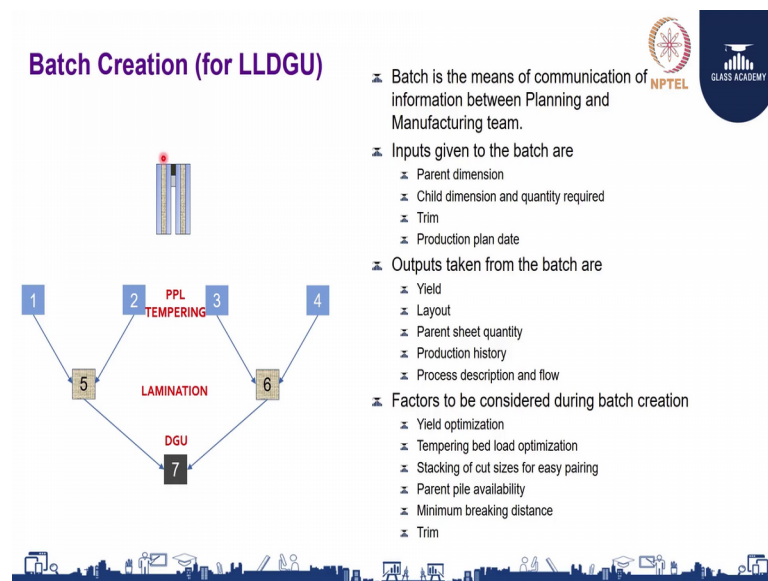


**Glass Processing Technology**  
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**Lecture – 14**  
**Serviceability – Sales and Production Planning in Solutions Business**

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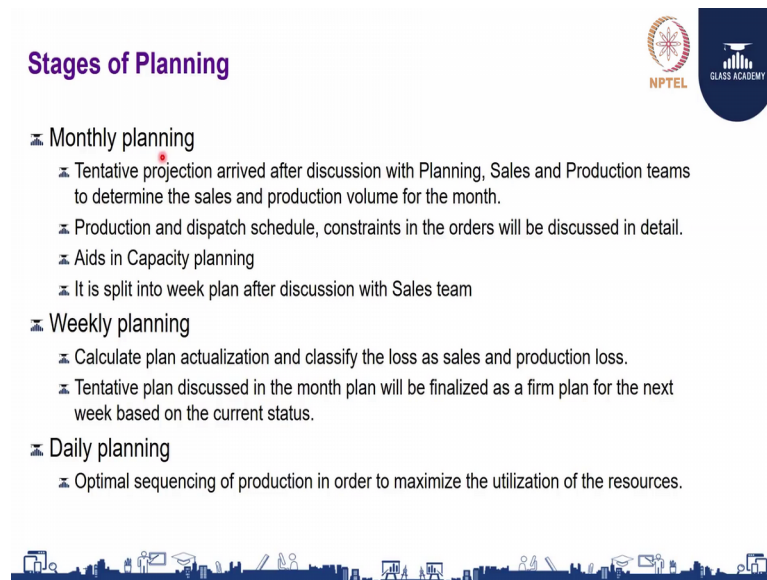
And if you are going to do a lamination with tempering you are going to do cutting grinding, then tempering and then lamination. In case if you are going to get into DGU process without lamination you do a cutting grinding tempering. And then so, the batch creations would be done for cutting grinding tempering with just one batch and then for tempering as a and then for IGU as the second batch.

So, depending upon the customer requirement this batch creation is being done in small steps in various machining process, in such a way the process flows, what I said to you the communication of the material and the information part. So, all flows together inform of a batch indicating the operator on what he has to do, when what will be an input to the next process. So, that the outputs fall in place towards delivery to the customers.

So, this process is considered the heart of the overall planning process, in terms of coordination between the manufacturing and planning team. So, students I hope you have understand on this part, which is which is which was being explained for a complex

product and it can be also break an based upon this simple products or the final outputs required by the customer.

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**Stages of Planning**

- Monthly planning
  - Tentative projection arrived after discussion with Planning, Sales and Production teams to determine the sales and production volume for the month.
  - Production and dispatch schedule, constraints in the orders will be discussed in detail.
  - Aids in Capacity planning
  - It is split into week plan after discussion with Sales team
- Weekly planning
  - Calculate plan actualization and classify the loss as sales and production loss.
  - Tentative plan discussed in the month plan will be finalized as a firm plan for the next week based on the current status.
- Daily planning
  - Optimal sequencing of production in order to maximize the utilization of the resources.

