



# AVIGILON

## Our Journey To Demand Driven



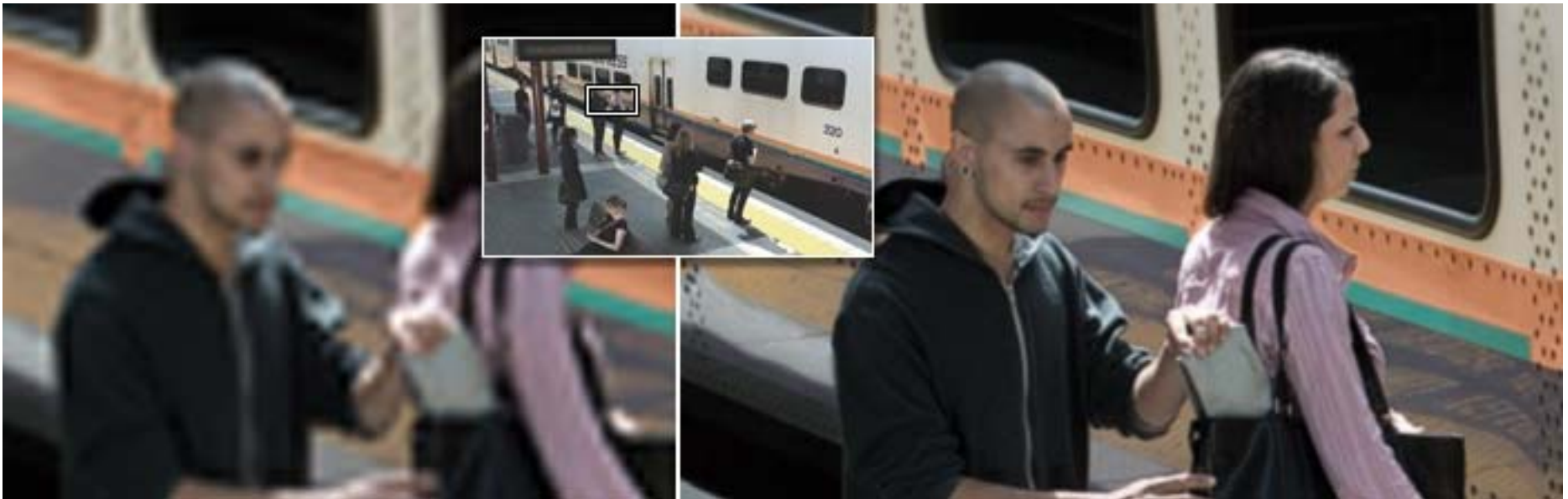
# Who We Are

avigilon

Design & manufacture  
the best high-definition  
surveillance solutions  
that provide unmatched  
image detail

Delivers the best image quality  
Easiest system to use  
Better ROI

# The Digital Advantage



- Avigilon is first to be certified to be used for evidence in courts (pixels/sq. in.)
- Units are more expensive but require 1/2 to 1/3 fewer units than competitors' systems

# Markets We Serve



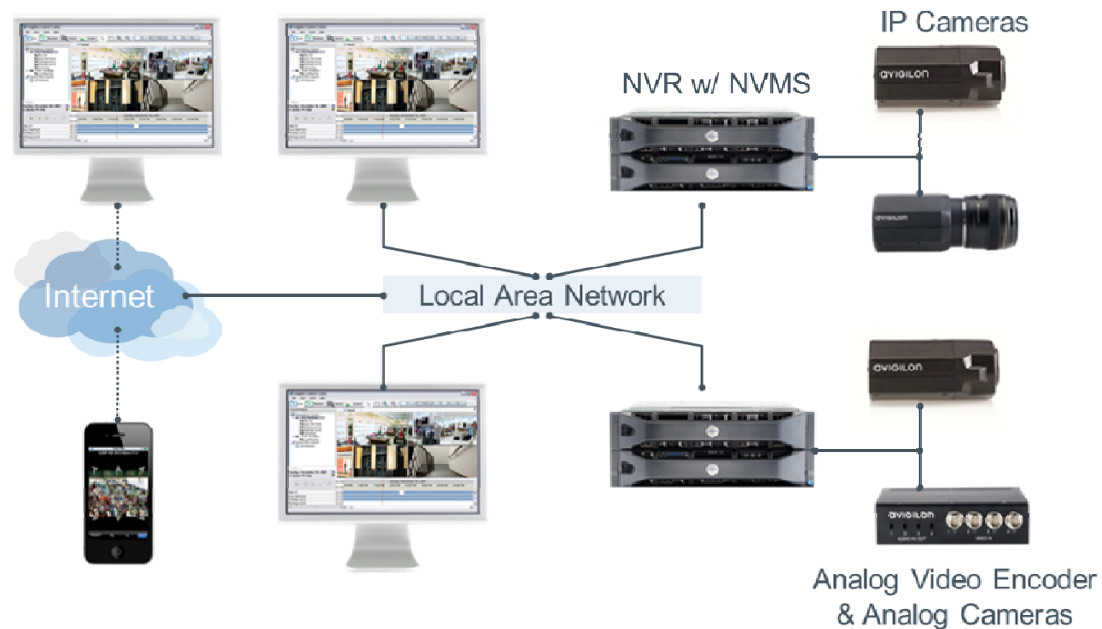
- Airports
- Banking
- Casinos
- City Surveillance
- Commercial Properties
- Critical Infrastructure
- Education
- Health Care
- Retail
- Stadiums
- Public Transit



# What We Do

avigilon

## End-to-End Open HD Surveillance System



- ▶ Avigilon Control Center Software
- ▶ HD IP Cameras
- ▶ Lenses / Enclosures
- ▶ Analog Encoders
- ▶ Network Switches
- ▶ NVRs
- ▶ Workstations

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# Product Line Up



Box Body



180 & 360  
Panoramic



Microdome



Dome



Bullet



PTZ

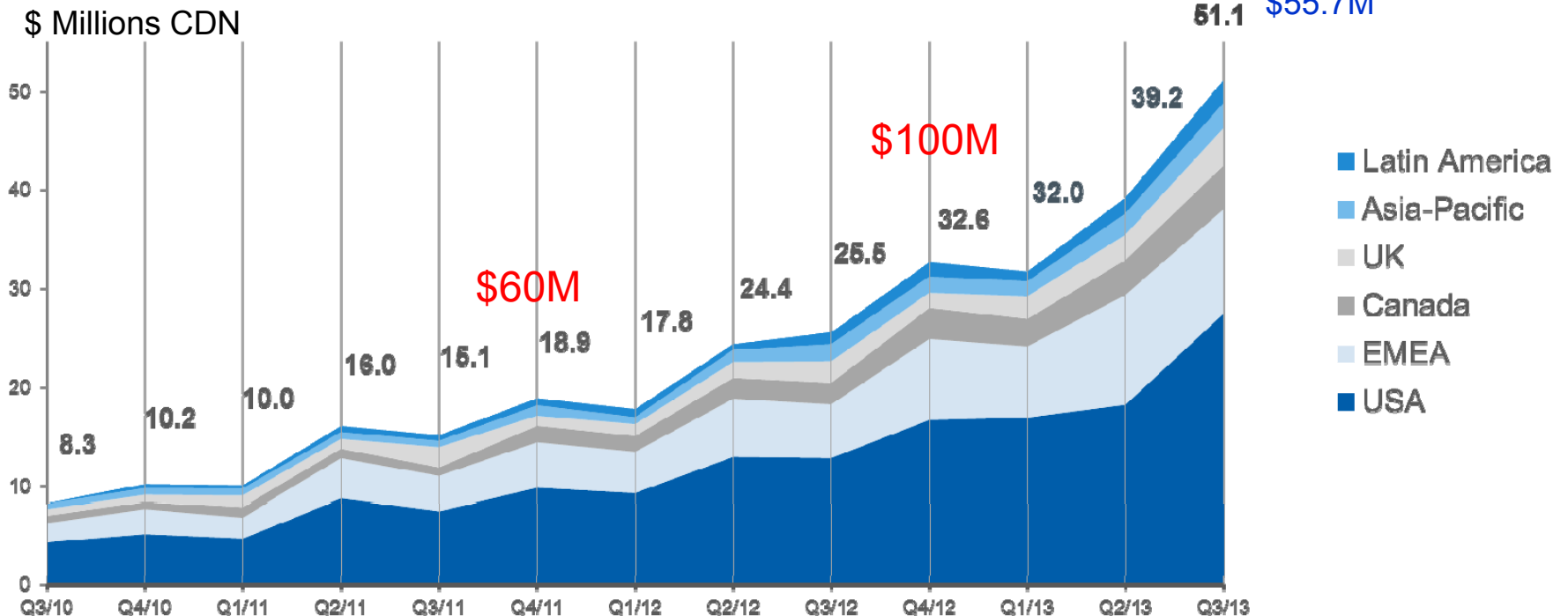
# Challenge: Rampant Growth

avigilon

## Quarterly Revenue by Geographic Region

**\$177M**

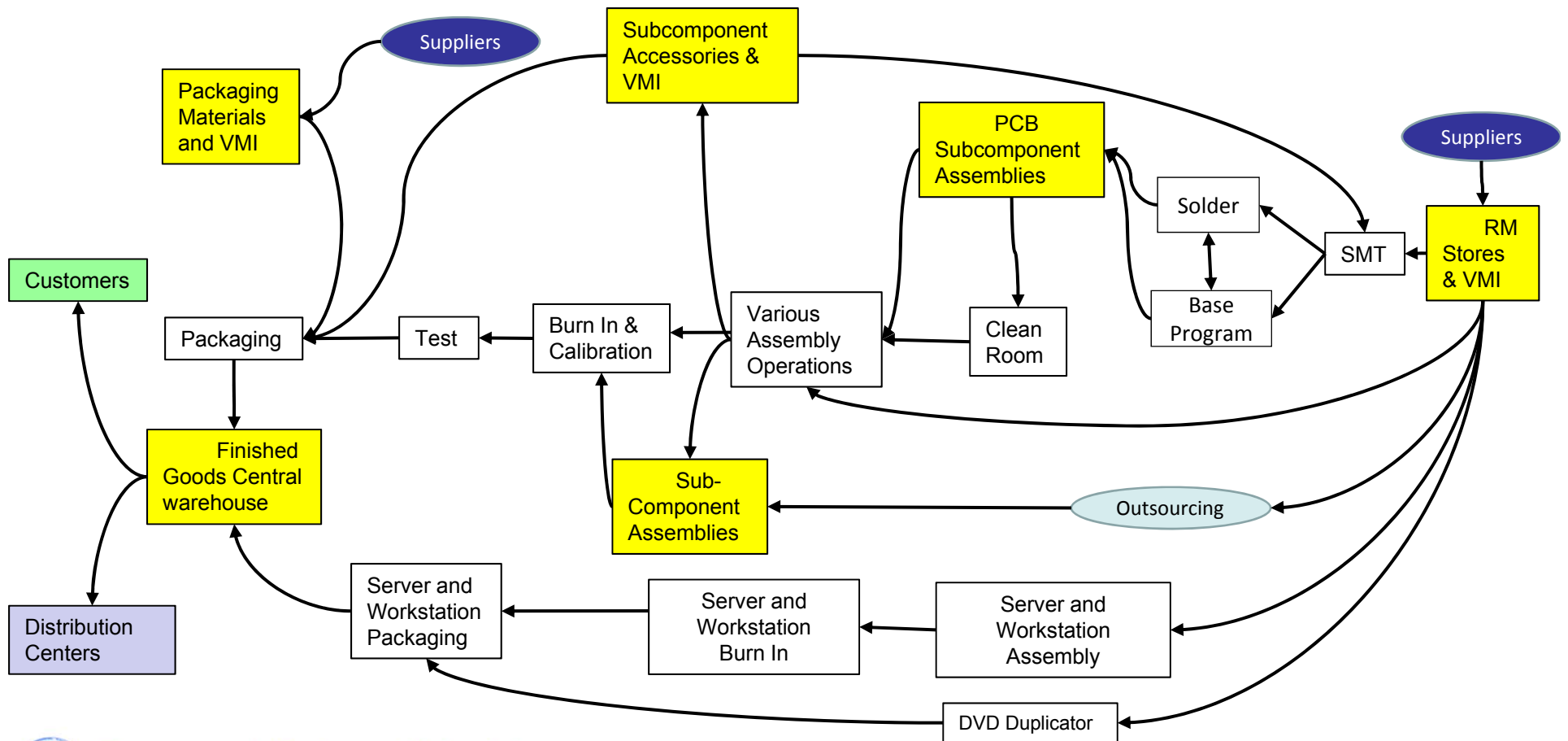
Q4/13  
**\$55.7M**



# Our System Starting Point

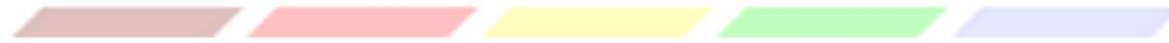
Dependent Planning Horizon and Lead Time to Customers

- Stocking locations were unplanned;
- Priorities were not clear;
- A lot of expediting and overtime;
- Growing backlog and service erosion.



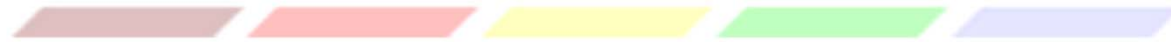


# Demand Driven Journey Time Line



- June 2013 - First meeting with Synchronix Technologies (Steve Jackson and Rod Gelhorn)
- July 2013 - Rod Gelhorn contracted to establish basic production processes and increase production shipments (CSL – 90.7%, 82.2%)
- October 2013 engaged Constraints Management Group and began working on data extracts to enable DDMRP with R+® and Drum Buffer Roper scheduling and execution with DBR+™
- November 2013 CMG facilitated a 3 day Demand Driven Design Workshop the principles of Demand Driven MRP (DDMRP and R+® ) and drum-buffer-rope operations scheduling (DBR+™)

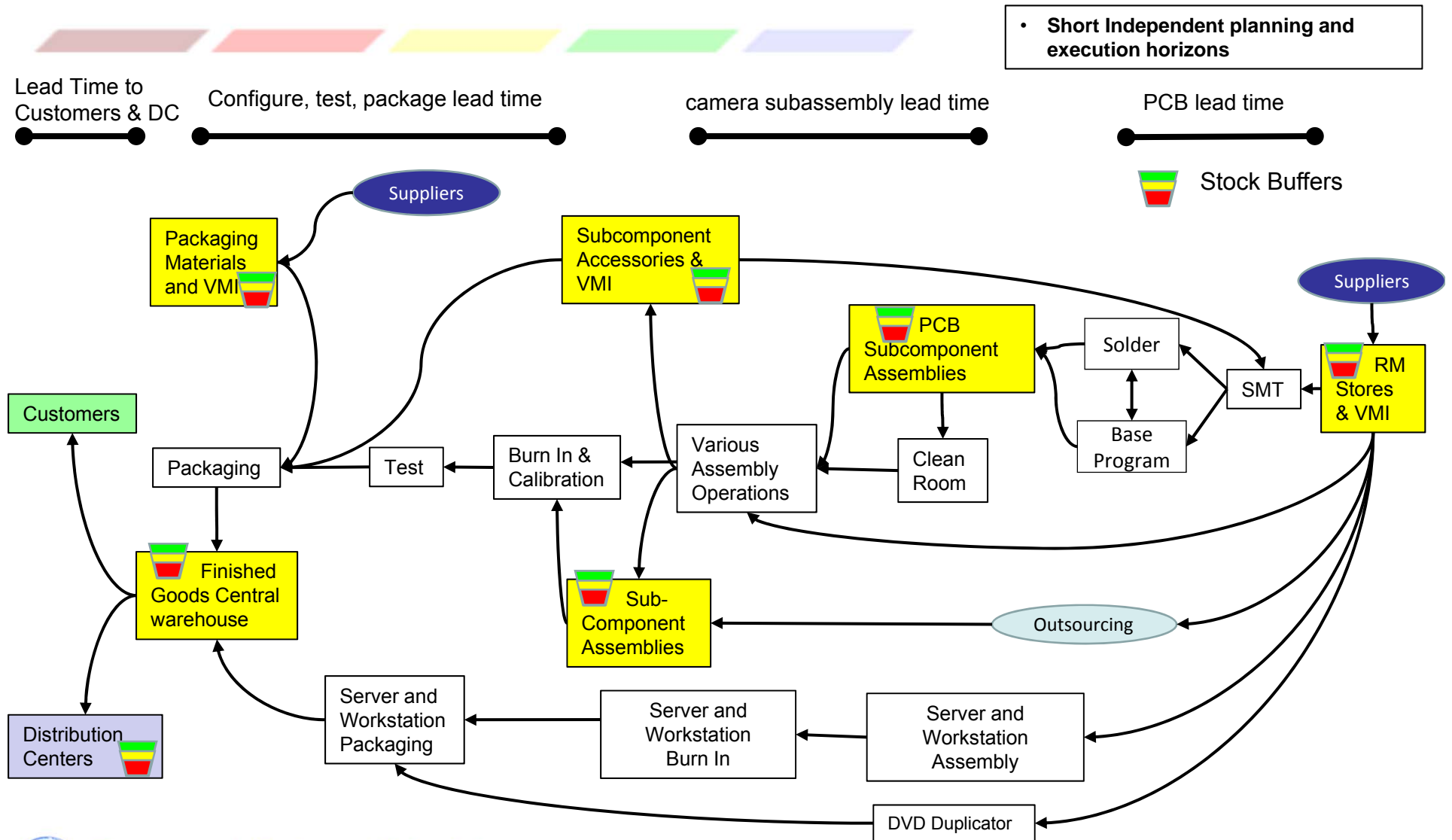
# Demand Driven Journey Time Line



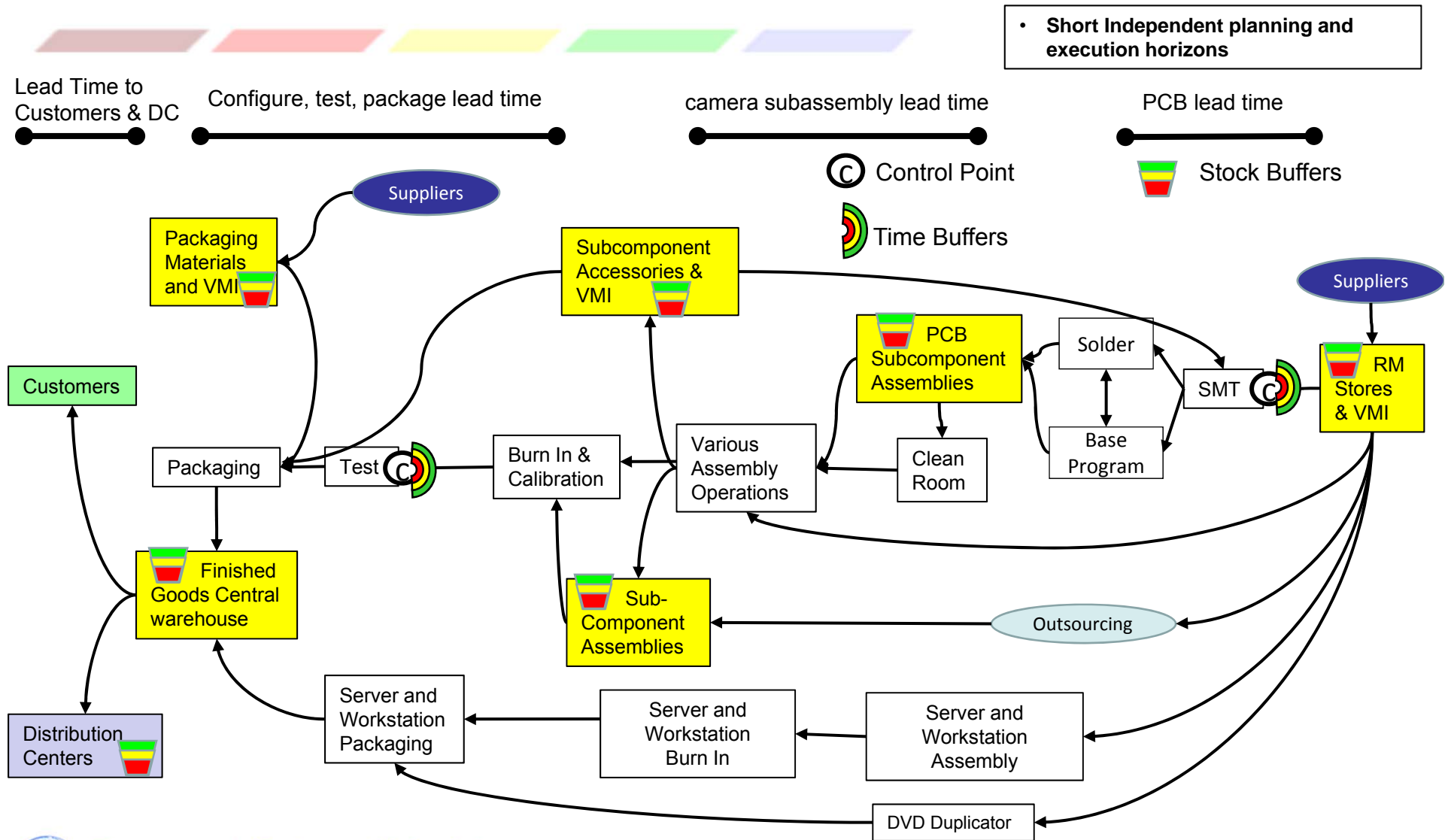
- The November workshop outcomes:
  - A project map to implement the new demand flow system
  - A short run interim operations plan to buffer, elevate and exploit the production Calibration/Test *control point*
  - And un-dedicate the test stations and four of the feeding assembly lines to increase flow.



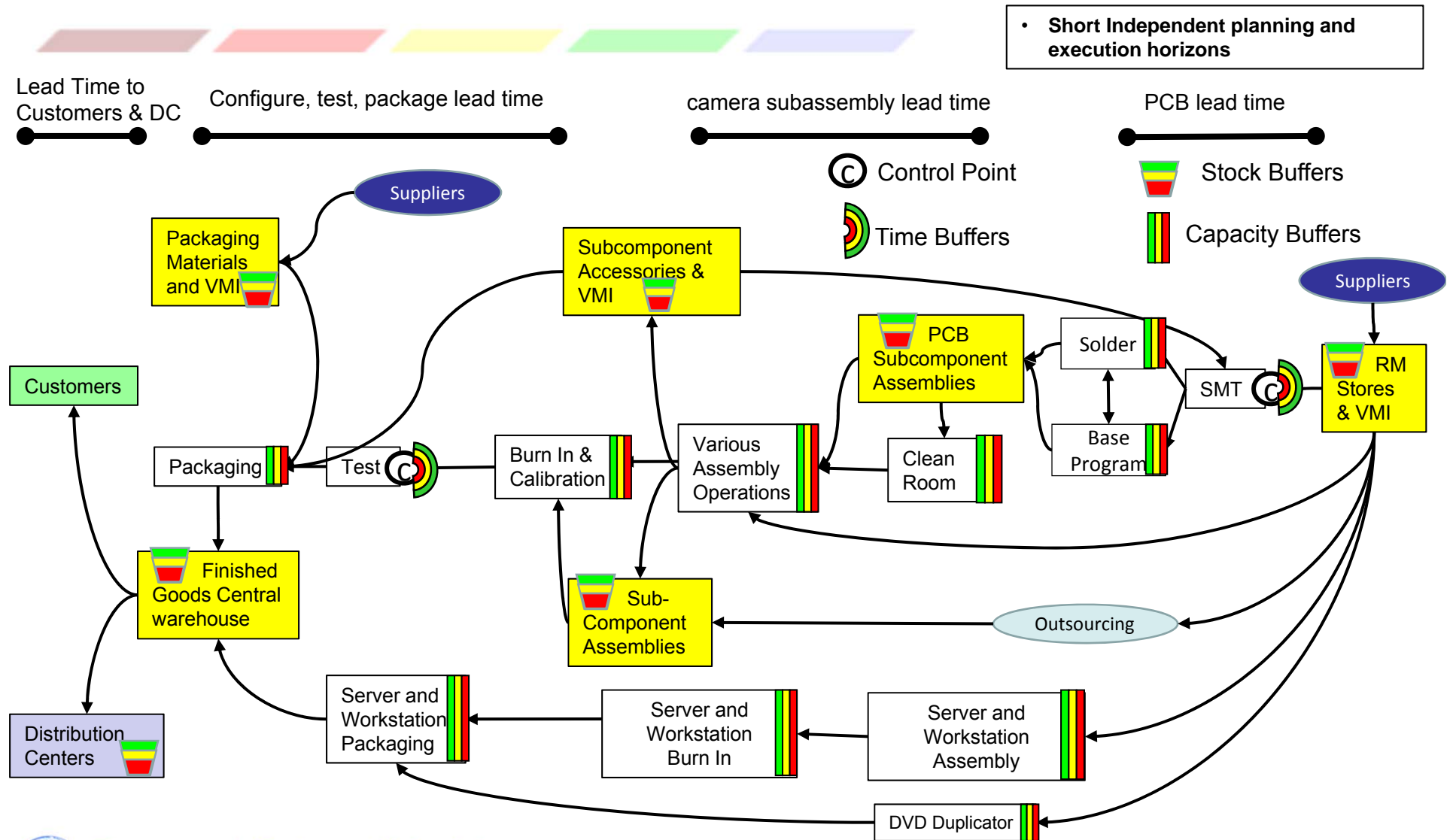
# Strategic Decoupling



# Gaining Control & Visibility

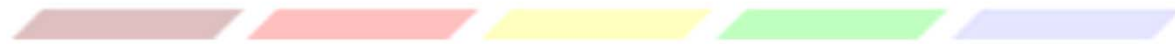


# Investing in Flexibility - Capacity Buffers





# Demand Driven Journey Time Line



- December 28, 2013 R+® goes live
- December 31, 2013
  - Record month, record quarter, record year at \$177.5M and ...
  - Customer Service Levels
    - Vancouver, BC 99.26%
    - Louisville, KY 99.03%
  - No backlog (vs opening 2013 with \$5 million backlog)
- January R+ is stabilized and buffers zones built
- January 31, 2014 DBR+™ goes live
- February 2014 DBR+™ stabilized and smart metric data collection is established to begin continuous process improvement cycle.



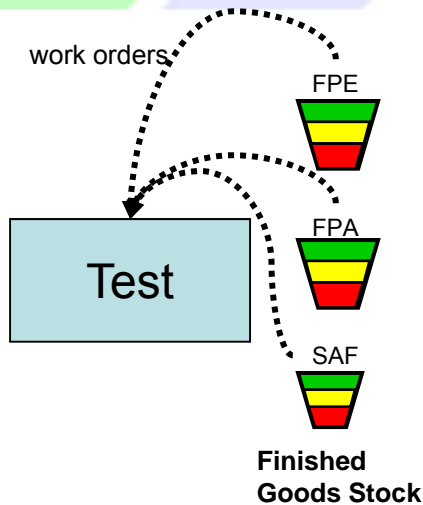
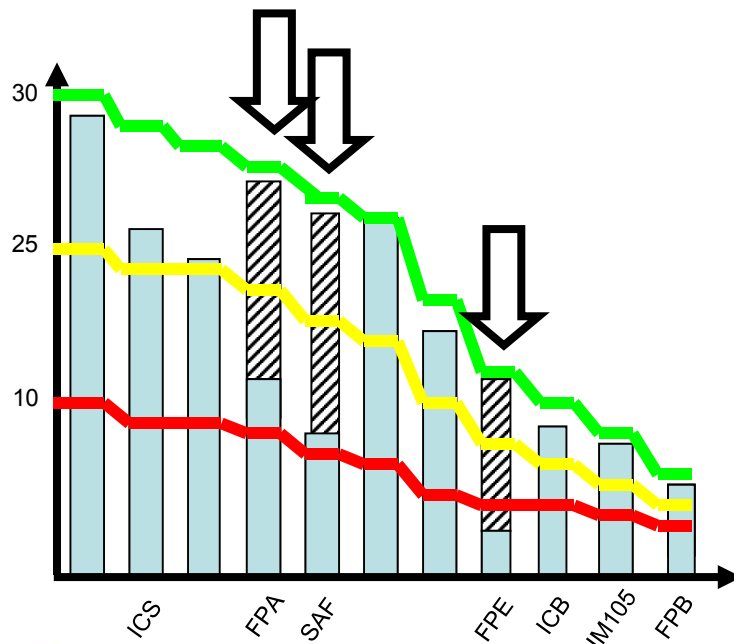
# Finished Goods Buffer Schedule for Test Control Points and Server Assembly

STOP

Re-Build

Re-Fill  
ASAP


- Zone and % determine sequence and priority.
- Work Orders are launched based on the Available Stock Status.






 Schedule Test Finished Items

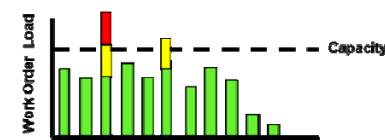
Order #	Due Date	Item #
WO 819-87	5/24	FPB
WO 832-41	5/22	FPE
WO 211-72	5/22	FPA

 Server Assembly

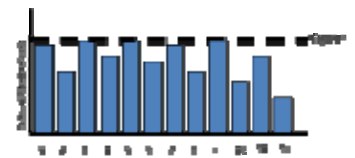
 Test

Line Schedule  
SKU Quantity

FPE	
SAF	
FPA	



Infinitely scheduled



Finitely scheduled

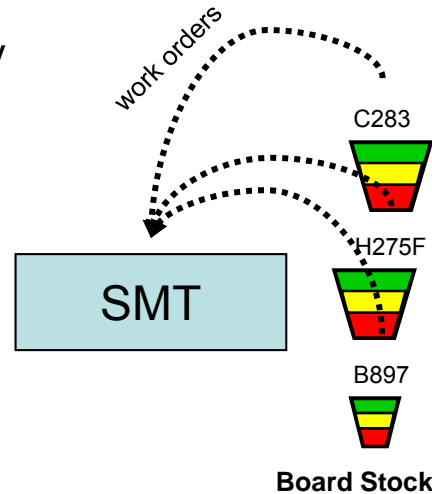
# PCBA Stock Buffers Schedule for SMT Control Point

STOP

Re-Build

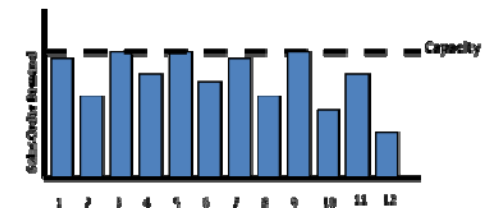
Re-Fill  
ASAP

Sequencing and Priority Work Orders are launched based on the Available Stock Status

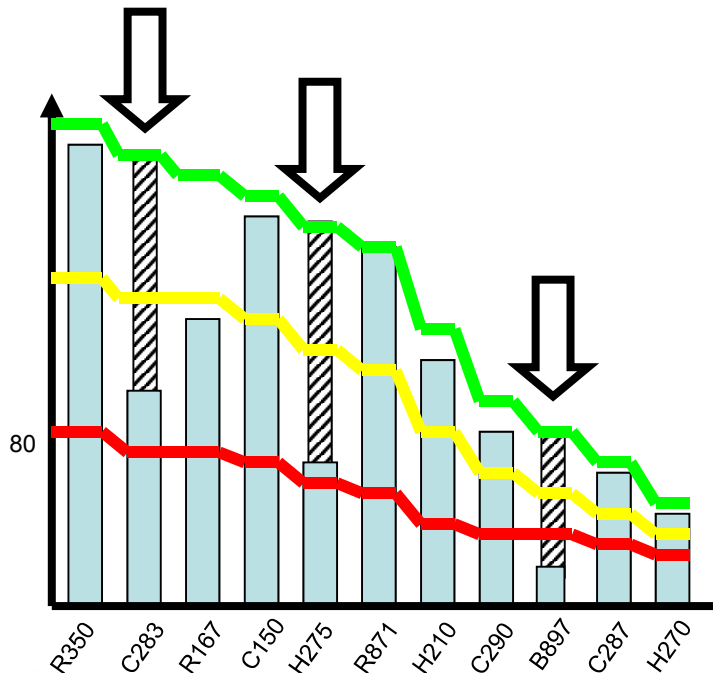


Schedule SMT Circuit Board Items

Order #	Due Date	Item #
WO 932-01	5/19	B897
WO 864-01	5/18	H275
WO 973-01	5/20	C283



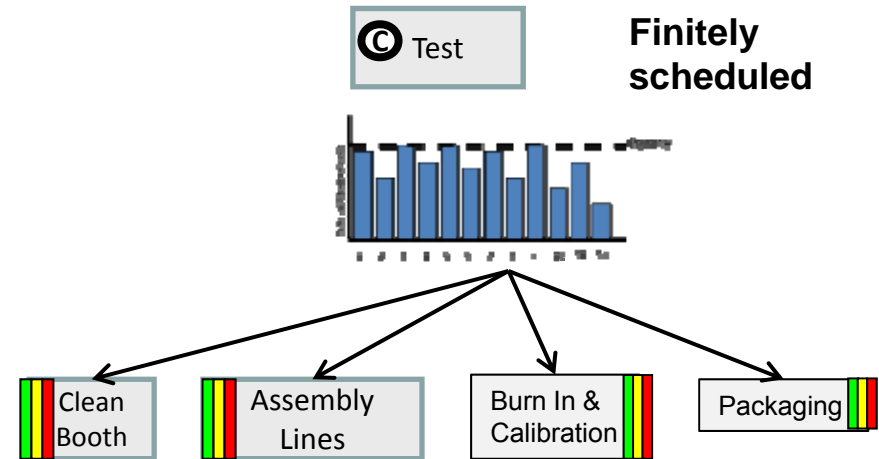
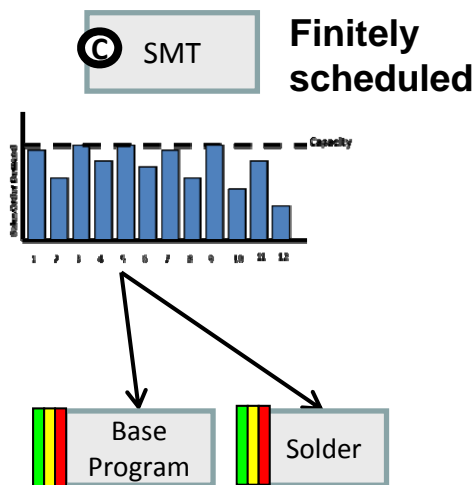
Finately scheduled



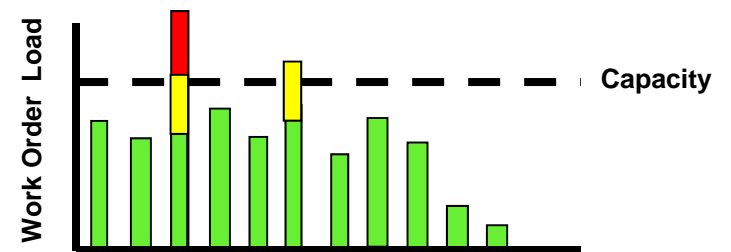
SMT Schedules

SKU	Quantity
B897	10
H275	20
C283	10

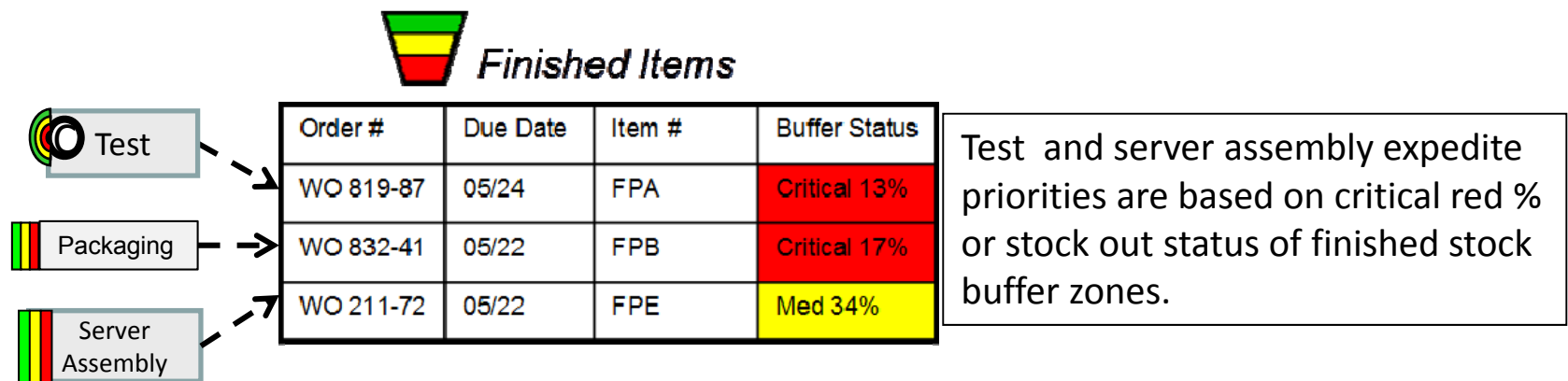
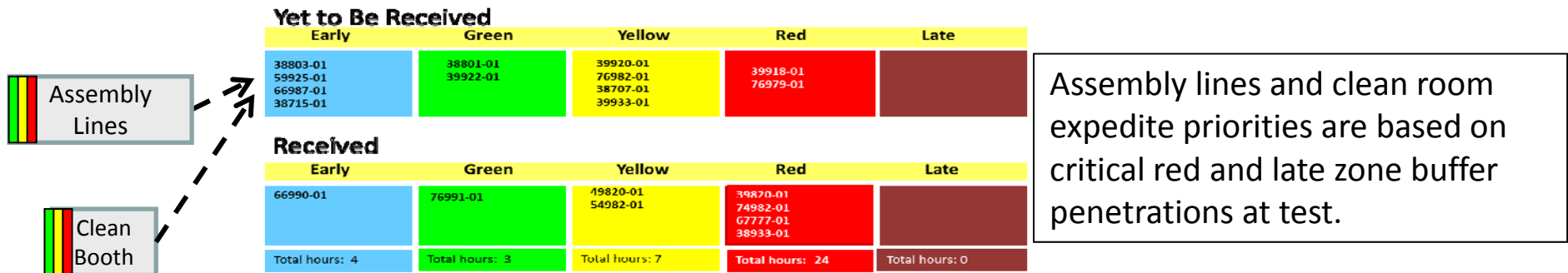
# All Other Resource Schedules Float



**Measure:**  
Monitor capacity buffers in non-control point resources looking for potential overloads



# Assembly Line Resource Priority Alignment





# Board Execution Priority Alignment

Raw stock staging and set up priorities for SMT operations are prioritized by the critical red and late zone buffer penetrations

## Execution Priority alignment on red zone and late

### Yet to Be Received

Early	Green	Yellow	Red	Late
803-01 925-01 987-01 715-01	801-01 922-01 983-01 709-01	920-01 982-01 707-01 933-01	815-87 979-01	4782-01

### Received

Early	Green	Yellow	Red	Late
990-01	832-01	836-01 211-72	20-01 777-01 933-01	
Total hours: 4	Total hours: 3	Total hours: 0	Total hours: 22	Total hours: 0

Raw Stock



SMT 1 Schedule

Control points and resources feeding the board stock buffers expedite priorities are based on the critical red % and stock out status of the board buffers

## Circuit Board Items Status

Order #	Due Date	Item #	Buffer Status
WO 932-01	5/19	B897	20%
WO 864-01	5/18	H275	25%
WO 973-01	5/20	C283	40%

## Execution Priority alignment on red zone and late

### Yet to Be Received

Early	Green	Yellow	Red	Late
803-01 925-01 987-01 715-01	801-01 922-01 983-01 709-01	920-01 982-01 707-01 933-01	815-87 979-01	4782-01

### Received

Early	Green	Yellow	Red	Late
990-01	832-01	836-01 211-72	20-01 777-01 933-01	
Total hours: 4	Total hours: 3	Total hours: 0	Total hours: 22	Total hours: 0

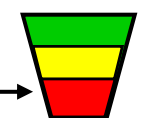
SMT 2 Schedule

Hand Solder

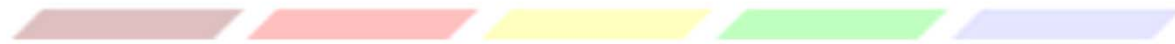
Base Prgrm

Select Solder

Board Stock



# Results:



- 2013 ended with near perfect customer service levels (99+%).
- Both overtime and expedited freight costs dramatically reduced.
- Major shift in our planning horizon:
  - From: “What do we need to build now to fill orders”
  - To: “Which stock buffer needs to be replenished”
- Significant Production Volume increase
- Increased plant performance came with much less stress and no heroics.

DS1

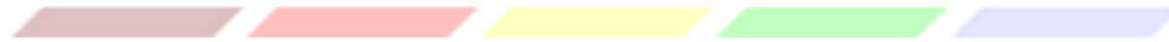


**DS1**

What does this mean?

Debra, 2/22/2014

# Results



- We were able to build distribution center stock buffers while supporting our sales growth.
- Buying and planning is greatly simplified and our signals are based on real pull and priority.
- Execution priorities are stable because our schedules are reliable and based on true demand pull priority.
- All resources remain synchronized to the right schedule and market priorities due to the visibility provided by the time buffer and stock buffers.
- No significant change in inventory dollar value levels.
- We use DBR+™ resource loading graphs to proactively plan additional resource requirements.

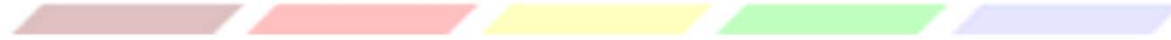


# Next Steps and Expected Results



- For DBR+™ and R+®:
  - Learn to use the smart metrics our new system
  - Focus on improvement opportunities as well as capital and labor investments to meet our sales growth
- Growth Targets
  - \$500M in 2016





# Questions?

