops, pork chops, spare ribs, sausages and the like contain some fat. Fat gives the “flavour” and the “taste” to a good barbecue.

When it comes to work (manufacturing operations), we do not like any fat, or waste, at all.

A manufacturing process should “flow”, continuously, regularly: the flow of materials should be as linear as possible, without turbulence, without hiccups, without “stops” in the flow, without “back-flow” and so on.

Waste causes turbulence in the flow, and stops, hiccups, back-flows etc.

The way to kill waste is Lean Manufacturing.

“Lean Manufacturing uses less of everything compared with mass production: half the human effort in the factory, half the manufacturing floor space, half the investment in tools, half the engineering hours to develop a new product in half the time. Also it requires keeping far less than half the needed inventory and results in fewer defects...” [James P Womack – Daniel T Jones – Daniel Roos - (The machine that changed the world)]

Many Manufacturing Enterprises are willing to undergo the "lean" road. Many enterprises make a formal decision in this respect.

Value Stream Management: the Value Stream Mapping technique

However, many enterprises just don't get there: their "lean" project gets somehow stuck midway, even at the very beginning - momentum decays or even gets lost altogether - the "lean" project gets postponed, delayed and even rescheduled indefinitely. Why?

Because either the direction, the "lean" direction is not clear.
Or, even when it's rather clear, they cannot set priorities and produce a formal, comprehensive plan of action.

People gets confused on priorities: what comes first, second and third is vague or blurred - and all constraints associated with a lean initiative are not properly identified and understood.

For instance, in order to link 2 processing stations close together and establish **continuous flow** between them may dictate that the set-up time of the first processing station be reduced considerably. If this aspect is overlooked, the flow initiative fails and people start blaming the lean philosophy and go back to the old method....

Or, for instance, it may be necessary to achieve a much higher OTDR (On-Time-Delivery-Rate, or degree of reliability) at the first processing station. If some **TPM** and Autonomous Maintenance practices are not deployed first at processing station 1 in order to increase its OTDR, the flow will go banana very soon, with similar back-fire results and likely returning to the old method.....

Episodes like the above happen very frequently: what lacks is a central "lean" plan, a comprehensive plan that links ALL necessary lean initiatives, highlighting all constraints and setting all necessary priorities.

This is where **Value Stream Management** and its operational arm, **Value Stream Mapping**, come to the rescue.

To introduce the subject, I will need to refer to some (only a few!) basic principles extracted by my Lean Manufacturing course. Obviously, what follows is only an overview.

I will start with

MANUFACTURING PROCESS: DEFINITIONS

Before I illustrate the Value Stream Management discipline, I better give you some important definitions regarding the manufacturing process.

PROCUREMENT LEAD-TIME

Interval of time elapsing between issue of order and goods' readiness for production

PROCESSING LEAD-TIME (THROUGHPUT TIME)

Interval of time elapsing between moment of availability of input materials/components and moment of availability of 1st output product (or quasi-product – or sub-assembly....) [Mather. 1988]

This is the entire time that takes to materials to shoot through the factory.

VALUE-ADDING CYCLE TIME

Referred to a repetitive operation: the overall “value-adding” time required to carry out a repetitive processing activity (**value-adding time only**: excluding all non-value-adding activities)

MANUFACTURING CYCLE TIME

Sum of all Cycle-Times necessary to carry out all operations required to manufacture a product

Please note: a processing Cycle Time may well differ from the

VALUE-ADDING MANUFACTURING CYCLE TIME

Sum of all Value-Adding Cycle-Times necessary to carry out all operations required to manufacture a product

SELLING CYCLE TIME (“PITCH TIME” – “TAKT TIME”)

Referred to a production lot: minutes and seconds that “should take” to process parts, quasi-products or finished products according to amount of D-Time as specified by Customers

$$\text{TAKT TIME} = \text{Total Daily Operating Time} / \text{Total Daily Requirement}$$

The TAKT TIME is a parameter related to Customer’s Demand Rate and gives an indication of “how long” operations should take. This is a fundamental parameter in all manufacturing operations. “Takt” is a German word, concerned with music (tikt, takt, tikt, takt...). Production is music, and the Takt Time sets its beat (or rhythm).

TAKT TIME - EXAMPLE

PRODUCT: Brake Cylinder
PRODUCT CODE: BC 0183
MONTH PRODUCTION SCHEDULE

22 Working days

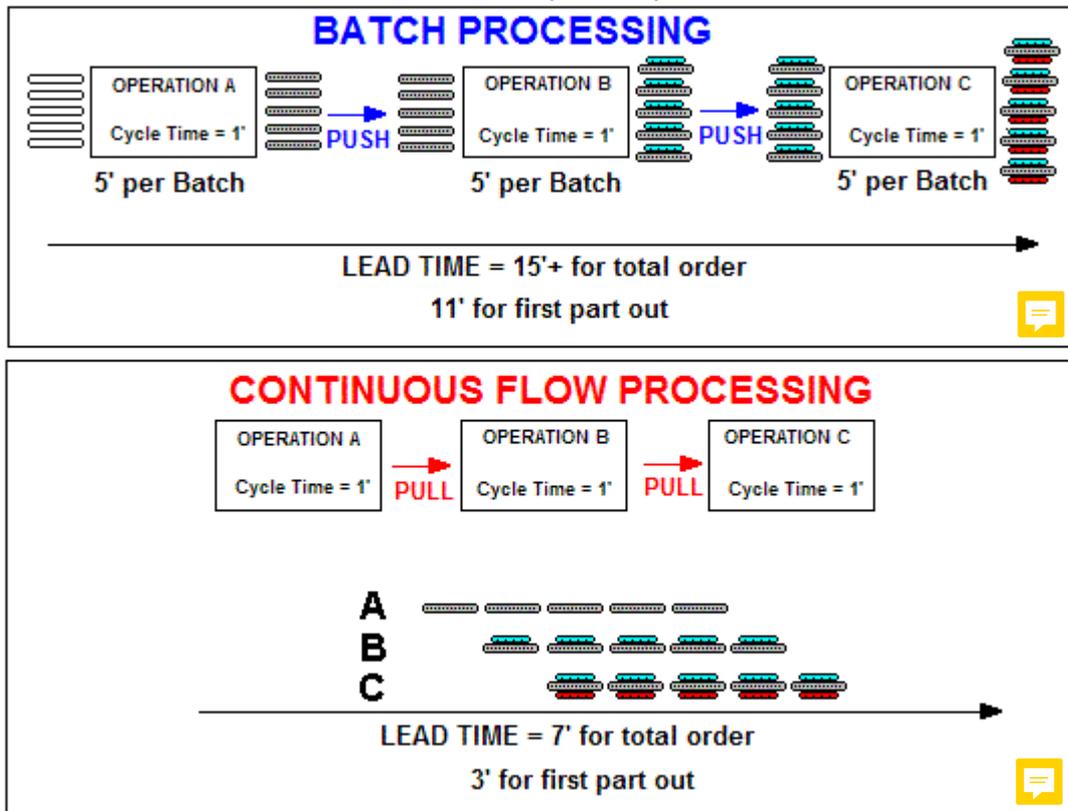
2 Shifts of 8 Hours each

Theoretical working time per shift	(h:min)	8:00
Breaks & precautionary resting time	(h:min)	0:20
Effective working time per shift	(h:min)	7:40
Effective working time per day	(h:min)	15:20
Effective working time per day	(sec)	55.200