Having seen the various material flow the information flow and the overall glass industry in terms of the process, let me now take you to the stages of planning. So, when we talk about stages of planning. First let us understand what should be the stages ok, we can talk about a yearly plan, we can about monthly plan, we can talk about half yearly plan, we can talk about quarterly plan. Whatever it is, but here I am going to fix your attention in terms of understanding how does it happen in a day to day industry and how does it get coordinated for a month. So, that once you understand what is happening in a month, you will be able to replicate that for different months as part of quarterly half yearly or for a year.

So, the first stage in planning is monthly planning, then for a weekly planning and then for a daily planning ok. This planning has requirements being taken as input from the, who has given as part of projections and waiting for confirmation during the due course of the month ok. So, what are all the inputs you take from this, you take tentative projection after discussing with planning a sales and production teams to determine the sales and production volume for the month. So, in this point we just explaining what should be a total sales, what should be a total production volume for the month.



are being discussed in detail. So, that we do not have any problems as you progress into the month plan.

So, I have given you a format which explains the type of customers in terms of the various names, how much order they are given DGU any order and LLDGU, any order in LDGU any order in laminated glass unit which is LGU, any order in SGU and then what is in terms of your total square meters, what is in terms of a value and then how much this is getting split into the week 1 week 2 week 3 week 4 in terms of the overall month for the respective lines is concerned.

So, what happens here in this month plan is that, all orders would not be confirmed because this industry works upon daily inputs from the customer or maximum 3, 4 days in terms of rolling plan kind of an scenario. So, as the order for a month is forecasted in terms of expected to be receive for that month the order get is inputed into the production planning file. So, here we call this is the sales planning recommend for the overall month, you take the recommend and then you have received all the distribution between the various units of DGU, LLDGU, LGU and SGU and in ordered things you put it in those formats.

And after putting in those formats you prepare what is in stores for the entire month, how much of laminator glass, how much of SGU, how much of DGU you just arrive it and then you also discuss what are all the critical quality parameters needs to be maintained for example, there may be certain specific quality parameter which needs to be ensure for which you need to make some necessary arrangements.

All that is being taken as an input into your monthly planning cycle and then this projection is being prepare. After preparing this projection you need to understand, whether you have capacity to make this, because projection can be 2 into x 3 into x 4 into x in terms of a capacity, but actually what is the capacity available.

So, I would be giving you if you see here a simple format, which explains to you the respective lines, the respective capacities in terms of the various machines and whether you have any holidays whether you have any maintenance plan and how much days it is going to be operational, what is a capacity of each line and then what is going to be the total is what is going to be indicated over here. And then also the overall number of days

of working for a particular month, in terms of summary and finally, what is going to be the capacity.

So, here if you see the illustration seen above, seen in the presentation you will be able to see there was a cutting capacity, there is also month plan and here you can see the month plan is over and above the capacity ok. So, it is over and above by how much is over and above by 10000 square meters. In terms of tempering yes you are well within the capacity, you still have capacity do more another 5000 square meters. In terms of lamination glass plant, you are short of a capacity because they recommend for the market is more by 2000 square meter.


In terms of IGU the recommend is more than another 2000 square meters, because a capacity is only 30000 square meters, where is the month plan is 32000 square meters on the overall. So, students at the end of this exercise, what do you really understand? You would be understanding what is in store for the entire month and what is the recommend of the customer by which week the recommend is going to get confirmed so, by which week this has to be distributed in to the various production centers.

And after that respective week what are all the additional preparations needed in terms of raw glass in terms of your purchasing consumables. So, that everything is ready on time to consume on time to manufactured, it followed by packing and followed by delivery. So, here you also need to understand what is that delivery date as expected by the customer.

This delivery date will be given as an input to the planning team to track the overall schedule adherence; this schedule adherence becomes very important in terms of complying and meeting the customer requirements on time. So, the delivery requirement along with the schedule is being notary by the planning, in such a way that this is getting distribute into the respective weeks so, that we are in line with the customer expectations.

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## Weekly Plan



Project Name	Op FC	Month-plan				Week 1-Plan				Week 1-Actual				Gap		Sales till 7th		Stock as on 7th Jan		Value Gap Split up					
		DGU	LOGU	LGU	SGU	Total	DGM	LOGM	LGM	SGM	Total	DGA	LOGA	LGA	SGA	Total	INR	INR	INR	INR	Sales Changes	Production			
Domestic	Lakhs																								
Cust A	0	500				500	1000	15			0	0				0	0	0	0	0					
Cust B	0	150				900	1050	15	150		150	3	137			309	446	7	296	4	0	7			
Domestic Total	0	650	0	0	1400	2050	31	150	0	0	150	3	137	0	0	309	446	7	296	4	0	7			
Cust C		1086				1086	27				0	0				0	0	0	0						
Cust D		350				350	12	350			350	12	334			334	12	-16	-1		9		-1		
Export Total	0	1436	0	0	0	1436	39	350	0	0	350	12	334	0	0	334	12	-16	-1	0	9	0	-1		
Total	0	2086	0	0	1400	3486	70	500	0	0	500	16	471	0	0	309	780	19	280	3	0	16	0	-1	
Cust E		700				8000	82	50			1500	16	54	4	37	1408	15	-47	0						
Cust F		2	1300			1300	42				0	0	53			53	2	53	2		2				
Grand Total	2	3586	0	0	9400	12986	134	550	0	0	1500	2050	31	578	4	37	1717	2336	36	296	4	0	18	0	-1
Plant & HQ Testing						2000	2000				800	800	0			604	604								
OutSourcing						1000	4000	1600			6000					600	600								
Total	2	3586	0	0	14000	14586	134	550	0	0	2300	2850	31	578	4	37	2381	3000	36	150	4	0	18	0	-1

- ⌘ Week plan is derived from the month plan based on
  - ⌘ Priorities given by sales team
  - ⌘ Availability and optimal usage of resources for production
- ⌘ The gap in the projected volume and actual volume produced is monitored and classified between
  - ⌘ Sales loss – Gap in the monthly tentative volume against current actuals
  - ⌘ Loss due to production issues

So, that was the summary on the overall month plan and you will take you into the next stage on what we say it is a weekly plan. So, students we saw what was on month plan, it already had week wise plan, but you know that as you progress into the respective week you just start monitoring daily on what was a plan for the day 1 and what was the actual for the day 1. And what are the gaps, what is a sales as for that week, what is the actual for that week in terms of so, for what is progress and what is the gap in terms of the various numbers.

So, week plan is being derived from the month plan I perfectly agree, you are also be agreeing with me, but please I understand the priority with in the week is being given by the customer. The priority of the recommend is being given by the customer, who in turn is the voice is being recorded from the sales team. So, here I indicated priorities given by sales team availability and optimal resources usage of resources for production. So, as I would have shown you in the material flow, you would be knowing that you have to procure glass to do the varies value rations. And so, they require glass should be available well within the time needed for processing.

So, you need to see whether that glass is available, the resources is available and whether you are getting a optimal usage finally, if no there is no point in putting a weekly plan for example, you have put today you need to a process this glass in your IGU unit and you

do not have that glass being supplied from float or procure from float or whatever it is how will you go and do IGU, will not able do at all.

So, that is what we are saying a you need a check whether the glass is available, you need to check whether the resources are available, whether combining all this whether you are optimal in terms of a commitment of EL commitment on bottom line, what you have already indicated to the finance team to the sales team in terms of controlling the price. If everything is ok, then you put into the respect to day wise plan.

The other important part here is that after putting plan, you should start tracking that in terms of what is the gap, please understand if you do not declare the gap on a daily bases it will prove to be very difficult in terms of overall tracking. Why? Here in this segment of business the number of units, or number of sizes recover by customer are n, n varies from 1 2 3 5 10 you can go even 100, 200 also you can go each size would be unique ok.

So, hence when each size is getting process, there are chances for rework there as chances for some miss outs ok, which needs to be capture as part of gaps and then brought back into the understanding of the manufacturing. So, that this re work has been completed and the entire material as requested by the customer is getting full filled as of final order in terms of delivery.

