



Building an Outpatient Imaging Center: A Case Study at Genesis HealthCare System, Part 1

By Jim Yanci

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Part one of a two-part series.

E X E C U T I V E

S U M M A R Y

- In the first of two parts, this article provides an outline of key steps in creating a freestanding diagnostic imaging center (Genesis HealthCare System located in Zanesville, OH) and provides details on a few of the significant processes. The following are highlighted in this article: Overview, market assessment, facility design, and equipment selection. Part 2 will feature operational process improvements.
- The length of the Genesis project extended to about 18 months due to the added services of urgent care and a community education and meeting facility. The project began in July 2005 and was completed in January 2006 (if the project was focused only on imaging, it could have been complete in about 8 to 10 months, see Figure 1 for a typical summary work task timeline). This multi-service outpatient center, The Genesis Healthplex on Maple, was created in an existing facility that was once a large grocery store.
- A significant goal that came out of the project was to create the perfect customer experience. The customer is defined as: Patients, patient families, referring physicians and their staff, radiologists, and employees. This was achieved by bringing the 3 entities of people (patient/family, staff, and physicians) working closely together by utilizing well identified processes and employing technology that the market demands. Only when these areas overlap and work together will the perfect customer experience be created. See Figure 2.

Genesis is a not-for-profit, community-based integrated healthcare facility with 705 licensed beds located in Zanesville, OH. The system was established in 1997 as an affiliation between Bethesda Care System and Good Samaritan Medical Center—2 healthcare organizations that have served the community for more than 100 years each.

Genesis wanted to improve their diagnostic imaging offering to enhance patient and physician satisfaction. Management realized it was time to enhance current operations by doing some form of construction or extensive renovation. It was also realized that equipment upgrades were needed. Options for new services consisted of constructing a new center somewhere off the hospital campus or doing extensive renovation on one of the hospital campuses. Either solution would improve access to imaging services, enable technology updates, and reduce the threat of competition in diagnostic imaging.

When Genesis realized it was time to improve radiology services, they decided to define exactly what improvements should be made. Administration first needed to understand what the market opportunity was for diagnostic imaging. Genesis decided to outsource the project management and hired a strategic management consulting company. They initially performed a

