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MASTER SCHEDULING POLICY

Master Scheduling is probably the most underused and least understood process in Manufacturing companies. The role of a Master Scheduler is also rarely properly understood.

The problem that companies face is the fact that there is a need for a balance between the fact that all customers want your products and they want them now, and the fact that lead times for products are getting ever longer as companies have to source from around the world.

In addition, manufacturing cost-effectively to make use of economies of scale and volume, has to be balanced with the fact that customers do not want to buy in economic lot sizes.

In order to give the customer what they want and when they want it, it is important that there is a fully agreed hedge against un-forecast demand, and stability in the production plan to manager at a "reasonable" cost.

This article therefore addresses the issues behind Master Scheduling, and sets out a draft policy document, which clients can use to gain control of their business.

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1. INTRODUCTION

- 1.1 Master Production Scheduling is recognised as a critical activity within the XYZ Company Integrated Business Leadership [IBL] process. The Master Schedule is maintained within the Operational side of the business, through the effective use of the Enterprise Resource Planning [ERP] system.
- 1.2 The objective of the Master Schedule is to ensure that the requirements of customers are met, as measured in two ways :
 - 1.2.1 As against the agreed promise date given to the customer on receipt of their order. The target of XYZ Company is to deliver > 98 % of Customer orders on the day that the customer was originally promised that they would get delivery from XYZ Company from the agreed point of supply. When orders are promised, they will be done so in line with the Available to Promise process.
 - 1.2.2 As against the required delivery date as given to XYZ Company at the point when the order was entered. The aim of XYZ Company is to deliver at least 98 % of all orders on the date that the Customer requests delivery from the agreed point of supply.
- 1.3 The key principle of the Master Production Schedule is that the Production and Supply plan is under the control of the Master Scheduler, and changes to the Master Schedule can only be made by the Master Scheduler through changes to Firm Planned Orders within the ERP System. Hence this document outlines:
 - A] How the Master Schedule is set
 - B] The process by which it can be changed
 - C] The authority levels that will be applied in making changes to the schedule.
- 1.4 The Master Production Schedule is the agreed production and supply plan by Stock Keeping unit, which will meet the requirements of the market place as represented by forecasts and orders from all business areas.
- 1.5 It is formally approved by the Management team at the appropriate levels through the monthly Integrated Enterprise Planning process.
- 1.6 It will at all times be agreed between all functions of the business as representing the true capability of XYZ Company to deliver to the Customer what they want and when they want it, subject to the constraints of the available resources in terms of capacity, cash, and suppliers' capacity to deliver.

- 1.7 It is a fundamental principle of the Master Schedule that at all times it is maintained as being achievable. In practical terms this means that none of the work centres in the Assembly area will be overloaded within the Capacity Planning horizon [13 weeks], and that there are no Past Due Orders [defined as Purchase or Planned Manufacturing orders with start or due dates prior to the current date].
- 1.8 The Master Schedule is managed through the use of Action Messages generated by the ERP Planning system. These messages identify which planned works orders should be released, rescheduled or cancelled. It is the Master Scheduler's task to ensure that the correct action is taken with respect to these action messages
- 1.9 The Master Schedule is managed in such a way as to ensure that there is flexibility to meet unanticipated demand. This flexibility will either be in the form of Safety Stock of finished product or components, and/or also Safety Capacity.
- 1.10 The Master Schedule is the driver of all internal Assembly Orders, subcontract and external supplier capacity requirements and managed correctly provides the short, medium and long term view of the Business's supply capability.
- 1.11 The Master Scheduler provides the control over issuing Works Orders to the factory. Purchase requirements are issued to suppliers through the Supplier Relationship Management function who either :
- Issue Purchase Orders in line with agreed lead times, and order quantities
 - Issue schedules to suppliers as covered by blanket order quantities, and requirements are called off either by Faxban or Kanban mechanisms.
- 1.12 The Master Production Schedule is also managed in such a way as to make sure that there is adequate stability given to the Supply Chain. Thus changes to the Master Schedule are made manually, in order to ensure that the impact on the Supply Chain is thoroughly investigated prior to making changes.
- 1.13 The Master Schedule is supported by the Material Requirements Planning [MRP] and Capacity Requirements Planning [CRP] processes contained within the ERP system. Thus once the Master Production Schedule is agreed, then the ERP system will calculate the requirements for components via the MRP processes, and also calculate Assembly schedules, and requirements for Purchased items. It will simultaneously calculate the Capacity requirements. Any changes to the Master Schedule will automatically generate the operation of the MRP and the CRP process.