So, this is one in terms of the overall recommends of the customer, second you would also have certain gaps happening in your manufacturing process. When I say a gap it is not only under producing there also chances for the machine to perform as expected better when compared to the OE standards in such a way you get a higher yield at higher output. So, you need keep track of that on a daily basis. So, that the plans are getting fine tune accordingly in terms of your daily outputs.


For example when you output is slow you need to keep pushing the production team ok, in terms of the necessary as of output. So, that you are able to cash the gap for the week plan, or in case a output is high in a start immediately calling the sales team start immediately calling them the customers about seem and say yes we are very going higher in terms of or order completion, can we have some more orders. So, that part also has to be done in terms of the weekly planning exercise.

So, if you see in this weekly planning one person should have and complete understanding on what is on stores from the entire week ok, other person should parallely go dive himself into the respective day, in such a way that is able to complete the week wholly. And last stage whatever is explained to you is the daily plan.

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### Daily Plan

DAILY PLAN



CUTTING PLAN															
Start	2/7/18 3:00 PM				End	2/7/18 10:00 PM				Month	Jul'18				
Shift	Cutting Batch No	Project	Thick	Product	Line	Combination	Qty PLAN	Plan Sq.m	No of Parent	AVG Child /parent	Cycle time (Sec/m2)	Total time (hrs)	Input Sq.m	Geo Yield	Plan Actualization
B	46097	Project 1	8	SKN 754	ACGP	SH+ED	20	14	3	6	88.00	1.0	27	52%	
B	46097	Project 2	6	Clear	ACGP	SH+P	20	14	3	6	76.00	0.6	27	52%	
B	46078	Project 3	10	STB 120	ALGP	DS+MED	26	65	13	2	21.81	0.6	94	69%	

- ⌘ Daily actuals will be reviewed.
- ⌘ Daily plan is circulated based on the week plan.
- ⌘ It gives clear information to the production team about the sequence of production.

DAILY TRACKING

Day	Line	DGI						CUTTING			FURNACE							ALGP			Production Value as on date (lacs)	Sales Value as on date (lacs)						
		OUTPUT			DOWNTIME			OUTPUT			OUTPUT			DOWNTIME (mins)				OUTPUT										
		PLAN	ACTUAL	GAP	M/P	No GLASS	B/D	Power	No trolley	Line	PLAN	ACTUAL	GAP	Line	PLAN	ACTUAL	GAP	No Glass	NO trolley	Label			B/D	Power	M/P	C/O	PLAN	ACTUAL
1	IGU1	600	286	-314	90		90	ACGP1	1599	1230	-369	F1 & F2	1650	1090	-560	630	10	140					170	250	174	-76		
	IGU2	600	553	-47			460	ACGP2	1300	1478	178	F3	1250	1414	164	30							60					
2	IGU1	400	324	-76				ACGP1	1849	1111	-738	F1 & F2	1650	1495	-155	130	70	20					165	250	202	-48		
	IGU2	400	50	-350		660	60	ACGP2	1300	1493	193	F3	1250	1271	21	45							70					
3	IGU1	85	85	20			30	ACGP1	1711	1685	-26	F1 & F2	1650	1415	-235	30	95					650	115	0	0	0		
	IGU2	282	282					ACGP2	1300	581	-719	F3	1250	939	-311													
4	IGU1	600	660	60	85			ACGP1	1498	1234	-264	F1 & F2	1650	1220	-430	150	175						180	250	351	101	108	63
	IGU2	600	403	-197	880			ACGP2	1300	1462	162	F3	1250	1279	29	100							95					

In daily plan it is very simple you have to the release a plan whichever showing into the spot of various batch creation and all, the daily plan is nothing going to be plan for the respective lines.

Now, what are lines you have for a daily plan, you have cutting line, you have grinding you have tempering you have lamination, you have ceramic printing you have IGU for all this you have to release a daily plan. Why you need to release a daily plan? Because the operator should follow this daily plan in terms of right sequence so, that the input of one machine becomes not the input to the output of one machine sorry, the output of one machine becomes an input to the second machine.