REQUIREMENT

Monthly requirement	(pieces/month)	18.000
Daily requirement	(pieces/day)	818

BATCH (PUSH) PRODUCTION vs. CONTINUOUS FLOW (PULL) PRODUCTION



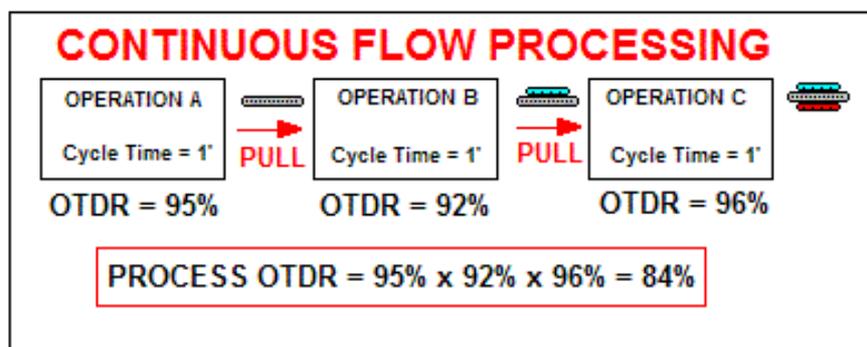
In the simplified example above we see, in a schematic way, how Traditional Production differs from Lean Production, and the benefits associated with Lean Production.

When a Continuous Flow type of Production (ideally one-piece-flow) can be established:

- Lead Time is much shorter
- WIP is minimal (ideally: one unit of product)

ON-TIME DELIVERY RATE (OTDR)

Degree of reliability of any upstream operation to release in due time its output to a downstream operation (and, finally, to the customer)



MANUFACTURING CYCLE-TIME = TAKT TIME

**Production “pitch” co-ordinated with Customers’ needs.
 Number of items to be produced = Number of items required by Customers
 (Produce daily what you sell daily....)**

OLD STYLE SCHEDULING					
P/D	1	2	3	4	5
A	XXXXXXXXXX				
B		XXXXXXXXXX	XXXXXXXXXX		
C				XXXXXXXXXX	
D					XXXXXXXXXX

NEW STYLE SCHEDULING					
P/D	1	2	3	4	5
A	XX	XX	XX	XX	XX
B	XXXX	XXXX	XXXX	XXXX	XXXX
C	XX	XX	XX	XX	XX
D	XX	XX	XX	XX	XX

MICRO-MIX = MACRO-MIX

In the old, non-lean days (the era of mass production), we used to produce large lots, as large as possible (in order to mitigate the negative effects of set-up/s and change-over/s).

So we would produce bananas on Mondays, apples on Tuesdays and Wednesdays, pears on Thursdays and peaches on Fridays (simplified example).

This would lead to rather large inventories of finished products: bananas, apples, pears and peaches would pile up in the finished product warehouse up to the sky, with possible consequences such as: obsolescence, excessive stock-on-hand, excessive warehousing costs, excessive storage space, larger insurance costs, etc. etc.

Moreover, production people main concern was to “refill” the finished products warehouse and keep it well stocked – not to satisfy customers!

Actually, as I said above, production people didn’t even know about customers, their needs, their expectations. The finished product warehouse was a thick wall between production and market....

Today, in a lean environment, we are very keen to produce what we sell, at a pace or speed as close as possible: production speed = selling speed.

This demands a new mentality, a new strategy, and a new-style scheduling.

Today’s target is to produce bananas, apples, pears and peaches on a daily basis, according to the orders we have on-hand.

The production “mix” is directly related, on a daily basis, to the sales “mix”: if we sell 100 bananas daily, on average, we produce only 100 bananas daily, not 1000 or 5000....

Obviously this requires very frequent production changes and, as such, very frequent set-up/s and change-over/s of production lines, machinery and equipment.

This style of lean production is strictly related to the second golden rule:

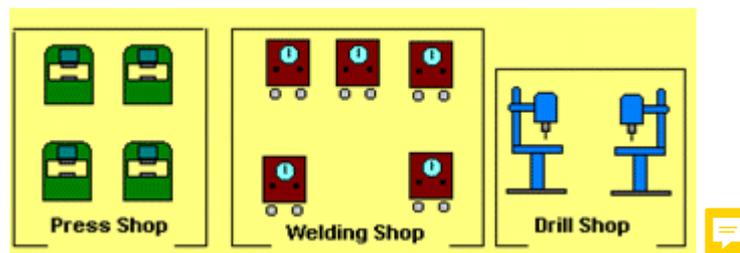
VERTICAL LAYOUT (FLOW LAYOUT)

Horizontal (job shop) layout is not suited to Flow Production/One-Piece Flow

This rule requires an explanation.

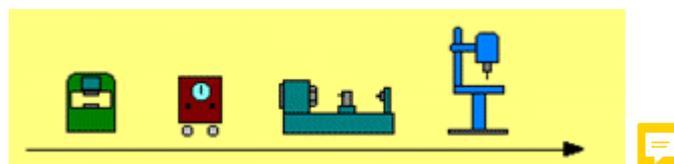
LAYOUT

A typical **Job Shop** layout is per “type of machines”, like in the following simple example:



Dedicated Working Areas are set for each “class” of machinery.

A **Flow Shop** layout is totally different:



Here equipment is laid out according to the **processing sequence**, irrespective of the typology of machinery involved. What is important is:

- A logical **sequence of value-adding activities**
- **As little as possible gap** (physical/geographical distance) between any two adjacent pieces of equipment or processing stations.

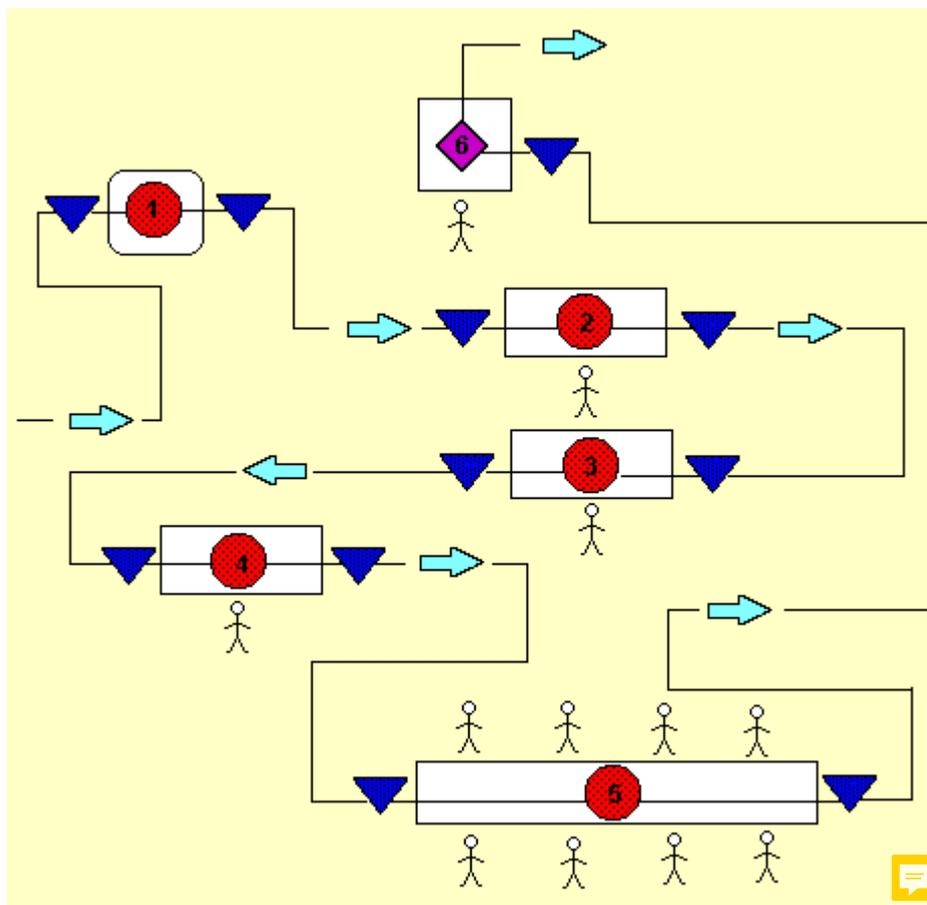
Obviously, a Job Shop type of layout uses a lot of space, as opposed to a Flow Shop layout, that occupies much less space.

