

Disaster Recovery:

Perform an Effective Business Impact Assessment

Himss[®]

NORTH CAROLINA *Chapter*

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SECTION 1: INTRODUCTIONS & BACKGROUND

UNC Healthcare System

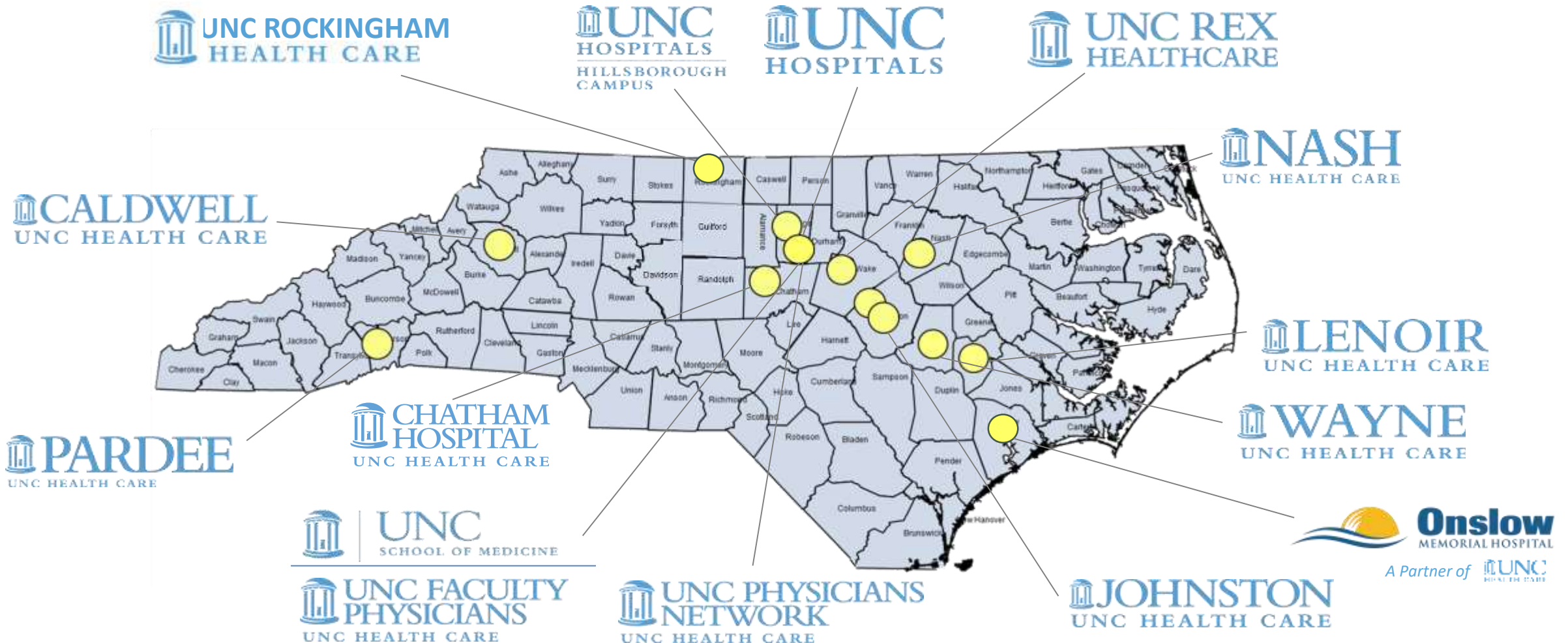


Integrated, not-for-profit health care system, owned by the State of North Carolina and based in Chapel Hill.

Promotes the health and well-being of North Carolinians through:

- Comprehensive patient care
- Physician education
- Research excellence

UNCHCS Geography



The Situation

- Internal Audit requested an updated Disaster Recovery Framework and Business Impact Analysis (BIA).
- Incomplete application catalog with minimal tiering
- No input from operations on current tiering
- Complete tiering information needed for budget planning

The Partnership

Why UNCHS engaged Himformatics:

- Significant legwork to obtain operational input
- Objective 3rd party for operational meetings beneficial for unbiased feedback
- Himformatics has experience in disaster recovery, survey processes, and data analysis

UNCHS	Himformatics
<ul style="list-style-type: none">• Brad Wright: IT Director of IT Service Management• Disaster Recovery Manager• DR Coordinator	<ul style="list-style-type: none">• Tammy Brown, Project Manager• Team included a financial analyst and a business continuity subject matter expert

Himformatics

- Founded January 2002 and privately held.
- ~70 Associates plus subcontractors.
- Academic medical centers, children's hospitals, large IDNs, and community hospitals.

Focus is on strategy and planning, helping our clients tackle complex healthcare problems through the use of information technology.

Core Competencies

- Strategic Advisory Services
- Assessments
- Program and Project Management
- Workflow and Operational Improvement
- Implementation Planning and Design
- Informatics
- Vendor Selections, Contract Review & Negotiations



SECTION 2: APPROACH

The Approach

- Two phases designed to ensure operational stakeholder feedback drives recommendations.
- Multiple “waves” for ~400 applications during Phase 2.

PHASE 1 Planning

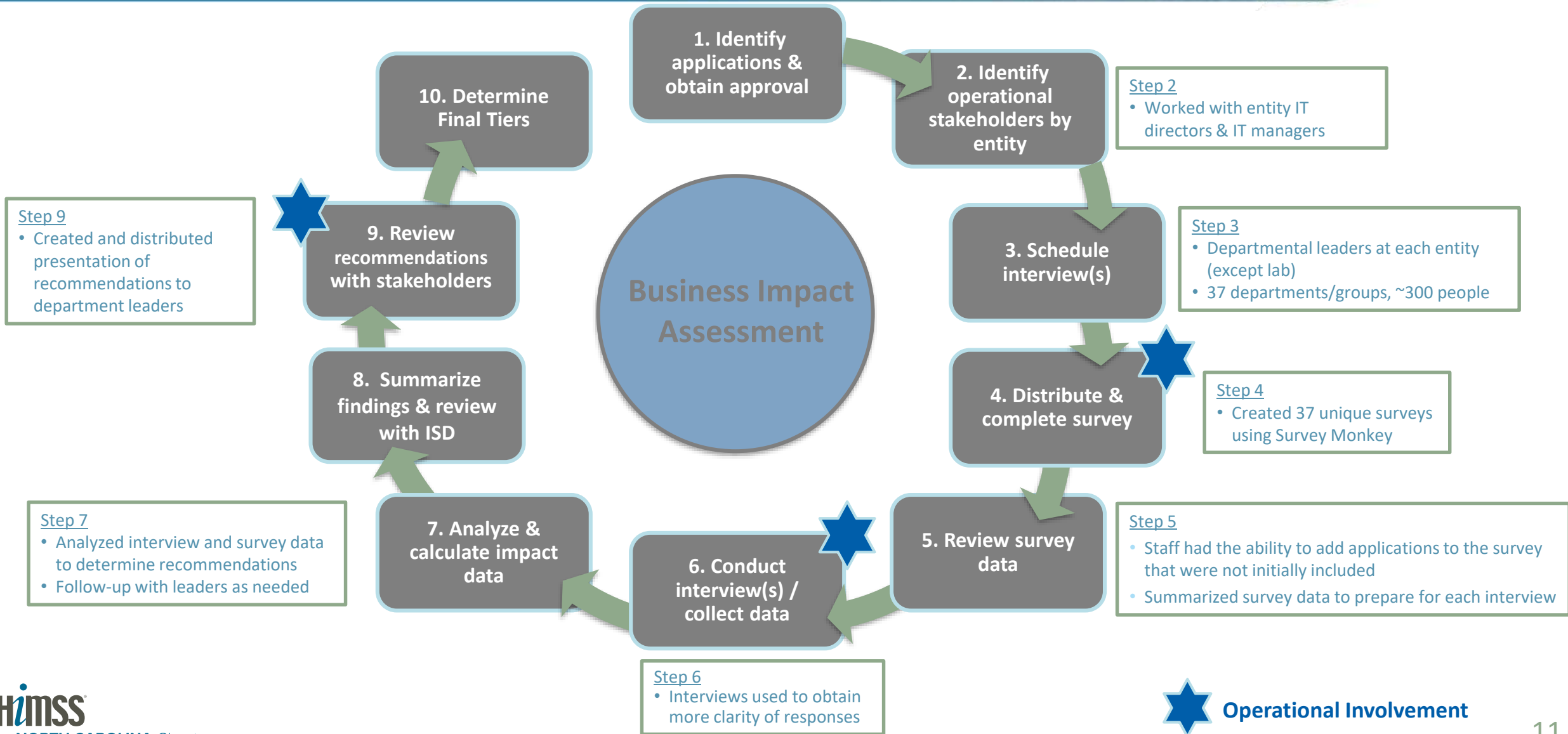


- A. Review Existing BIA Framework and Data Elements
- B. Categorize Applications & Determine Interview Scope
- C. Finalize Required Impact Measures

PHASE 2 BIA Development *(iterative by Wave)*

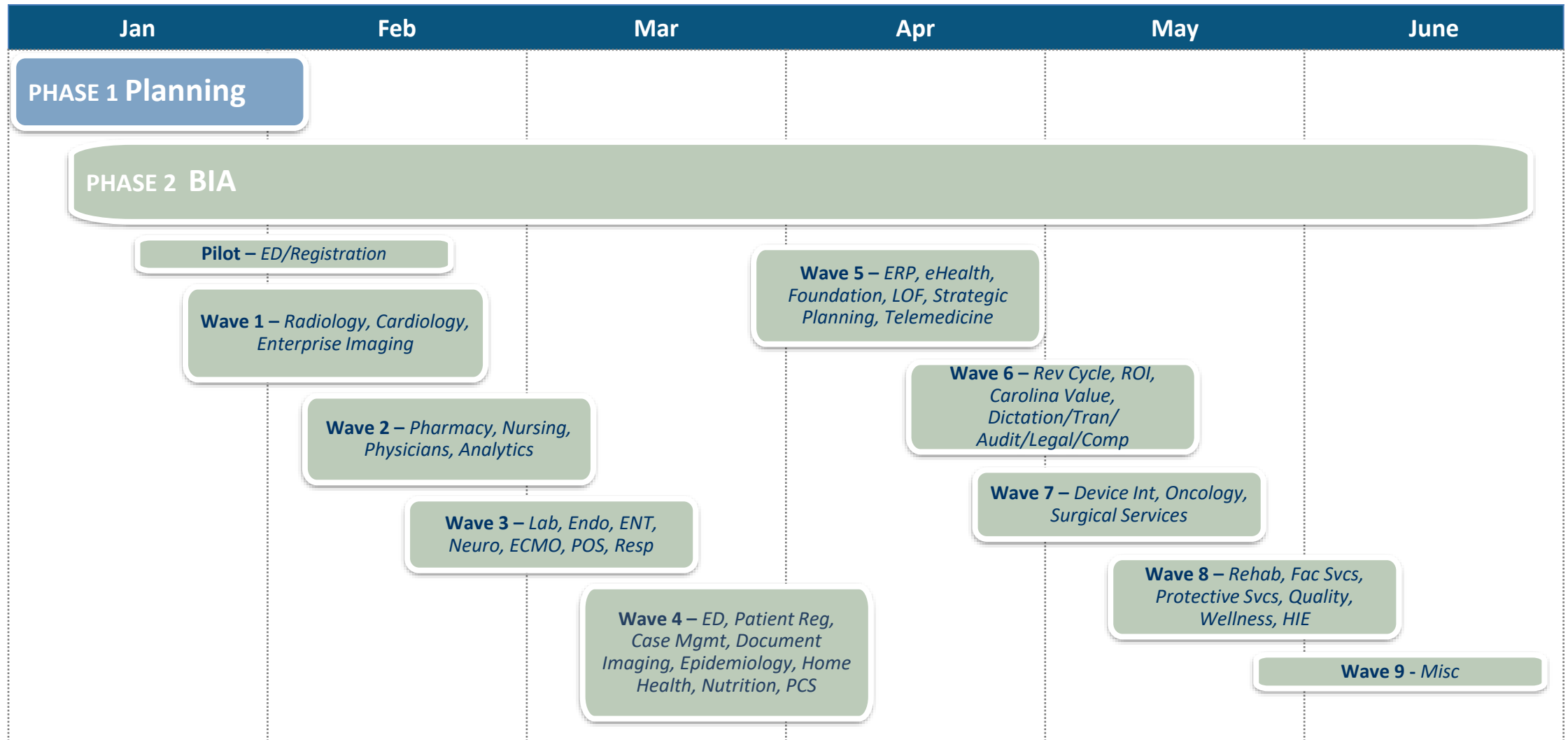
- A. Perform Stakeholder Interviews & Document Results
- B. Finalize BIA with Executive Recommendations

Phase 2 Wave Process By Department



 **Operational Involvement**

Waves Timeline



Survey Content

- Surveyed each department about which timeframe the following impacts occur for each application:
 - Patient Care
 - Revenue Cycle
 - Productivity Loss
 - Regulatory
- Asked leaders to indicate the maximum tolerable downtime for each application:
 - ≤ 4 hours
 - 4-24 hours
 - 24-72 hours
 - ≥ 72 hours

Example Survey Results

		Impacts			
Drug Dispensing Systems	Max Tolerable Downtime	Patient Care	Revenue Cycle	Productivity Loss	Regulatory
N/A	N/A	0%	0%	0%	0%
<= 4 hours	56%	100%	11%	67%	71%
4 to 24 hours	44%	0%	45%	33%	28%
24 to 72 hours	0%	0%	33%	0%	0%
>72 hours	0%	0%	11%	0%	0%
Total Responses	9	9	9	9	7

Tier Prioritization Factors

Tier Prioritization Factors	Notes
Maximum Tolerable Downtime	Interview discussions identified existing downtime procedures, if any, that would make downtime more tolerable
Impacts <ul style="list-style-type: none">• Patient Care• Revenue Cycle• Productivity• Regulatory	Considered patient care impact most important on survey responses
IT Application Manager Feedback	Reviewed results to validate and refine
Operational Manager Feedback	Reviewed recommendations to validate and refine



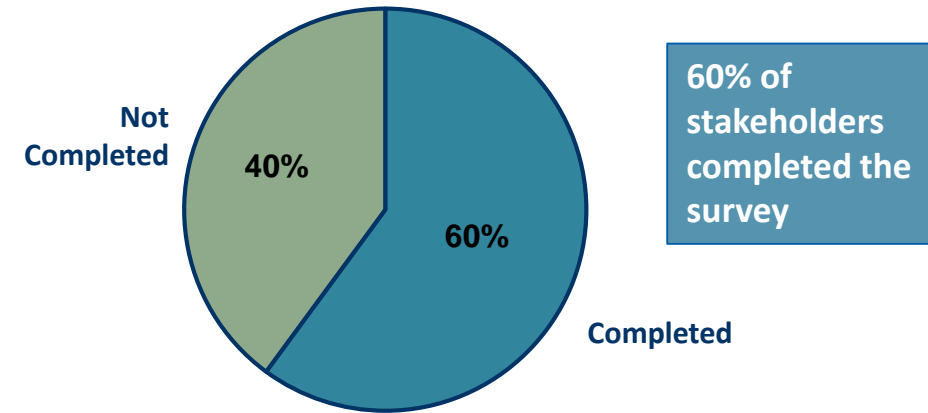
SECTION 3: KEY FINDINGS

Survey and Interview Summary

Survey Overview

Demographics	Count	Percentage
Invitations Unopened	112	26%
Invitations Opened	324	74%
Total Surveys Sent	438	100%
Survey Completed	262	60%
Survey Not Completed	174	40%

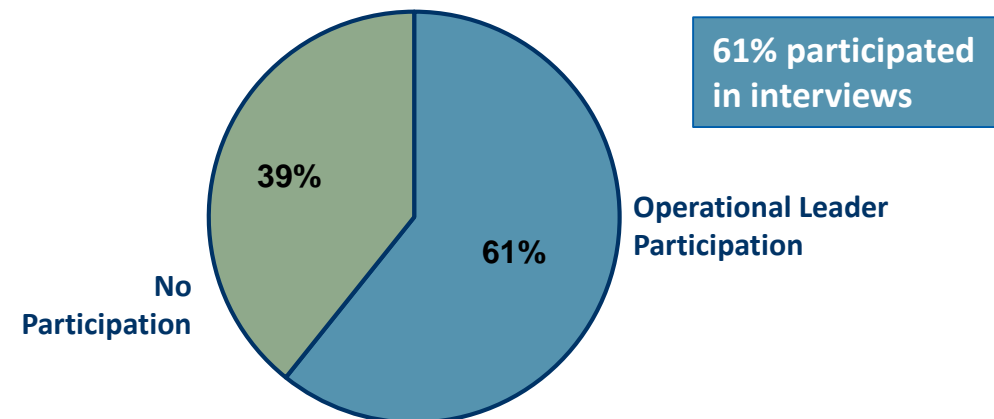
Survey Response



Interview Overview

Demographics	Count	Percentage
Operational Leader Participation	294	61%
No Participation	190	39%

Interview Participation



Key Findings

Some applications are used by multiple departments:

- Himformatics considered data from all areas to make recommendations.
- Recommendations made at the enterprise level for all entities.

Biomed Applications	ISD	Survey	Recommendation
Nursing	NR	2	2
Biomed	NR	2	2
Facilities	NR	4	2

Operational Summaries:

- Provided recommendations to each department/group.
- One department disagreed with some of recommendations.
- Follow-up meetings to discuss.

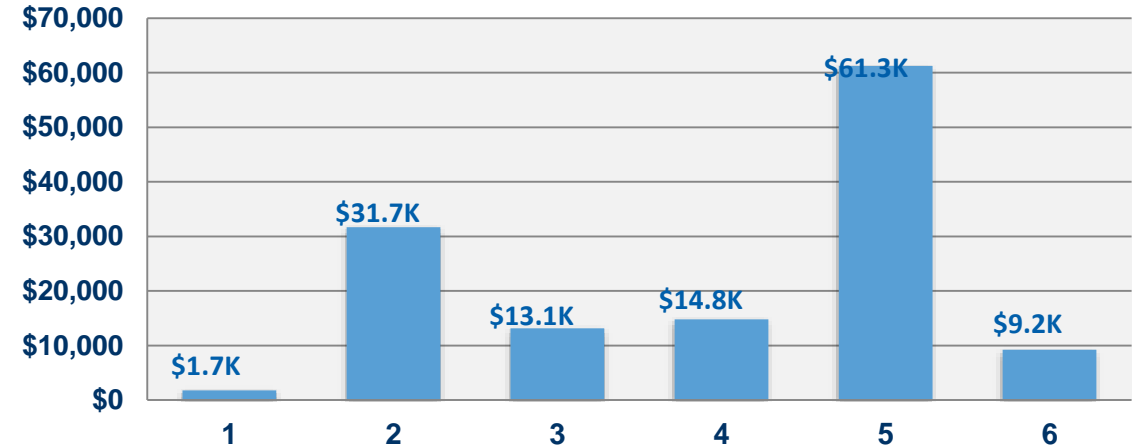
Example Application Dashboard

PACS		ISD Tier	Survey Tier	Recommended	
		1	1 / 2	1	
Interview Details: <ul style="list-style-type: none"> No radiology interpretations will go out 4-24 hours not reasonable New downtime system not implemented yet Historically used a test system for backup, have not had to use in the past Has never had a downtime more than four hours 					
		Impacts			
Number of Facilities	Max Tolerable Downtime	Patient Care	Revenue Cycle	Productivity Loss	Regulatory Impacts
4	<=4 hours 4-24 hours	<=4 hours	<=4 hours 4-24 hours	<=4 hours	N/A
Considerations: <ul style="list-style-type: none"> Used at more than three facilities Delays reads which can cause a delay in patient care and productivity loss within four hours 					

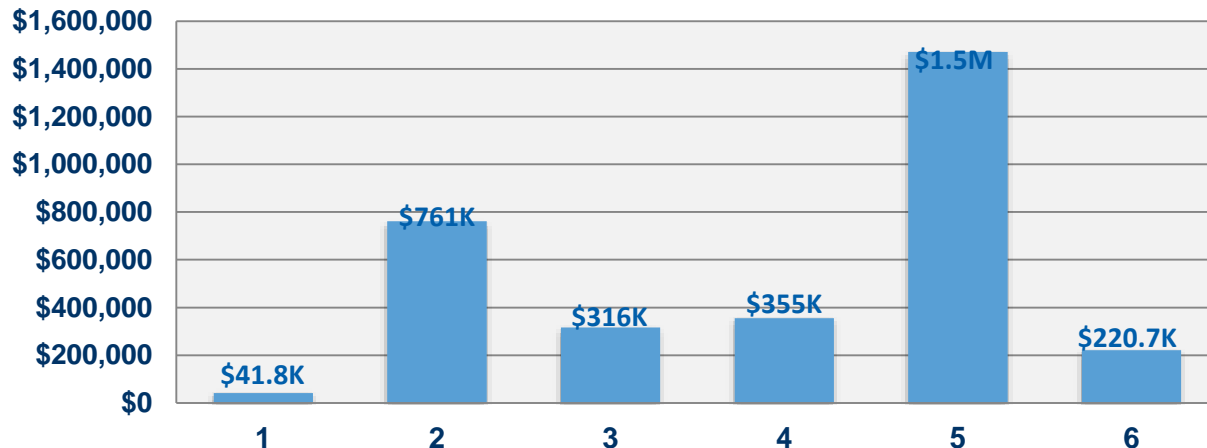
Example Department Financial Impact

Hospital	1	2	3	4	5	6
Daily Revenue	\$40,000	\$734,000	\$300,000	\$350,000	\$1,403,051	\$212,800
FTEs	12	132	100	35	368	52
Total FTE Salary	\$588,000	\$11,230,164	\$5,000,000	\$1,750,000	\$26,326,720	\$3,452,800
Hourly Revenue Impact	\$1,667	\$30,583	\$12,500	\$14,583	\$58,460	\$8,867
Hourly Resource Cost Impact	\$67	\$1,281	\$570	\$200	\$3,004	\$394

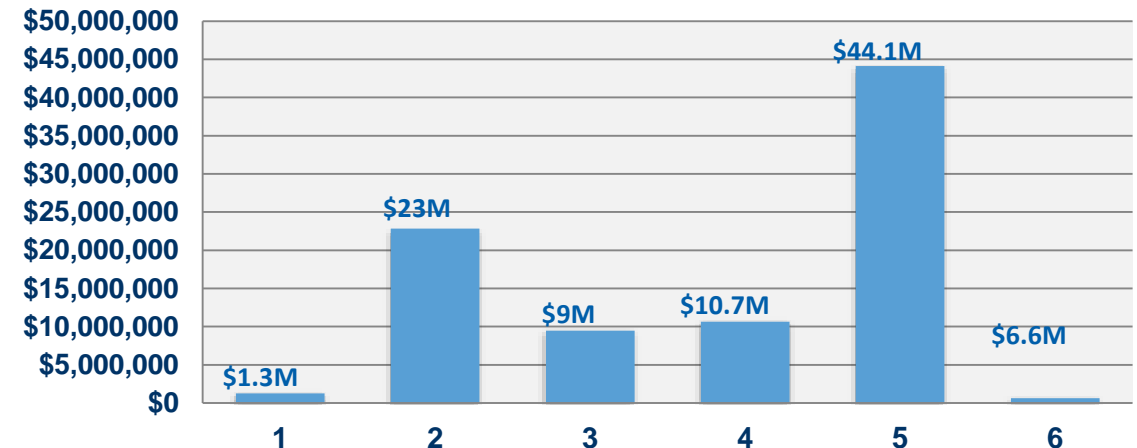
Hourly Downtime Cost



Daily Downtime Cost



Monthly Downtime Cost



- Revenue and Average Salary figures provided by department.
- Average Salary represents fully burdened costs as provided by department.

Example Interview Comments

Patient Safety

Staffing or Workflow





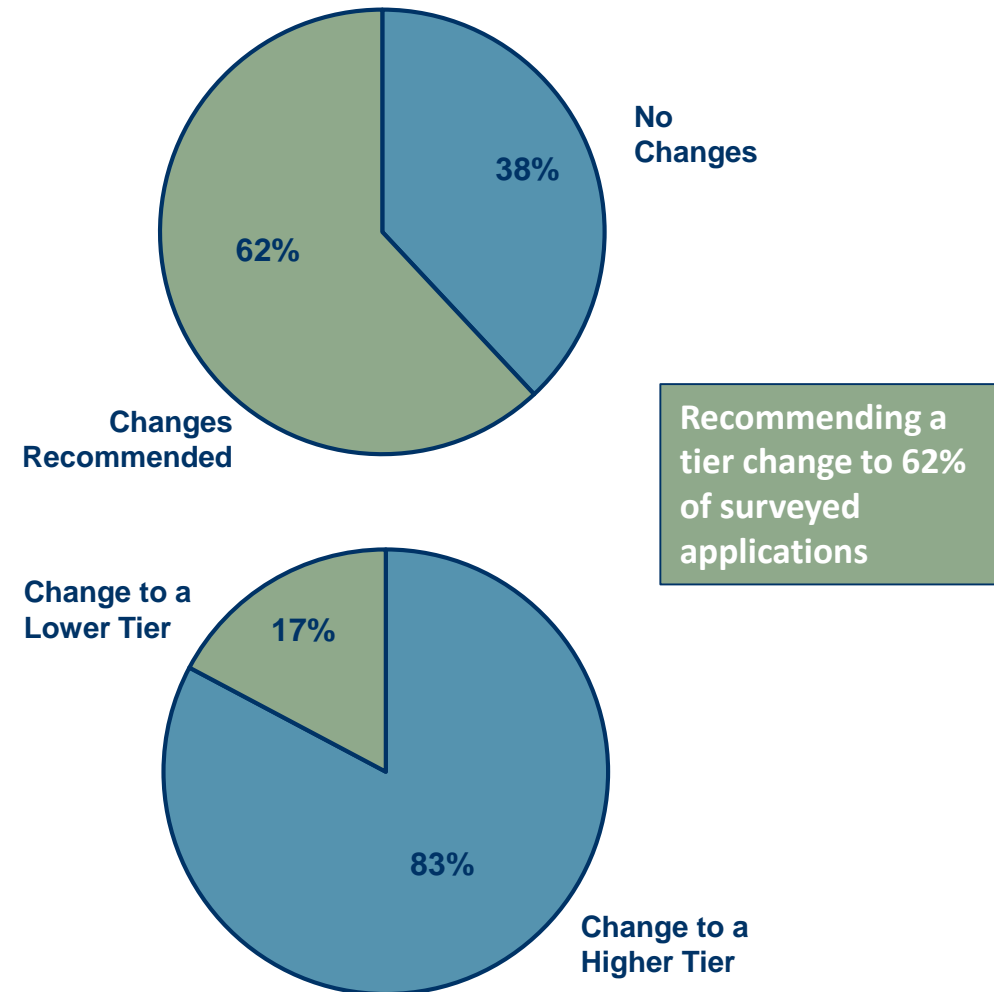
SECTION 4: RESULTS & INITIAL RECOMMENDATIONS

Application Summary

Applications Overview

Application Type	Count	Percentage
Enterprise (≥ 5 facilities)	66	40%
Non-Enterprise (≤ 4 facilities)	236	60%
Initial Applications listed on Survey	305	
Applications Added to Survey by Department	93	
Applications on Survey Plus Those Added by Department	398	

Tier Recommendations



Results & Tier Recommendations

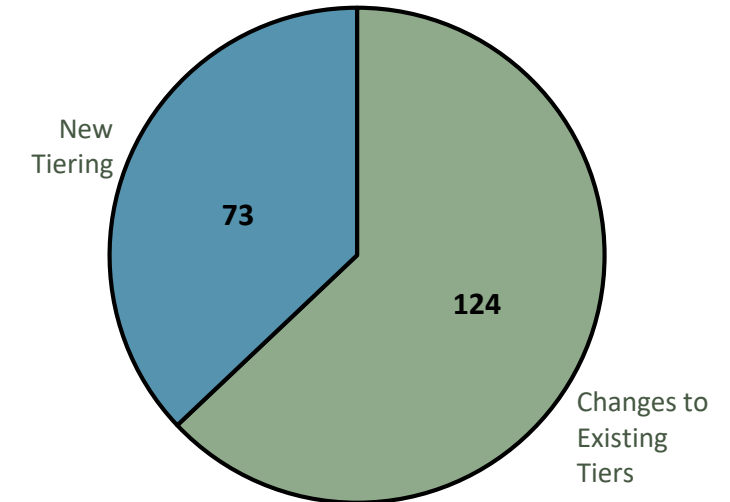
Initially Non Rated Applications

Tier Recommendation	#	%
Tier 1	14	18.2%
Tier 2	27	35.1%
Tier 3	21	27.3%
Tier 4	10	13.0%
?	5	6.5%
Total	77	100%

Recommended Tier 1 Applications and Prior Tier

ISD Initial Tier	#	%
Tier 1	14	20.9%
Tier 2	26	38.8%
Tier 3	8	11.9%
Tier 4	5	7.5%
NR	14	20.9%
Total	67	100%

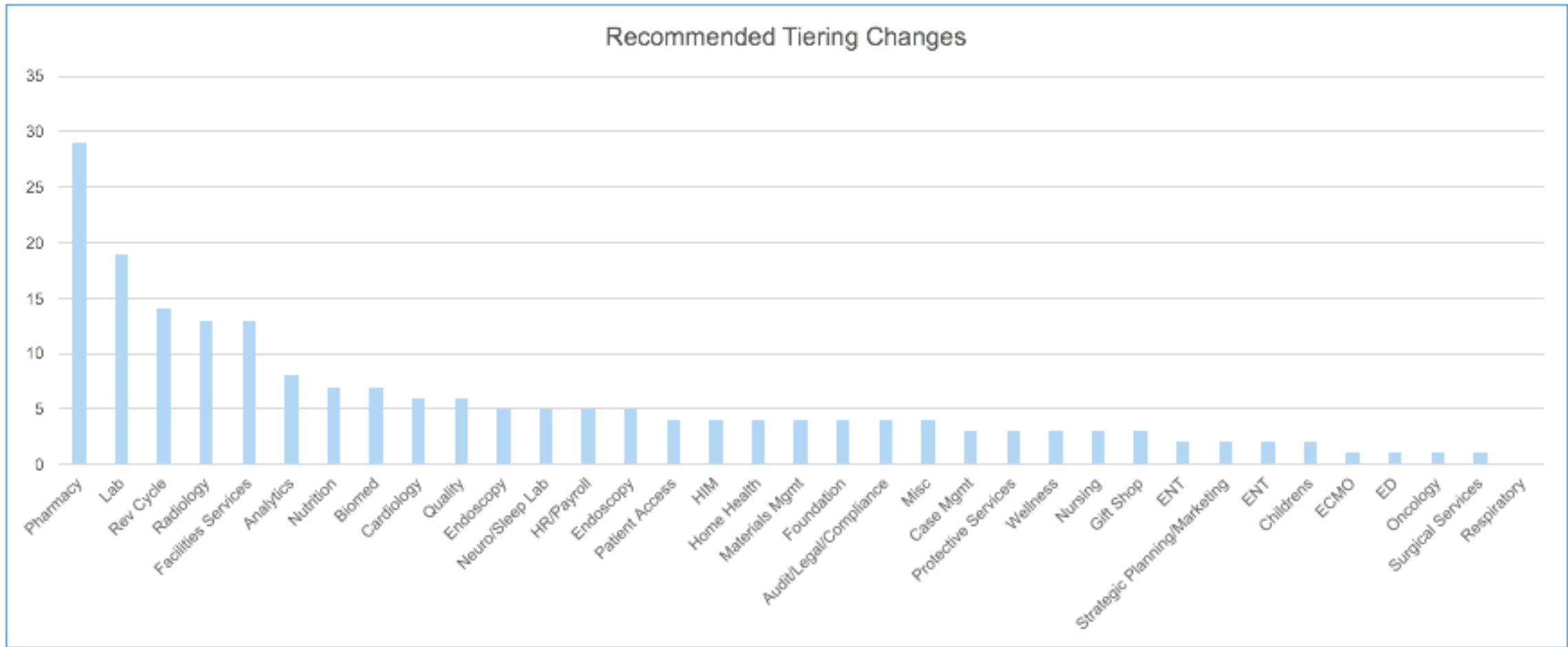
Changes vs. New Tiering



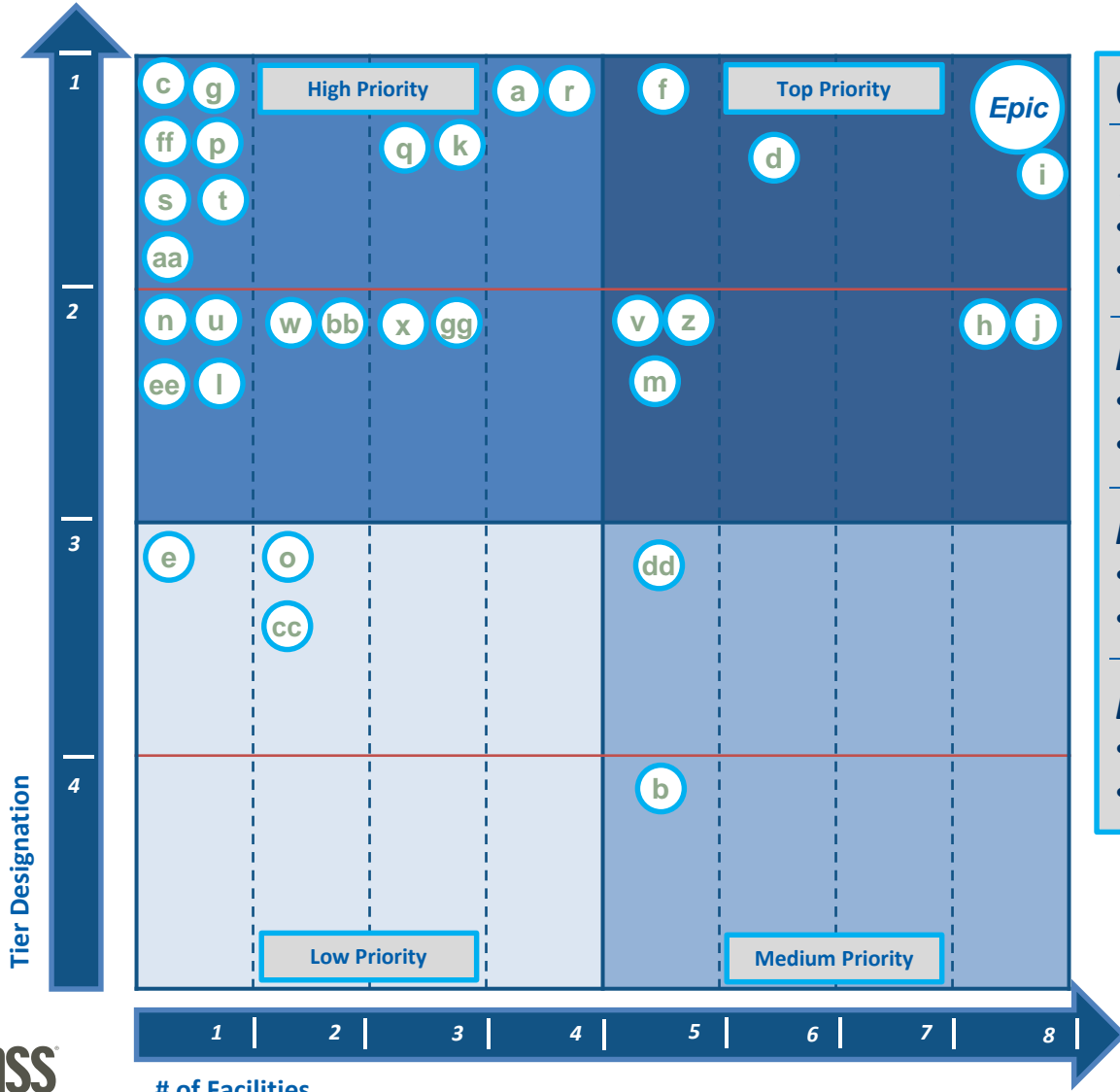
- Of the 77 Not-Rated Applications, 53% are recommended at Tiers 1 and 2.

Number of Changes by Department/Group

Recommended Tiering Changes



Applications Quadrant - Example



- ### Quadrants →
- Top Priority**
 - ≥ 5 facilities
 - Tiers 1-2
 - High Priority**
 - ≤ 4 facilities
 - Tiers 1-2
 - Medium Priority**
 - ≥ 5 facilities
 - Tiers 3-4
 - Low Priority**
 - ≤ 4 facilities
 - Tiers 3-4

- ### 33 Applications →
- | | |
|----------------------|------------------------|
| a) Drug Dispensing 1 | r) Retail System 3 |
| b) Drug Dispensing 2 | s) Retail System 4 |
| c) Drug Dispensing 3 | t) Retail System 5 |
| d) Drug Dispensing 4 | u) Retail System 6 |
| e) Drug Dispensing 5 | v) Retail System 7 |
| f) Drug Dispensing 6 | w) Retail System 8 |
| g) Drug Dispensing 7 | x) Retail System 9 |
| h) Drug Reference 1 | y) Retail System 10 |
| i) Drug Reference 2 | z) Retail System 11 |
| j) Drug Reference 3 | aa) Retail System 12 |
| k) Drug Reference 4 | bb) Specialty System 1 |
| l) Drug Reference 5 | cc) Specialty System 2 |
| m) Inventory Mgmt 1 | dd) Specialty System 3 |
| n) Inventory Mgmt 2 | ee) Specialty System 4 |
| o) Inventory Mgmt 3 | ff) Specialty System 5 |
| p) Retail System 1 | gg) Specialty System 6 |
| q) Retail System 2 | |



SECTION 5: FINAL RECOMMENDATIONS

Hardware Assessment

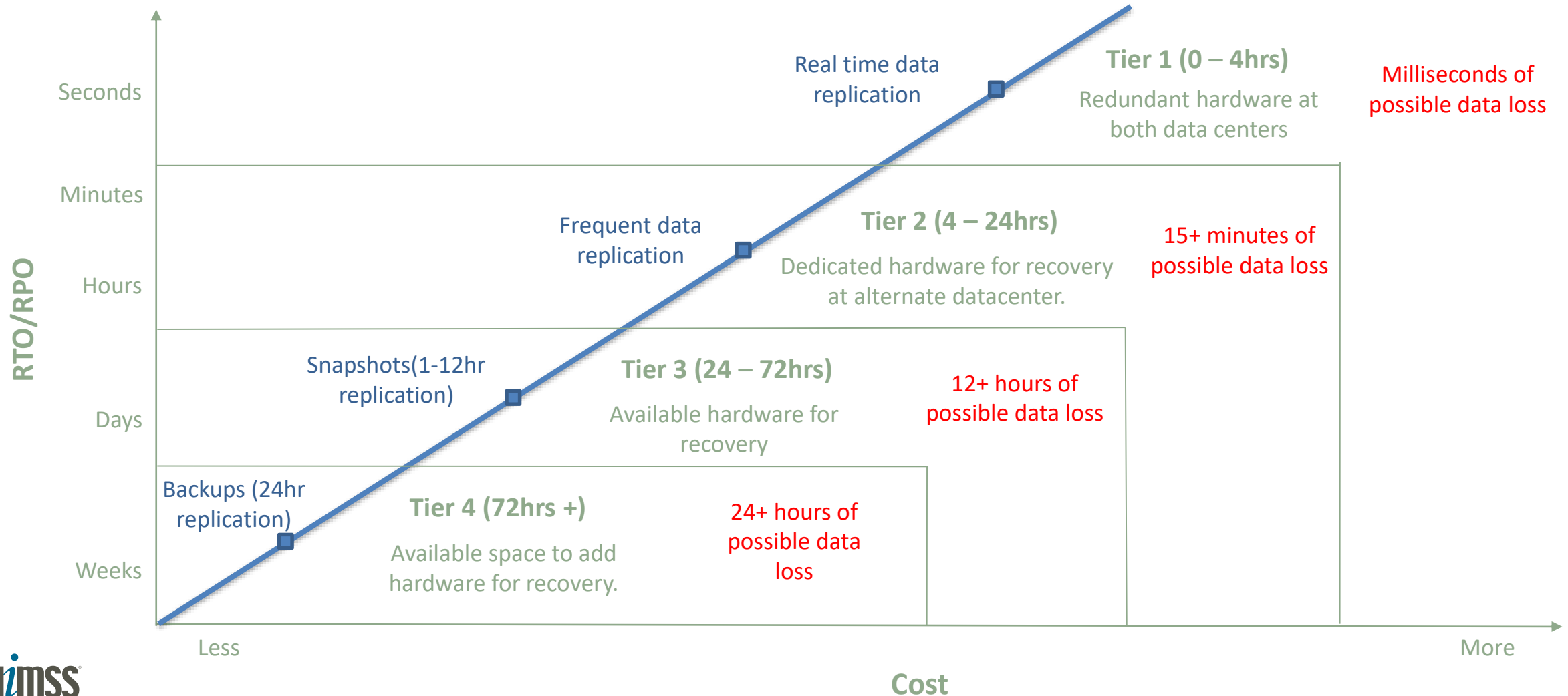
While BIA was being conducted:

- Servers were mapped to applications they supported
- Standards were finalized for tier requirements

Following BIA:

- Gap analysis was conducted based on tiering
- Focused on hardware only (Software HA out of scope)
- Assigned costs based on server and storage needs

Hardware Assessment



Reduce List of Tier 1 Applications

Of the 87 recommended Tier 1 applications, 46 largely departmental.

- Impact to the department was significant
- Overall hospital impact less significant
- Designated as “2+” in slides; they would be recovered first from that tier

41 applications presented with costs to Operational Governance group.

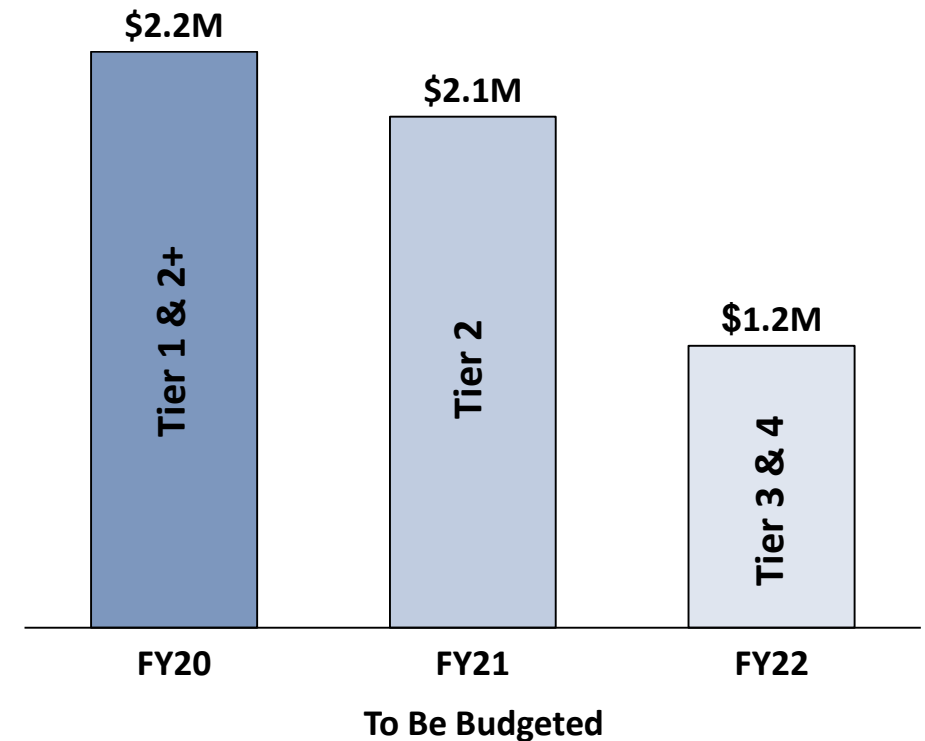
- Leaders chose to further refine the list
- Challenged departmental leaders offline
- Settled on 19 applications that were unilaterally approved

Final Cost Assessment

- 120 of 330 applications do not meet recovery objectives for defined tier.
- DR budgeting over the next three years is needed to provide appropriate hardware for systems recoverability.

Infrastructure Costs Required to Close the Disaster Recovery Gaps (n=120)

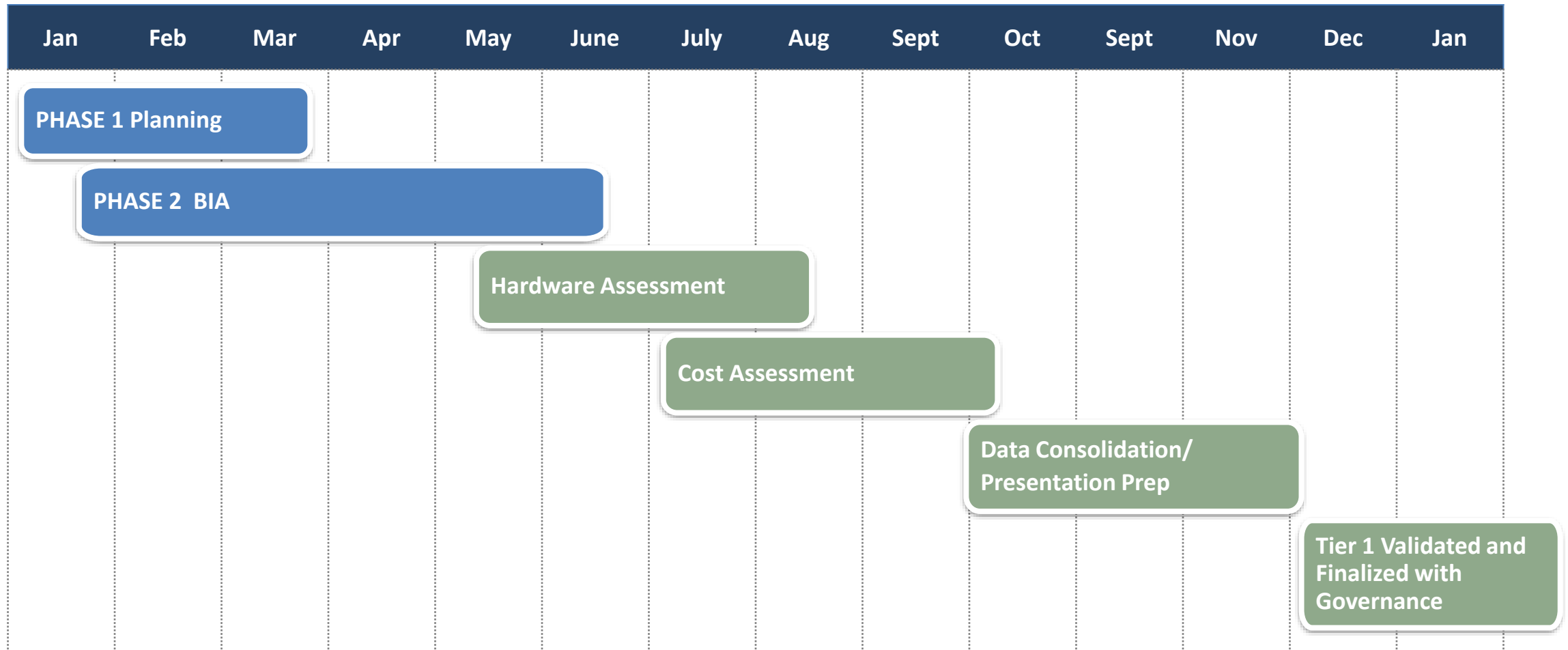
Tier	# Apps	Total Costs
1	19	\$1.9M
2+	14	\$0.3M
2	50	\$2.1M
3	26	\$1.0M
4	11	\$0.2M
Totals	120	<u>\$5.5M</u>



Final Tier 1 List

- UNCHC's Enterprise Electronic Health Record (EHR)
- Radiology PACS used for various imaging modalities (e.g., DR, CT, MRI, Mammo, U/S, etc.)
- UNC REX's instance of their radiology information system
- Cardiology PACS used for (e.g. Cath, EP, Stress, Echo, PVL, etc.)
- Integrated imaging viewer
- Enterprise drug dispensing system
- Middleware between lab instruments and Lab EHR
- Point of Care (POC) integration and data flow into Enterprise EHR
- Labor & Delivery monitoring solution
- Materials management & core financials
- HR/Financial/Purchasing payroll system
- Integration application for networked and standalone medical devices with Enterprise EHR
- Transmission of electronic prescriptions
- Management of glucometers and interfaces Point of Care results to LIS
- Endoscopy imaging and physician documentation
- Nurse call system

Overall Timeline



*Himformatics w/
UNC Assistance*

UNC



QUESTIONS?