1.14 In the event that there are any subsequent delays to a purchased or a manufactured order, then the impact of this will be investigated. If there is no opportunity for recovery, then the Master Schedule will be altered.

2.0 PRINCIPLES

- 2.1 The Master Schedule is a statement of the anticipated Assembly and Purchase Schedules expressed in exact configuration of product, quantity and time. It shows what is going to be made or purchased (for externally sourced products).
- 2.2 It is calculated by reference to the Demands from the customer in the form of Forecasts – as supplied by Sales and Marketing, and Customer Orders as entered by the Customer Order Entry area. However, the Master Schedule can also be used to build production ahead of demand through firm planning production.
- 2.3 The Master Schedule represents a valid, achievable production plan satisfying both the statement of Demand, and taking into account the need to meet the XYZ Company UK stock policies agreed through the IBL process; these are designed to ensure a flexible response is possible to meet unanticipated customer demands.
- 2.4 The objectives of the Master Scheduling Process are to :
 - Deliver agreed Customer Service requirements.
 - Optimise resource utilisation
 - Provide flexibility where agreed through the IBL process to meet volatile demand
 - Minimise the risk of making unwanted products.
 - Provide stability and control of Assembly activity, and the whole Supply Chain.
- 2.5 Define an accurate statement of requirements for purchased items, by quantity and due date
- 2.6 Changes to the Master Schedule will be formally managed through a change control process.
- 2.7 A Valid plan is represented by the fact that there are no past due orders, and there are no overloads on any work centres. Planned capacity will be set at the level of the demonstrated capacity as calculated by reference to the actual output achieved expressed in standard hours as a proportion of the number of hours available from the workforce.

Thus a load factor is calculated with reference to the following formula:

[Actual Standard hours Produced]

[Actual hours available from the number of people/machine hours available]

This load factor is then applied to anticipated labour and/or machine availability and this will be the basis of planned load for the work centres.

3.0 SCOPE

- 3.1 Master Production Scheduling will encompass all the MPS controlled products sourced (Assembled or Purchased) to be sold by XYZ Company in UK and export markets.
- 3.2 This policy and procedure applies to control the MPS and the changes made within the time horizons defined within this document.