STYLE OF OPERATIONS

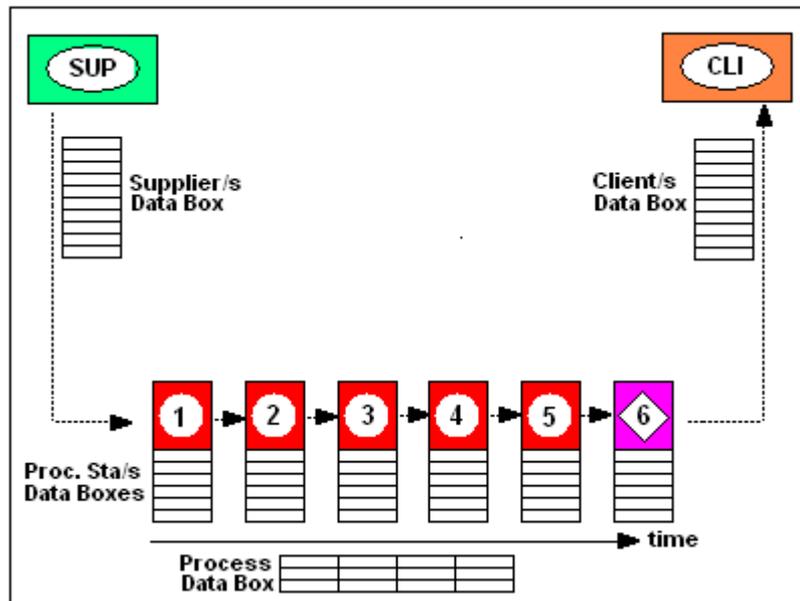
Also the style of operations are different in the two situations.

Component	Symbol	Description
RETENTION	▼	Stopping of work-in-process. May carry large waste.
CONVEYANCE	→	Moving work-in-process from A to B May carry large waste.
PROCESSING (work)	●	Changing physically or chemically the work-in-process adding value to it. May carry some waste.
INSPECTION	◆	Inspecting work-in-process to check conformity to quality standards. May carry large waste.

A Process Map produced with the Arrow Diagram tool will look something like this:



Please note: no physical constraints (pillars, walls, etc.) are shown in the above diagram (for simplicity).



Note: attached to each Processing Station icon there is a **data box** (which must then be filled with data). A similar one is drawn next to Supplier and Client icons. Also a data box regarding the entire process is positioned in the Current State area.

The schematic diagram drawn represents the **Flow of Materials** for that Value Stream.

- Now the **Data Collection** step may begin. The first stage consists in collecting data regarding the **Flow of Materials**. Operations must be documented with relevant data. Which data?

No fixed rule exists. The VSM Teams will have to identify the most significant data for each Processing Station AND for the entire Process. Moreover, all significant data regarding supplies from Supplier/s and despatches to Client/s must be documented too. All collected data then are inserted in the respective data boxes. As a guideline:

FOR EACH PROCESSING STATION	FOR THE ENTIRE PROCESS
- Total time per shift	- Total time per shift
- Planned Downtime	- Planned Downtime
- Preventive Maintenance Schedules	- Preventive Maintenance Schedules
- Change-Over time	- Change-Over time
- Actual available daily production time	- Actual available daily production time
- Overall Equipment Effectiveness (3 rates)	- Overall Equipment Effectiveness (3 rates)
- Uptime	- Uptime (average)
- Delivery/despatch schedules (per day/week/month)	- Delivery/despatch schedules (per day/week/month)
- Economic Lot size (if any) and actual Lot size	- Economic Lot size (if any) and actual Lot size
- N. of items per despatch container	- Any typical/recurring/significant disruption in the Flow
- Cycle Time (and VA Time, if different!)	- Overall number of Operators (including services and logistics)
- WIP	- Throughput Time (overall)
- Number of operators	- and any other significant parameter
- Typical Line/Machine speed	
- and any other significant parameter	

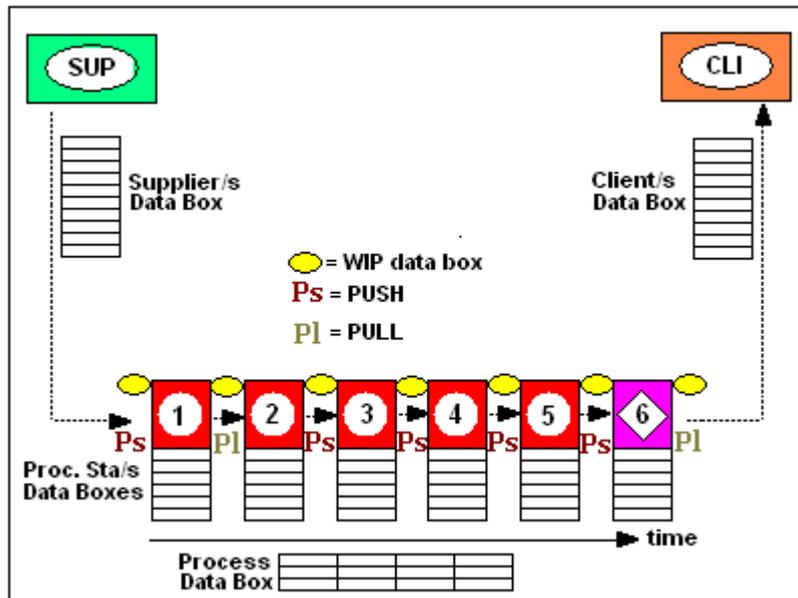
FOR SUPPLIER/S	FOR CLIENT/S
<ul style="list-style-type: none"> - Descriptions and typical supplied quantities for every supplied critical material lot - Frequency of despatches (typical) - Lead time - "Punctuality" (OTDR) rate - QC on acceptance specs. - Typical rejects, non-conformities, or defective PPM (parts per million) - Release to production specs (if any) – quarantine specs (if any) - Sizes of typical lots released to production - Etc. 	<ul style="list-style-type: none"> - Customer/s requirements per product (monthly, weekly....) - Delivery/despatch actual (recorded) frequency - Delivery/despatch actual lot size (typical, average.....) - "Punctuality" (OTDR) rate - Typical rejects, non-conformities, or defective PPM actually ascertained by client/s - Etc.

As integral part of this step, also data regarding the "what happens between Processing Stations" and "between Supplier/s and Processing Station 1" and "between last Processing Station and Client/s" must be collected and documented.

