

# E3: Evolution of Empowering Employees

**Nicholas Calaceto - James Lau**

Mechanical Engineer - Associate Product Manager  
**RAB Lighting**

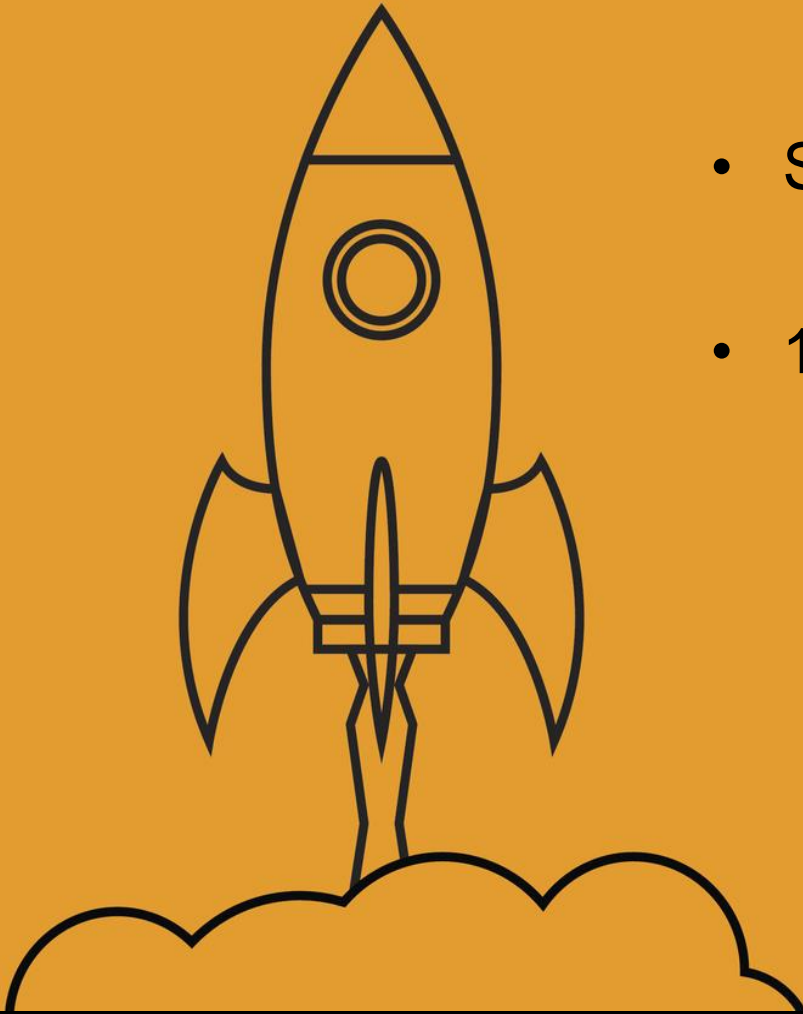


# Lighting Solutions



# New Product Development Process

- Spec creation to launch
- 10 Departments affected



	Jul-16	5/1/15	11/16/15	10/30/15	11/19/15	12/31/15	3/2/16	2/3/16	1/7/16	2/3/16	3/14/16	1/9/16	3/25/16	3/25/16	1/23/16	4/6/16	4/1/16	1/30/16	4/14/16	4/14/16
	Jan-16																			
DOWNLIGHT 3" TRIMMED & TRIMLESS	Sep-16	10/23/14	1/31/16	7/29/15	12/17/14	3/16/16	9/1/15	10/14/15	3/23/16	10/14/15	10/9/15	3/25/16	1/27/16	1/27/16	4/8/16	1/27/16	1/25/16	4/15/16	2/1/16	
	Oct-15																			
LESLIE - BULLET ECONOMY	Jul-16	10/1/15	10/21/15	2/11/16	1/1/16	11/16/15	1/28/16	2/24/16	1/7/16	2/24/16	1/28/16	1/9/16	2/29/16	2/29/16	1/9/16	1/23/16	2/29/16	3/3/16	1/30/16	3/3/16
	Jan-16																			
HAYBAY	Oct-16	10/19/15	1/20/16	3/24/16	3/25/16	2/15/16	3/31/16	6/1/16	4/19/16	4/7/16	4/19/16	5/24/16	4/9/16	6/20/16	6/20/16	4/23/16	8/5/16	8/16/16	4/30/16	8/16/16
	Nov-15																			
EZ PAN (Sourcing)	578		152			118			6			7			0			0		
	Jul-16	10/1/15	11/5/15			12/1/15			1/15/16			1/22/16			1/24/16		2/7/16			
	Oct-15																			