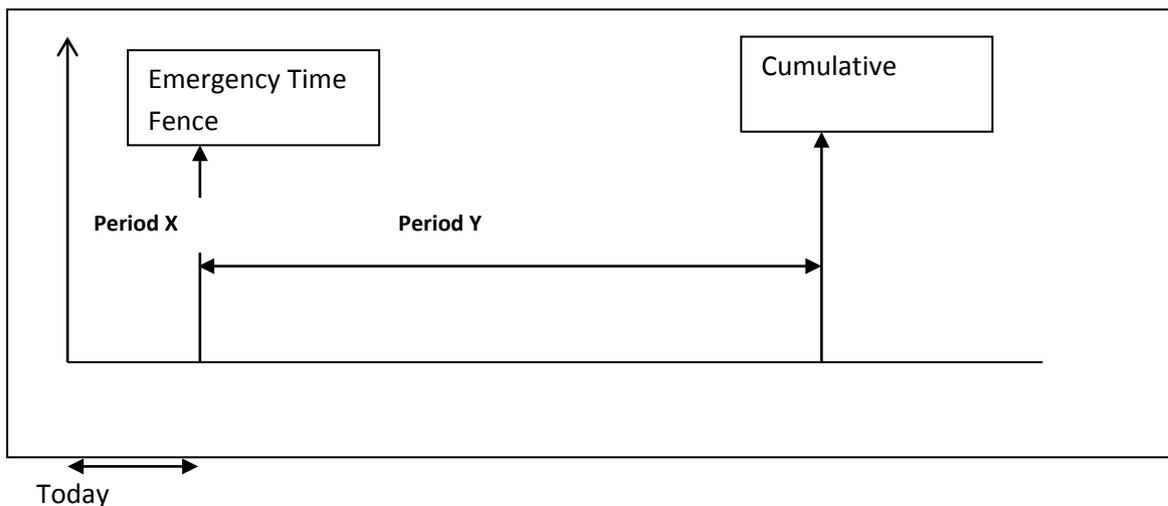
4.0 RESPONSIBILITY AND AUTHORITY

- 4.1 The Operations & Logistics Manager will have overall accountability for the MPS Process, and changes to the Master Schedule.
- 4.2 The Management and maintenance of the MPS is the responsibility of the Assembly Planner for internal assembled items and the Senior Planner for fully outsourced items.
- 4.3 The Assembly Planner will be responsible for managing internal capacities and ensuring overloads or underloads are addressed.
- 4.4 The Assembly Planner will propose production options in times of material or capacity constraint.
- 4.5 The Assembly Planner, Senior Planner, Planners and Supply Chain Engineer will ensure the integrity of Order Due Dates in the MPS and will also be responsible for the planning parameters related to their portfolio of products. No order due dates will be allowed which have dates prior to the current day.
- 4.6 The Business Managers are responsible for providing a forecast on a monthly basis in line with the requirements of the IBL process. They are also responsible for keeping the forecast up to date where changes are needed between the monthly Demand Review meetings.
- 4.7 The Demand Manager will be responsible for agreeing the MPS with the Operation & Logistics Manager within the IBL process.
- 4.8 The Demand Manager will be responsible for ensuring effective prioritisation in times of material or capacity constraints. This means that if material and/or capacity are not available to meet the total demand requirements, then either the Forecast will be adjusted, and/or customer orders will be rescheduled so that they will fit in with the available supply.
- 4.9 The Demand Manager is responsible for agreeing with the Business managers any changes to customer order due dates.
- 4.10 The Operations & Logistics Manager will ensure that resources are optimised across all work centres, subcontractors and suppliers. He will monitor and review performance and projected workload. The Operations & Logistics Manager will advise the IBL review panel where there are issues relating to the fact the available capacity as represented by the Master Schedule is insufficient to meet demand.

4.11 The following personnel are authorised to initiate change requests to the previously agreed Master Production Schedule within the defined time horizons:

- Sales Manager
- Business Manager
- Operations and Logistics Manager
- Demand Manager
- Senior Planner
- Assembly Planner
- Assembly Leader

4.12 The people allowed to make changes to the Master Schedule will be related to the following diagram :



The Master Scheduler has responsibility for the control of the Master Schedule between the Emergency Time Fence and the Cumulative Lead Time [Period Y]; the General Manager has responsibility for authorising changes to the schedule within the period from Today to the Emergency Time Fence [Period X].

4.13 Requests for change outside of the defined time horizons may be submitted for issues such as equipment trials, SH&E issues and statutory maintenance issues via an authorised Initiator.

4.14 In addition to the authorised Initiators, directives for change may be issued from the IBL Committee.

5.0 POLICY GUIDELINES

- 5.1 Products will be individually defined as “Make to Order” or “Make to Stock” as defined by the market requirements for the product. These classifications are agreed within the IBL process.
- 5.2 The Assembly Planner will ensure that the MPS is achievable, in weekly time buckets, for a minimum period of 6 weeks from today’s date. Thus they will check that the plan – week by week – is within the capacity limitations for that week,
- 5.3 The Assembly Planner will also ensure that the MPS is achievable, in monthly time buckets, for a minimum period of 6 months. Thus they will validate that the planned requirement for capacity for the month does not exceed the capacity available for the month. This position will be approved through the IBL process.
- 5.4 The MPS retains the ability to be flexible and responsive to meet the requirements of a dynamic market place; however short term change is minimised and where required must be controlled to ensure the overall Business benefit is delivered. Changes to the Master Schedule can be occasioned by changes from Customers, or from suppliers.
 - 5.4.1 It is XYZ Company’s policy that no changes to the Master Schedule will take place within the Emergency Time Fence, which is defined as being the period 5 days forward from the current date without prior approval Thus any changes that are needed will only be authorised by the Operations Manager
 - 5.4.2 It is XYZ Company’s policy that no changes will be made to the Master Schedule up to the Cumulative Time Fence which require additions to capacity or the total volume of material components on order without the approval of the Operations Manager. Substitutions between similar products can be made.
- 5.5 In order to optimise manufacturing costs and asset utilisation the Assembly Planner will have the authority to manufacture Make to Stock products up to 2 weeks ahead of the Customer requirement. Any early assembly intended in excess of this time horizon must be agreed with the IBL committee.
- 5.6 The MPS planning horizon is 24 months, which necessitates visibility of forecasted requirements over this period.
- 5.7 A Forecast by Product SKU or by Product Family will be provided for a horizon of 24 months by the Business Managers, in monthly time buckets. This forecast will either be based on the output of the Forecasting system, or their individual knowledge of the current situation with respect to Customers and the Market Place
- 5.8 The MPS will take account of any capacity reservations that may be required to meet opportunistic business as defined by the IBL process. Thus where required, capacity based on current forecasts and orders will be planned up to x % of the planned capacity, allowing 100 – x % to be available for incremental business opportunities as they occur.
- 5.9 The Master Production Scheduler will treat all products as having equal importance.