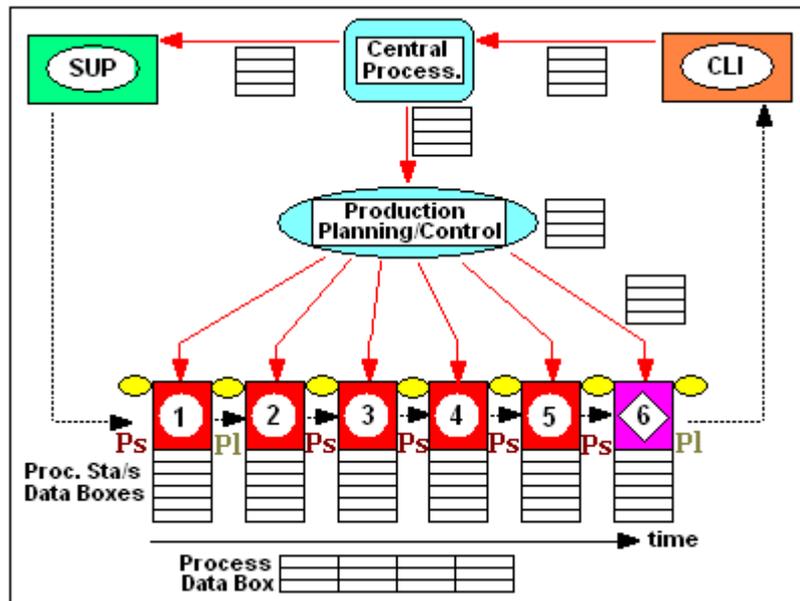
The main data required are (but not limited to) the following:

- **Method of transmission of materials** between: Supplier/s and Processing Station 1 - between the various Processing Stations - between Last Processing Station and Client/s. This may be: a **PUSH** method - a **PULL** method - a *hybrid* method.
- **Inventory/WIP** (work-in-progress) at the same points as above

The relevant data may be inserted in data boxes or, better, between Processing Stations. VSM icons may be used, or invent your own. The Current State Map will look something like this:



Also the total **Days of Inventory/WIP on hand** should be calculated and entered in the Process Data Box.



Please note:

- the various data boxes positioned: next to Central Processing (Central Processing Unit data)
- between Client/s and Central Processing Unit (Client/s orders placing data)
- between Central Processing Unit and Supplier/s (orders to Supplier/s placing data)
- between Central Processing Unit and Production Planning/Control (data regarding transmissions of Production Orders to Production Planning)
- next to Production Planning/Control (data regarding this Unit)
- between Production Planning/Control and Processing Stations (via Production Supervision if applicable) (data regarding transmission of Production Plans and Schedules to Processing Stations).

Which are the significant data to be collected and documented?

Again, no fixed rule exists, as it varies case by case. As a guideline:

- Frequency of transmission of information (between the various concerned units)
- Means of transmission/documentation (paper, fax, electronically.....)
- Manning (number of persons) required for processing information
- Production Planning features (MRP, MRP II, Kanban.....)
- Typical hiccups, delays and mishaps (entity, frequency.....)
- Typical lead times at all information processing steps
- Any other significant data

Eventually, all data regarding the flow of information are collected and documented in the Current State Map. The target is simple (but difficult to achieve):

Know in sufficient details and with sufficient clarity how the information mechanism works, so that *all concerned entities* (Suppliers and Processing Stations) *know what to do, when to do it, and how.*

The Data Collection step is the most delicate and at the same time the most energy-consuming part of the VSM exercise.

Yet it is vital not only to draw the Current State Map, but primarily **to enable all those concerned to know (finally!) how the Current System of Operation works!**

It demands the involvement of several VSM Teams and may require long time to be completed accurately.

It is extremely important to collect and document only significant data, but ALL significant data (those that may impact the design of the future, lean state) must be collected and documented.

While the collected data start flocking into the **VSM Control Room** (where the **storyboard** is located), they are verified and then inserted in the relevant data boxes.

Eventually also this step is completed. The **Current State Map** is checked and verified in great detail, and gets finally approved by the LPM.

EJ DETERMINE APPLICABLE METRICS

This is another very important step.

The Current State Map just produced is an excellent, operational tool to understand and analyse in detail the present state of affairs (the Future State Map will have a similar purpose).

Therefore it is a vital tool for the VSM Teams, a tool that enables their members to trace important operational details at any time they may be required.

However, in order to compare (eventually) the present state of affairs with a proposed, future, leaner one, details are not so important, especially for Top Management.

What is required is **indices**: few, global and meaningful.

That's why this step becomes so important.

During this step of the VSM exercise, the **Primary VSM Team** (the one lead directly by the LPM) identifies and defines the **system metrics**, synthetic *indices* describing broadly but effectively the **system "performance"**.

What indices? what metrics?

Here a few rules can be given. The recommended indices should include:

- The **Total Cycle Time**
- The **ΣVA-Time** (Sum Value-Adding Time)
- The **Throughput Time**
- The **main "lean" index**: **ΣVA-Time / Throughput Time**

- **Defective Parts per Million (DPPP) - or Sigma Level**
- **Overall Equipment Effectiveness**
- **Inventory turns**
- **Days of inventory on-hand**
- **Total Process' WIP**
- **Uptime rate**
- **On-time Delivery (OTD) Index**

They are sufficient to assess the *System Performance* (actually, the main "lean" index alone gives already a rather good indication of the *System Performance*).

However, it is up to the Primary VSM Team to identify the necessary *System Metrics*, agree upon them, and document them in the pertinent area (the lower area of the VS Map).

This area should be conveniently subdivided to display:

- The **Current State Metrics**
- The **Future State Metrics**
- The **proposed System Performance Improvement**

and may look like this:

CURRENT STATE AREA				FUTURE STATE AREA			
Index							
Current							
Future							
% Improv.							

Now the power of the VSM exercise starts appearing: once the Future State will be mapped and the corresponding, proposed metrics will be identified, it will be possible to compare thoroughly the 2 states, and assess the improvements that will be achieved if the Future State plan will be implemented!

Top Management will definitely have lots of food for thoughts....

F] MAP THE FUTURE STATE

This step is implemented by the various VSM Teams by deploying:

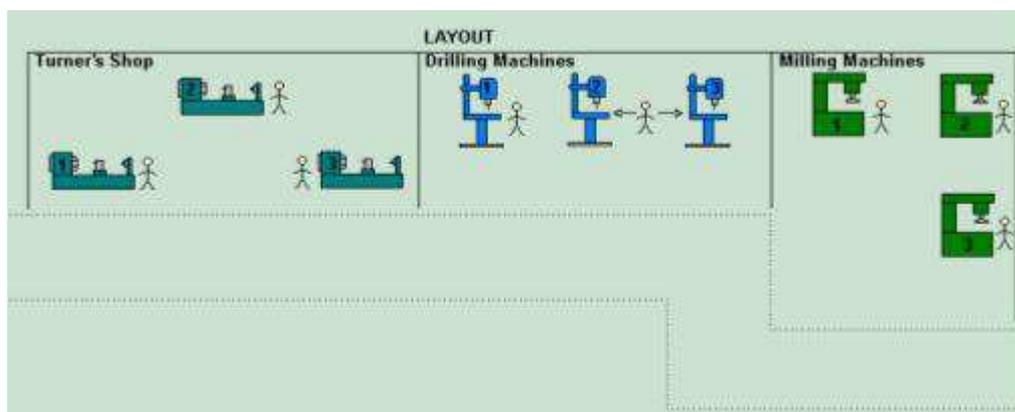
- Their "lean" know-how
- **Creative Thinking**

- Determine **which Quality Improvement Technique/s you are going to adopt** for improving drastically the output quality of critical Processing Stations. For instance: **TQM** techniques - "in-process" Quality Control/Assurance performed by Operators - SPC - **6 Sigma** - **0 defects/Poka Yoke tools** - 100% Quality Testing - etc.
The deployment of the above Techniques (or others) may have resulted obvious and necessary when producing the Current State Map. So this is an essential item to be considered.