DLED - Low Cost (Sourcing)	Jul-16	12/3/15	10/21/15	3/16/16	1/1/16	11/16/15	2/19/16	3/24/16	1/7/16	3/30/16	1/16/16	1/9/16	3/21/16	3/21/16	1/23/16	3/21/16	n/a	1/30/16	n/a	
	Dec-15																			
STAIRWELL LIGHT	1373		700			43			173			39			0			7		
	Aug-16	10/1/13	12/31/15	9/1/15	6/3/15	2/14/16	7/16/15	7/24/15	2/21/16	1/13/16	7/17/15	2/23/16	8/25/15	8/25/15	3/8/16	8/25/15		3/15/16		
BTA4-XL	Sep-00		1/0/00			1/26/00			3/11/00			3/18/00			3/20/00		4/3/00		4/10/00	
			1/26/00			3/11/00			3/18/00			3/20/00			4/3/00		4/10/00			
COST REDUCE RAIL95	268		26			45			7			2			14			7		
	Sep-00		1/0/00			1/26/00			3/11/00			3/18/00			3/20/00		4/3/00		4/10/00	
	Oct-15																			
DOWNLIGHT 2" ADJUSTABLE	Jul-16	10/1/14	10/21/15	12/23/15	10/1/14	11/16/15	4/18/16	4/18/16	1/7/16	4/27/16	2/18/16	1/9/16	3/29/16	3/29/16	1/23/16	3/30/16		1/30/16		
	Nov-15																			
TRIBORO-NEW DESIGN	137		112			54			49			-250			0			7		
	Aug-16	6/11/15	11/22/15	10/1/15	8/26/15	12/18/15	2/1/16	10/19/15	2/3/16	2/8/16	3/23/16	11/1/16	2/10/16	2/25/16	2/25/16	2/24/16	2/25/16		3/2/16	
	Oct-15																			
SKEET XL (Sourcing)	Jul-16	10/1/14	10/21/15	3/1/16	12/30/15	11/16/15	4/19/16	3/21/16	1/7/16		3/2/16	1/9/16	3/10/16	3/10/16	1/23/16	3/10/16		1/30/16		
	Oct-15																			
FERN LANDSCAPE -	1046		565			240			0			40			0			7		



