

Production Management (ME-419)

Module 3 – Supply Management

Master Production Schedule (MPS)

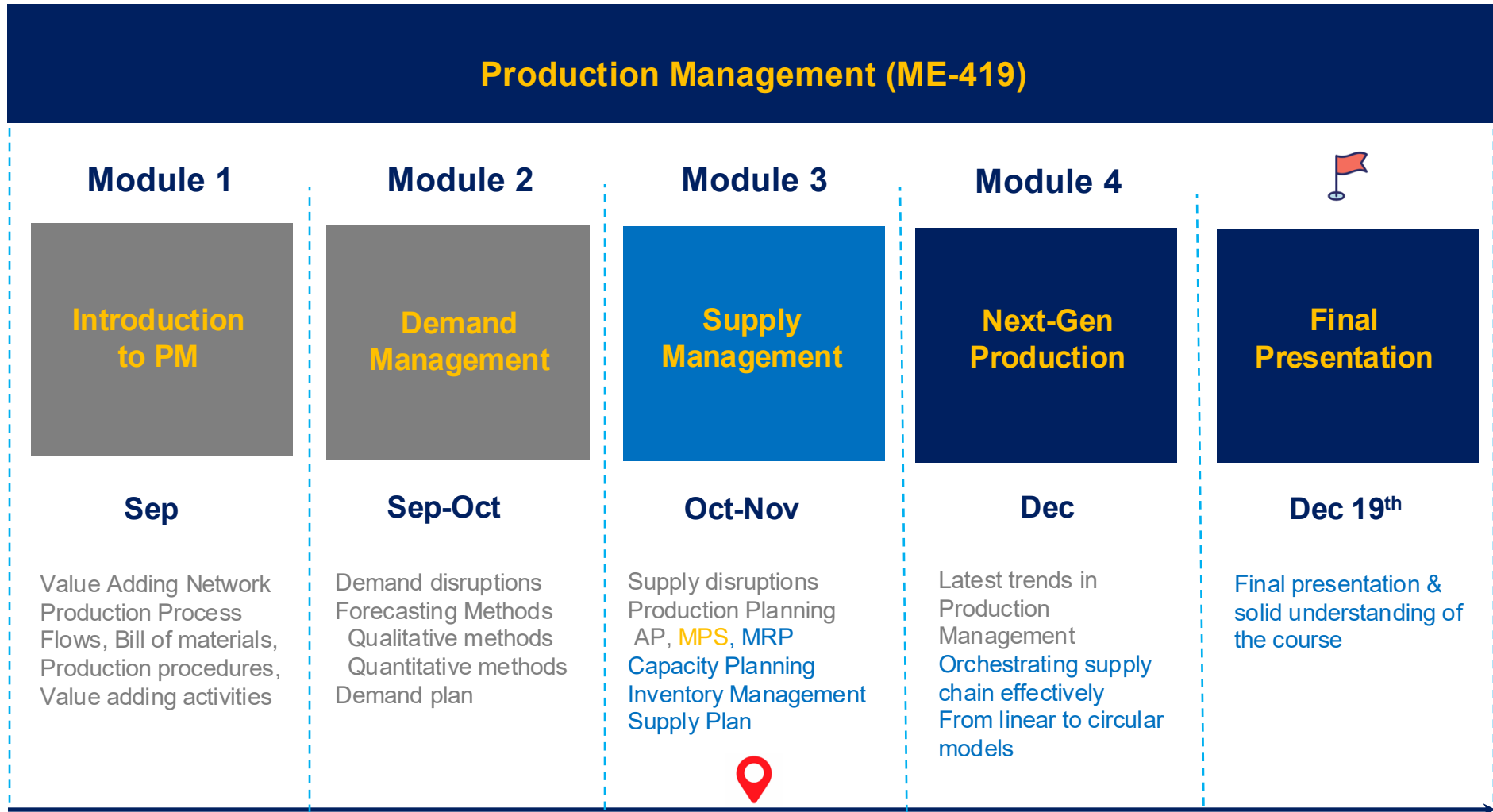
Amin Kaboli

Week 9 – Session 1&2 – Nov 7th, 2025

Course Framework



Business plan
Strategic plan
Financial plan



Planning a Dinner Party

- Required activities:

1. Plan the menu

2. Determine the number of guests

3. Review the recipes for each item on the menu

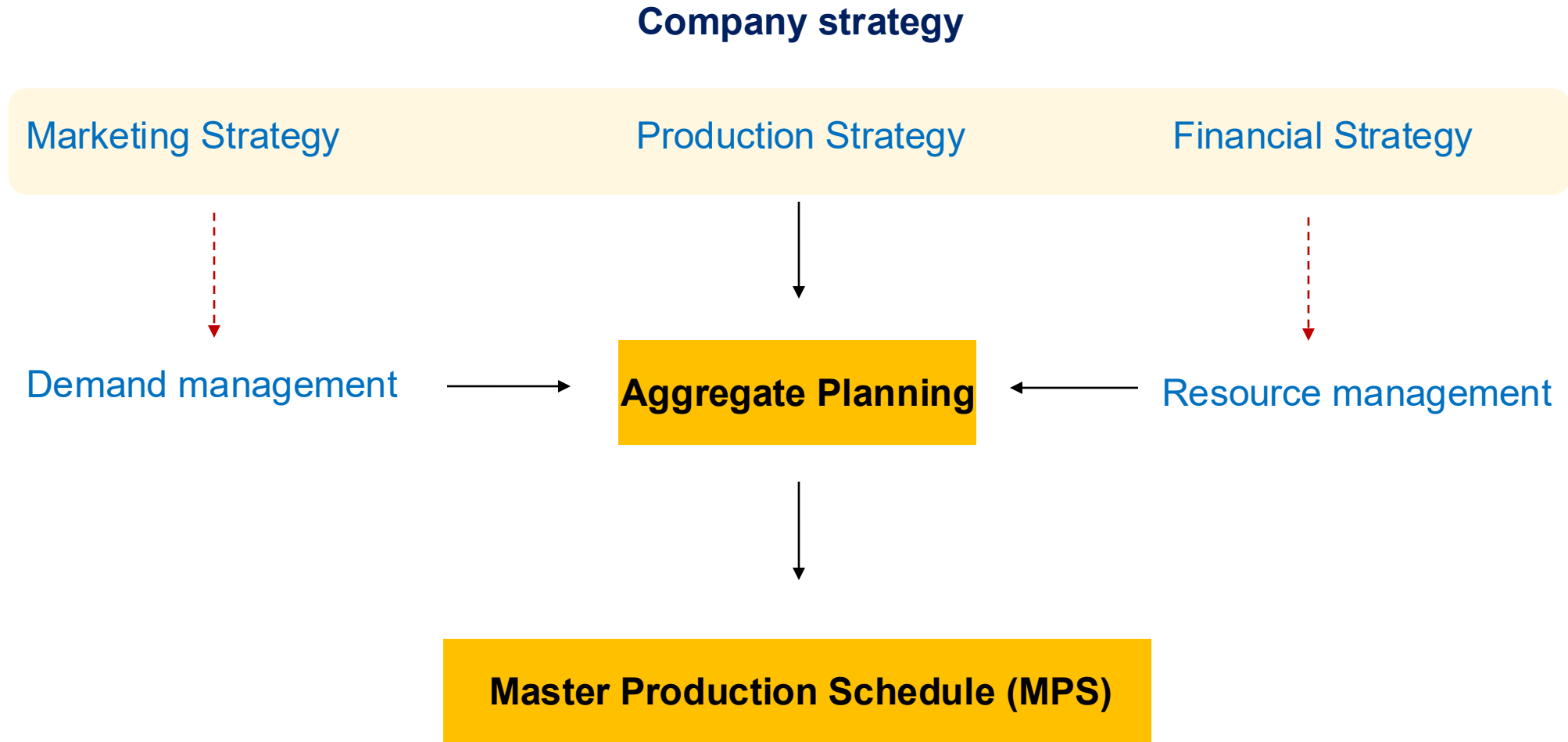
4. Check the kitchen for what you already have

5. Purchase required materials

6. Dinner is ready, let's party



Aggregate planning - Extended



Disaggregation



Aggregate Plan **vs** Master Production Schedule

Aggregate Plan (AP)

- Shows how many products are planned for each time period.

Master Production Schedule (MPS)

- Shows the specific products planned for a given time period.