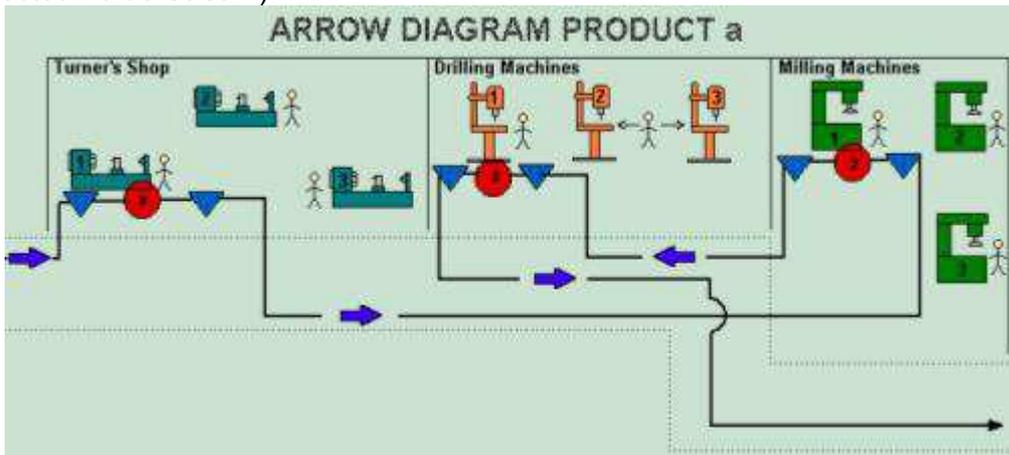
- Now **focus on "Flow"**. The target: **Continuous Flow**. This means that each next downstream Processing Station receives from upstream:
 - Only those work-pieces that are needed
 - Just when they are needed
 - In the exact amount needed
 - With the needed level of Quality

Brainstorming: which "**Lean Flow**" Techniques can you conveniently deploy at which Processing Station/s to **enhance FLOW and PULL**? A number of questions need to be answered:

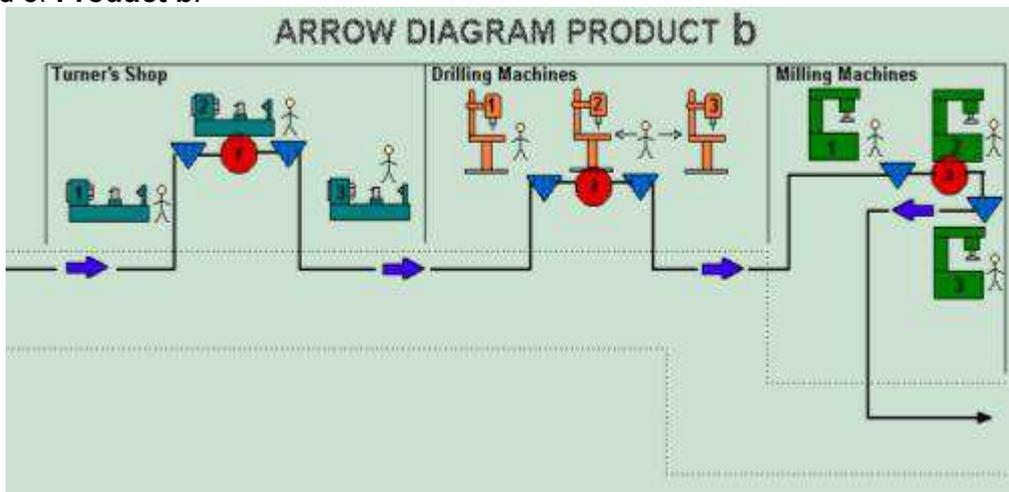
- Where can you apply "**continuous flow**"?
 - Can you go for "**one-piece flow**" in a number of adjacent Processing Stations?
 - Can you reduce considerably the "lot size" in a number of adjacent Processing Stations?
 - Can you introduce **U-Cells** to replace a number of adjacent Processing Stations?
 - Can you bring closer and join together two or more adjacent Processing Stations?
 - Can you integrate any multi-process Station/Line?
 - Can you eliminate altogether (any) redundant Processing Stations?
 - Can you apply "**Process Razing**" and "**Group Technology**" techniques to group together a number of adjacent Processing Stations?
- This is where the **previously drawn Process Map** (using the **Arrow Diagram** tool) comes handy.
Let's give an example of utilisation of the **Process Razing/Group Technology** technique, considering this simple layout:



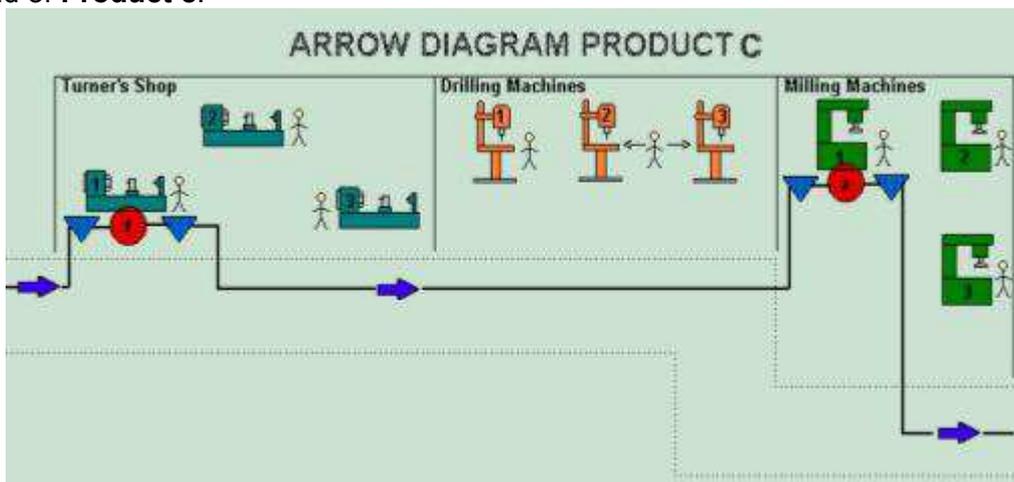
Now let's consider the *Arrow Diagram* of **Product a** (one the 4 products produced in the selected Value Stream):



And of **Product b**:



And of **Product c**:



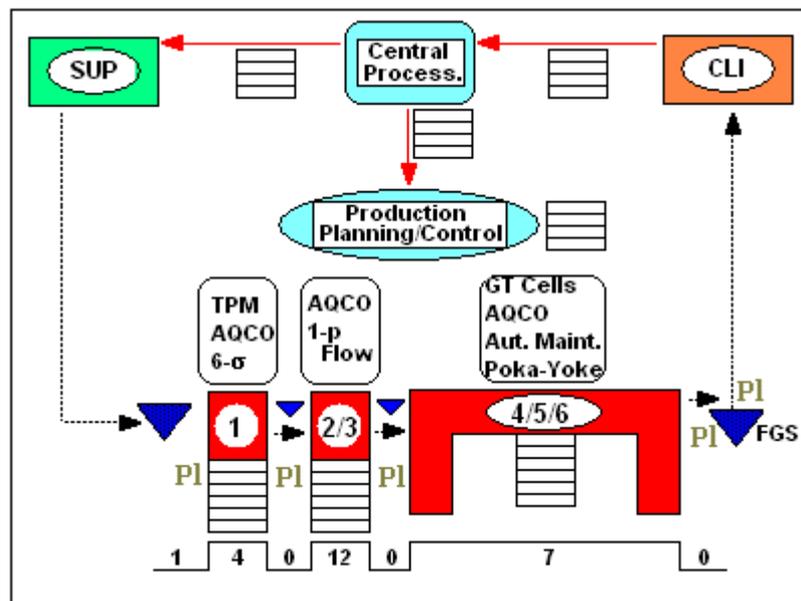
No fixed rule, valid in all manufacturing circumstances, exists:

- New, proposed **cycle-times** need to be analysed very carefully
- **Micro-Waste** inherent in actual "value-adding" processing operations may need to be eliminated in order to minimise their cycle-time
- Some **machines may need to be slowed down** (to prevent over-production)
- Some **machines may need to be speeded-up** through **TPM** methods or even more drastic interventions (to prevent under-production)
- Operators' work may require **balancing** (to prevent under-busy or over-busy situations)
- Operators' work may need to be **standardised** (in order to achieve an even level of performance from different operators)
- The **number of operators** required at and between Processing Stations needs to be assessed realistically - the overall Operators' work must be **balanced** and **synchronised**.

- NB: Do not attempt to study the "future" flow of information at this stage - **only focus on flow of materials**.
- **Draw**, in subsequent, experimental steps **the future state map**. Continuous brainstorming/debating may be required.
Display:
 - Processing Stations/lines that will remain **un-altered**
 - Adjacent Processing Stations that are going to be **re-arranged in Cell shape**
 - Adjacent Processing Stations that are going to be **"joined" physically** or re-laid out to become much closer to each other
 - Processing Stations that are going to be **eliminated** (such as "external" QC stations) do not need to be displayed.
- Draw, next to each "future" Processing Station, **the lean improvement method** needed to actually implement it (such as AQCO - TPM - Cell - etc.) using the "cloud" icon or any icon of your choice.
- **Attach** to each "future" Processing Station the respective **Data Box** showing the new, significant Attributes as extrapolated by the Team/s (Cycle Time - Available Time - Overall Uptime - Change-Over Time - OEE - Operators' icons - etc.).

- Think of how you are going to **set PRODUCTION LEVELLING** [over a day or a shift: even distribution of work-load required to meet customer demand within the various Processing Station so that no one will fall behind (overloaded) and no one will be under-utilised (idling)]: **Continuous Flow? Kanban? Paced Withdrawal? Heijunka Box system?**

After which, the Flow of Materials part of the Future State Map should take shape. It may look something like this:



You may note:

- The **lean disciplines** the VSM Team/s have decided to adopt in order to transform the relevant Processing Stations into a more flowing and pull system
 - The envisaged possibility of introducing "**supermarkets**" (buffer and safety stock) between Processing Stations. This may be a temporary measure, until the Future system stabilises
 - The future "**timeline**" showing drastic improvement both in *cycle times* and in *throughput time*
- Draw the Flow of Information** (electronic and manual): to/from Customer/Supplier - to/from Production Planning/Control from/to Processing Stations (include Production Supervisors' boxes in between as required).

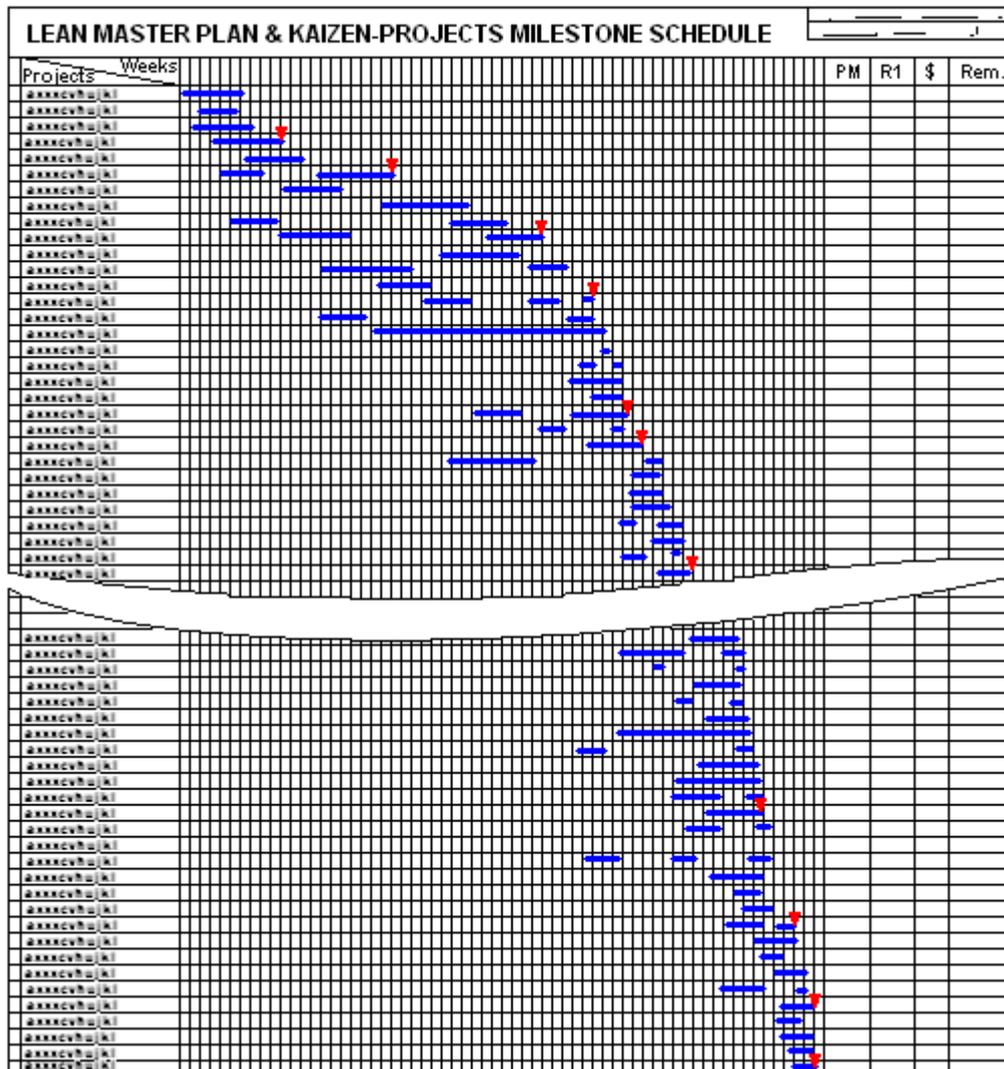
In a much *leaner* and *pull* system, such as the one in the example, the Flow of Information between the Planning/Control Unit and the Processing Stations becomes extremely simple: information on orders to be produced are transmitted to the most downstream Station (4/5/6 in the example) and simultaneously to the others. The entire system then gets into motion in a pull style, and the continuous flow gets established.