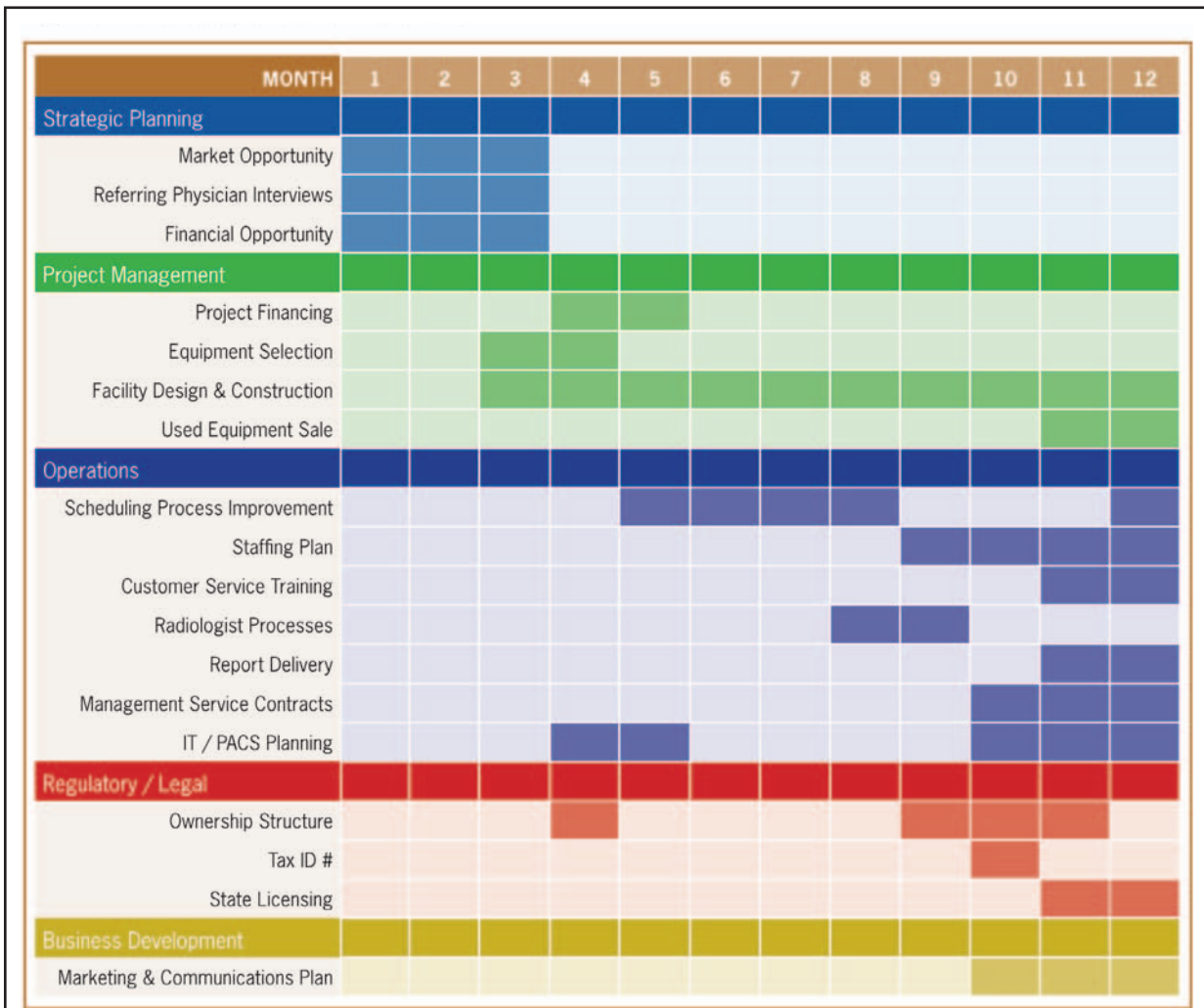


Figure 1. A typical summary work task timeline. (Courtesy of Charis Healthcare)

market assessment and laid the foundation of a business plan.

Market Assessment

The purpose of the market assessment was to answer 3 primary questions:

1. Is there an imaging market opportunity?
2. How do we know this opportunity exists?
3. What must be done to capture the opportunity?

To answer the questions, the following work tasks were conducted:

- Identify diagnostic imaging service areas
- Demographic analysis
- Competitive analysis
- Modality use rate analysis

- Conduct physician and physician office staff interviews
 - Conduct Genesis employee interviews
 - Financial opportunity analysis
- The Genesis market was defined as a 25 mile radius outside of the Genesis HealthCare System

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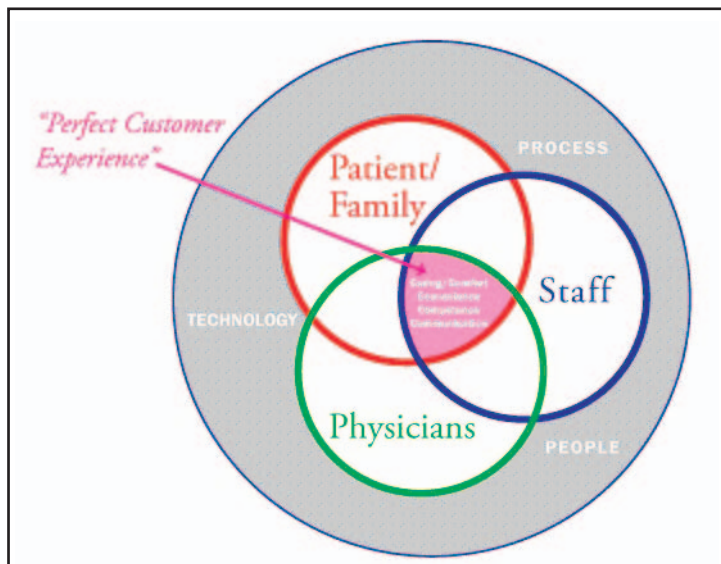


Figure 2. Only when *people* (patient/family, staff, and physicians) work closely together by utilizing well defined *processes* and employing *technology* that the market demands will the perfect customer experience be created. (Courtesy of Charis Healthcare)

Demographic analysis provided a preliminary understanding of the need for diagnostic imaging services in the Genesis market.

Demographic analysis provided a preliminary understanding of the need for diagnostic imaging services in the Genesis market. The demographic assessment evaluated the impact of population growth and age mix variables on demand for diagnostic imaging services.

The total population of the Genesis market area was estimated at 223,000 and expected to grow 2% over the next 5 years. As is common with national trends, however, the “Baby Boomer” population of 45-64 year olds will show an increase of 7% over the next 5 years. The Baby Boomer population currently makes up 25% of the Genesis market.¹

Competitive intelligence was obtained by modality and illustrated in a provider matrix as illustrated in Table 1. The matrix identified type of facility, vendor type of equipment, hours of operation, and estimated backlog. This information was utilized to create a SWOT (strengths, weaknesses, opportunities, threats) analysis by provider that would be used later in the project for equipment selection.