From Proposed to Authorized MPS

1 Proposed MPS: The production planner develops a proposed MPS.

2 Feasibility check: The Production planner uses rough cut capacity planning technique to calculate whether the company has the capacity to meet the proposed MPS.

*If the proposed MPS is feasible, s/he further evaluates effective use of resources.

*If the proposed MPS is not feasible, the proposed MPS is modified or capacity is expanded.

3 Authorized MPS: If the proposed MPS is accepted, it becomes the authorized MPS.

Note: the authorized MPS is a critical input into the Material Requirement Planning (MRP).

From Proposed to Authorized MPS

1 Proposed MPS: The production planner develops a **proposed MPS**.

2 Feasibility check: The Production planner uses **rough cut capacity planning technique** to calculate whether the company has the capacity to meet the proposed MPS.

*If the **proposed MPS is feasible**, s/he further evaluates effective use of resources.

*If the **proposed MPS is not feasible**, the proposed MPS is modified or capacity is expanded.

3 Authorized MPS: If the proposed MPS is accepted, it becomes **the authorized MPS**.

Note: the authorized MPS is a critical input into the Material Requirement Planning (MRP).

Proposing an MPS

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Projected Available (110)	60	10	-40									
MPS	0	0	0	0	0	0	0	0	0	0	0	0

Projected available = Beginning inventory + MPS shipment – Sales forecast

First Revised MPS

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Projected Available (110)	60	10	85	35	-40							
MPS	0	0	125	0	0	0	0	0	0	0	0	0

Projected available = Beginning inventory + MPS shipment – Sales forecast

Projected available (3) = 10 + 125 – 50

Completed MPS

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Projected Available (110)	60	10	85	35	85	10	60	110	60	10	85	35
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Projected available = Beginning inventory + MPS shipment – Sales forecast

From Proposed to Authorized MPS

1 Proposed MPS: The production planner develops a **proposed MPS**.

2 Feasibility check: The Production planner uses **rough cut capacity planning technique** to calculate whether the company has the capacity to meet the proposed MPS.

*If the **proposed MPS is feasible**, s/he further evaluates effective use of resources.

*If the **proposed MPS is not feasible**, the proposed MPS is modified or capacity is expanded.

3 Authorized MPS: If the proposed MPS is accepted, it becomes **the authorized MPS**.

Note: the authorized MPS is a critical input into the Material Requirement Planning (MRP).

Rough-Cut Capacity Planning (RCCP)

Definition: The process of converting proposed MPS into requirements for key resources such as:

- Direct labor
- Machine time.

What: Calculates a rough estimate of the workload placed on critical resources by the proposed MPS

RCCP technique:

- Capacity Planning using Overall Planning Factors (CPOPF)
- it develops a planning factor for each critical resource based on historical data.
- it shows how much of a resource is needed for one completed unit.

Procedure for CPOPF

Step 1. Determine the appropriate planning factor using historical data.

Step 2. Multiply the MPS quantities by the appropriate planning factor.

Step 3. Sum capacity requirements for each resource by time period.

Step 4. Allocate capacity requirements to individual work centres based on historical percentage.

Step 5. Evaluate the workload at each resource to validate MPS feasibility.

Example: Blancpain's Valentin Watches

- During the past three years produced
 - * **72'000 for Men watch**
 - * 21'600 hours of direct labor hours
 - * 5'760 hours of machine hours
 - * **108'000 for Women watch**
 - * 43'200 hours of direct labor hours
 - * 12'960 hours of machine hours



Procedure for CPOPF

Step 1. Determine the appropriate planning factor using historical data.

Two factors already mentioned:

- Direct labor
- Machine time

- Planning factor for direct labor = Total direct labor spent / number of units

Direct labor for Men = 21'600 / 72'000

- Planning factor for machine time = Total machine hours spent / number of units

Direct labor for Women = 43'200 / 108'000



Procedure for CPOPF

Step 1. Determine the appropriate planning factor using historical data.

Two factors already mentioned:

- Direct labor
- Machine time

Planning factors (hours per watch)		
	Direct labor	Machine time
Watch for Men	0.30	0.08
Watch for Women	0.40	0.12



Procedure for CPOPF

Step 2. Multiply the MPS quantities by the appropriate planning factor.

Planning factors (hours per watch)		
	Direct labor	Machine time
Watch for Men	0.30	0.08
Watch for Women	0.40	0.12

Quarterly MPS					
	Q1	Q2	Q3	Q4	Total
Watch for Men	6000	5500	9500	6500	27500
Watch for Women	10000	12000	7500	10100	39600



Procedure for CPOPF

Step 3. Sum capacity requirements for each resource by time period.

Direct labor hours required					
	Q1	Q2	Q3	Q4	Total
Watch for Men	1800	1650	2850	1950	8250
Watch for Women	4000	4800	3000	4040	15840
Total	5800	6450	5850	5990	24090

Direct machine time (hours) required					
	Q1	Q2	Q3	Q4	Total
Watch for Men	480	440	760	520	2200
Watch for Women	1200	1440	900	1212	4752
Total	1680	1880	1660	1732	6952

Procedure for CPOPF

Step 4. Allocate capacity requirements to individual work centres based on historical percentage.

Work centers	
	Historical allocation
Center 101	60%
Center 102	40%



Procedure for CPOPF

Step 4. Allocate capacity requirements to individual work centres based on historical percentage.

Direct labor hours required by work center					
	Q1	Q2	Q3	Q4	Total
Center 101 (60%)	3480	3870	3510	3594	14454
Center 102 (40%)	2320	2580	2340	2396	9636
Total	5800	6450	5850	5990	24090

Direct machine time (hours) required by work center					
	Q1	Q2	Q3	Q4	Total
Center 101 (60%)	1008	1128	996	1039	4171
Center 102 (40%)	672	752	664	693	2781
Total	1680	1880	1660	1732	6952

Procedure for CPOPF

Step 5. Evaluate the workload at each resource to validate MPS feasibility.

- Check available labor and machine time and compare to the resources.



Exercise 2 – Capacity Check



MPS Feasibility Check

- Compare the MPS to the aggregate plan
- If MPS needs additional resources;
 - Company can increase its capacity with overtime, temp workers, subcontracting, or by using alternative manufacturing processes.
- Otherwise;
 - Company may not achieve the objectives of the marketing plan and consequently, the business plan.

From Proposed to Authorized MPS

1 Proposed MPS: The production planner develops a **proposed MPS**.

2 Feasibility check: The Production planner uses **rough cut capacity planning technique** to calculate whether the company has the capacity to meet the proposed MPS.

*If the **proposed MPS is feasible**, s/he further evaluates effective use of resources.

*If the **proposed MPS is not feasible**, the proposed MPS is modified or capacity is expanded.

3 Authorized MPS: If the proposed MPS is accepted, it becomes **the authorized MPS**.

Note: the authorized MPS is a critical input into the Material Requirement Planning (MRP).

From Proposed to Authorized MPS



1

Proposed MPS: The production planner develops a **proposed MPS**.



2

Feasibility check: The Production planner uses **rough cut capacity planning technique** to calculate whether the company has the capacity to meet the proposed MPS.

*If the **proposed MPS is feasible**, s/he further evaluates effective use of resources.

*If the **proposed MPS is not feasible**, the proposed MPS is modified or capacity is expanded.



3

Authorized MPS: If the proposed MPS is accepted, it becomes **the authorized MPS**.

Note: the authorized MPS is a critical input into the Material Requirement Planning (MRP).

Use of Authorized MPS

Order promising: process of making order delivery commitment.

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Projected Available (110)	60	10	-40									
MPS	0	0	0	0	0	0	0	0	0	0	0	0

Available to promise = uncommitted portion of a company's inventory and planned production, maintained in MPS to support order promising.

Completed MPS

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Projected Available (110)	60	10	85	35	85	10	60	110	60	10	85	35
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Projected available = Beginning inventory + MPS shipment – Sales forecast

Extended MPS Record

Orders promised to customers for delivery in given time period.

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Customer orders	35	25	25	20	0	15	0	0	10	0	0	10
Projected Available (110)												
ATP												
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Uncommitted portion of a company's inventory and planned production, maintained in MPS to support order promising.

Projected available = ?

Case 1: New Customer Orders

Marketing director had a meeting with Head of Purchasing at Globus in Zurich to present the product and discuss the possibility to sell as pilot sales in their shop.