A bit more complex is **prioritising activities** and establishing their **logical sequence**, as well as **estimating durations** and **cost impact** of the improvement activities that need to be carried out.

Whereas the **"who-is-going-to-be-in-charge-of-what"** is not too difficult to identify, as all Team/s members by now know each other very well and have assessed their respective abilities and competencies.

More thinking will be necessary, but eventually a **"Lean Master Plan"** can be produced.

How does it look like? Something like this:



Wow, what a beauty! All what is to be done, when, for how long, in what sequence, lead by whom, costing how much, etc. etc. All is there!

| This is a true Kaizen-style Plan!

What a difference from the "traditional improvement list" - maybe resulting from a "suggestion box" scheme; that meaningless list of items to be improved at 360° looking like this

- ## IMPROVEMENT ACTIONS
- Clean up and re-organize common areas at Welding Dept.
 - Fix floor in aisle: Moulding → Assembly
 - Set up system for regular cleaning of Toolkits
 - More variety of food in Canteen
 - Re-condition Fork Lift F23
 - Maintenance to Filling Line 2 should be intensified
 - Yard is in a mess and should be cleaned
 - Sell scrap metal to Scrap Dealer
 - Reasons for Personnel of Assembly Line 3 should be reviewed
 - Better shoeing for Die Store
 - Set change-over standards and procedures
 - Management should inform work-force about Company performance and targets
 - etc.
 - etc.
 - etc.
 - etc.
 - etc.
 - etc.

and leading nowhere! (no direction, no priorities, no sequence, no nothing.....). No wonder many Kaizen projects have miserably failed.....

The Lean Master Plan is a true Kaizen Plan and works wonders!

Also the Lean Master Plan, once reviewed and approved, gets posted next to the Storyboard.

There is a **final job** for the VSM Primary Team: the plan of the future is ready, but to become operational must also please Top Management, isn't it?

Easy: the **comparison between old metrics and new, proposed metrics** is there. The **benefits can be quantified**. Some are straight-forward calculations: it's easy to assess the saving corresponding to a defectiveness reduction of x% or the saving related to an improvement in OEE or OTDR of y%. Possibly the calculation of the benefits associated with an improvement in Throughput Time of z% is not as easy: because those benefits are the sum of technical savings (easy to quantify) and the economic advantage arising from extra Marketing power (leverage deriving from offering Clients a drastically reduced lead time....). But good, lean, financial people can quantify anything....

So, **benefits can be established** somehow.

The **total expenditure** associated with the Future State Lean Plan comes out of the Lean Master Plan: a good Plan caters for estimates of ALL costs associated with the required Improvement Projects (including cost of training - cost of new equipment/ancillaries/accessories as well as jigs, tools, etc. - cost of physical layout changes and machinery relocation - cost of new services and logistics - etc.).

So, **Top Management** now has: **total cost** and **total benefits**. What is the resulting **ROI** (Return on Investment)?

If reasonably good over a reasonable period of time (and sometimes that ROI can be fantastically good!), Top Management will easily give its final blessing.....

HJ IMPLEMENT IMPROVEMENT PLANS

Good **project planning** is the secret of a good project. If the VSM Team/s have worked well, implementation should be rather smooth.

Surely there will be some hiccup, and it is also possible that the Future State Map will need to be revised. Good VSM Teams will take good care of that...

END OF PREVIEW

To order and download immediately this entire e-course go to
https://www.scodanibbio.com/site/e_courses.html

some excerpts from Carlo Scodanibbio Web Site

MY PHILOSOPHY, MY VISION, MY MISSION

I believe in Value and Lean.

I believe that in many decades of industrialisation we have somehow lost a key word and a key concept: value - value that Enterprises offer to Clients - value generated by productive processes - value produced by managers and employees in their daily confrontation with reality - value produced by plant, equipment, machines, and technology - value brought in by suppliers - value inherent in people know-how - value generated by continuous improvement.....

Today, World Class Performers are re-discovering the vital importance of this key concept, and build enterprises engineered to produce pure, abundant value. World Class Performers are Enterprises that build their competitiveness on the value parameter: their processes are waste-less, and under continuous improvement - their people understand value, and are extremely critical about the way they produce it - their plant and their technology are managed to generate extremely high levels of output value - customers' satisfaction is their primary target, and they achieve it by offering customers an ever increasing level of value - suppliers and sub-suppliers, clients and clients of clients become integral part of a "value-chain" ending only at end-user level - their vision, their mission, their strategies, their targets, their industrial culture, their corporate communication, their organisational structure..... are all focusing on this very, primary concept: value.

I believe that, in a rapidly changing world, featuring globalisation and vanishing borders, all Enterprises, of any size, must and can, today, perform as the "top of the class" by adopting the Value Adding Management discipline as their guiding light.

My philosophy rotates around the key concept of value, and my training and consulting services are structured to enable Small and Medium size Enterprises to achieve higher levels of performance by re-discovering "value" as key parameter for competitiveness and success.

I believe in Integration.

I believe that as specialisation has been the key feature of this century's industry, integration is going to be the key feature of years 2000's industry.

Industry has been built around the concept of "specialisation" from well over a century: processes, products, services, jobs, machine functions, etc. show, even today, a high degree of specialisation. Associated to specialisation, however, there is another feature, which is "fragmentation": fragmentation of processes, of work, of operations, of activities, of tasks.....

I believe that specialisation and fragmentation are enemies number one when aiming at high levels of performance. I believe that only integration sets the path to excellence and real industrial performance.

Integration is associated with flexibility, adaptability, government and control of change: all important features in our industrial world of today and tomorrow. Integration is associated with overall view, overall control, and overall, holistic approach to performance: for too long many Enterprises, especially of small and medium size, have tried to achieve competitiveness and performance by embracing the "fashion" management discipline of the time, be it Quality Assurance, Total Quality Management, Zero Defects, Productivity Improvement, Process Improvement and Management.... or effective Management techniques, or Leadership techniques, or a Continuous Improvement approach, or Management by Objectives..... and even One-Minute Management..... trusting they had come across the truth and the recipe to success, to discover eventually, in many cases, that the improvement in performance was not real, or consistent, or stable.....

Value Stream Management: the Value Stream Mapping technique

I believe that real improvement in performance can only be obtained with an integrated approach, focusing on the key concept of "value" as guiding light, and powered by the use of a number of appropriate disciplines "in consociation" and simultaneous deployment: like to say that targeting at quality improvement without considering simultaneously the productivity aspect is not getting to real improvement, and it has never generated real improvement, because quality and productivity are always the two sides of the same medal - and vice-versa - like to say that focusing on process improvement or process re-engineering without considering simultaneously the primary importance of getting employees highly involved and without the simultaneous deployment of adequate technology-performance techniques can only bring very marginal results - like to say that going for a Kaizen style of continuous improvement without knowing priorities and targets that in certain instances only adequate Benchmarking can provide may fail, as it has failed - and so on: there are many more examples of possible failures due to lack of integration or to excessive focus on an individual, specialised technique.....

Only an integrated view (".....see the tree, not the leaves....." or, referring to my New Performing Systems architectural structure, ".....see the temple, not only the pillars....") can produce valid, high level results.

Because when, and only when, people, machines, methods, techniques and disciplines become an harmonic, integrated combination, in symbiosis one another, can an Enterprise aim at superior performance.