Market demand was calculated by modality to understand current market share and utilization by using a variety of benchmarks, databases, and Genesis data.

The physician office survey quantified opinions and attitudes toward current services being provided in diagnostic imaging among the physicians and physicians’ office personnel practicing in the Genesis service area. The ultimate goal was to identify opportunities for improvement. The sur-

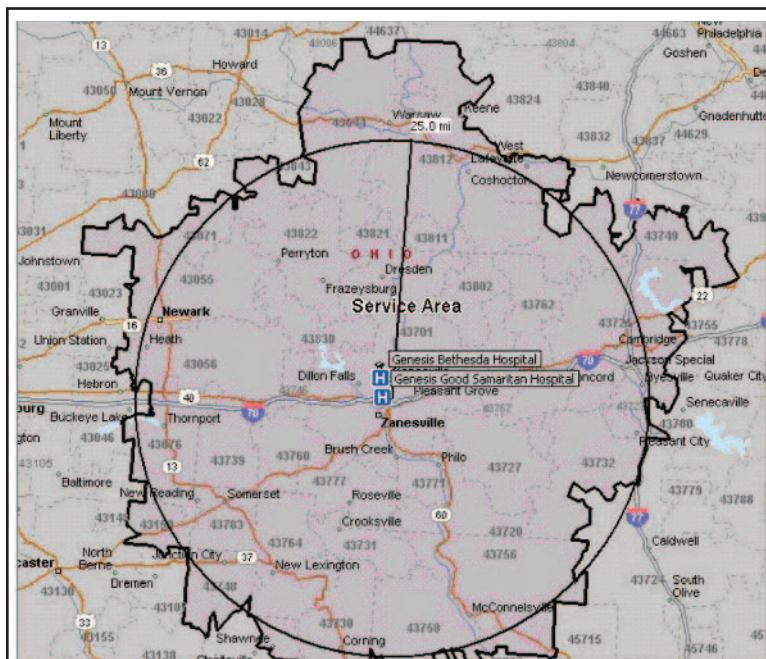


Figure 3. The Genesis market. (Courtesy of Charis Healthcare)

campuses (See Figure 3). This determination was supported by both a patient origin analysis and secondary service area opportunities based on competition.

Table 1. Provider Matrix Showing Competitive Intelligence (Courtesy of Charis Healthcare)

PROVIDER	MRI EQUIPMENT	HOURS OF OPERATION	BACKLOG
Provider 1	Philips 1.5t Philips 1.0t Philips .23t	5 days / week	3 - 7 days
Provider 2	Philips Intera 1.5t	5.5 days / week	1 week
Provider 3	GE 1.5t	5 days / week	5 days
Provider 4	GE 1.5t	6 days / week	2 days
Provider 5	GE 1.0t	5.5 days / week	2 weeks
Provider 6	Open MRI	5 days / week	none
Provider 7	Hitachi Airis II .3t	5 days / week	3 days
Provider 8	Hitachi Airis	1 day / week	none
Provider 9	GE Lunar .2t Extremity	5 days / week	none

veys were conducted with physicians and physician office staff, including nurses and schedulers. The survey consisted of 2 ranking sections. The first section measured the importance of 8 key service areas pertinent to the success of the referring physician and their office staff. The systematic ranking was on a scale from 1 to 5 (1 being not very important and 5 being very important). The second section of the survey captured the current satisfaction level specific to each key service area.

Competitive intelligence was obtained by modality and illustrated in a provider matrix... The matrix identified type of facility, vendor type of equipment, hours of operation, and estimated backlog.

A positive or negative satisfaction gap score was recorded for each service area to further quantify physician perceptions of the imaging services. See summary results in Table 2.

Genesis staff interviews were also conducted. Several probing, open-ended questions were asked to explore where any operational bottlenecks may exist and where the best opportunity for performance improvement existed. The following areas were identified in order of opportunity improvement:

1. Radiologist Support Services
2. Scheduling Process (Central Scheduling vs Direct Scheduling)
3. Equipment Availability
4. Customer Service

Business Opportunity

The overall recommendation taken from the market assessment was to create a centralized, multi-modality, outpatient imaging facility with a retail healthcare approach. The qualitative and quantitative information derived from the market assessment led to the following summary level findings:

Table 2. Physician Office Survey Summary (Courtesy of Charis Healthcare)