Globus purchasing team liked the product and asked for 200 units delivery in period 5. the marketing director calls you on the way back to Lausanne and brief you about the meeting and ask you:

Q: is it possible to deliver 200 units in period 5?



Revised ATP MPS Record

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Customer orders	35	25	25	20	200	15	0	0	10	0	0	10
Projected Available (110)	60	10	85	35	-40	-115	-65	-15	-65	-115	-40	-90
ATP	50		80		-90		125	115			115	
MPS	0	0	125	0	125	0	125	125	0	0	125	0



Projected available = Beginning inventory + MPS shipment – Max (Sales forecast, Customer orders)

ATP = Beginning inventory + MPS shipment – Customer orders before next shipment

Revised ATP Record - Solution

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Customer orders	35	25	25	20	200	15	0	0	10	0	0	10
Projected Available (110)	60	10	85	35	-40	-115	-65	-15	-65	-115	-40	-90
ATP	50		80		-90		125	115			115	
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Projected available = Beginning inventory + MPS shipment – Max (Sales forecast, Customer orders)

ATP = Beginning inventory + MPS shipment – Customer orders before next shipment

Second Revision of ATP Record - Solution

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Customer orders	45*	25	105*	20	110*	15	0	0	10	0	0	10
Projected Available (110)	60	10	30	-20	-5	-80	-30	20	-30	-80	-5	-55
ATP	40		0		0		125	115			115	
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Projected available = Beginning inventory + MPS shipment – Max (Sales forecast, Customer orders)

ATP = Beginning inventory + MPS shipment – Customer orders before next shipment

Case 2: New Customer Orders

Globus purchasing team calls 1 hour after the meeting and asks for extra units! 50 units delivery in period 4. the marketing director calls you again happily and asks you:

Q: is it possible to deliver 50 extra units in period 4?



Third Revision of ATP Record

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Customer orders	45*	25	105*	70	110*	15	0	0	10	0	0	10
Projected Available (110)	60	10	30	-40	-25	-100	-50	0	-50	-100	-25	-75
ATP	40		-50		0		125	115			115	
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Projected available = Beginning inventory + MPS shipment – Max (Sales forecast, Customer orders)

ATP = Beginning inventory + MPS shipment – Customer orders before next shipment

Fourth Revision of ATP Record

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales forecast	50	50	50	50	75	75	75	75	50	50	50	50
Customer orders	45*	25	105*	20	110*	15	50	0	10	0	0	10
Projected Available (110)	60	10	30	-20	-5	-80	-30	20	-30	-80	-5	-55
ATP	40		0		0		125	65			85	
MPS	0	0	125	0	125	0	125	125	0	0	125	0

Projected available = Beginning inventory + MPS shipment – Max (Sales forecast, Customer orders)

ATP = Beginning inventory + MPS shipment – Customer orders before next shipment

Case 3: New Customer Orders

Globus purchasing team calls for the third times and asks for another extra units! 30 units delivery in period 12.