6.0 PROCESS FOR ESTABLISHING THE MASTER SCHEDULE

- 6.1 The Business Managers will provide a Forecast each month in monthly buckets out to the horizon of 24 months either at the level of a SKU, or Product Family. This forecast will then be entered by the Demand Manager into the ERP system [see the Demand Planning Policy and procedure for details of this]
- 6.2 On a daily basis, orders will be received from customers and entered into the ERP system.
- 6.3 As orders are entered into the system, the Customer Services administrator will verify whether the orders are forecast [or “normal”] or unforecast. If the orders are forecast, then these orders will consume the forecast. If they are considered abnormal, then they will not consume the forecast.
- 6.4 The Total Demand for an individual product will, therefore, comprise of all remaining [unconsumed] forecasts for an individual product, and the accepted customer orders.
- 6.5 In response to the Total Demand for a product, the ERP system will calculate a Master Production Schedule for that item, which will equal the Demand for the product, and allow for any safety stock requirements for the product.
- 6.6 Outside of the Cumulative Lead Time, the ERP system will automatically calculate the plan. However, at the Cumulative Lead Time, the Master Scheduler will need to Firm Plan the Schedule, so that they are in control of any changes to the plan.
- 6.7 Safety Stock will be consumed within the Firm Plan Horizon for the product, and will only be replenished outside of the Cumulative Lead Time for the product group.
- 6.8 Once an item’s Production schedule has been Firm Planned in this way, then the ERP system will not change the schedule, but will identify if changes need to be made, through the reporting of Action messages, which are reported to the Master Production Scheduler. It is the Master Production Scheduler’s responsibility to evaluate the Action Messages and take appropriate action.
- 6.9 The Master Schedule module of ERP will calculate the Projected Available Balance, which identifies whether the current supply plan is met by the current Demand plan.
- 6.10 The Master Schedule module of ERP will calculate the Available to Promise, which identifies the amount of the current supply plan which is not committed to customer orders.
- 6.11 On receipt of a Customer Order, a Customer Service administrator will check whether an order is forecast.
 - 6.11.1 If it is forecast, then the order will be given a date in line with the first Available to Promise Quantity identified by the ERP system.
 - 6.11.2 In the event that the order is unforecast, then the promise date that will be given to the order will be at or beyond the cumulative lead time, depending on material and capacity availability
 - 6.11.3 If this date is deemed by the Business Manager not to be acceptable to the Customer, then the date to be given to the customer will be determined by the Sales Manager, taking into account the potential

risk to other customers, for whom forecasts already exist. The risk of the date given to the customer rests with the Sales manager.

6.11.4 Any change required to the Master Schedule will be handled through the process described below.

6.12 On a daily basis the ERP system will be run, and the calculations for Material Requirements Planning and Capacity Requirements Planning will be made by the system.

6.13 The Master Production Scheduler will review the action messages produced by the system each morning, and will take the appropriate action.