This "integration" key feature, besides, should not only be the task of top management of an Enterprise, but should, to my opinion, be a feature of the Enterprise as a whole, as it may be noticed in World Class Performers: I believe that all minds in an high performing Enterprise must be made aware of the strategic importance of "integration" and addressed to that very direction. I believe that processes must be integrated, work must be integrated (and not fragmented), and approaches must be integrated. Because only this way people may achieve real job satisfaction.

I believe in Simplicity.

I believe that being in business, performing well as an Enterprise, manufacturing products or providing services, is and should be simple, and, most of all, be kept simple, especially in a world in which a predominant feature is complexity. It is my view that if any process, situation, or problem is too complex to be understood, solved or managed, there is something very wrong behind it, and, rather than tackling complexity, complexity should be eliminated to begin with.

As I notice that, in many decades of industrialisation, things have gone more and more complex (I refer to: complex, fragmented processes - pyramidal, bureaucratic, complex, split-function organisational structures - processes built on waste rather than around value - complex management practices - complexity of communication - complex and even distorted thinking, at all levels - etc.), I believe that time has come to bring things back to basics, back to elementary shapes, back to reality, back to simplicity, back to value.

I believe that World Class Performers have well understood this basic concept, and I believe that Enterprises aiming at excellence or superior status must, first of all, re-simplify and make very practical their dynamics, their processes, and their approaches.

I often follow the trend and offer, to participants to my courses, the latest techniques in: communication - leadership - team building - self-improvement - etc.

However: I believe that practicality and simplicity are even more essential than techniques. I believe that what counts is the ability to simplify processes and to make them more linear, more human, more understandable. I believe that what is important is to assure value generation at every step of any process. I believe that is extremely important to give people well defined responsibilities, rather than trying to inject, with superior leadership and excellent communication abilities, doses of motivation that cannot get anywhere, just because the very task or the very activity is de-motivating and frustrating in itself.

I believe that accountability for the output of a well-defined process gives more job satisfaction and more motivation than a salary increase or a performance bonus. I believe that people must return down to earth to simple, basic concepts of daily value generation through hard effort and acceptance of challenges. I believe that brain laziness is a public enemy to be fought very fiercely. And I believe that people must be responsible for providing their own motivation, their own security, their own quality of life.

I believe in Creativity.

I believe that Creativity (and not Products, Services, Finance, Technology, Management abilities.....) is and is going to be the only and real factor of competitiveness in the next millennium. As Creativity is the common denominator of all other factors of competitiveness. I believe that Creativity is essential for the Enterprise aiming at high levels of performance: Creativity is very important in problem solving, in decision-making, in planning, in team-work, in searching and generating opportunities, in continuous improvement practices..... Creativity is the ultimate secret for achieving high levels of Quality, Productivity and Customers' Satisfaction. Creativity is the spark that makes the difference between Enterprise's excellence or mediocrity.

I believe in the very high power of Creativity, channelled to the generation of value by integration-capable minds, and I stress its vital importance in all my consulting and training activities.

I believe in People.

And I believe that people is the most important resource of any Enterprise, as people may make the difference between its failure or its success.

I believe that people can improve considerably themselves, their performance and the performance of their Enterprise, and that a chance to generate such improvements must be given to people. I believe that it is Top Management primary responsibility to create an environment in which people are given the possibility of performing at high levels. And I believe that this can be obtained by critically (re)designing processes in which people work, and in which people are empowered to generate high levels of value through their efforts, their creativity, their commitment, and their thorough understanding of the process/es to which they are assigned and for which they have high levels of responsibility and accountability. I also believe that responsibility and accountability for a process are a major pre-requisite for people to obtain high levels of job satisfaction.

I believe that people work must be integrated and not fragmented, and that specialisation must gradually make space to multi-skill and multi-function situations.

And I believe that only this way people may re-gain that professional dignity somehow lost in many decades of specialisation and fragmentation.

I believe that work must be a very pleasant experience for all employees, a gymnasium in which people can practise, test and prove themselves, set challenges, improve, excel and be highly satisfied. And I believe that this is easily achievable.

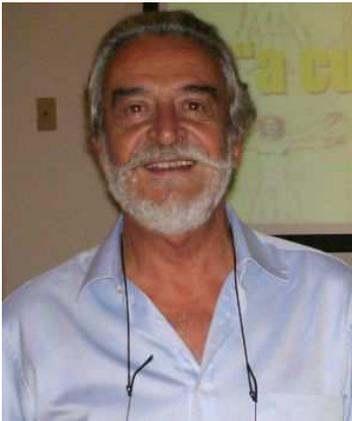
It is my commitment to stress these vital issues in my consulting and training activities, and to convey these priority messages to people in Industry, at all levels.

The above is my vision and my operational philosophy.

It is my mission, and my thorough commitment, to convey its basic principles to Enterprises and people in Enterprises, with the aim of achieving higher and higher levels of performance. It is my commitment to do my very best, with honesty and professionalism, to enable Enterprises of small and medium sizes (and as such within my reach and within my own personal capacity and abilities) to understand and make operational the best, up-to-date practices that lead to World Class performance.

Finally, it is my pleasure to commit myself to continuous learning, continuous self-improvement, and, wherever necessary, to continuous change, with humility, and with consciousness of my limited knowledge, always insufficient and always perfectible. Along these lines, it is also my commitment and personal pleasure to get in deep contact with industrial realities of many Countries, and with diversified cultures, to continuous personal and professional enrichment, and to the benefit of my Clients, of the Participants to my training courses, and of all the individuals I will have the opportunity and the joy to get in touch with in the course of my life.

Carlo Scodanibbio



Carlo Scodanibbio, born in Macerata (Italy) in 1944, holds an Italian doctor degree in Electrical Engineering (Politecnico di Milano - 1970).

He has over 49 years of experience in Plant Engineering, Project Engineering and Project Management, as well as Industrial Engineering and Operations Management. Free-lance Consultant since 1979, he has worked in a wide spectrum of companies and industries in many countries (Southern Africa - Italy - Cape Verde - Romania - Malta - Cyprus - Lebanon - Mauritius - Malaysia - Nigeria - Kenya - India - Saudi Arabia - Seychelles), and operates as an Independent Professional Consultant and Human Resources Trainer to industry. His area of intervention is: World Class Performance for Small and Medium Enterprises in the Project, Manufacturing, and Service sectors. His favourite area of action is: the "lean" area.

He has co-operated, inter-alia, with the Cyprus Chamber of Commerce, the Cyprus Productivity Centre, the Malta Federation of Industry, the Mauritius Employers' Federation, the Romanian Paper Industry Association, the United Nations Industrial Development Organisation and the University of Cape Town.

His courses and seminars, conducted in English, Italian and French, have been attended by well over 20.000 Entrepreneurs, Managers, Supervisors and Workers. They feature a very high level of interaction, and are rich in simulations, exercising and real case studies. The approach is invariably "hands-on" and addressed to immediate, practical application.

For a complete list of Carlo Scodanibbio e-courses and e-books, visit:

https://www.scodanibbio.com/site/e_courses.html

Value Stream Management: the Value Stream Mapping technique

Copyright: © Carlo Scodanibbio 2010 onwards – All rights reserved

A simple copyright statement: you are authorised to install this e-course in one computer station only.

You are authorised to print this entire course and copy it for exclusive use by employees of your Organisation.

You are not authorised to distribute this e-course - by electronic or other means and supports - outside your Organisation.

<https://www.scodanibbio.com>