AREA OF IMPORTANCE	PHYSICIANS			PHYSICIAN STAFF		
	IMPORTANCE	SATISFACTION	GAP	IMPORTANCE	SATISFACTION	GAP
Quick report TAT	4.57	3.86	-0.71	4.79	3.86	-0.93
Quality of Radiology reports	4.57	3.93	-0.64	na	na	na
Schedule availability	4.21	3.35	-0.86	4.39	3.54	-0.85
Quality of equipment and images	4.15	4.23	0.08	na	na	na
Ease of scheduling	4.14	3.62	-0.52	4.71	3.54	-1.17
Pre-certification	4.07	2.00	-2.07	4.00	1.86	-2.14
Insurance coverage	3.86	4.23	0.37	3.70	3.85	0.15
Location of facilities	3.18	3.86	0.68	3.46	4.64	1.18
Overall quality of imaging service	5.00	4.00	-1.00	5.00	3.93	-1.07

RED	Opportunity for improvement
YELLOW	Items for concern
GREEN	No concerns

- Low physician utilization of imaging services due to lacking technology and some inefficiencies in operations
- Increase market share via marketing and improved operational processes
- Create a multi-modality free standing facility outside of the hospital
- Radiologist interest in getting more involved in delivery of imaging services

Capturing these market opportunities required individual strategic action items. The following is a summary of some of the action items put into place.

Increase Utilization

- Improve operational processes
- Increase equipment availability
- Upgrade equipment
- Improve customer service

Increase Market Share

- Increase imaging marketing efforts
- Develop a marketing plan and new marketing

- materials for secondary service area referring physicians
- Investigate pre-certification services

Project Implementation and Prioritization

The results of the market assessment established confirmation to Genesis administration that implementing the recommendations from the study were indeed the next step to enhancing imaging services. Furthermore, it was decided to incorporate the multi-modality imaging center (1.5 MRI, open MRI, 16 slice CT, diagnostic x-ray, ultrasound) into a larger facility plan that would include women’s health (digital mammography, DXA,

Capturing these market opportunities required individual strategic action items.