6.14 In the event that the calculations for Capacity Requirements Planning show an overload on a work centre, then the Master Scheduler will:

6.14.1 Review whether the requirement is necessary. If not, then he will reduce the order quantity causing the requirement causing the overload

OR

6.14.2 Reschedule the Works Orders in the order of priority.

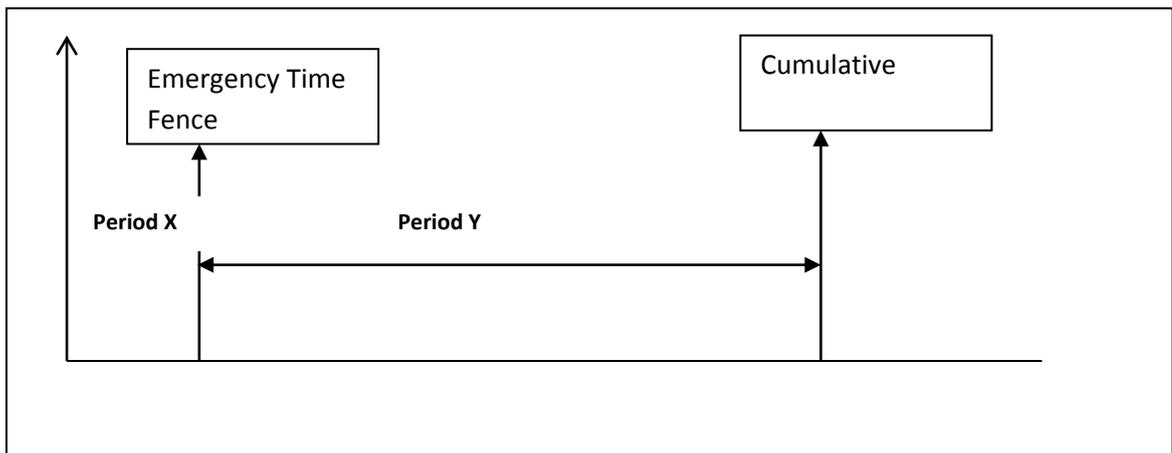
6.15 In the event that the calculations for Material Requirements Planning show a need to replan, then the Master Scheduler will replan the works orders in line with their judgment.

6.16 In the event of a breakdown in machinery or equipment in assembly, or as a result of a failure in delivery from the supplier, then a revised estimated date must be obtained from the supplier or the assembly shop manager, and the Master Schedule will be replanned accordingly. These changes will also be subject to the process for changes to the Master Production Schedule.

7.0 REQUEST FOR CHANGING THE MASTER PRODUCTION SCHEDULE

7.1 Each month, as part of the IBL process, the current Master Schedule will be agreed and signed off after the Senior Team Review. Clearly changes can be made to this Master Schedule in between the Monthly IBL meetings, and this process defines how changes will be monitored and controlled.

7.2 The period within which change is subject to this procedure is between the present and the limit of the Firm Planning Period. This time horizon is product specific and the currently applicable figures are shown in Appendix 2. It is useful to refer to the following diagram in order to review the degree of changes that can be made :



7.3 For a change to be made to the MPS, which has been approved through the IBL process, in the time zone marked Period Y in the diagram, which involves the inclusion or removal of another product, additional quantities, or the expediting of agreed production, then a request for a change to the Master Production Schedule must be made by an authorised Initiator and made to the Operations Manager, using the form shown at Appendix 3.

7.4 The authorised Initiator shall provide details of the proposed change with respect to future sales, customer service and the product and/or market growth.

7.5 The authorised Initiator shall collate and determine the cost to the business for the proposed change including one off costs, overtime or extra labour, storage costs of substitute product, raw materials, packaging, and any other significant costs.

7.6 The Assembly or Senior Planner as appropriate shall assess the impact of the possible changes by:

- Assessing material availability
- Assessing production capacity availability

- Assessing the impact on the Projected Available Balance and highlighting implications on previously committed requirements.
- Collating data on Site costs/resources implications.

7.7 The proposal will be presented to the Operations & Logistics Manager and the Demand Manager, who will be responsible for accepting or rejecting the proposal. In exceptional circumstances or where agreement cannot be reached the matter will be referred to the IBL committee for resolution.

7.8 Once the change request has been approved it will be signed off by the Operations Manager. On receipt of a completed and signed form the Assembly Planner or Senior Planner (as appropriate) shall:

- Change the MPS quantities and/or start and due dates
- Advise Supply Chain Engineers or Planners to reschedule requirements for the components involved as necessary.

7.9 If a change is required to the Master Schedule in the period represented by Period X in the above diagram, then changes will only be approved by the Operations Manager on an exceptional basis, and only in the case of a situation defined as a genuine emergency.

