



# Schlumberger New Product Development Cell (NPD)

## – Timeline and Status

02 April 2012

# Agenda

- **The Parts**
- **The Process**
- **The Machines**
- **The People**
- **The Timeline**
  - The Timeline Project Planning
  - The Master Schedule
- **The Status**
  - Master Control Plan
  - Main Tasks Progress
  - Status Summary
- **Next Steps We Focus On**

# The Parts

## ✓ The range of products specified for the NPD Cell

- **Size:** Max. 2.5metres
- **Max. Weight:** 1.5 metric ton
- **Product Family:**
  - ✓ Block
  - ✓ Housing
  - ✓ Chassis
  - ✓ Flow Diverter
- **Complexity:**
  - ✓ Tier I



# Internal Processes

## ✓ Equipment Required:

- EMCO - Lathe
- Conventional lathe 3M - Lathe
- DHB – Deep Hole Boring
- NL3000, Doosan - Lathe
- Honing
- Gundrilling
- HM1000, HU80 or A88 - Milling
- Sachman – Large Milling
- TIG welding
- 600° oven to heat treat at 588°C after welding
- EDM
- NL2500 – Turn-Mill
- NL1500 – Turn-Mill

# External Processes

## ✓ Requirements:

- QPQ
- Shot Peening
- EBW
- HVOF
- Pressure testing at 25K psi @ 177°C (Collapse test)
- Machine Toxic Material BeCu (Beryllium Copper) Pins & Plugs
- NDT
- Chemical Plating

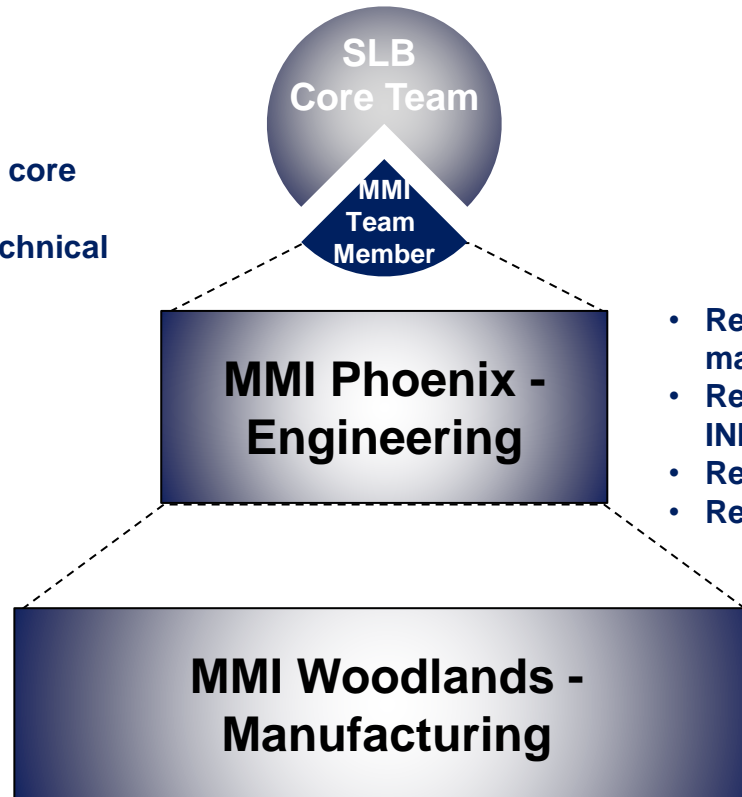
# I The Machines

Equipment Required	Quantity	Equipment Cost (USD)
Large Mill (3 meter)	2	US\$2,290,000
Large Turn-Mill Lathe (3 Meter)	1	
Large EDM (3 Meter)	1	US\$591,415
Large Gundrill (2.5 Meter)	1	US\$875,148
Large Deep Hole Boring (3 Meter)	Current capacity available for NPD cell	
Large Honing (2 Meter) (80% of NPD Parts Covered)	Current capacity available for NPD cell	
CMM 3 MM	2	US\$503,257
	Total CapEx required	\$4,259,820

Items such as Toolings, Renovation etc would need to be considered for CapEx requirement separately, the total amount inclusive of the equipment cost would be US\$6MM.

# The People

- One On-site core team member
- Day-to-day interaction with SLB core team
- Primary customer contact for technical problems and issue resolution
- Single point of contact for RFQ responses



- Responsible for establishing the overall manufacturing approach
- Responsible for the development of INITIAL CNC programming
- Responsible for tool list / cutters
- Responsible for fixture design

- Physical location of the NPD cell
- 1-3 Expat engineers will be hired to work SLB NPD parts
- Responsible for the development / enhancement of CNC programming to produce parts
- Responsible to make the parts to the specification required
- Responsible to procure the raw material, cutters, etc. required to make the prototype parts
- Responsible to produce the manufacturing fixtures as designed by the Phoenix engineers
- Required to load and run the equipment with the supplied CNC code developed in Phoenix

# I The People

## ✓ Engineers (3x)

- **One On-site Engineer:** stationed in Houston to work with Schlumberger NPD engineers
- **One Expat Engineer:** stationed in Singapore for the NPD cell
- **One Local Engineer:** stationed in Singapore for the NPD cell

## ✓ Direct Labors (8x)

- 4 from internal existing IDL employees
- 4 “promoted” from internal existing DL employees



# The Timeline

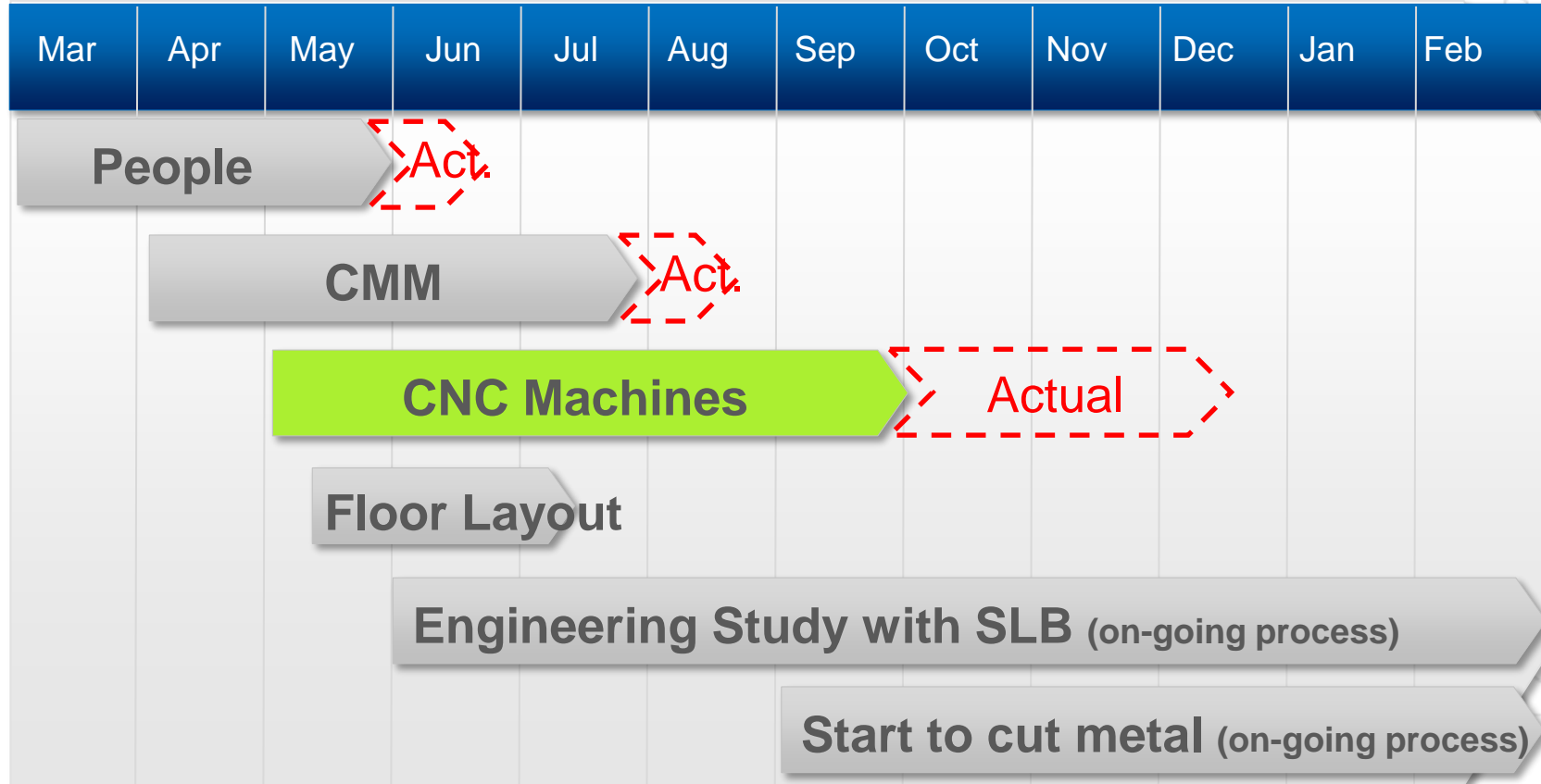
8 Months

## 2012

## Overall Targets

- Customer's expectation vs the actual

## 2013



### Customer's Expectation

- 1) 5 sets of JPG ENP to be built in 2012;
- 2) Houston based engineer to be onsite in Apr-May time frame;
- 3) First CNC machine arrives in Jun-Aug time frame;
- 4) Gundrill machine (last equipment) arrives in Sep 2012;

# The Timeline

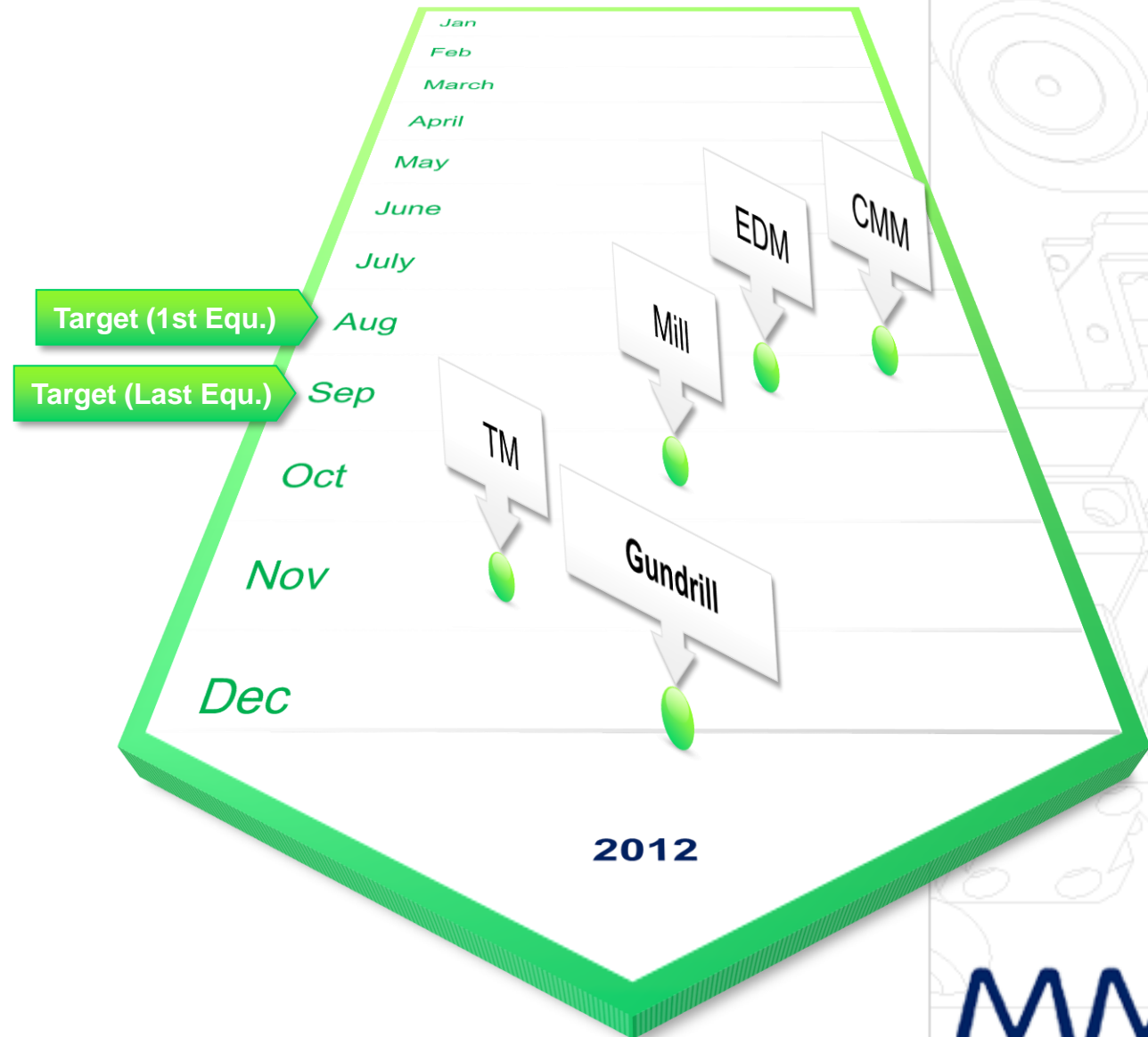
9 Months

## Advantage

- We may get the CMM machine in place in advance comparing to the target;

## Bottleneck

- We have a potential risk of failure to meet the schedule for Gundrill Machine;