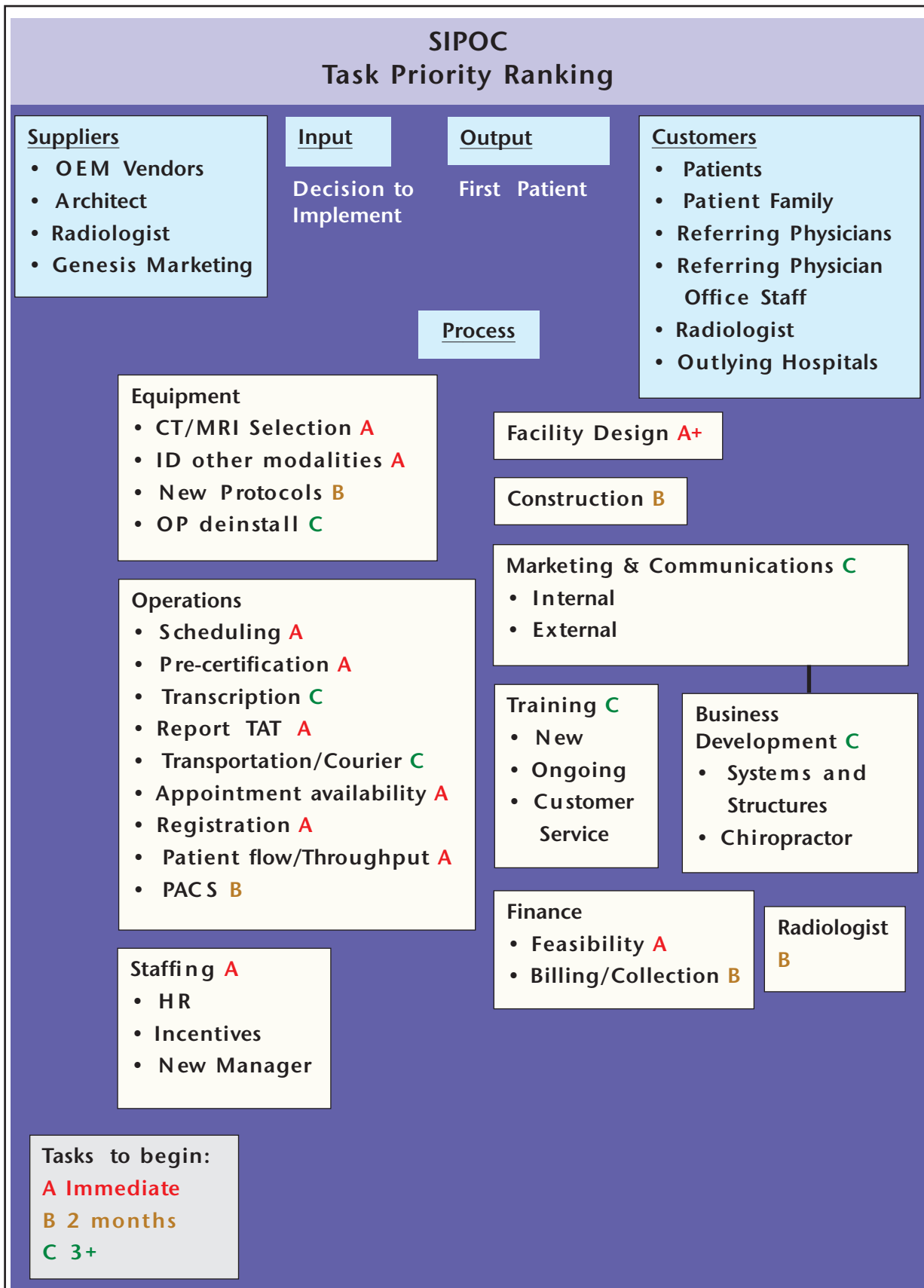


Figure 4. SIPOC diagram used to identify tasks needed to begin immediately, in a few months, and those greater than 3 months. (Courtesy of Charis Healthcare)

and ultrasound), urgent care, and other administrative functions. As for location of the new center, Genesis considered using a vacated grocery store located across the street from one of its current campuses.

An implementation strategy was needed to prioritize all of the steps required to create the new outpatient imaging center. A SIPOC (S = Suppliers, I = Inputs, P = Processes, O = Outputs, and C = Customers) tool is used by a team to identify all relevant elements of a process before work begins. The SIPOC diagram used here identified tasks needed to begin immediately, in a few months, and those greater than 3 months. See Figure 4. From this prioritized list, a project flow down process was utilized to further identify which tasks needed the most attention.

All of the process projects were assigned project sponsors, team leaders, and team members. Project charters were developed to identify problem statements, scope, deliverables and estimated timeline. Each project was treated individually and included the appropriate administrative support to remove barriers and drive results.

Facility Design: The Development of the Perfect Customer Experience

Genesis decided to renovate the existing grocery store into an outpatient facility. The building required significant design change to accommodate the imaging modalities, office space, and patient waiting areas. Imaging services was the first clinical area that would be located in the center. To understand what the future of Genesis outpatient imaging should look like, a team was created to participate in an "Imaging Design Shop." The facilitated process utilized an envision, design, and build (EDB) process to specifically focus on designing the imaging space. See Figures 5a and 5b for before and after pictures.

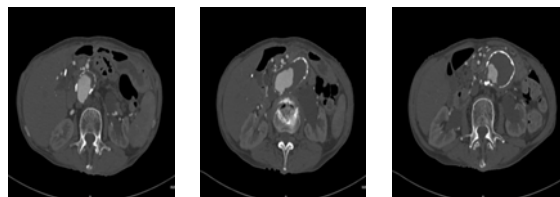
Up to this point in the planning process, creating the perfect customer experience had not been realized. It was through the EDB process that the goal of creating the perfect customer experience was born. The EDB process consisted of a 6 hour working session that included members of the Genesis staff, board of directors, referring physicians, radiologists, architects, healthcare facility planners, and vendor imaging equipment site planners. The session included interactive case studies, a field trip to the new facility, and some team exercises that began to lay the groundwork for the design of the new space while keeping the theme of the perfect customer experience in mind. Additionally, at the end of the day, 3 conceptual design layouts were created utilizing a design kit.

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Figures 5a and 5b. “Before” and “after” pictures of the facility.

- What are referring physicians’ expectations of an outpatient imaging center?
- What are referring physicians’ office staff expectations of an outpatient imaging center?
- What are radiologists’ expectations of an outpatient imaging center?

Critical success factors were identified along with barriers to success. Many of the items identified during the EDB session were invaluable during the implementation process. See below.

Critical Success Factors

- Quick throughput/patient flow
- Communication
- Customer service focus on staff
- Referring physician satisfaction with results (eg, marketing and education packets)
- Facility appearance / design
- Teamwork

Following were some of the summary items answered by the team:

- Who are the customers?
- What are patient expectations at an outpatient imaging center?
- What are patient’s family expectations at an outpatient imaging center?
- What are the community expectations at an outpatient imaging center?
- What are the staff expectations at an outpatient imaging center?