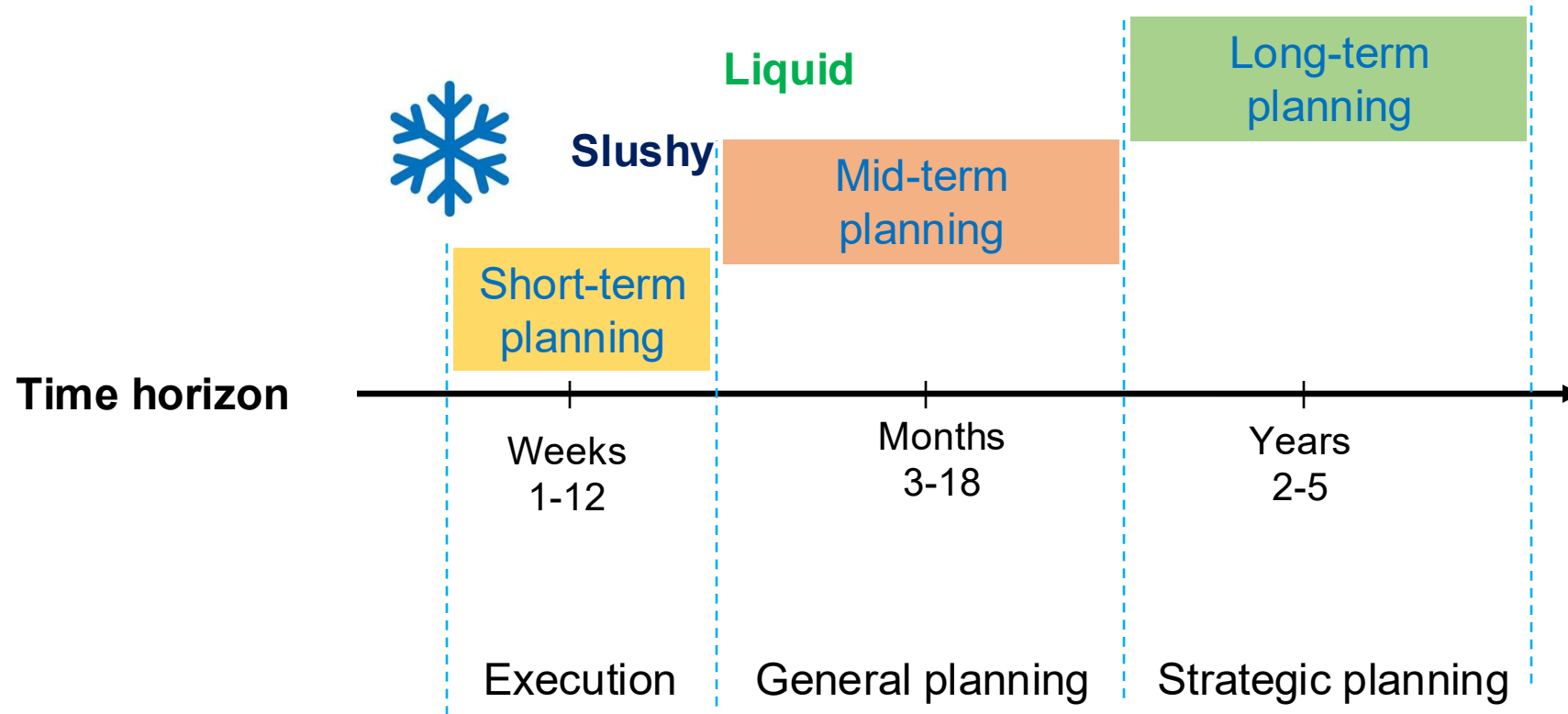
Q: is it possible to deliver 50 extra units in period 4?



Exercise 3 – Develop The Authorized MPS



Time Fence and Plan Horizon



Production Management (ME-419)

Coaching Rooms

Amin Kaboli

Week 9 – Session 4 – Nov 7th, 2025

The Art of Giving and Receiving Effective Feedback



Feedback is a gift



Feedback/comments are
always welcome

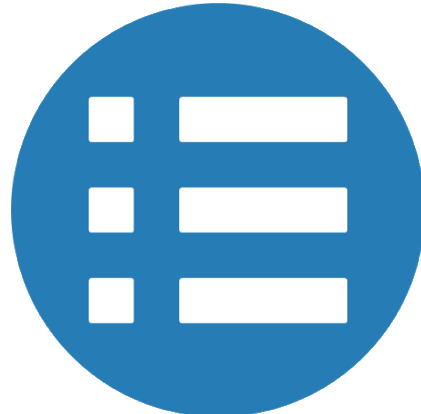
Giving Effective Feedback



Respectful

Ask for permission

May I share my observation



Fact-based

Share facts/ your feelings

What I observed/felt is that ...



Constructive

Stay focused on growth

What I suggest is that ...



Concise

Be to-the-point and short

Max three key points



Open

Be open to any reaction

I respect your feeling ...

Receiving Effective Feedback



Receive the gift

Be open and receptive

I appreciate your feedback



Listen

Listen to listen!

The goal is to listen not to answer, no interruption (zip it)



Understand

Focus on THE message

The goal is to understand, ask questions, clarify, repeat key points, ...



Decide

You always have a choice

Thank you, I have never seen it this way
OR
Thank you, let me reflect and get back to you?



Follow up

Reach a common understanding

There are many ways to follow up: revise the work, set up a meeting, ...