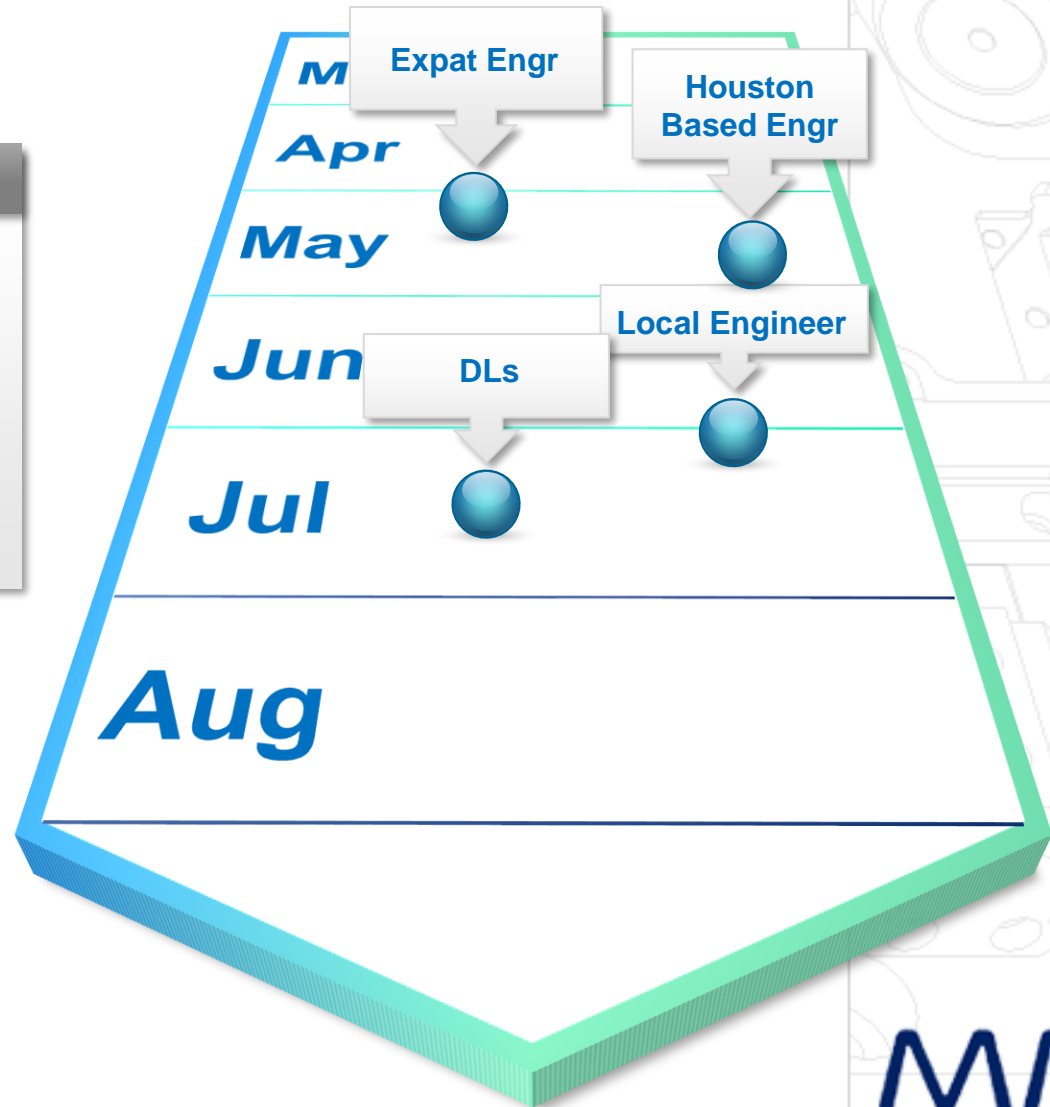
# The Timeline

4 Months

People in Place

## May – Our Target

- We have to get the key Houston based engineer in place by May 2012 that customer expects .



# The Timeline

8 Months

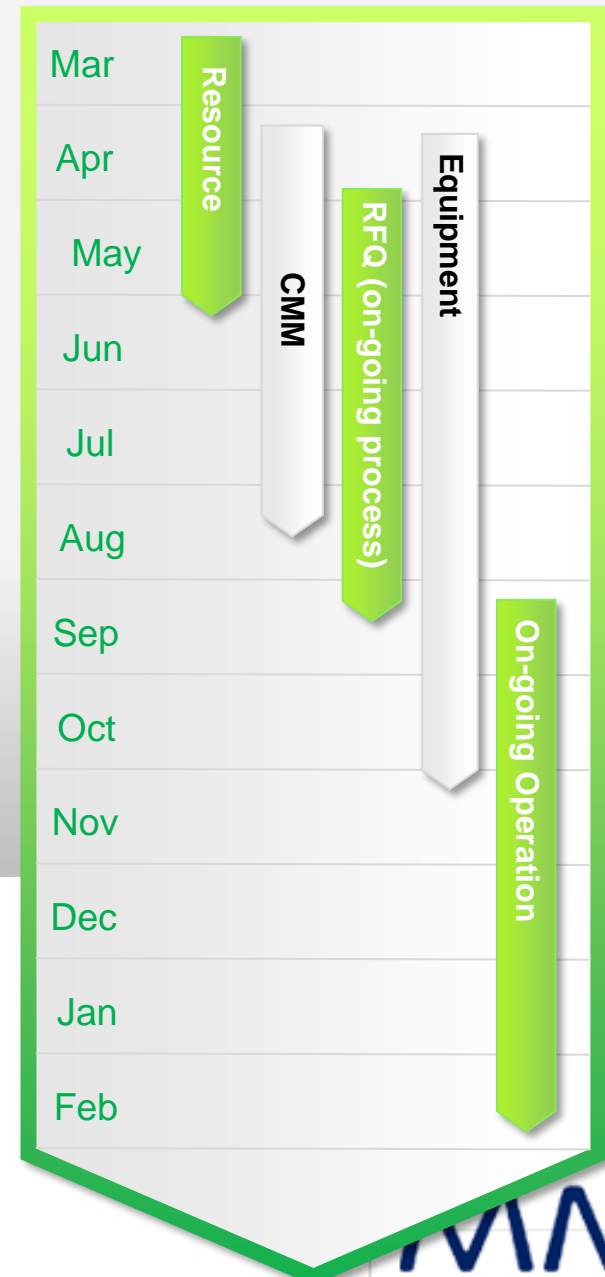
## Target

### September – Starting

- **RFQ** – By **Q2** we can start to process RFQ then the Houston based Engineer would be in place;
- **PO** – By **Sep.** we can start to process order then the CMM would be in place;
- **FA** – By **Nov.** we can start to submit FA for smaller parts and move on to larger FA parts as the new equipment would be in place.

SEPTEMBER  
2012

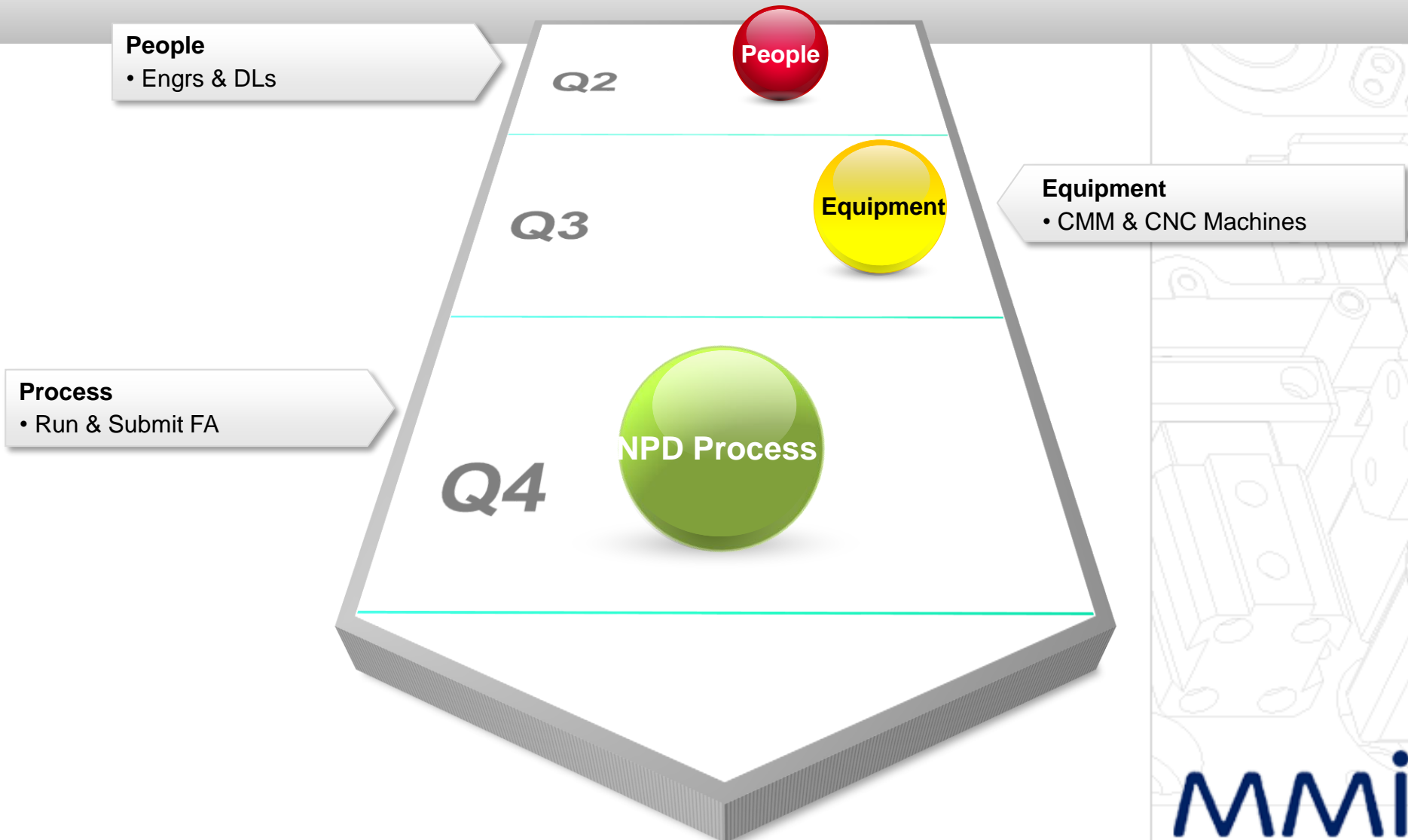
## NPD Process



# The Timeline

3 Quarters

## NPD Process



# The Master Schedule

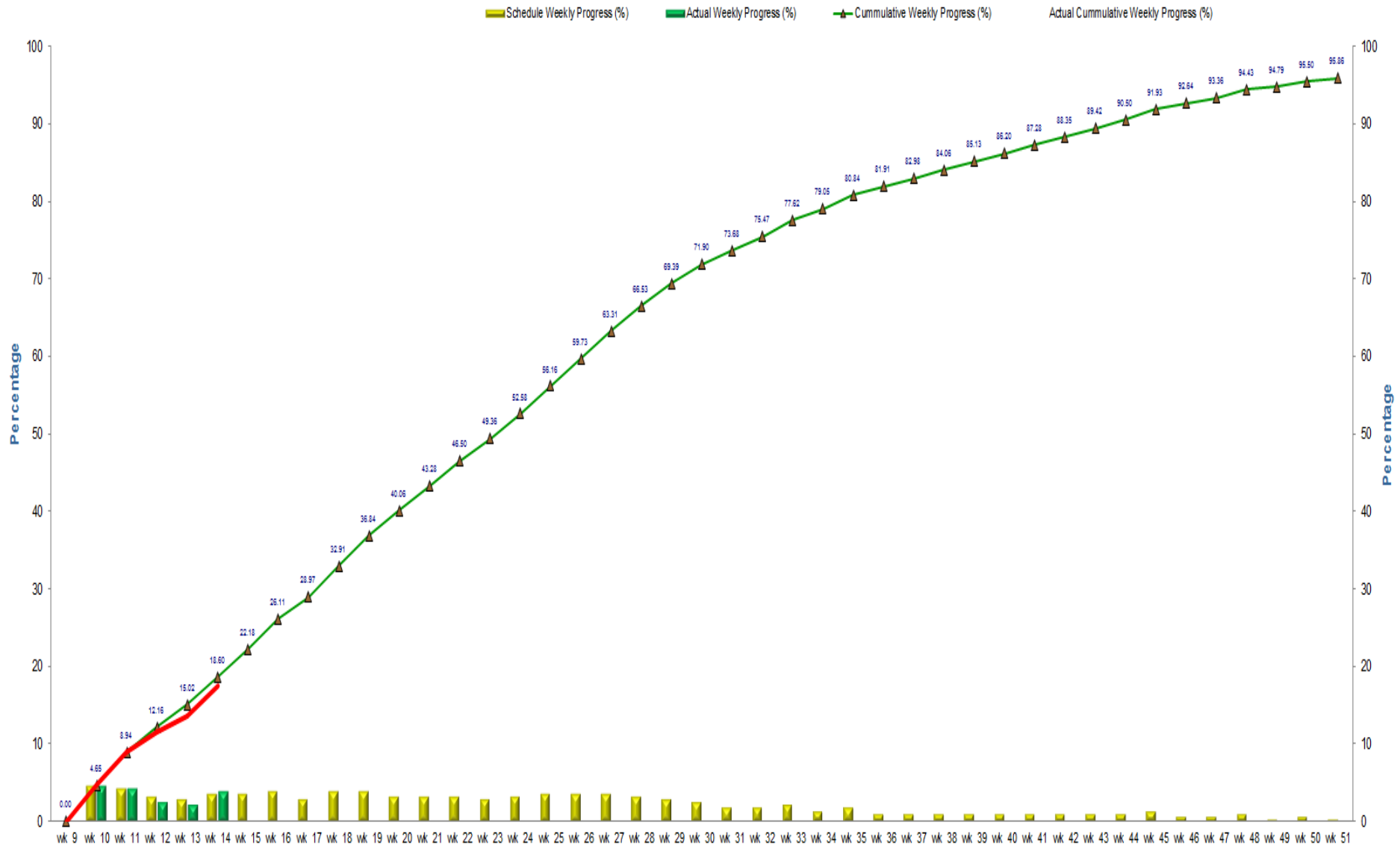
A		B	C	D	E	F	G	H	J	K	L	M	R	V	Z	AE	AI	AN	AR	AV	BA	BO	BP	B	
PROJECT MASTER SCHEDULE							TEAM MEMBERS:		CY 2012												Next Action	Comments			
PROJECT DESCRIPTION:			START DATE:		1-Mar-12		Leader: Simon	CMM: Leoh	Q1				Q2				Q3				Q4				Note 1: This is a "Live" document that may change over time.
NPD CELL SET-UP			END DATE:		17-Dec-12 <td>Vice: Equipment Lay</td> <td>Finance: Wai</td> <td colspan="4">Mar</td> <td>Apr</td> <td>May</td> <td>Jun</td> <td>Jul</td> <td>Aug</td> <td>Sep</td> <td>Oct</td> <td>Nov</td> <td>Dec</td>		Vice: Equipment Lay	Finance: Wai	Mar				Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
							Facility: Chris	Operation: Matt	4-Mar	11-Mar	18-Mar	25-Mar	29-Apr	*****	24-Jun	29-Jul	*****	*****	28-Oct	25-Nov	*****				
							Tommy Dale	SRO: Dave	wk 10	wk 11	wk 12	wk 13	wk 18	wk 22	wk 26	wk 31	wk 35	wk 40	wk 44	wk 48	wk 1	Note 2: Only the cells in pale GREEN are available for edit and the related cells will be updated automatically.			
ITEM	TASKS/ACTIVITIES		DURATION (mth)	START DATE	END DATE	RESPONSIBILITY	STATUS																		
1	PROJECT PLANNING		2 wks	1-Mar-12	12-Mar-12	Simon	Done																		
1.1	INITIATING		1 wks	1-Mar-12	7-Mar-12		Done																		
1.2	PLANNING		2 wks	1-Mar-12	12-Mar-12	Simon	Done																		
2	EQUIPMENT BUYING		42 wks	1-Mar-12	17-Dec-12	Chris/Leoh	In Progress																		
2.1	LARGE CMM MACHINE 4 METER (2x)		24 wks	1-Mar-12	13-Aug-12	Leoh	In Progress																		
2.2	LARGE TURN-MILL MACHINE 3 METER (1x)		38 wks	1-Mar-12	19-Nov-12	Chris	In Progress																		
2.3	LARGE MILL MACHINE 3 METER (2x)		36 wks	1-Mar-12	5-Nov-12	Chris	In Progress																		
2.4	LARGE EDM MACHINE 3 METER (1x)		26 wks	1-Mar-12	31-Aug-12	Chris	In Progress																		
2.5	LARGE GUNDRILL MACHINE 2.5 METER (1x)		42 wks	1-Mar-12	17-Dec-12	Chris	In Progress																		
3	FACILITIZATION		20 wks	5-Mar-12	23-Jul-12	Tommy/Chris	In Progress																		
3.1	Check List		6 wks	26-Mar-12	7-May-12	Tommy	Planned																		
3.2	Landlord Final Approval		1 wks	7-May-12	14-May-12		Planned																		
3.3	Floors Layout		6 wks	26-Mar-12	7-May-12	Chris/Tommy	In Progress																		
3.4	Relocation and Renovation		13 wks	23-Apr-12	23-Jul-12	Tommy	Planned																		
4	PEOPLE GETTING		21 wks	1-Mar-12	23-Jul-12	Lea/Ho/Russ/Jennifer	In Progress																		
4.1	One Expat Engineer Stationed in WLD5		13 wks	1-Mar-12	28-May-12	Russ/Jennifer	In Progress																		
4.2	One Expat Engineer Stationed in WLD5		12 wks	1-Mar-12	23-May-12	Russ/Jennifer	In Progress																		
4.3	One Local Engineer Stationed in WLD5		16 wks	5-Mar-12	25-Jun-12	Lena/Ho	In Progress																		
4.4	Direct Labors (8x)		6 wks	11-Jun-12	23-Jul-12	Lena/Ho	Planned																		
5	PROJECT CLOSING		2 wks	19-Nov-12	30-Nov-12	Simon	Not Planned																		
DISTRIBUTION :																									
<div><div><div></div><div>Done</div></div><div><div></div><div>Delayed</div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><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# The Master Control Plan

PROJECT MASTER CONTROL PLAN			Notes: 1) Only the ... and the related cells will be updated automatically. 2) This is a "Live" document that may change over time;				Color Legend: <div><div></div><div></div><div></div><div></div></div>		Planned Actual Tasks Finished Delayed		Q1 Mar					
PROJECT DESCRIPTION:		4-Mar									11-Mar	18-Mar	25-Mar	1-Apr		
<div><div></div></div> NPD CELL SET-UP		MASTER WEIGHT(%)	DURATION (wks)	SCHEDULE START DATE	SCHEDULE FINISH DATE	ACTUAL START DATE	ACTUAL FINISH DATE	ACCOMP. to Date (%)	Act. Dur. (wks)	wk 10	wk 11	wk 12	wk 13	wk 14		
ITEM	TASKS															
	OVERALL	100.00%	42 wks	1-Mar-12	17-Dec-12	1-Mar-12	2-Apr-12	11.3%	4.7							
1	PROJECT PLANNING	2.10%	1.7 wks	1-Mar-12	12-Mar-12	1-Mar-12	12-Mar-12	100.0%	1.7							
2	EQUIPMENT BUYING	62.75%	41.7 wks	1-Mar-12	17-Dec-12	1-Mar-12	2-Apr-12	11.3%	4.7							
2.1	LARGE CMM MACHINE 4 METER (2x)	9.61%	23.7 wks	1-Mar-12	13-Aug-12	1-Mar-12	1-Apr-12	19.3%	4.6							
2.2	LARGE TURN-MILL MACHINE 3 METER (1x)	14.26%	37.7 wks	1-Mar-12	19-Nov-12	1-Mar-12	1-Apr-12	12.1%	4.6							
2.3	LARGE MILL MACHINE 3 METER (2x)	13.54%	35.7 wks	1-Mar-12	5-Nov-12	1-Mar-12	1-Apr-12	12.8%	4.6							
2.4	LARGE EDM MACHINE 3 METER (1x)	10.17%	26.3 wks	1-Mar-12	31-Aug-12	1-Mar-12	2-Apr-12	17.9%	4.7							
2.5	LARGE GUNDRILL MACHINE 2.5 METER (1x)	15.18%	41.7 wks	1-Mar-12	17-Dec-12	1-Mar-12	2-Apr-12	11.3%	4.7							
3	FACILITIZATION	19.62%	20.1 wks	5-Mar-12	23-Jul-12	5-Mar-12	2-Apr-12	20.6%	4.1							
4	PEOPLE GETTING	14.21%	20.7 wks	1-Mar-12	23-Jul-12	1-Mar-12	1-Apr-12	22.1%	4.6							
4.1	One On-site Engineer Stationed in Houston	3.32%	12.7 wks	1-Mar-12	28-May-12	1-Mar-12	1-Apr-12	36.0%	4.6							
4.2	One Expat Engineer Stationed in WLDS	3.32%	12.0 wks	1-Mar-12	23-May-12	1-Mar-12	1-Apr-12	38.1%	4.6							
4.3	One Local Engineer Stationed in WDLS	5.26%	16.1 wks	5-Mar-12	25-Jun-12	5-Mar-12	1-Apr-12	24.8%	4.0							
4.4	Direct Labors (8x)	2.30%	6.1 wks	11-Jun-12	23-Jul-12	11-Jun-12	1-Apr-12	no start yet	-10.0							
5	PROJECT CLOSING	1.33%	1.7 wks	19-Nov-12	30-Nov-12	19-Nov-12	1-Apr-12	no start yet	-33.0							
Total		100.00%	3092.0%	99	Total Percent (%) Progress by tasks =				31.2%							