- Commitment by everyone to make each exam the “perfect customer experience”
- Customer service training: Recognize that the customer is king and exceeding customer expectations
- Consistency
- Parking
- Comfort, convenience, and cleanliness
- Technology
- Continuous process improvement

One of the most difficult decisions of creating a new outpatient imaging center is the selection of equipment. Traditionally, most purchasers of equipment will utilize past relationships with vendors and not understand the details of all the customer expectations.

Barriers to Success

- Adding additional FTEs
- Staff anxiety
- Cost / financial feasibility
- Resistance to change
- Physical design and process
- Lack of flexibility
- Adding late hours/extra hours to current staff
- Transition of hospital thinking to a retail approach
- Physician education
- Coordination of other outpatient services
- Trying to improve the customer service mentality
- Poor communication

The 3 sample designs were incorporated into the architectural layout for final floor plan design. The healthcare facility planners and architects incorporated the design kit examples and results of the EDB in mind and created the final floor plan. See Figure 6 for the final design layout of the entire space.

Equipment Selection

One of the most difficult decisions of creating a new outpatient imaging center is the selection of equipment. Traditionally, most purchasers of equipment will utilize past relationships with vendors and not understand the details of all the customer expectations. Purchasers also may not comprehend all of the available options that are available by modality. The equipment criteria selection process for this project utilized a team approach of including radiology technologists, managers, directors, administrators, and consultant expertise.

The process followed a high level process. Equipment vendor presentation meetings were scheduled and site visits planned based on initial presentations. For the site visits, the team created the criteria in a scoring grid for what made the most sense to satisfy partnership, technology, service, and cost. The equipment selection criteria tool was utilized by the team on the site visits and

summarized for the Imaging Steering Committee, who had the final decision making authority.

The equipment selection tool was based on a tool called Quality Functional Deployment (QFD). The QFD is a matrix based decision tool that utilizes the voice of the customer from a cross functional team. It uses a structured approach to defining customer needs or requirements and translates them into different levels of importance ratings. "Voice of the customer" is the term used to describe customer needs or requirements.

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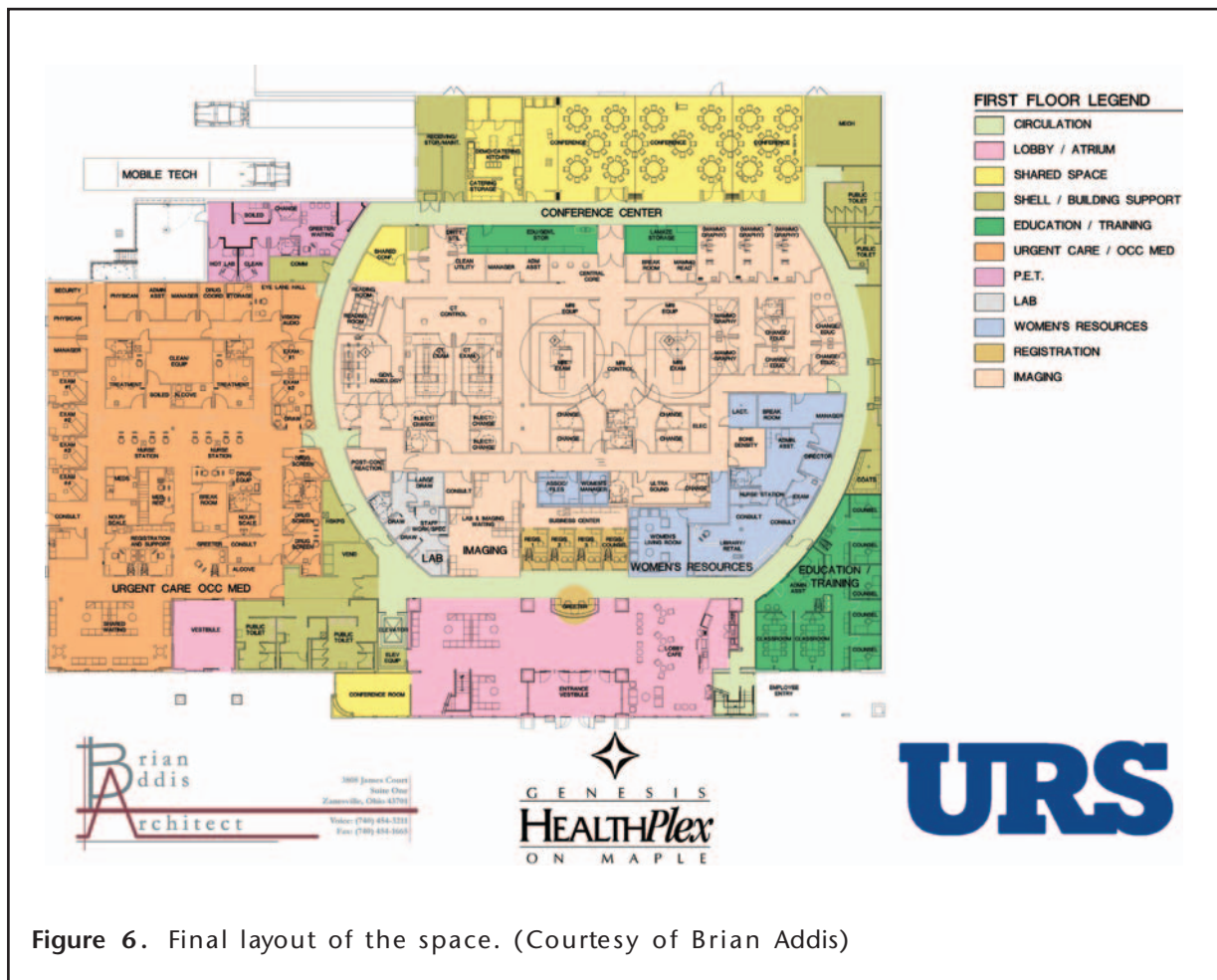


Figure 6. Final layout of the space. (Courtesy of Brian Addis)

Mechanics of the Tool

The key criteria, voice of the customer, were developed in a team approach facilitated by the consultant. The rating level of importance (1 = low through 5 = high)

Whether a hospital-based director of imaging is tasked with being the project manager or an independent consulting firm is hired, constructing a new imaging center is a full time job from the time of a “go decision” to the first patient.

was also gauged by the cross functional team. On each site visit, the team member rated the vendor on each of the key decision criteria as strong (9), medium (3) or weak (1). See Table 3 (Note: criteria can vary by institution).

Using the grid alongside equipment specifications and price allowed for a quantitative overview of each vendor to help make the correct equipment decision.

Conclusion

The task of developing a new freestanding imaging center is a complex undertaking. Several areas not discussed in this article that are notably important in the process include the construction design/bid/build process, regulatory issues if a joint venture structure is in place, and efficient operational process flow if the project manager has not seen how other centers flow. Staffing is another area that needs expert evaluation (eg, what happens when and if volume shifts from current facilities to new facilities). Whether a

Table 3. Equipment Selection Tool Key Criteria (Courtesy of Charis Healthcare)

MRI *Rank between 1 and 5 or 1 and 10 with the higher numbers indicating greater importance.

Key Criteria for Comparison		Importance Rating*	Vendor 1	Vendor 2	Rating Scale 1 = Weak 3 = Medium 9 = Strong
Equipment	1	Current Model Lifecycle		0	0
	2	Options		0	0
	3	Upgrades/Futures		0	0
	4	Costs of Upgrades		0	0
	5	PACS Interface		0	0
User Friendly Workstation	1	Steps to Scan		0	0
	2	Application Time		0	0
	3	Power Injector		0	0
	4	Post Processing Time		0	0
	5	Preset Protocols		0	0
	6	"Change on the Fly"		0	0
	7	Ramp up Time		0	0
	8	Physician multimodality use		0	0
	9	Multimodality Use		0	0
	10	Tech learning curve		0	0
Image Quality	1	Team Member C-Spine		0	0
	2	Requested Images		0	0
	3	Power Injector		0	0
	4	Gauss Line (artifact)		0	0
	5	Fat Saturation		0	0
Throughput	1	Work Listing		0	0
	2	Scans/Day		0	0
	4	Overall		0	0
				0	0
Patient Comfort	1	Table		0	0
	2	Noise Level		0	0
	3	Coil Component		0	0
Technical Service	1	Uptime Guarantee		0	0
	2	Engineer location/Commute time		0	0
	3	PM Scheduled hours		0	0
	4	Time for PM?		0	0
	5	Coil Replacement Time		0	0
	6	Tech Training		0	0
	7	New and Future Training Costs		0	0
MISC	1	User Group		0	0
				0	0
Price	1	Equipment Cost		0	0
	2	Service Cost		0	0
	3	Siting Costs		0	0
Total				0	0

The task of developing a new freestanding imaging center is a complex undertaking... Always remember to include key stakeholders and team members involved in the entire development process. The more each member of the team is involved, the better chance there is of implementing new policies and procedures effectively.

hospital-based director of imaging is tasked with being the project manager or an independent consulting firm is hired, constructing a new imaging center is a full time job from the time of a “go decision” to the first patient.

Always remember to include key stakeholders and team members involved in the entire development process. The more each member of the team is involved, the better chance there is of implementing new policies and procedures effectively. Getting everyone to *accept* the change is another story! 🗨️

Reference

¹Thomson Medstat. Pop by age group by zip. 2003, Claritas Inc. Available at: <http://www.medstat.com/marketexpert/>. Accessed September 1, 2004.

Jim Yanci is a Senior Manager at Charis Healthcare, a national healthcare consulting firm located in Hudson, OH. Jim has over 20 years of healthcare experience that includes six sigma and change management consulting and has also had a variety of sales management and marketing roles with diagnostic imaging vendors. He may be contacted at jim.yanci@charishealthcare.com. Jim would also like to offer a special thanks and acknowledge Genesis HealthCare System, specifically Cheryl Stillberger, Director of Imaging, for her contributions to this article.



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Carefully read the following multiple choice questions. Mark your answers on the answer sheet found on page 34 and mail or fax the answer sheet to:

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Questions

Instructions: Choose the answer that is most correct.

- This article describes a case study involving the key steps in creating a:**
 - Routine diagnostic imaging department
 - Freestanding diagnostic imaging center
 - Dedicated mammography center
 - Outpatient surgery center
- In this case study, patients, patient families, referring physicians and their staff, radiologists, and employees are defined as the:**
 - Employer
 - Customer
 - Project team
 - All of the above
- What is the purpose of the market assessment in this study?**
 - To determine if there is an imaging market opportunity.
 - To identify what must be done to capture the opportunity
 - To establish how it is known that the opportunity exists.
 - All of the above
- Which of the following were work tasks conducted for the market assessment in this study?**
 - Demographic analysis
 - Modality use rate analysis
 - Competitive analysis
 - All of the above
- What task provided a preliminary understanding of the need for diagnostic imaging services in the market area?**
 - Demographic analysis.
 - Hospital employee interviews
 - Modality use rate analysis
 - Physician and office staff interviews
- National trends indicate that the "Baby Boomer" population of 45-64 year olds will increase how much over the next 5 years?**
 - 2%
 - 7%
 - 25%
 - 43%

7. **What is a SWOT analysis?**
 - a. Systems, workstations, opportunities, threats
 - b. Strengths, weaknesses, overage, treatments
 - c. Strengths, weaknesses, opportunities, threats
 - d. None of the above

8. **What area did staff interviews identify as the best opportunity for performance improvement?**
 - a. Equipment availability
 - b. Scheduling process
 - c. Radiologist support services
 - d. Customer service

9. **The overall recommendation taken from the market assessment was to create a centralized, multimodality, outpatient imaging facility with a retail healthcare approach.**
 - a. True
 - b. False

10. **Action items put into place to increase utilization included:**
 - a. Upgrade equipment
 - b. Improve operational processes
 - c. Improve customer service
 - d. All of the above

11. **Action items put into place to increase market share included:**
 - a. Develop collaterals for secondary service area
 - b. Increase imaging marketing efforts
 - c. Investigate pre-certification services
 - d. All of the above

12. **All of the process projects were assigned:**
 - a. Vendors, project sponsors, and radiologists
 - b. Project sponsors, team leaders, and team members
 - c. Project teams and vendors
 - d. Managers, radiologists, and technologists

13. **What was the EDB used for in this case study?**
 - a. To focus on designing the imaging space
 - b. To market the procedures to be offered
 - c. To interview physicians and staff
 - d. None of the above

14. **Who was included in the EDB process?**
 - a. Architects
 - b. Radiologists
 - c. Board of directors
 - d. All of the above

15. **Which of the following were identified as critical success factors during the EDB session?**
 - a. Quick throughput/patient flow
 - b. Physician satisfaction with results
 - c. Customer service focus on staff
 - d. All of the above

16. **Which of the following was identified as a barrier to success during the EDB session?**
 - a. Consistency
 - b. Staff anxiety
 - c. Teamwork
 - d. Customer service training

17. **Radiologic technologists were included in the equipment criteria selection process.**
 - a. True
 - b. False

18. **A Quality Functional Deployment tool was used in the:**
 - a. Staff assignment process
 - b. Equipment selection process
 - c. Facility location process
 - d. All of the above

19. **What was the approximate length of the project described in this case study?**
 - a. 8 months
 - b. 10 months
 - c. 18 months
 - d. None of the above

20. **The multi-service outpatient center was created in an existing facility that was once a large grocery store.**
 - a. True
 - b. False



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