# What was the problem?

No visibility of processes

Products not launching on time

“Fire fighting” problems

No metrics

Previous lean events

Lack of priority

Reactive instead of proactive



# How did we start to tackle the problem?

Spoke to each department

Broke down the VSM

Got help for numbers

Mapped it out



Prototyping 5	Final Design 6	Drawing Creation 7	Vendor Selection 8	Issue Tooling Drawings 9	Engineering Samples 10	UL Testing 11	Product Marketing 12	Pre-Production 13	Product Manufacturing 14
Prototype - Heat Test (3)	Optical Design - Final Design (5)	Create Drawings - Part Drawings (5)	Complete Forecast (1)	Issue Tooling Drawings (2)	Dielines - Product Dielines/Final Design (5)	ES Approval - ES Show & Tell Meeting (1)	Photometric Testing - Generate report (2)	Pricing Upload (1)	Production Sample (1)
Prototype - Electrical Test (2)	Mechanical Design - Final Design (10)	Create Drawings - Demo Drawings (2)	Review quotation drawings (1)	Submit Engineering Sample List (1)	Dielines - Demo Dielines (2)	Drop Test @ Supplier (3)	Instruction Sheets - Finalize sheet (5)	DLC Received (1)	PS review (1)
Prototype - Optical Approval (5)	Packaging Final Concept Design (5)	Create Drawings - Send Demo and Line dwg to Packaging and Marketing (1)	Review Target cost (3)	Release ECN (3)	Create Drawings - Line Art Preparation (1)	ES Approval - Electrical Test (1)	Marketing - Intake Form (2)	Energy Star Received (1)	QC China Inspect (5)
Prototype - Photometric Testing - Create Work Order (1)	Instruction Sheets - Create Initial Draft, Acquire Renderings and Line Drawings (5)	Create Drawings - Initial Line Art Preparation (1)	Send Quotation Pkg for Quote (1)	Release tooling PO (1)	General Dimension line drawings (1)	ES Approval - Heat Test (3)	Start Spec Label Artwork (2)	Post Spec Label Artwork to SPM (1)	Create BOM (10)
Prototype - Photometric Testing - Sample preparation (1)	Create Engineering Sample List - Product/Demo Samples (1)	Initial General Dimension Line Drawings (1)	Compare quotes between vendors (5)		Mechanical Inspection (China) (2)	ES Approval - Construction Review (1)	UL Testing - UL Listed (1)	Ship 99 ES and prelim VKS for QC reference (5)	Compare BOM to VKS (1)
Prototype - Photometric Testing - Testing (5) (if applicable)		Create quotation Package (2)	Select Vendor (1)		Make/Receive ES (45)	ES Approval - Alternate Build Drawings (1)	Lighting Facts (15)	MFG Eng train the trainer build and WI review (2)	Vendor Product Manufacturing (Start - Ship) (50)
Packaging Prototype (5)		Create demo packaging drawings (2)	UL Testing - Quotation (5)		Communicate to VENDOR no further changes (after ES received) (1)	ES Optical Approval (5)	DLC Application and Submittal (10)	CA builds Rep Kits (5)	Date Sheet (15)
Create 3D PDF's (1)		Upload Vendor 3D models to CREO (5)			Compliance gather basic items (3)	Photometric Testing - Create work order (1)	Energy Star Submittal (1)	PPS Review (5)	Features Page - online (15)
Prototype - Prepare for UL Submittal (2)		Check/Start driver multiple listing (1)			Draft PO Plan (3)	Photometric Testing - Sample preparation (1)	DLC Review Documents (20)	Finalize Ins. Procedures (5)	Product Page Development (20)
Prototype - UL Testing (30)		Finalize Product Matrix Approval (3)			Finalize Cost & Provide Cost to Process Eng (20)	Photometric Testing - Testing (5)	Energy Star Testing (20)		Develop Email Blast (1)
Select Vendor (1)					Provide accessory MC/polybag Information (2)	Publish Photometric Test Results (1)	Upload MFG CAT Numbers (10)		Warranty Review and Revision (1)
Design for Manufacturing Meeting - Part 2 (1)						Upload Product SKU's to SPM (1)	Marketing Specification Sheet for lighting facts (3)		
						UL Testing - Prepare for UL Submittal (3)	Photography of Product (1)		
						UL Testing - Testing (30)	Photo Touchup (5)		
						Vibration Testing (15)	Operations cubic requirement. Establish storage (3)		
						IP Testing (15)	ES Mfg Eng Review - WI, Jigs (10)		
						Upload FAP Cat Numbers (5)	Issue PO's (2)		
						Photography of Product/Rendering (if color packaging) (1)	Release PPS & PO, order long lead time items (1)		
						Photo Touchup (if color packaging) (5)	Inventory Transition Plan (5) (if applicable)		
						Complete Red Rub Labels (1)			
						Finalize What Matters Most with Ross (WHMM, only minor changes) (3)			
						Packaging Art Work - Finalize Packaging Artwork (15)			
						ES Mfg Eng Review - Build, labor study (10)			
						ES Mfg Eng Review - WI, Jigs (10)			
						Begin Ins. Procedures (15)			
						Complete PO Plan (1)			

# Value stream map visualization

# How did we plan to fix the problem?

- Daily stand ups
- Phase meetings
- Creating phases
- Defining nomenclature
- Formatting view of process



TEAM



MEETING



PROJECT START



TARGET



SUCCESS



# Developing a New Tool

PROJECT NAME	Dept	Phase Number	Start	Approx. Days Required	Deadline	Actual End Date	Actual Days	Task Status	Task Notes	Late Reason	Phase Status	Phase Open/Closed	Lead Time Difference	Time Spent After Deadline
		Leader Name		Phase Lead Time	Phase Actual Lead Time		Phase Deadline							
PHASE 1 - Project Kickoff - Leader [Mechanical Engineer]	1	0		5	0		4/14/2017				On Schedule	Open	0	0
Spec Created with Approved WMM's	PDM	1		1	TBD		TBD	Not Started						
Kickoff Meeting	PJM	1		5	TBD		TBD	Not Started						
		Leader Name		Phase Lead Time	Phase Actual Lead Time		Phase Deadline							
PHASE 2 - R&D - Leader [Mechanical Engineer]	2	0		10	0		4/28/2017				On Schedule	Open	0	0
Optical Design - R&D	OPT	2		10	TBD		TBD	Not Started						
Mechanical Design - R&D	ENG	2		10	TBD		TBD	Not Started						
Packaging Concept (if applicable)	ENG	2		5	TBD		TBD	Not Started						
Forecast Draft	SC	2		7	TBD		TBD	Not Started						
Review Existing Inventory	SC	2		7	TBD		TBD	Not Started						
Preliminary Catalog Matrix	PE	2		1	TBD		TBD	Not Started						
		Leader Name		Phase Lead Time	Phase Actual Lead Time		Phase Deadline							
PHASE 3 - Initial Design - Leader [Mechanical Engineer]	3	0		25	0		6/2/2017				On Schedule	Open	0	0
Optical Design - Initial Design	OPT	3		10	TBD		TBD	Not Started						
Mechanical Design - Initial Design/Concept Approval	ENG	3		25	TBD		TBD	Not Started						
Prototype - Drawings (if applicable)	ENG	3		1	TBD		TBD	Not Started						
		Leader Name		Phase Lead Time	Phase Actual Lead Time		Phase Deadline							
PHASE 4 - Engineering Simulations - Leader [Mechanical Engineer]	4	0		10	0		6/16/2017				On Schedule	Open	0	0
Optical Design - Simulation	OPT	4		5	TBD		TBD	Not Started						
Mechanical Design - Simulation, Thermal	ENG	4		5	TBD		TBD	Not Started						
Packaging Design - Initial Design/Concept Approval	ENG	4		10	TBD		TBD	Not Started						
Review Concept with Other Departments	ENG	4		1	TBD		TBD	Not Started						
Purchase Prototype (if applicable)	SC	4		1	TBD		TBD	Not Started						
Make prototype (if applicable)	SC	4		10	TBD		TBD	Not Started						
Make/Buy	SC	4		7	TBD		TBD	Not Started						

# Implementation

Sprints

Scrum

Standard work

Training



# Challenges

SW not followed

Physical stand ups

Old processes

Lack of visibility

No buy in

Didn't want extra work

Department silos



# How did we overcome the challenges?

Old processes:	Tested new method and got buy in
Lack of visibility:	Insight into processes, showed it was to help not hinder
No buy in:	Support from the top
Didn't want extra work:	Keep things simple and automated
Department silos:	Gave visibility to everyone

