no. **16**

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Mission of the Academy Journal

As the official journal of the AIA Academy of Architecture for Health (AAH), this publication explores subjects of interest to AAH members and others involved in the fields of healthcare architecture, planning, design, and construction. The goal is to promote awareness, educational exchange, and advancement of the overall project-delivery process and building products.

About the Academy

The Academy of Architecture for Health (AAH) is one of 21 member communities of the American Institute of Architects. The AAH is unique in the depth of its collaboration with professionals from all sectors of the healthcare community, including physicians, nurses, hospital administrators, facility planners, engineers, managers, healthcare educators, industry and government representatives, product manufacturers, healthcare contractors, specialty subcontractors, allied design professionals, and healthcare consultants.

The AAH currently consists of approximately 6,954 members. The mission of the Academy is to improve both the quality of healthcare design and the design of healthy communities by developing, documenting, and disseminating knowledge; educating design practitioners and other related constituencies; advancing the practice of architecture; and affiliating and advocating with others that share these priorities.

Please visit the Academy's Website at www.aia.org/aah, for more information on the Academy's activities. Please direct any inquiries to aah@aia.org.

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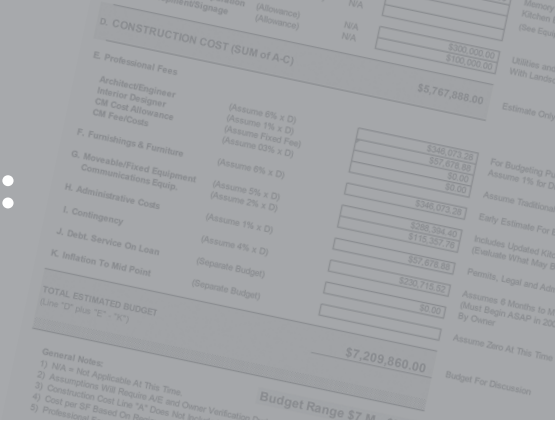

by JAMES G. EASTER, JR., FAAMA, ASSOCIATE AIA

ABSTRACT

The pre-design phase of healthcare planning and programming is changing rapidly. The response is relevant to several factors; shifts in care management and service delivery, improved processes for enhanced efficiency, governmental intervention through Meaningful Use and the Patient Protection and Affordable Care Act (PP/ACA), enacted on March 23, 2010 by the Federal Government and administered through the IRS for 501 (c) (3) category providers. These regulatory mandates are complementary to many of the efforts in the past to contain costs, improve access, and improve outcomes associated with the care of patients treated in the public healthcare sector.

This position statement addresses the operational, environmental and design factors associated with these process improvements to demonstrate the importance of effective pre-design decision making in a new era of professional practice. Needs based programs and efficient design will be complementary partnerships based on improved outcomes and reduced costs.

Buildings, systems, technology and design operate hand-in-hand to change the consumer and the provider perspective. The built environment and urban planning have significant importance for both improved methods of healthcare delivery. The healthcare system of the future must be a component of the fabric of the community by utilizing urban planning methods, metrics, and processes defined herein. The architect and planner of the future will serve the consumer seamlessly to provide meaningful design that exceeds the performance standards imposed on buildings by regulators and third party payors. Decisions will be made with confidence based on sound business principles, grounded in reliable facts, and directed toward reliable population-based metrics.

ARTICLE

Meaningful Healthcare Planning: A New Era for Needs Analysis + Creative Design

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Background

There are options one might consider to achieve a successful healthcare plan. For architects, it is more than the design of a single building but the comparative assessment of an entire system. Utilizing a "working methodology" to achieve an effective plan requires experience, an understanding of the situation, regulatory responsiveness, cultural adaptation and a sensitive "global view" of the client's vision and mission.

Healthcare design and planning specialization are key success factors. The operational and design features of what were traditionally the core attributes of a "hospital" have shifted from a "stand alone building" to a network of buildings packaged in what has become an "integrated" healthcare delivery system. This approach to service delivery is in response to a number of dynamic market forces:

- Consumer Access Demands Convenience
- Competition Within Markets Requiring Innovative Options
- Disease Awareness and Early Intervention Responsive to Location and Consumer Needs: Specialization and Clinical Aggregation Are Key Factors
- Providers Must Respond to Varying Acuity Levels: Primary, Secondary and Tertiary
- Regulations Are Moving Toward Bundled Care: Reduce The Selection of Preferred Consumer and Disease Types to Ensure A Balanced Care Plan

- Regulations Are Requiring That Needs Be Met To Participate In The Market
- Third Party Payors, Both Public and Private, Require Cost Consciousness and Better Management Methods
- Clinical Programs Will BeNeeds Based and Located Where The Consumers Reside
- Transportation And Technology Are Integral to Accessibility
- Healthcare Communities Are Evolving Full Service Continuums of Care: Clinical Integration goes Beyond the Acute Care to Post Acute and Extended Care Services
- Public, Private and Investor Owned Providers Are Blending Services and Networks
- Buildings are No Longer Stand Alone, But Integrated, Personal, Efficient and Consumer Friendly
- Physician Specialization, Employment and Attitudes are Changing The Care Plans: Care Partners and Extenders are Added Value to the Ideal Medical Home Models

The list of market dynamics grows as the planning, programming and design features mature. Fragmented systemic planning and the incremental development of healthcare buildings is no longer affordable or appropriate. Healthcare architects are strategically adding specialty staff including; physicians, nurses and technologists, as well as other team members versed in strategy, finance and operations. Through creative teaming the hospital planner, architect, engineer, financial advisor, strategic planner and lawyer will build better healthcare delivery systems for the future.

The most nebulous terms in the previous statement are planning and programming. Both have different meanings to both architects and hospital clients. Planning may refer to strategic, fiscal, urban and facility concerns. Programming is often confused with service delivery, while architects may refer to the process as functional programming. The sequencing of these events is a key consideration to ensure appropriate decision making and timing. The successful healthcare systems of the future will place the emphasis on doing the right things in the right sequence for the right reasons.

Getting Started With Healthcare Change

To the architect Louis Sullivan's concept of *"form follows function"* has been added *"follows funding"* which is a guiding premise of most successful businesses. At the same time this premise is the overarching mantra for healthcare reform at both the public and private sector levels. Healthcare has historically been referred to as a combination of diverse service delivery systems including; private, not-for-profit, public and community, investor owned for- profit, federal sector and governmental. Each provider approaches the early stages of a capital development program differently. These differences vary by region, service delivery philosophy, licensure status and fiscal objectives.

We have added, through governmental incentives, the Critical Access Hospital (CAH) category and more recently the Federally Qualified Healthcare Clinics (FQHC) which often compete with both the county supported clinics, private clinics and the CAH's for market share. Recent private investments have grown in the healthcare sector to flood the markets with low acuity "minute" clinics, urgent care retail centers, pharm-care and "Wal-Care" all aimed at entering the delivery system to gain a competitive business advantage. Consumer demand and third party payers will ultimately determine their success or failure. Success will also be measured by results based on positive and consistent clinical outcomes. Most consumers of higher acuity care will continue to seek care from the "branded providers" with the best outcomes provided in a "transparent" environment. Ideally, the over use of Emergency services provided on an episodic basis will diminish as alternative treatment sites are offered to the consumer.

In many ways competitive market dynamics and the entrepreneurial attributes of healthy economies succeed when free enterprise efforts are encouraged. A core premise of the future healthcare delivery systems are these market dynamics. Healthcare is a dynamic industry complicated by poorly managed entitlement programs like Medicare and Medicaid. The jury is still out on the recently introduced healthcare exchanges and other aspects of the affordable care act.

The Certificate of Need (CON) laws of the mid 70's are being supplanted by more simplistic, but more effective regulation, through new requirements being implemented within the Affordable Care Act and the criteria embedded in the new requirements for "charitable, non-profit" 501 (c) (3) hospitals and healthcare delivery systems. It appears that this new law will have both value and built-in planning incentives for providers of care at all levels.

To paraphrase an initial reading of the law, it will embrace four (4) general requirements on a facility-by-facility basis. It is recommended that the reader contact the IRS, their financial advisor, tax accountant or legal advisor for more details on the impact of this law:

- Establish written financial assistance and emergency medical care policies (EMTALA laws will likely still require compliance as well as board policies on Medical Screening).
- Limit amounts charged for emergency or other medically necessary care to individuals eligible for assistance under the hospital's financial assistance policy (combined with state-by-state Medicaid laws either in compliance with federal law or not and aide in the growing misuse of emergency services recognized as a concern today).
- Make reasonable efforts to determine whether an individual is eligible for assistance under the hospitals financial assistance policy before engaging in extraordinary collection actions against the individual, and;
- Conduct a community health needs assessment (CHNA) and adopt a CHNA implementation strategy at least once every three years (effective future tax years beginning after March, 2012).

Responding To Changes Both the Micro and Macro Levels

The teamwork concept begins to have teeth as we review the implications of these new laws and the market dynamics. It is apparent that architects and planners will need specialists on their teams to address these mandates beyond the traditional architect, engineer and facility planner roles.

Even those firms practicing specialty architecture for healthcare delivery and high tech laboratory and scientific design will be impacted. These firms have already embraced the rules of the CON mandates (where applicable), the current FGI "Guidelines for Design and Construction of Healthcare Facilities"—2010 Edition (being updated in 2014): www.fgiguidelines.org" and the myriad of codes and standards adopted and enforced by states, counties and authorities having jurisdiction (AHJ) over the design of the following:

- Acute, Post-Acute and Tertiary Healthcare Facilities
- Medical Research Centers
- Academic Health Science Centers
- Cancer Care and Specialty Care Centers including Comprehensive and Community Based Radiation Therapy Centers
- Free Standing Specialty Care Centers and Those Within Acute Care Settings (Women's Care, Children/Pediatric Care and Neonatal Intensive Care, etc.)
- Free Standing Satellite Emergency Departments
- Free Standing Urgent and Emergent or Quick Care Centers
- Secondary Care Specialty Clinics and Sub-Acute Centers for Outpatient and Ambulatory Care at Numerous Levels
- Nursing Homes, Skilled Care, Senior Care, Assisted Living and Memory Care Centers
- Hospice Care and Respite Care
- Senior Day Care and Respite Care
- Continuum of Care Retirement Centers (CCRC)
- Community Mental Healthcare Centers
- Inpatient Psychiatric Centers
- Retail Healthcare Centers
- Pharmacies and Allied Health
- