

# **Fulcrum (SIM), Lean Sigma Implementation Case Study....**

## ***Integrating People, Process, Technology***

***December 12<sup>th</sup>, 2008  
Fulcrum Primer Training and Users Group  
San Jose, California***

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## Who We Are

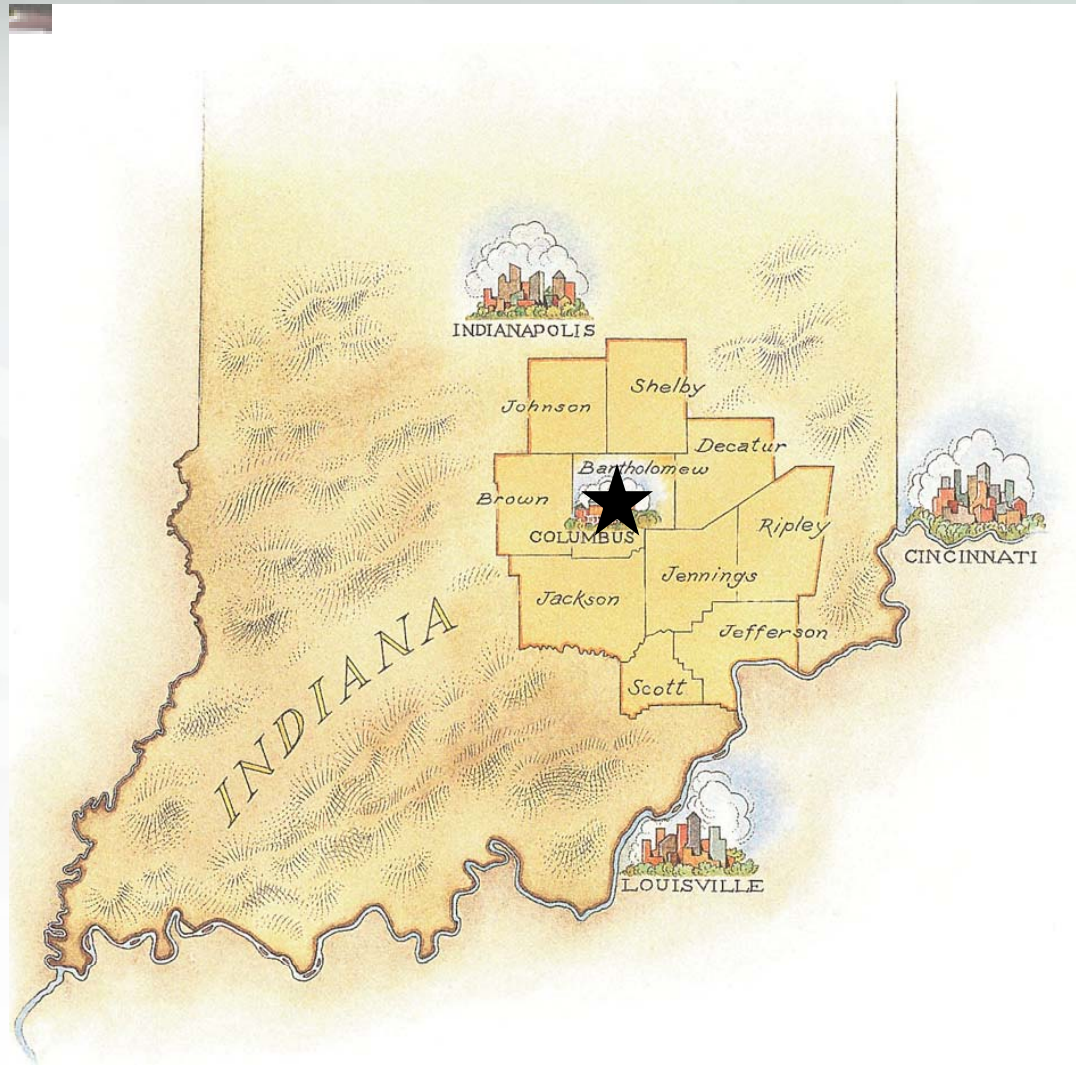
- Columbus Regional Hospital is a regional provider of healthcare services offering comprehensive services:
  - Acute inpatient care
  - Emergency/ambulance care
  - Surgery
  - Cancer care
  - Birthing Center
  - Cardiac services
  - Rehabilitation
  - Outpatient services





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# CRH Market Area Map





# Mission, Vision, and Values

## Mission:

Improve the health and well-being of the people we serve.

## Vision:

To be the best in the country at everything we do.

## Values:

- Strong Leadership
- Teamwork
- Commitment
- Citizenship
- Personal Excellence
- Ethics
- Caring
- Quality

## Pillars:

- Quality/Safety
- Service
- Satisfaction
- People
- Finance



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American Hospital Association McKesson  
*Quest for Quality Prize*<sup>®</sup>

Honoring Leadership and Innovation  
in Patient Care Quality, Safety, and Commitment



The Foster G. McGaw Prize







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## Learning Objectives:

- Learn and understand the need for a partnership between SIM, Fulcrum, and Lean Six Sigma process redesign in Information Technology implementations based on actual project experience
- Learn and understand practical tools and examples from actual projects

### Discussion Agenda;

- |  |            |
|--|------------|
| 1.) Lean / I.T. Roadmaps/ Overview                 | 15 minutes |
| 2.) SIM/Fulcrum Examples                           | 30 minutes |
| • VSP, Contracting, Implementation, Lean (Control) |            |
| 3.) Successes/Key Takeaways                        | 15 minutes |



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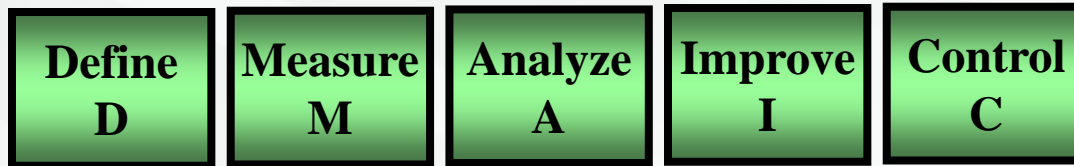
## Agenda item #1 – 15 minutes

I.T. & Lean Roadmaps (Overview)



# Lean Six Sigma Process

## Current Lean Six Sigma Project Methodology



## Focus on “Process”

- \* Lean – eliminate waste (speed)
- \* Six Sigma – standardize (variation)





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# I.T. Project Implementation Process

## Current I.T. Project Methodology



Focus on “Technology”



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## Overview of 2 approaches:

- Lean with I.T.
- I.T. with Lean



# Lean Six Sigma Process Design with I.T. Projects

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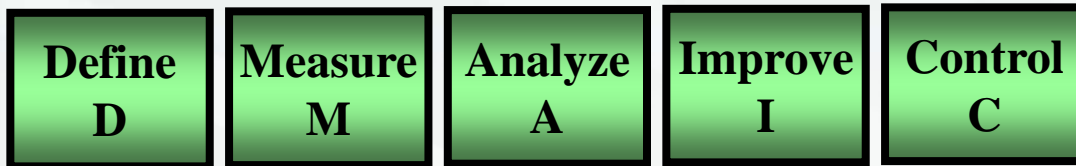
## Approach #1

1. I.T. Solution is introduced as a part of Improve “I” phase of the DMAIC Lean Six Sigma roadmap



# I.T. Solution(s) introduced as a part of the “Improve” phase of Lean project

## Current Lean Six Sigma Project Methodology



An I.T. project may be considered as an improvement element during a Lean Six Sigma Project



# Lean Six Sigma Process Design with I.T. Projects

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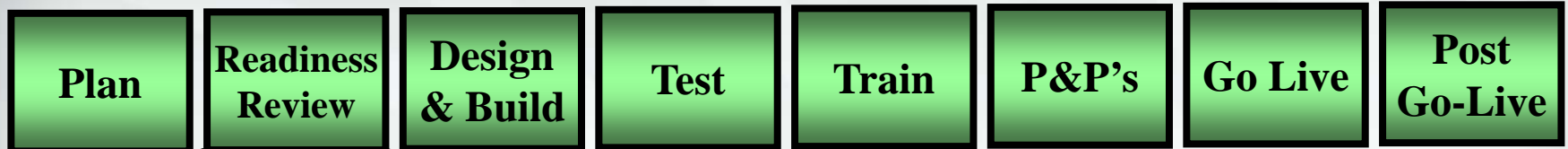
Approach #2:

2. Lean Six Sigma is introduced as a part of I.T. Readiness



# Lean Six Sigma Process Design with I.T. Projects

## Current I.S. Project Methodology



### Readiness Review

#### VOC/VOB

- Process Observation
- Interviews
- Murphy's Diagram
- Requirements Validation Survey

#### Baseline Process/Identify NVA

- VSM
- SIPOC
- I&O Map
- C&E Matrix
- FMEA

#### Baseline Metrics

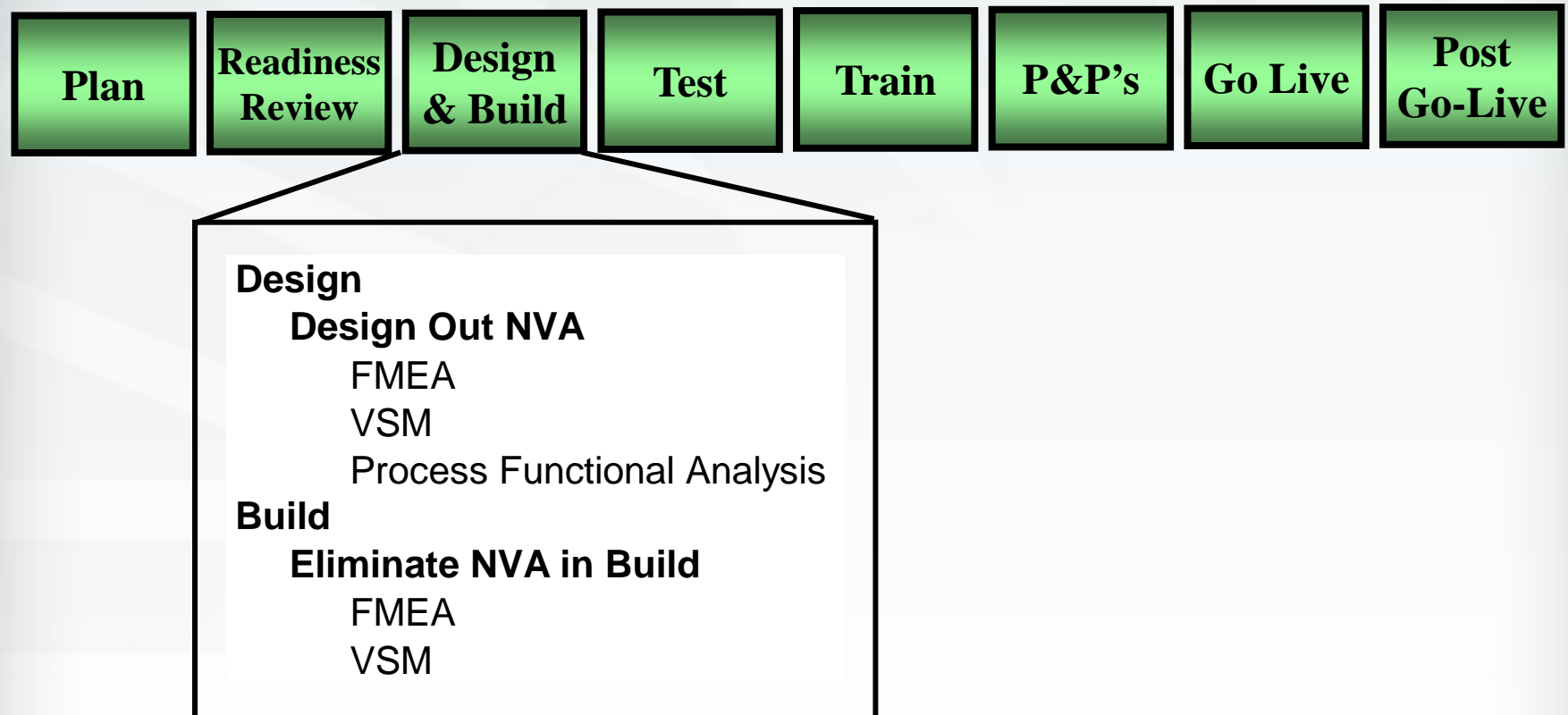
- Expand Project Summary

*Reference: Tim Tarnowski, former CIO; CRH (slides 14-17)*

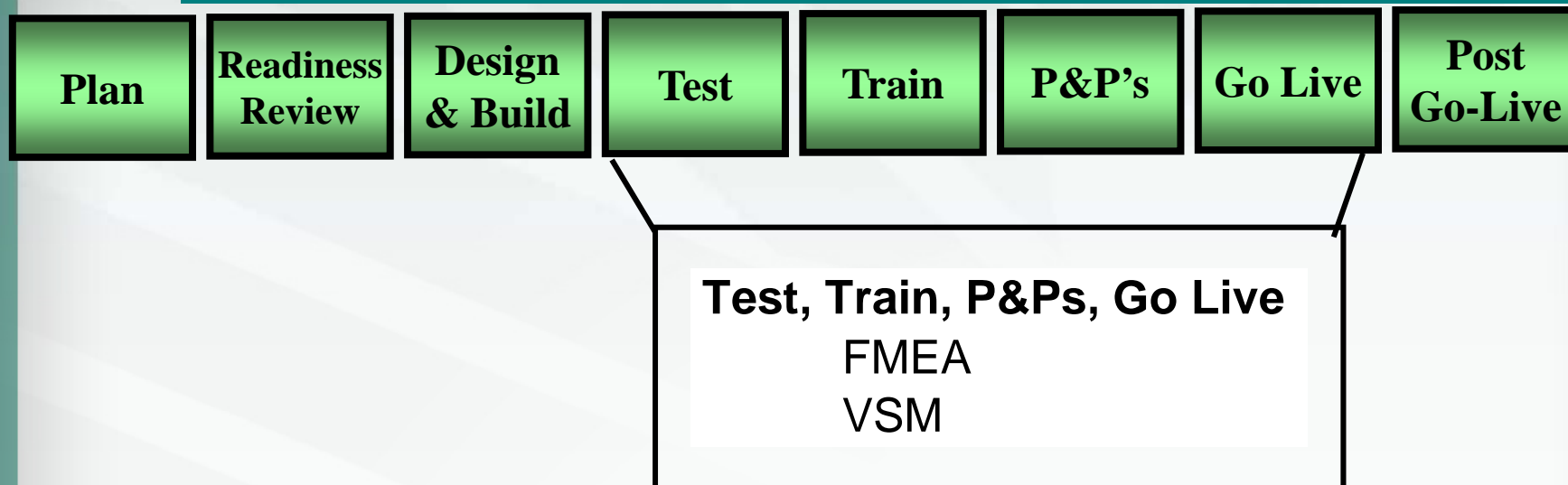




# Lean Six Sigma Process Design with I.T. Projects



# Lean Six Sigma Process Design with I.T. Projects

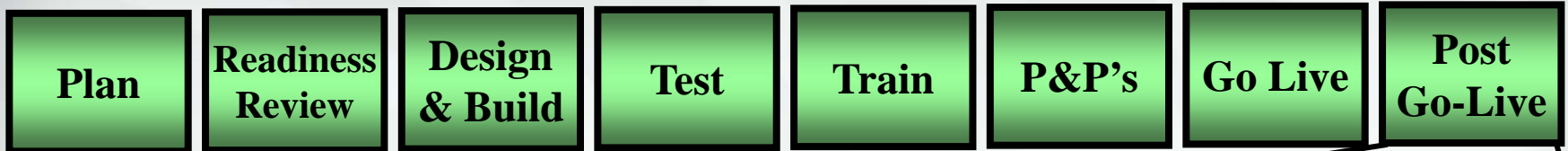


## **FREEZE PROCESS DESIGN!!!**

- Test scripts developed with new process design
- Train staff on new processes
- P&P's developed for new processes
- Go-Live planned and implemented with new processes in place



# Lean Six Sigma Process Design with I.T. Projects



## Post Go Live

### Validate VOC/VOB

Requirements Validation Survey

### Baseline Process vs. New Process

FMEA

VSM

### Baseline Metrics vs. New Metrics

Control Plan/Minitab

### Confirm NVA Eliminated

Process Functional Analysis



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## Agenda Item #2 – 25 minutes

I.T. SIM / Fulcrum / Lean Methods Overview



## Document Imaging – Case Study

- |                            |               |
|----------------------------|---------------|
| 1.) RFP Issued             | July 2003     |
| 2.) Contract Signed        | August 2004   |
| 3.) Project Go-Live:       |               |
| • PFS/Patient Registration | October 2005  |
| • Health Information       | November 2005 |
| 4.) Project Closed         | January 2006  |

\*\* Lifecycle – 29 months



# I.T. SIM / Fulcrum Methods Overview

## Vendor Selection & Contracting:

1. Vendor Selection Work Plan
2. RFP
3. \*\*RFP Vendor analysis to get to 2 finalists
4. \*\*Contract Terms & Conditions
5. Contract
6. Project Charter

## Implementation:

1. \*\*Approved Project Summary (Including project team) – Vision/Scope
2. Project Controls: Sample Agenda, Action Items, Issues List, Monthly Project Status Report
3. Readiness Review Master
4. \*\*Design Master
5. Build Master
6. \*\*Testing Template with specific scenarios and testing results
7. Procedure/Policy Master
8. Training Manual
9. Go-Live Planning Template
10. Go-Live Plan
11. Transition for Implementation to Support
12. \*\*Project Closure





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## I.T. SIM / Fulcrum Methods Overview

Vendor Selection & Contracting...



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# Vendor Selection Sample

## 4 Vendors

Criticals Analysis		
Vendor C (CUSTOM)	1	Tab Sect.4C / Section AM - Integration with Portal
Vendor C (CUSTOM)	1	Tab Sect.4C / Section AQ - Integration with MicroInnovation
Vendor C (FUTURE)	1	Currently do not have remote access via web (Citrix only)
Vendor D (CUSTOM)	1	Tab Sect.4C / Section AQ - Integration with MicroInnovation

<i>In Question</i>	1	2	8	6
<b>DOES NOT MEET Analysis</b>				
	<u>Vendor A</u>	<u>Vendor B</u>	<u>Vendor C</u>	<u>Vendor D</u>
Critical No's	0	0	0	0
High No's	7	1	12	5
Medium No's	17	7	7	7
Low No's	54	9	14	9
Rank	4	1	3	2
Total	78	17	33	21

<b>CUSTOM Analysis</b>				
	<u>Vendor A</u>	<u>Vendor B</u>	<u>Vendor C</u>	<u>Vendor D</u>
Critical Custom	0	0	3	1
High Custom	4	0	7	16
Medium Custom	0	0	2	4
Low Custom	1	0	1	5
Rank	2	1	3	4
Total	5	0	13	26

<b>FUTURE Analysis</b>				
	<u>Vendor A</u>	<u>Vendor B</u>	<u>Vendor C</u>	<u>Vendor D</u>
Critical Future	0	0	0	0
High Future	0	0	6	18
Medium Future	0	0	3	15
Low Future	0	2	1	8
Rank	1	2	3	4
Total	0	2	10	41

<b>Overall Rank</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>
---------------------	----------	----------	----------	----------





# Contract – Executive Summary

Vendor Rankings		Vendor A	Vendor B
Physician's Ranking		1	2
HIM Ranking		1	2
Business Office Ranking		1	2
Registration Ranking		1	2
KLAS Ranking		1	2
MD Buyline Ranking		1	2
<b>Overall Ranking</b>			
Estimated Costs		Vendor A	Vendor B
One-Time Estimated Total Costs with 20% Contingency (includes SAN year 1)		insert # here	insert # here
Estimated Annual Cost of Storage Area Network (SAN)		insert # here	insert # here
Functionality		Vendor A	Vendor B
<b>Physician Functionality</b>			
Physician Portal - Chart Completion - Deficiency Functionality		Yes	Yes
Physician Portal - Context Management (Integration with Patient Information) for Medical Record		Yes	No (3.4)
Electronic Image Lookup		Yes	No (A)
Physician Portal - Text Editing/Completion		Yes	Yes
Physician Portal - Autosign		Yes	No (A)
<b>User Functionality</b>			
Ability for System to fully integrate and accept and Enterprise Medical Record Number		Yes	Yes
<b>Adequate Functionality for HIM Department</b>		Yes	Yes
Chart Analysis		Yes	Yes
Physician Chart Completion		Yes	Yes
Electronic Signature		Yes	Yes
Release of Information		Yes	Yes
Work Queues for Scanning, Indexing, Quality Review, Coding, Deficiency Analysis, and Completion		Yes	Yes
Chart Review		Yes	Yes
Audit Logs		Yes	Yes
Faxing		Yes	Yes



# Vendor Selection & Contract Summary

## CRH's Comprehensive Vendor Selection Process Utilized:

### Detailed Request for Proposal (RFP)

- Sent to 7 Vendors (July 2003)

### Vendor Demos

- 4 Finalist Demonstrations completed (September 2003)
- 4 Finalists include Vendors A, B, C, D

### Vendor Open House at CRH

- 2 Finalists; Vendor A and Vendor B (December 2003)

### Site Visits/Reference Calls for the Two Finalists (December 2003)

- Vendor A (List Location of Visit)
- Vendor B (List Location of Visit)

### External Validation

- MD Buyline
- KLAS Consulting Firm

### Selection Team's Recommendation = Vendor A

- Team Decision in July 2004
- Approval at Board of Trustees meeting in July 2004
- Contract Signed on August 13, 2004



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# I.T. SIM / Fulcrum Methods Overview

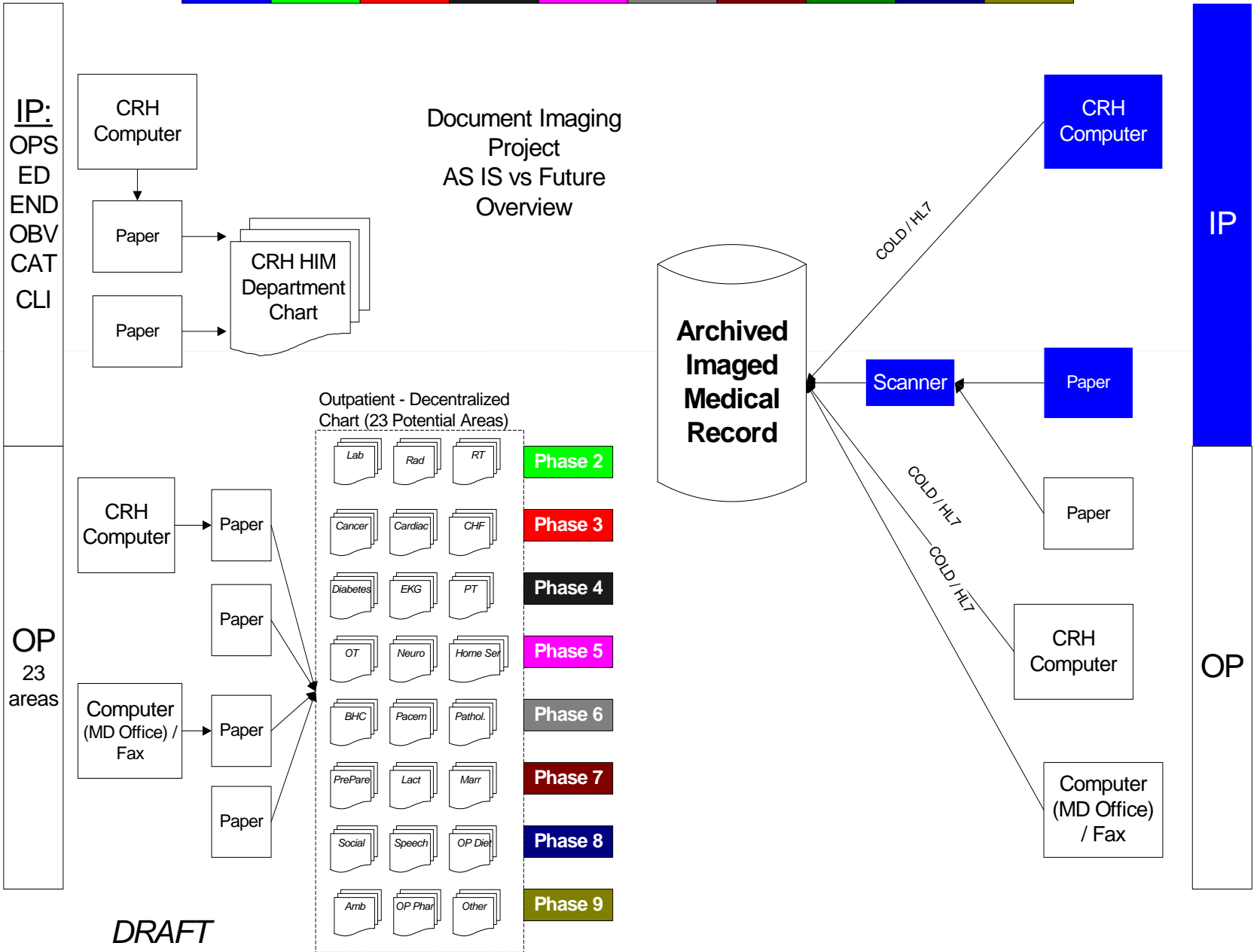
Implementation....



Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Upgrade	Phase 8	Phase 9
Q4 2005	Q1 2006	Q2 2006	Q3 2006	Q4 2006	Q1 2007	Q2 2007	Q3 2007	Q4 2007	Q1 2008

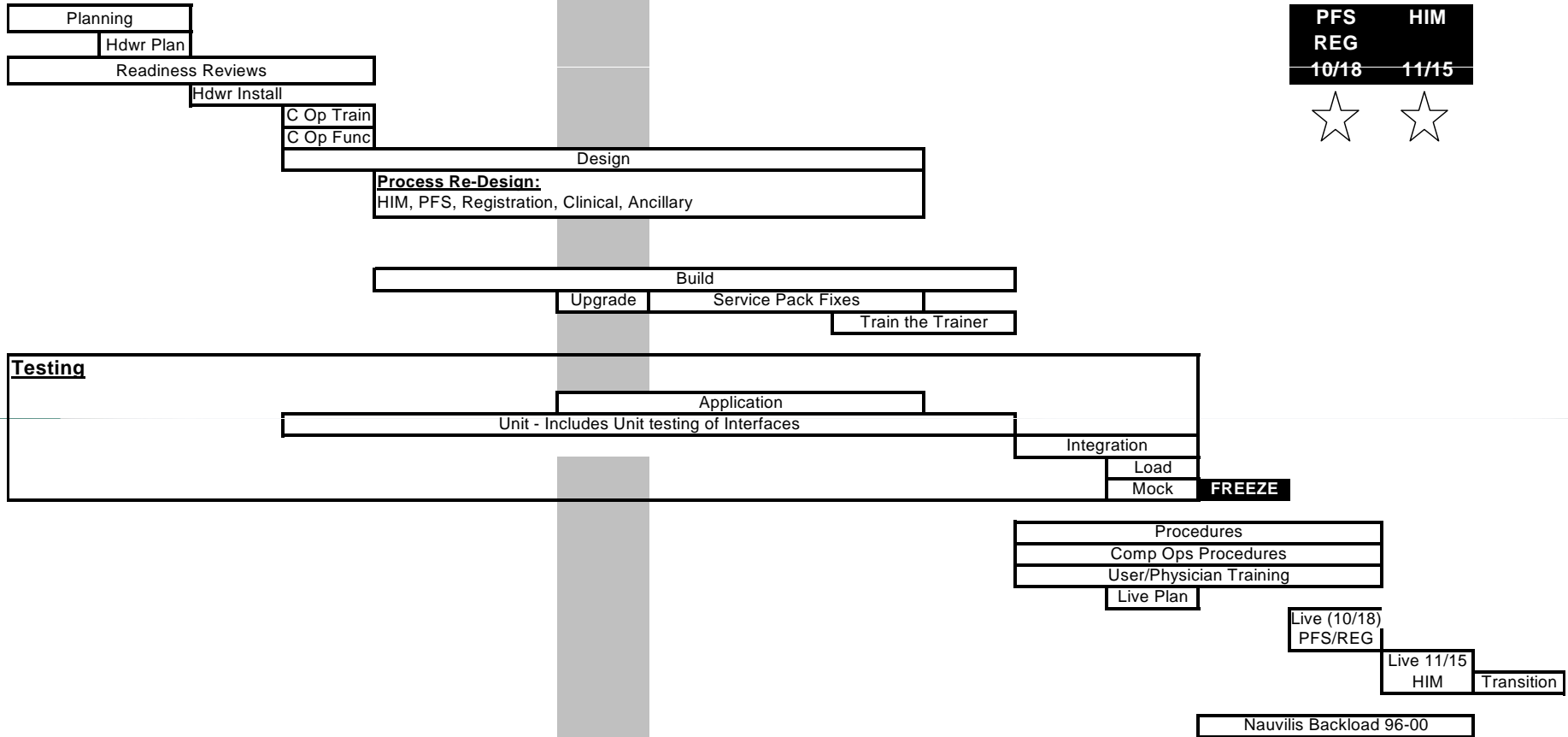
**AS IS**

**FUTURE**

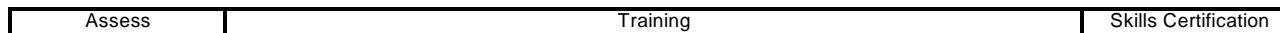


# Imaging - Phase 1 (HIM, Business Office, Registration)

Aug-04   Sep-04   Oct-04   Nov-04   Dec-04   Jan-05   Feb-05   Mar-05   Apr-05   May-05   Jun-05   Jul-05   Aug-05   Sep-05   Oct-05   Nov-05   Dec-05



## HIM Computer Training



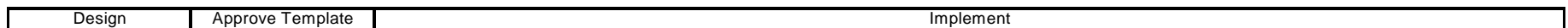
## Peripherals



## Space Redesign

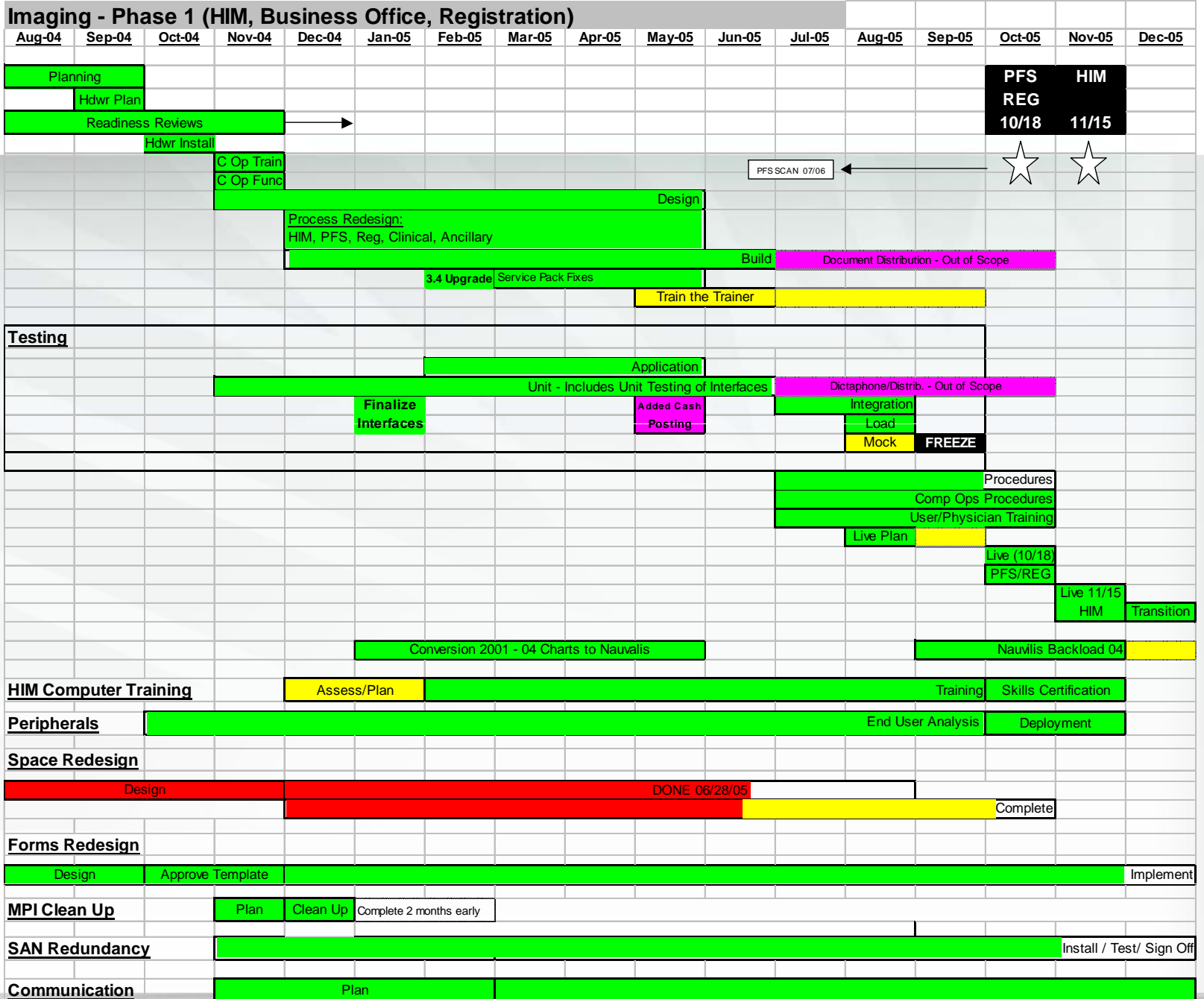


## Forms Redesign





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PFS SCAN 07/06



PFS  
REG  
10/18

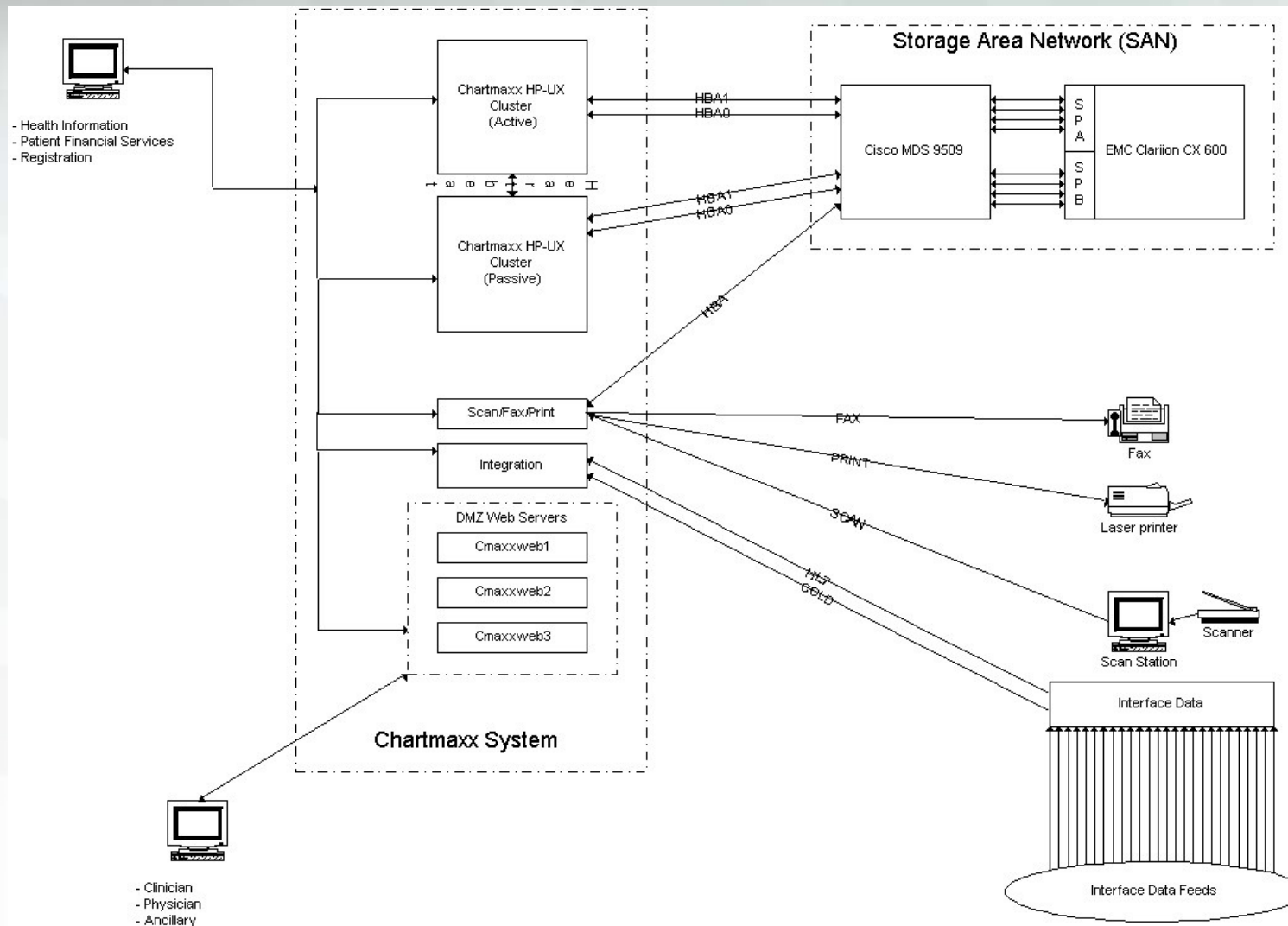
HIM  
11/15



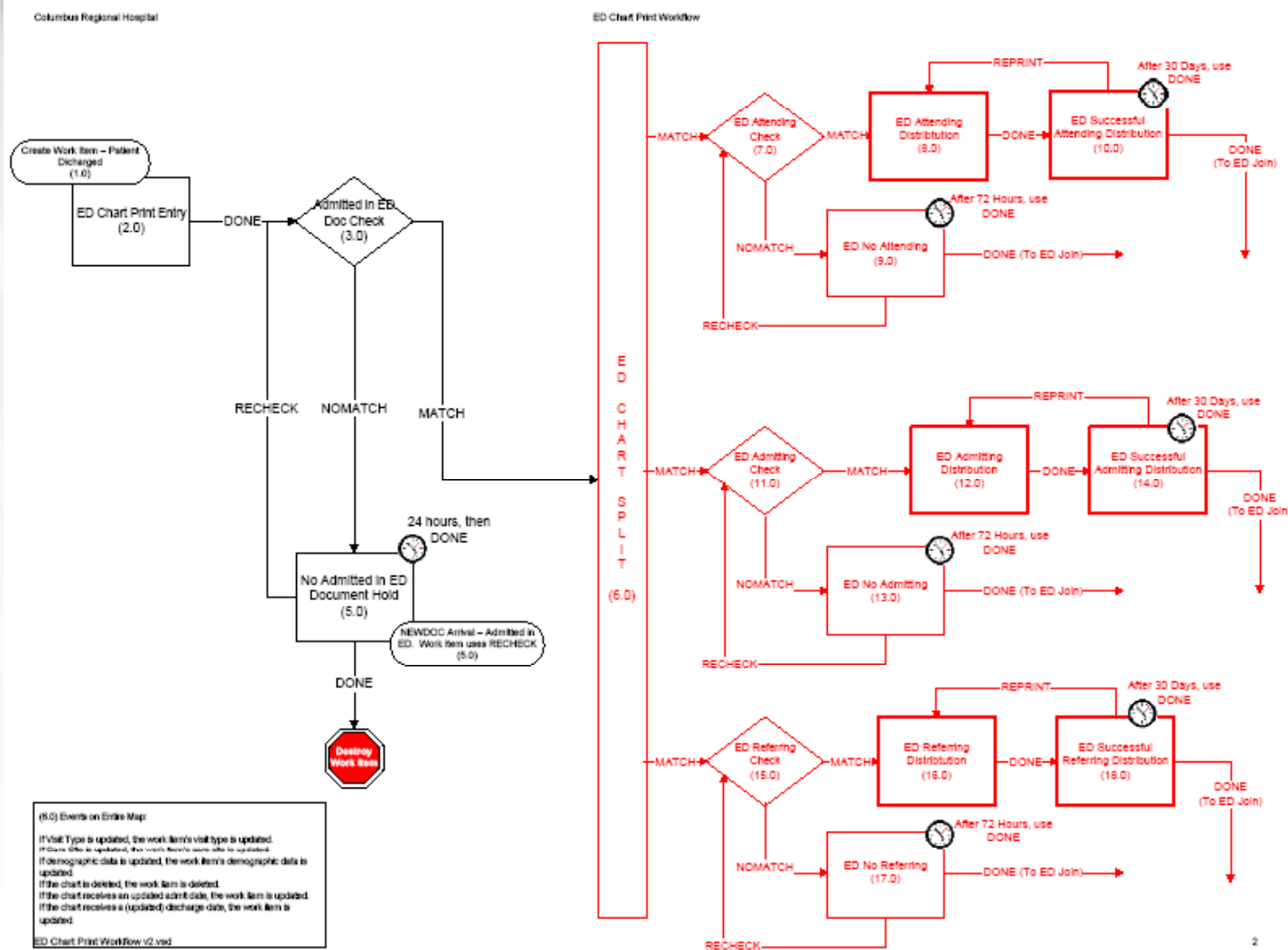
## Document Imaging Resource Matrix – page 3

			Plan	Hdwr	Design										P&P				
			Build											Train					
			TEST - includes integration														Live Plan	LIVE1	LIVE2
Dep	Role	Name	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05		
		Total Physicians																	
PHY		12			0.025	0.025	0.025	0.025	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1		
PHY		12 times amount	0	0	0.3	0.3	0.3	0.3	0.6	0.6	0.6	1.2	1.2	1.2	1.2	1.2	1.2		
PHY	Support Team Leader		0	0	0.025	0.025	0.025	0.025	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
PHY	Support Team		0	0	0.025	0.025	0.025	0.025	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
			<b>0.0</b>	<b>0.0</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>		
ANC	ED		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Nursing		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Clinical Quality		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Nursing (CNS)		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Pharmacy		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	OPS, PAT		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Home Services		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Cancer Center		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
ANC	Radiology		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
		<b>ANC TOTAL</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>		
		<b>GRAND TOTAL</b>	<b>5.5</b>	<b>6.4</b>	<b>5.9</b>	<b>5.9</b>	<b>5.9</b>	<b>11.5</b>	<b>12.2</b>	<b>12.5</b>	<b>12.9</b>	<b>15.3</b>	<b>22.2</b>	<b>22.2</b>	<b>21.8</b>	<b>31.3</b>	<b>63.3</b>		

# Implementation – Technical Diagram



# Implementation – Design (ED Chart Workflow: Page 1 of 3)



## Implementation – Testing Lifecycle

- ❑ Application Testing June 2005
- ❑ Unit Testing July 2005
- ❑ Integration Testing July/August 2005
  
- ❑ System Freeze 1<sup>st</sup> week September 2005
  
- ❑ Load Testing September 2005
- ❑ System Failover Testing Sept/Oct/Nov 2005
- ❑ Parallel Testing October/November 2005

# Implementation – Go-Live Plan

## Table of Contents

Chapter 1	<a href="#">Go Live Plan</a>
Chapter 2	<a href="#">CRH Personnel Support Plan</a>
Chapter 3	<a href="#">Vendor Personnel Support Plan</a>
Chapter 4	<a href="#">Issue Reporting Plan</a>
Chapter 7	<a href="#">Project Team Shift Transition</a>
Chapter 8	<a href="#">Location of Project Headquarters</a>
Chapter 9	<a href="#">Break Room</a>
Chapter 10	<a href="#">Exhibit A – IS Master Phone List</a>
Chapter 12	<a href="#">Exhibit C – CRH Super User Support Personnel</a>
Chapter 13	<a href="#">Exhibit D – CRH Super User Roles &amp; Responsibilities</a>
Chapter 14	<a href="#">Exhibit E – Project Personnel Go-Live Support Schedule</a>
Chapter 15	<a href="#">Exhibit F – CRH Project Vacations</a>
Chapter 16	<a href="#">Exhibit G – BLANK</a>
Chapter 19	<a href="#">Exhibit J – FAQ's for Go-Live</a>
Chapter 20	<a href="#">Exhibit K – Equipment Support Matrix</a>
Chapter 21	<a href="#">Exhibit L – Important CRH Information</a>
Chapter 22	<a href="#">Exhibit M Additional Information</a>

520 Lines





**Implementation  
Closure Report  
(10 Pages)**

**Revised Scope – 13**

**Project Benefits:  
HI – 18  
PFS – 13  
Registration - 11**

## Columbus Regional Hospital Project Closure Report

<b>Project Name:</b> Chartmaxx (Document Imaging)		<b>Project #:</b> 70085 (2004-188-9304)
<b>Project Leader:</b> Doug Sabotin / Michelle Klein		
<b>Project Sponsors:</b> Tim Tarnowski / Marlene Weatherwax		
<b>Status Report Date:</b> January 2006		
<b>Planned Go-Live Date:</b> 10/18/05, 11/15/05		<b>Actual Go-Live Date:</b> 10/18/05, 11/15/05
<b>Budget:</b> \$\$\$\$\$	<b>Actual:</b> \$\$\$\$\$ <i>(as of 05/09/06)</i>	<b>Variance:</b> \$\$\$\$\$ carried over to future rollouts *Project may stay open for future peripheral purchases for future phases (Peripherals, Interfaces, Workflow)
<b>Closed Date:</b> 02/15/06		

### Original Statement of Scope

To implement a Document Imaging and Management (DIM) system that will drive towards the following IS Strategies:

<u>Strategy (What)</u> <u>(Why)</u>	<u>Balanced Scorecard Targets</u> (Quality, Satisfaction, Financial, G&I)
1. Electronic Medical Record (IP/OP - see next page)	(Quality, Satisfaction, Financial, G&I)
2. Physician Electronic Signature (Chart Completion)	(Satisfaction, Financial, G&I)
3. Increase access to information	(Quality, Satisfaction, G&I)
4. Multiple user access to information	(Quality, Satisfaction, G&I)
5. Potentially serve all departments at CRH	(Quality, Satisfaction, Financial, G&I)

The project implementation will be a phased approach as follows:

Phase 1:

- Registration all areas
- Business Office
- Health Information



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## Lean & IT Examples (2006 – present)

- Lean w/ I.T. Examples

- Document Scanning/Coding:

Health Information & Lab Requisitions

- IT w/ Lean Examples

- Financial Counseling:

Registration & PFS

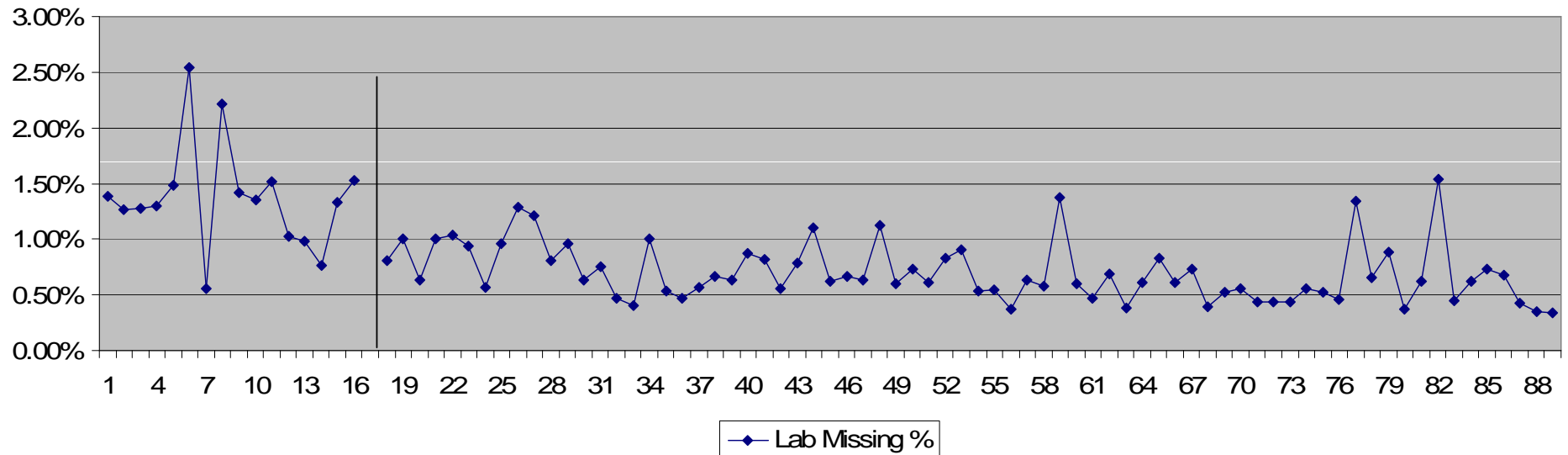
- Dictation/Transcription:

Health Information & Radiology



## Lean w/ I.T. Example – Health Information & Lab

ChartMaxx Reconciliation: Lab Requisition Missing Rate  
Year: 2006



“Control”:

72 total cycles

Met Goal:

45 cycles

Met “Stretch Goal”:

20 cycles

“Met” or “Stretch” achieved 90% of the time



# I.T. w/ Lean Example – Health Information During Design Phase (11-AA-00)

Include Value Added (VA) with new system functionality			Test		Policy & Procedure		Process Variation		Education Needed
FA#		Areas of Focus	Application		Revise or Need	How it's used - MT	How it's used - Provider		
			How it's built						
1	3	Canned Reports (narrative, body)	Y		Y	Y	Y	Y	
2	3	Template	Y		Y	Y	Y	Y	
3	3	Work Type (tokens, layout, header, footer)	Y		Y	Y	Y	Y	
4	3	Shortcuts	Y		Y	Y	N	Y	
5	3	Expanders (anything under 200 characters w/out a carriage return)	Y		Y	Y	N	Y	
6	2	Pool Scripts	Y		Y	Y	N	Y	
7	3	Correct ADT information - selecting the correct visit -	Y		Y	Y	N	Y	
8	1	Provider Requirements for Dictated Report (I.e. Template at beginning, Account Number, MRN, DOB, Date of Service, CC) - Decided to have them dictatet the Account Number	Y		Y	N	Y	Y	
9	1, 3	Known CC (including not people) If testing this is done.	Y		Y	Y	Y	Y	
10	1, 3	Unknown CC - If testing this is done.	Y		Y	Y	Y	Y	
11	2, 3	Back end speech - EXSpeech	Y		Y	Y	N	Y	
12	1, 4	Front end speech - EWS-Speech Recognition	Y		Y	N	Y	Y	
13	3	Demographic Screen (TES, VIS, VES, ????)	Y		Y	Y	N	Y	
14		HI - Not applicable to the above listed items.							

- Completed
- Incomplete
- Didn't Have to Do
- Future



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# Use of Fulcrum, SIM, and Lean in Non-Clinical Project Management

- CRH Re-Opening 2008



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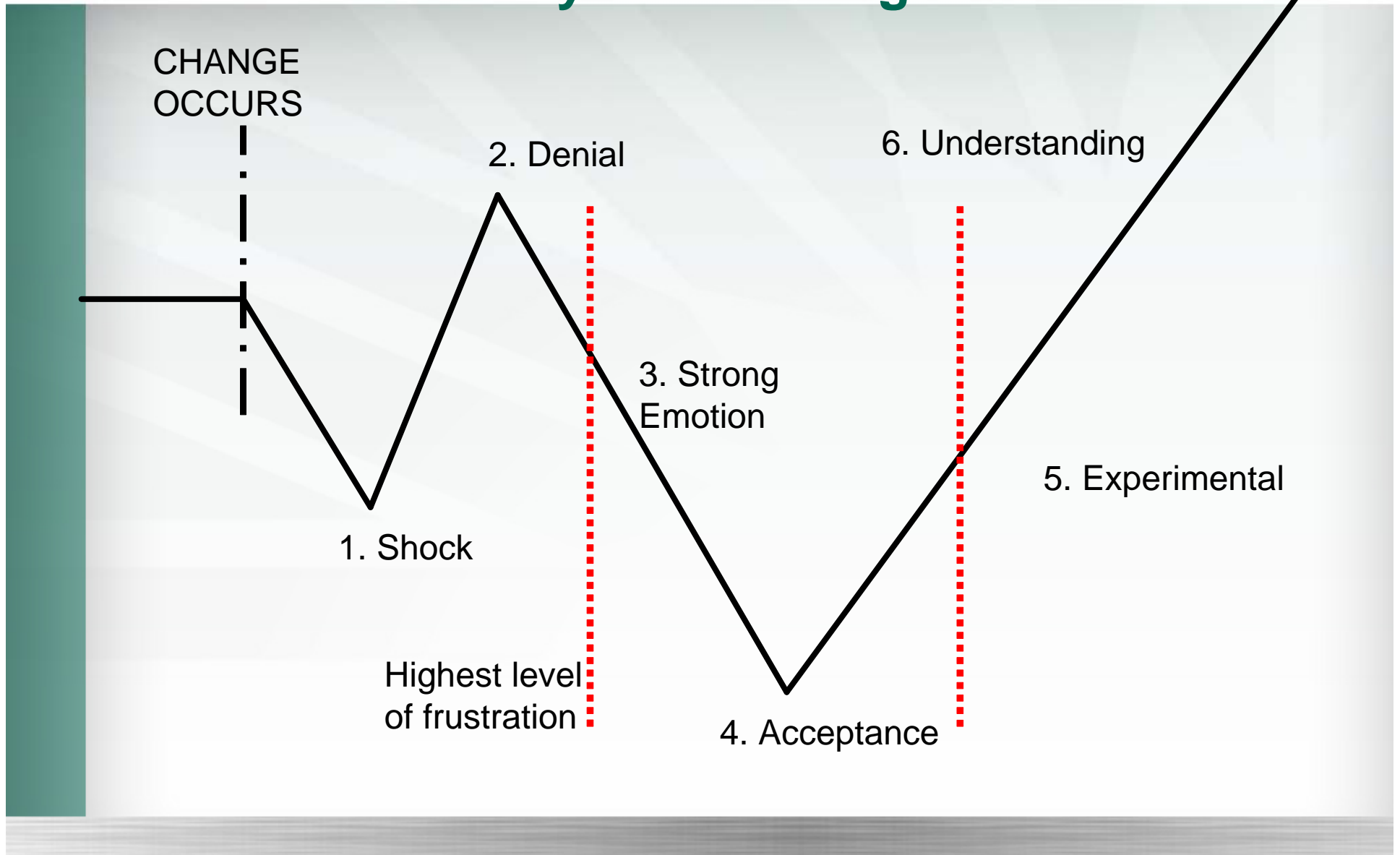
## Agenda item #3 – 15 minutes

- Successes
- Key Takeaways



# Cycle of Change

7. Integration





# Successes & Key Takeaways

- Key Takeaways
  - Trust & Communication
  - Clear Vision/Purpose = Passion, Creativity, Energy (SCOPE)
  - If it looks like chocolate (Nancy's example)
  - Be patient, curious, flexible
  - Habits are hard to break
  - VOC is critical (Customer Requirements)
  - Shared accountability
  - Millimeters not miles (look down, look ahead)
  - Celebrate what's right!\*
  - Believing is seeing
  - The Sound of Silence





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# Five Team Dysfunctions

- 1.) Trust
- 2.) Conflict - (Constructive)
- 3.) Commitment
- 4.) Accountability
- 5.) Results



\*\*\*Source: The Five Dysfunctions of a Team, Patrick Lencioni (2002)



# Successes & Key Takeaways

- Leadership Key Takeaways
  - Be a Storyteller
  - Resisting change can be good
  - Breakdowns in leadership/process = unmet expectations
  - Expect failure
  - Push through the pain
  - Our response to fear = fight, flight, freeze
  - Building trusts starts with empathy
  - Responsibility of Leader
    - If they don't know, teach them
    - If they don't understand, help them
    - If they don't care, invite them
    - If they refuse, replace them
  - Communication (Assessment, Assertion, Declaration, Request, Promise)
  - Accountability, starts with you (The Leader)



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Thank You for Your Time!!  
Questions?