# The Overall Status

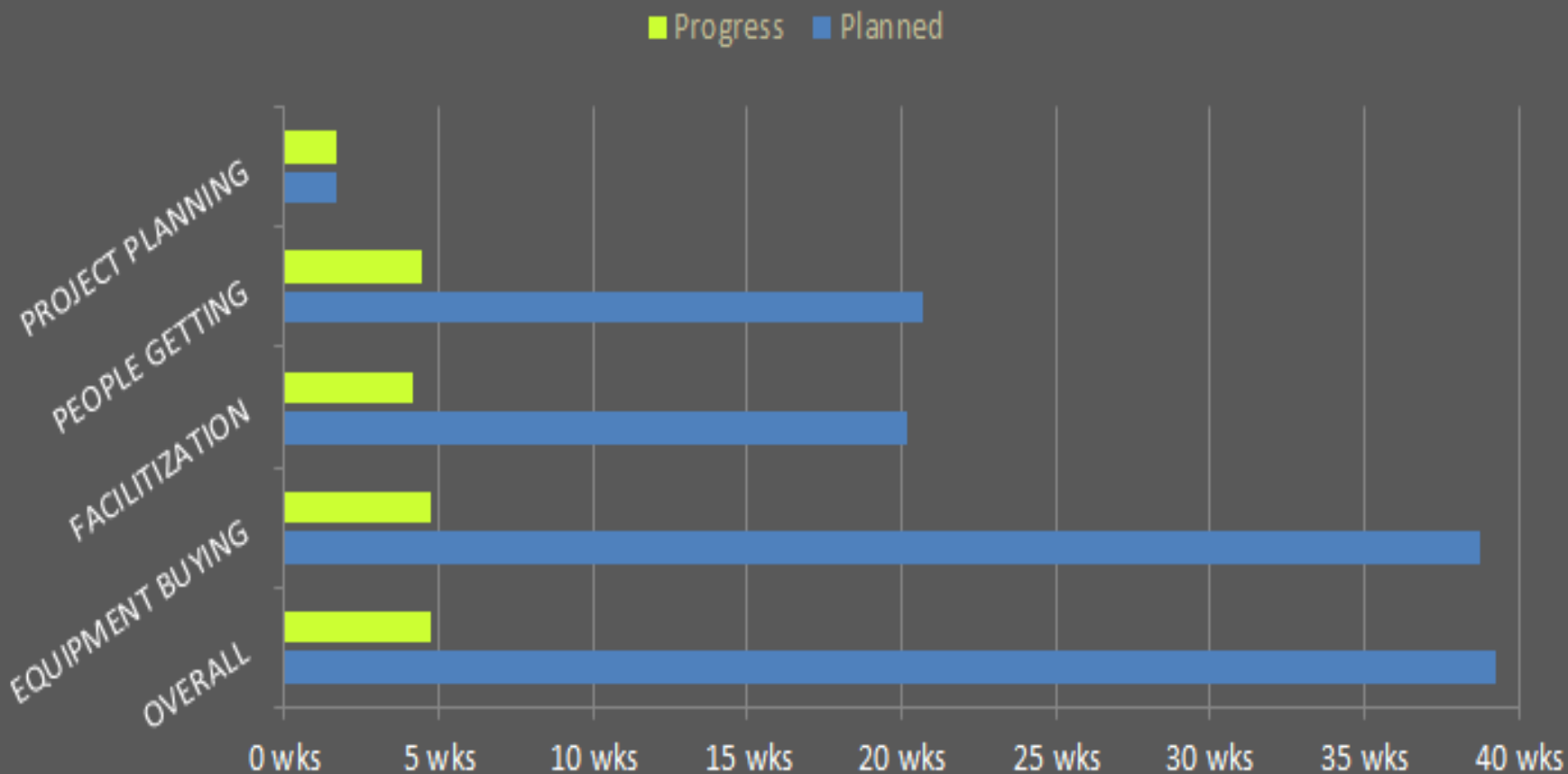
NPD Project Weekly Progress Report





# The Main Tasks Progress

## Dashboard -Progress

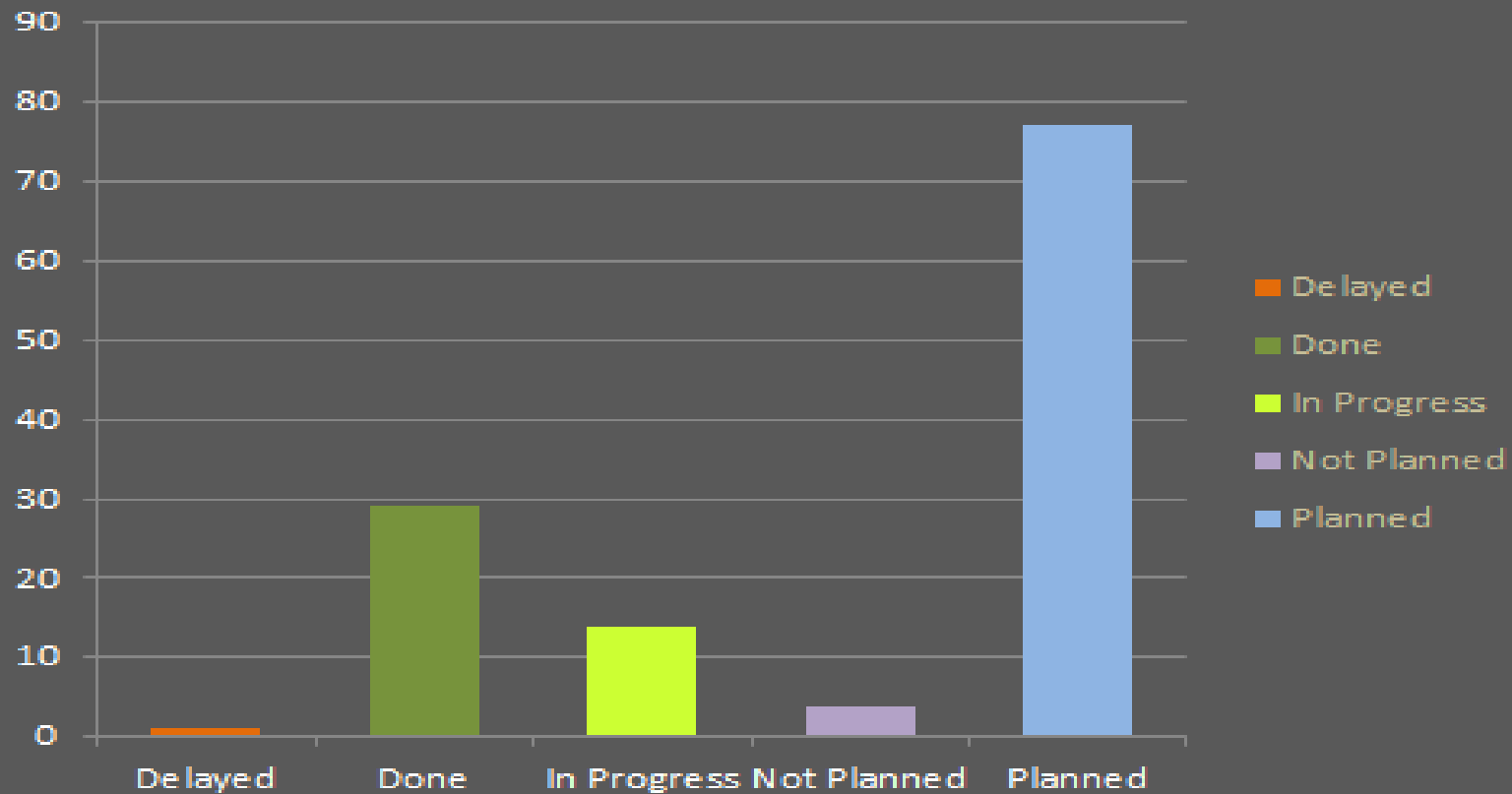


# The Status Summary

## Dashboard

Count of T...

**Status Summary - Master Plan: Tasks v/s Status**



St... ↗

# **Next Steps We Shall Focus On**

- 1) Review Equipment Quotations;**
- 2) Approve Quotations;**
- 3) Approve the CapEx, PR forms**
- 4) Raise and Issue the POs to Equipment Suppliers**

Thank You

THE END

MMi

MMI HOLDINGS LIMITED