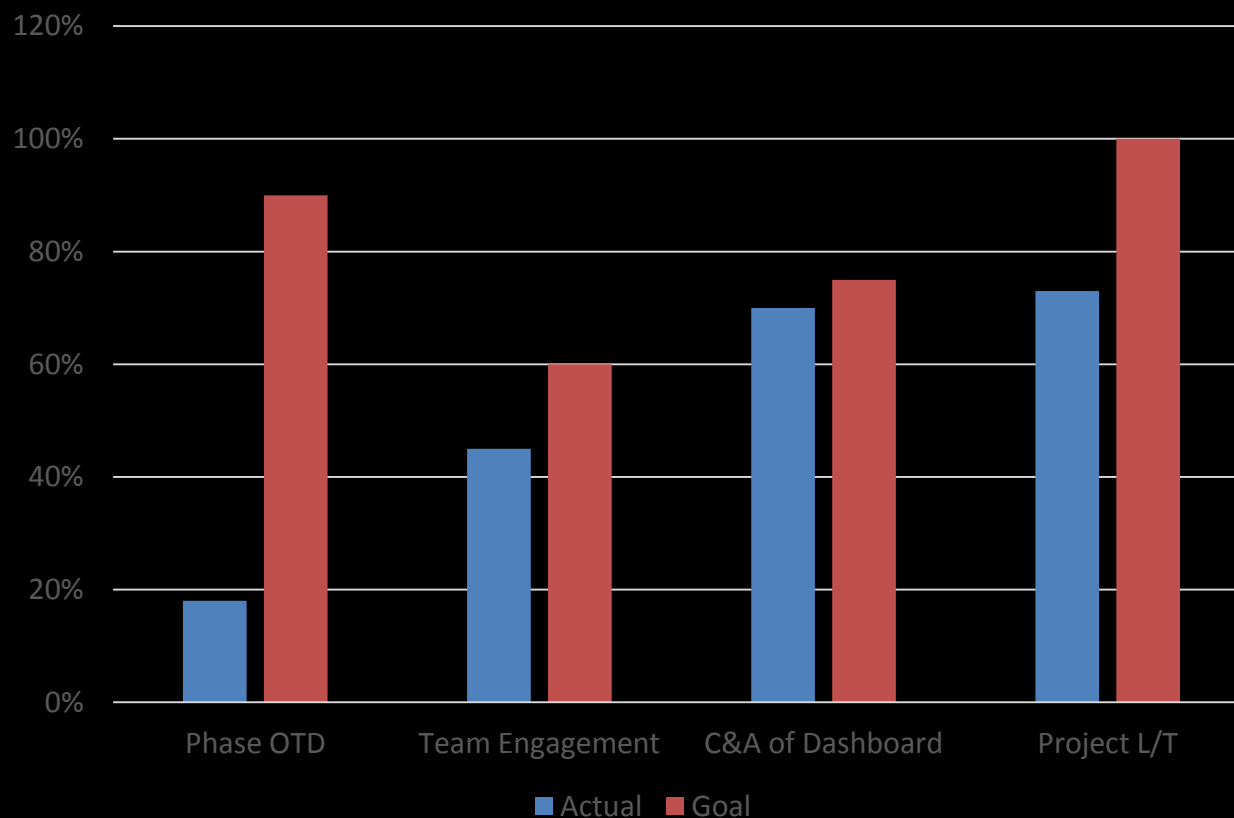
# How are we doing?

- Phase meetings
- Garbage in, garbage out
- Responsibility confusion
- Project ownership
- Project L/T went from 317 days to 260





# Current State





- Phase OTD 18%
- Quick experiments failing
- Work load

- Project Management
- Feedback session
- Consolidated information



# As clear as a bus schedule

Change from real product to fake product

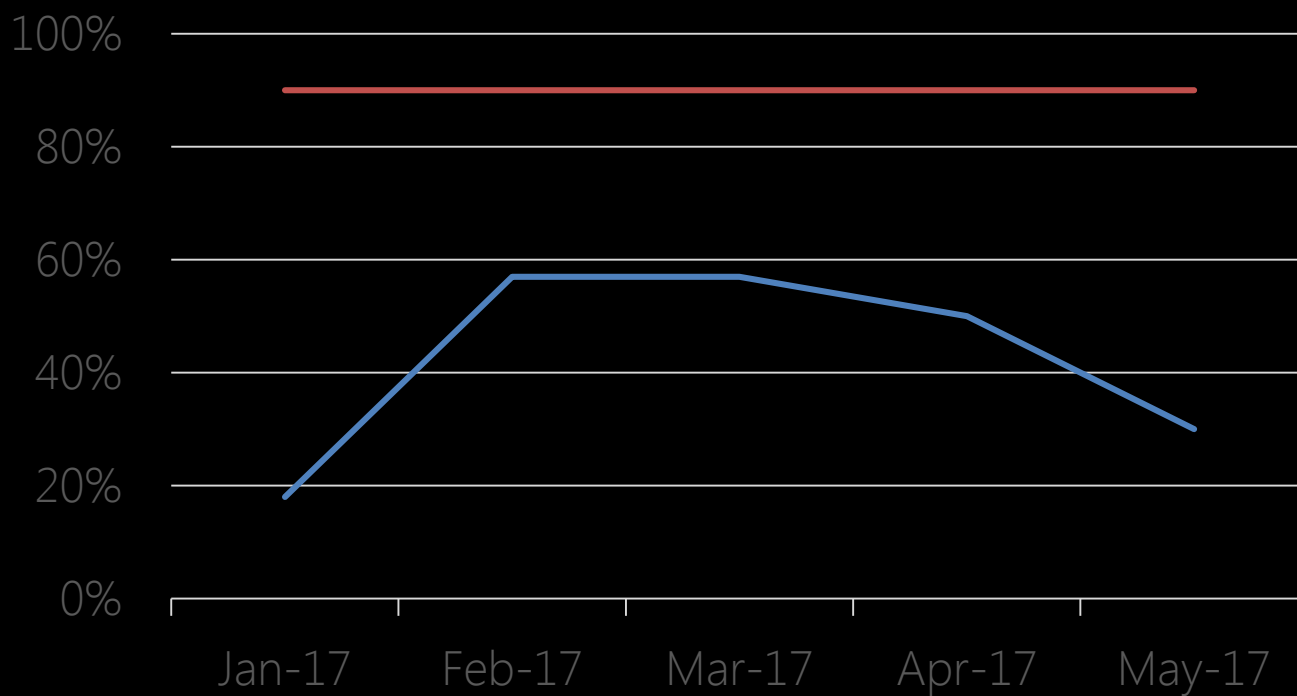
Project Name	Project Manager	Spec Review Complete	Current Phase	Current Phase Name	Current Phase Due Date	ACTUAL Launch Date	TARGET Launch Date	Next Phase Meeting Date	RISK	Schedule Variance	TOTAL Quality Defects
MINI LED REGRESS	Jessica	YES	1	Engineering Samples	3/20/17	9/21/17	11/1/17	4/21/17	LOW	30	2
RICHMOND (ACORN LED)	Gabriel	YES	2	R&D	4/28/17	5/11/18	10/1/17	5/18/17	HIGH	-160	0
BOA CONT	Gabriel	YES	4	Engineering Simulations	4/18/18	11/1/17	See Microsoft Project Plan		HIGH	-121	7
COVE - NOOK	Joseph	YES	4	Engineering Simulations	10/6/16	5/16/17	8/30/17	4/19/17	LOW	77	0
CYLINDERS	Jessica	YES	4	Engineering Simulations	11/22/16	9/12/17	10/1/17		LOW	14	0
DLED - low cost	Gabriel	YES	15	Pre-Production	3/27/17	5/26/17	5/1/17	5/9/17	MEDIUM	-20	0
EZPAN 1X4	Gabriel	YES	6	Final Design	4/13/17	11/2/17	6/22/17	5/4/17	HIGH	-96	1
FFLED 30,000lm	Joseph	YES	5	Prototyping Testing	4/10/17	12/25/17	10/15/17	4/18 (NJ), 4/20 (China)	HIGH	-51	0
FFLED125	Joseph	YES	12	Packaging Review	4/7/17	10/4/17	9/1/17		MEDIUM	-24	3
FXLED500	Joseph	YES	4	Engineering Simulations	3/7/17	7/21/17	8/1/17	4/26/17	LOW	8	1
HALITE	Laura	YES	8	Quotation	2/21/17	11/7/17	7/1/17		HIGH	-92	12
HAYBAY	Jessica	YES	7	Drawing Creation	4/15/16	4/3/17	4/20/2017		LOW	14	52
HAYBAY 45,000Lm	Gabriel	YES	2	R&D	4/20/17	3/30/18	9/25/2017	5/10/17	HIGH	-135	0
AEROBAY	Vicki	YES	4	Engineering Simulations	4/17/17	10/12/17	10/1/17		LOW	-9	1
Hospitality Wall Sconce	Gabriel	YES	1	Project Kickoff	4/24/17	4/16/18	6/15/18		LOW	45	0
KLED-FLUSH-DOWNLIGHTS	Gabriel	YES	13	UL Testing	4/3/17	8/4/17	6/1/17	5/1/17	HIGH	-47	1
LOTBLASTER XL	Gabriel	YES	2	R&D	4/27/17	4/6/18	12/20/2017	4/27/17	HIGH	-78	0
NDLED3	Jessica	n/a	15	Pre-Production	4/10/17	4/20/17	4/25/17		LOW	4	18
PIP XL	Eric	YES	5	Prototyping Testing	6/21/16	7/13/17	7/1/17		LOW	-9	4
PIP45 6000lm	Eric	YES	15	Pre-Production	3/29/17	4/6/17	4/5/2017		LOW	-2	4
RAIL135-200W	Jessica	YES	7	Drawing Creation	11/18/16	7/14/17	6/15/17		MEDIUM	-22	6
RAIL400W	Romit	YES	4	Engineering Simulations	12/6/16	9/5/17	6/15/17		HIGH	-59	4
RAIL90	Jessica	YES	13	UL Testing	12/9/16	4/28/17	4/26/17		LOW	-3	15
SEAL - sourced	Gabriel	YES	12	Packaging Review	4/26/17	8/8/17	6/1/17	5/1/17	HIGH	-49	5
SHARK 8FT	Gabriel	YES	16	Product Manufacturing	5/1/17	5/31/17	5/4/2017	5/1/17	MEDIUM	-20	5
SMK-RMK-EZPAN	Jessica	YES	10	Issue Tooling Drawings	4/14/17	7/25/17	5/1/17	4/21/17	HIGH	-62	0
SQ DLED RETRO IN ROUND HOUSING	Romit	YES	7	Drawing Creation	7/29/16	10/19/17	7/15/17	4/19/17	HIGH	-69	0
TEMPORARY LIGHT	Jess	YES	4	Engineering Simulations	4/19/17	1/31/18	11/5/2017	4/17/17	HIGH	-63	0
TROFFER RETROFIT KIT	Jessica	n/a	6	Final Design	11/15/16	9/1/17	8/1/17		MEDIUM	-24	0
WP3LED110 - 15,000 lm	Gabriel	YES	12	Packaging Review	4/27/17	9/20/17	7/15/17	4/28/17	HIGH	-48	0
YARDBLASTER XL (60)	Gabriel	YES	2	R&D	4/11/17	4/4/18	10/25/2017	4/26/17	HIGH	-116	0

# Accomplishments






## Phase OTD Year-to-Date



# Sustainment



LDM Boards  
Meeting cadence  
Standard Work



# Future State

Remove department silos

Reduce oversight

Clarity

Reduced lead time



# Lessons Learned

Patience

Training, training, training, training

Realigning priorities

No data? Get some!

Quick failures are great!

9月  
日  
曜日  
日直

# Team Effort





# Questions



# Thank You!

*Your opinion is important to us!*

**Please take a moment to complete the survey using the conference mobile app.**

**Session No: ThS/51**

**E3: Evolution of Empowering Employees**

**Nicholas Calaceto & James Lau**

RAB Lighting

[nickc@rabweb.com](mailto:nickc@rabweb.com)

[jamesl@rabweb.com](mailto:jamesl@rabweb.com)