So, if you has to ensure that all lines in the production are fully occupied, for that he has to ensure the right sequence is followed the right priority of the customer is being followed. Hence you have to listen day wise plan and please note, you has to have clear information on all critical parameters as requested by the customer for example, you need to have a trim you need to have, if you have to do h delusion you have to do that.



So, how do you capture all those informations? All those informations can be captured in the daily planning sheet. So, that the operator when he sees the requirement, he is able to note all the critical to quality parameters and process it accordingly. And after you do this you need to once again track at in terms of your measurement, on what is your output for the day in terms of initial plan how much was it in terms of actual finally, how much was the output and what was the final gap.

Now, you also have to understand because you are the person, who have list a plan assuming  $x$  as a capacity. And now you also need to go back to the production team and say, against this capacity you have done either  $x$  plus or you have done either  $x$  minus. Now, if the, it is going to be  $x$  minus obviously, they are going to have a particular say stages this of down time what are all the stages of down time so, that the production heads are able to quickly take character of actions in such a way this does not get repeated.

Second; the gaps and production needs to be immediately given back to the manufacturing team in terms of a highlight. So, that the understand how to quickly dissolve at in terms of adding additional as of production, or focusing more in the upcoming days. So, that they do not have any break downs, or any down times in such a way there able to overall me the back lock for the entire plan and complete the week plan on time.

So, here I would have indicated you some two formats, if you see the overall cutting plan being indicated on a daily bases, in which has the cycle time which has the total time, which has a total inputs quometers which also as the geometry yielding. Then I would also indicated to you a daily tracking format, which has the plan which actualization on the gap, then you have the various down times, then you have the outputs in the cutting the outputs in the firmness the down time and a respect to a centers.

So, this completes your micro planning from what you started in terms of macro planning. So, I repeat once again you did monthly planning exercise where you called it a all the recommends, you understood all the critical to quality parameters inputted into the your sheet in terms of overall understanding, noted when should be the delivery for each of the projects, split that into the respective weeks.

In after splitting into the weeks you started tracking it as part of a week you started leasing plan and in terms of daily basis, and also started tracking the daily gaps in such a way how we are able to summarize only the week actuals and then later in terms of monthly summary to your management team in terms of accomplishment.

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### First cut batch completion details



- It gives information about the gaps in production at various station and the number of remakes booked
- It is published so that the manufacturing team can close the gaps in production.

Lot	Lot Details	Batch	RG P	RG A	GAP	Plan	PPL	Tempering	Remake Booked	GAP	DGU	DGU	GAP	
1	Coated	44500	23	23	0	92	92	92	0	0				
1	Clear	44499	23	23	0	92	92	89		3	92	89	3	
2	Coated	44506	23	23	0	57	57	57		0				
2	Clear	44507	23	23	0	57	57	56		1	57	55	2	
3	Coated	44563	23	23	0	58	58	56	2	0				
3	Clear	44564	20	21	-1	58	58	58		0	58	55	3	
4	Coated	44575	23	23	0	54	53	51		3				
4	Clear	44576	23	23	0	54	54	49	2	3	54	45	9	
5	Coated	44578	23	23	0	23	23	23		0				
5	Clear	44579	23	23	0	23	23	23		0	23	23	0	
6	Coated	44625	23	23	0	43	43	42		1				
6	Clear	44627	15	15	0	43	43	42		1	43	35	8	
7	Coated	44477	23	23	0	23	23	18		0	5			
7	Clear	44478	23	23	0	23	23	23		0	23	16	7	
8	Coated	44675	22	22	0	39	39	34		4	1			
8	Clear	44676	17	13	4	39	39	38		1	39	27	12	
9	Coated	44678	23	23	0	42	42	40		0	2			
9	Clear	44679	14	14	0	42	42	42		0	42	29	13	
10	Coated	44681	35	30	5	55	49	30		0	5			
10	Clear	44682	22	22	0	55	55	55		0	55	5	50	
						972	965	918		14	40	486	379	107



So, I would after completing this daily planning, we need to understand needed one batch creation in the initial stage, which I told you that it is a communication flow between the manufacturing and planning. So, once you create batches for various machining centers. And after releasing the machine batchers to the respect to operator for accomplishing it what you would do?