7.10 All changes will be collated by the Demand Manager and reported to the EBP committee on a monthly basis.

8.0 PERFORMANCE MEASURES

8.1 The following measures will be reported to the Sales Manager and the Operations Manager on a weekly basis:

8.1.1 Performance to Promise

8.1.1.1 All Customer Orders will be given a Promise Date on the first date that the customer order is entered.

8.1.1.2 When the order is recorded as being despatched from the Manufacturing site, the actual despatch date, quantity and specification will be compared with the original first promised despatch date, quantity and specification.

8.1.1.3 If the Actual Despatch date, quantity and specification are the same as the Original promised despatch date, quantity and specification, then the order will be deemed to be a hit, otherwise it will be a miss.

8.1.1.4 The Original Promise date can only be varied as a result of a specific written request on the part of the customer.

8.1.1.5 The measure will be calculated as :

[Total number of orders on time despatched in the week]

_____ x 100 %

[Total number of orders due to be despatched in the week]

8.1.1.6 XYZ Company have a policy of achieving greater than 98 % of orders being delivered On Time in Full to Specification

8.1.1.7 The responsibility for investigating the causes for the failure in delivering to less than this target rests with the Sales Manager.

8.1.2 Performance to Request

8.1.2.1 All Customer Orders will be given a Request Date on the first date that the customer order is entered.

8.1.2.2 When the order is recorded as being despatched from the Manufacturing site, the actual despatch date, quantity and specification will be compared with the original first requested despatch date, quantity and specification.

8.1.2.3 If the Actual Despatch date, quantity and specification are the same as the Original requested despatch date, quantity and specification, then the order will be deemed to be a hit, otherwise it will be a miss.

8.1.2.4 The Original Request date can only be varied as a result of a specific written request on the part of the customer.

8.1.2.5 The measure will be calculated as :

[Total number of orders as hits despatched in the week]

_____ x 100 %

[Total number of orders due to be despatched in the week]

8.1.2.6 XYZ Company have a policy of achieving greater than 98 % of orders being delivered On Time in Full to Specification according to the Customer Request date.

8.1.2.7 The responsibility for investigating the causes for the failure in delivering to less than this target rests with the Sales Manager.

8.1.3 Master Schedule Achievement

8.1.3.1 All Master Schedule Orders will be given a Works Order Due Date when they are released to the shop floor, or outside supplier.

8.1.3.2 When the Works order or Supply Order is recorded as being completed and put into stock, then the actual completion date, quantity and specification will be compared with the original first recorded Works Order due date, quantity and specification.

8.1.3.3 If the Actual completion date, quantity and specification are the same as the Original Works Order due date, quantity and specification, then the order will be deemed to be a hit, otherwise it will be a miss.

8.1.3.4 The measure will be calculated as :

[Total number of orders as hits completed in the week]

_____ x 100 %

[Total number of orders due to be completed in the week]

8.1.3.5 XYZ Company have a policy of achieving greater than 98 % of orders being completed On Time in Full to Specification according to the Works Order Due Date.

8.1.3.6 The responsibility for investigating the causes for the failure in delivering to less than this target rests with the Operations Manager.

8.1.4 MPS Stability

8.1.4.1 The total number of changes made to the Master Schedule will be collated into a report by the Master Production Scheduler. This will be analysed into the number of changes made:

A] Within the Emergency Time Fence

B] Within the Cumulative Lead Time

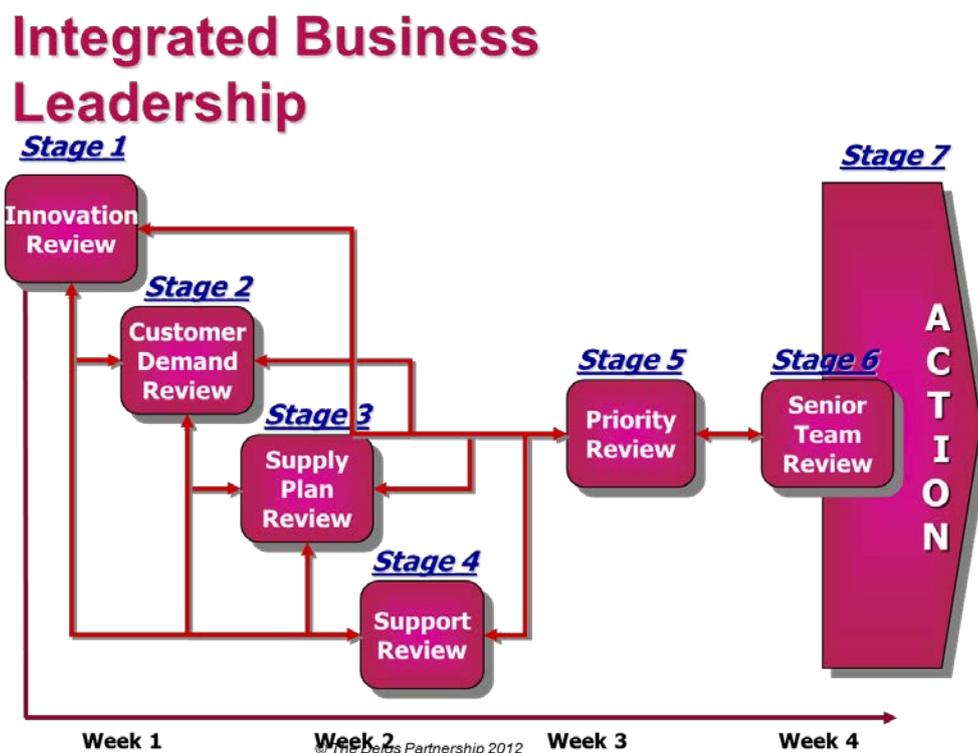
- 8.1.4.2 The Master Scheduler will then calculate the number of Master Scheduler orders in existence in the week from the ERP system.
- 8.1.4.3 The proportion of MPS orders changed in the week compared to the total number in existence will be calculated and reported to the Operations Manager.
- 8.1.4.4 XYZ Company has a policy that not more of 5 % of all MPS orders will be changed within a week in the Period y as in the above diagram, and not more than 1 % of all orders within the Emergency Time Fence will be changed.
- 8.1.4.5 It is the responsibility of the Operations manager to investigate reasons for changes in excess of these target figures.

APPENDIX 1 - DEFINITIONS

1.0 Definitions and Glossary of Terms

1.1 Integrated Business Leadership (IBL)

- 1.1.1 This is the monthly business planning cycle comprising of the Engineering, Demand and Supply reviews which ultimately approve the Master Schedule within the formalised monthly review activity. This process is described in the following diagram, which illustrates the monthly cycle of meetings :



- 1.1.2 This process explicitly recognises that the total demand may not be capable of being met by the Supply side. In the event that the Demand exceeds Supply, then a formal process for prioritising the demand is recognised under Stage 5 of the process.

- 1.1.3 Thus supposing the planned available capacity in any month within the production area was 1000 hours [and all other sources of capacity had been investigated and not found to be available], and the demands from all areas amounted to 1,200 hours requirements, then this process would need to decide on the business priorities, and manage the demand in accordance with the priorities.

- 1.1.4 In the event that this is not capable of resolution between business units, then the matter could be brought forward to the Senior Team review, where decisions on capacity expansion would be taken.

1.2 Firm Planning period.

- 1.2.1 The period of time out into the future where the Production Planner has manual control of the MPS and changes are not made automatically by the ERP system. The period length is set to reflect the impact of change and is dependent on the product and/or process.
- 1.2.2 Specifically this Firm Planning period is set to the Cumulative Lead Time of the product being planned.

1.3 Cumulative Lead Time

- 1.3.1 The Cumulative Lead Time is defined as the total length of time to purchase the components for and assemble the items required to make the item ready to deliver to the customer.

1.4 Emergency Time Fence

- 1.4.1 This is the Time period within which changes to the Master Schedule will be strictly limited. This is to ensure that productivity within the factory and at suppliers is maximised within the short term.
- 1.4.2 Changes can be made to the schedule, but these changes will be strictly controlled and monitored.

1.5 Forecast Consumption

- 1.5.1 This represents the technical term for the way in which the ERP system replaces Forecast with Customer Orders. A customer order is said to consume the forecast when the demand is considered to be in line with the forecast. In this event, the forecast does not prompt a change to the schedule.
- 1.5.2 Where an order is received from a customer which is considered outside of the forecast, it will be treated as abnormal, and will not consume the forecast. Such an order will require review of when a change to the Master Production Schedule will be made.

1.6 Abnormal Demand

- 1.6.1 An order is considered to be abnormal when the amount ordered from a customer exceeds the amount forecast for the relevant time period.
- 1.6.2 This will be identified either as a specific quantity as forecast by a customer for that particular period, or for all customers for a particular item.

1.7 Projected Available Balance

- 1.7.1 The Projected Available Balance [PAB] is the Balance between the Demands as represented by the sum of Forecasts and Orders, and the projected supply plan calculated from the current on hand balance, and the Projected Production or Purchasing plan.
- 1.7.2 The Master Scheduler should at all times ensure that the PAB does not go negative.

1.8 Available to Promise

- 1.8.1 The Available to Promise figures calculated by the ERP system represent the amount of supply currently not committed to Customer Orders.
- 1.8.2 Customers will never be promised a quantity or a date that will make the system calculate a negative Available to Promise.
- 1.8.3 In the event that a Negative Available to promise is caused through replanning of the Master Schedule, it is essential that the Customers affected are given revised delivery dates.

1.9 Make To Order

- 1.9.1 A product is defined as being Made to Order if the business decides that the risk of making or purchasing this product is not justified.
- 1.9.2 In this case the Master Scheduler will only authorise manufacture of the product if and only if a Customer order for that specific product exists within the Master Production Schedule

1.10 Assemble to Order

- 1.10.1 Where it is desired to be able to give a customer a delivery lead time that is shorter than would be required through quoting the full lead time of the product, but would not entail holding finished goods stock, then the business decides to hold common components in stock, allowing the final operations to be completed against the customer order.
- 1.10.2 In this case the components will be bought and part assembled against the forecast, but the Master Scheduler will not complete production into the final item without the authority of a Customer Order.

1.11 Make to Stock

- 1.11.1 A product is defined as being Make to Stock if the business decides that the financial and commercial risk of putting the product into stock is worthwhile, in terms of the fact that XYZ Company will be able to give an instant response to customers' requiring that product.
- 1.11.2 The amount of product which will be held in Stock is defined with reference to the accuracy of the forecast for that item [as suggested

by XYZ Company's Inventory Optimisation software product], the Lead Time for replenishment of the product, and the desired Service Level for the product.

- 1.11.3 In the case of these products, the Master Scheduler has the authority of releasing these into Manufacture without the existence of a Customer Order to support the manufacture of the product.

1.12 Customer Service Level

- 1.12.1 For each product or group of products, the business will determine a desired Service level, which will be incorporated in the commercial contracts agreed with customers.
- 1.12.2 For those products which are Made to Order or Assembled to Order, then a lead time will be quoted to customers [See Appendix 2] against which they will expect to get delivery x % of the time. Customers will be told that a final promise date will be given to customers on receipt of the customer order.
- 1.12.3 For those products which are Make to Stock, then a service level will be offered to customers on the basis that they will get delivery off the shelf from XYZ Company. Thus they should expect to get x % of all orders delivered ex XYZ Company within 24 hours plus the lead time to deliver to their premises.

1.13 Stock Keeping Unit

- 1.13.1 A stock keeping unit [SKU] refers to a unit which can be stocked, and differentiates from part built product which may occur as Work-in-Process as part of the manufacturing or sub-contract operations.
- 1.13.2 Each Stock Keeping Unit is identified by a unique part number, and planned and managed as such within the ERP System.

1.14 Kanban

- 1.14.1 A Kanban represents an alternative to a Works Order or Purchase Order as a means of triggering a requirement for product. It means "visible signal" as translated from the Japanese
- 1.14.2 It can take the form of a marked physical space on the floor, which indicates – when empty – the need for replenishment, or it can take the form of a standard card which contains the product details, and which is faxed to suppliers.

APPENDIX 3 : FORM FOR REQUESTING A CHANGE TO THE MASTER SCHEDULE

Master Scheduling Change Request Form			Number :	
Product Code		Description		
Works Order Number		Current Start/Due Date		
Reason for Change :		Proposed Start/Due Date		
		Current Quantity		
		Proposed Quantity		
Impact of change on :		Initiator of request		
Stock :		Date Request made		
Storage Costs:		Approved by :		
Product Costs:		Date Approved :		
Overtime:		Actioned by :		