You need to once again reload it in terms of what was being actualized from that plan list, what are all the gaps ok. So, that the manufacturing team follows with that respect to a production center on closing the gaps. So, if this batch will give you first cut batch will give you clear update saying, where how many number of units still need to be completed so, that once you complete this the entire batch has been completed.


So, I just read it here it gives information about the gaps in production, at various stations and number of remakes booked remakes is nothing, but the rejections booked it is also published. So, that the manufacturing team can close the gaps and production. So, each batch, the gaps if it need to be close has to be published back into the to the production team. So, that they follow you understand and the completed.

So, the first cut batch completion details if published from the planner to the manufacturing, helps the manufacturing team in completing all the left over's in such a way the final delivery to the customer, need not weight saying 2 numbers is missing, 3 number missing 4 number is missing ok, it is available together as a full package. So, that the entire root of coordination between planning and manufacturing get is completed ok.

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### Weekly update on project status

- A project may consist of multiple orders.
- An order goes through various stages of production for completion.
- A weekly update on the order's status is published to monitor the progress of the project.
- Number of days taken to complete an order is tracked for better customer service.



Projects/Status	No of Orders	Order sq.m	Balance Sq.m
In production	4	12604	6297
Project A	3	8367	25
Project B	1	4237	6272
In production - CNC	2	1548	398
Project C	2	1548	398
To be planned - CNC	3	767	767
Project D	2	521	521
Project C	1	246	246
To be planned	2	1200	1200
Project B	1	734	734
Project A	1	466	466
Order Closure	5	3446	232
Project D	2	2436	128
Project A	3	1010	104
RG non available in Float	4	2614	2602
Project C	2	1243	1230
Project D	2	1371	1372
Not planned - CNC constraint	10	673	673
Project A	3	138	138
Project B	7	535	535
Not plannable - Despatch needed in Oct	15	5123	5123

Project/Status	No of Orders	Order sq.m	Balance Sq.m	No of days of completion
Completed	32	1966		10
CIAL	2	8		15
CNPS Yaounde	1	2		0
FIRS - Nigeria	1	4		5
Four Points Sheraton - Kochi	2	15		10
Genting Hotel	1	6		5
Glassnote SLIM	1	86		2
Menzies CDU in Darwin	1	9		54
North Gate	5	131		4
Odyssey Gabon	2	332		11
ORACLE - Bangalore	2	64		3
Rangitapu Dhaka	4	60		16
Reliance Twin Tower	1	6		10
RMZ AZURE	1	4		3
Signature Tower	3	34		5
TCS Indore	1	56		3
The 42 - Chowringhee	2	203		16
Trell	1	901		12
Wittur Elevator	1	25		9
<b>Grand Total</b>	<b>82</b>	<b>29941</b>	<b>17294</b>	<b>10</b>

And I would also take you in terms of a weekly project update, because when you are seeing in terms of the monthly planning, the weekly planning, the daily planning and the batch creation. A person from sales or a person outside the manufacturing, when as you understand what is in store for the month or what is happening actually currently can be understood only with weekly update on the various project status.

Because if you see a sales team would be giving many orders, they would say I have released this order the finance is uproar, now you go add and produce that, they will not know whether you have all resources, all glasses for would you go immediately produced that correct.

They may also not know whether at some stage whether it is being stuck or it is not being stuck ok. This is for a sales person is concern, what about manufacturing person, manufacturing person will be saying as daily output and will see that is performing perfectly on a daily mode, hence is going interact with the plan no it is not that. Yes come

back to the sheet and understand whether his production planning helps in completion of the orders. So, that there is no order waiting for balance material to be produced for it to get dispatched ok.

So, for bridging these two paths in terms of the sales team understanding on the where the projectors, in terms of the manufacturing team understanding on whether their entire project that has been completed as for a delivery. And for the planning and the customer service team to understand, in terms of the various projects stages this report will help.

So, as I will explain you what I have written over here, a project consist of multiple orders, the orders goes to various stages of the completion of production. So, weekly update is being published to monitor the progress of the project, in number of days taken to complete the order is also being tracked which helps you to bench mark this as a metric for your future improvements.

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### **Summary:**

By the end of this video, you have learnt about the:

- Batch creation
- Stages of planning
- First cut batch completion details
- Weekly update on project status

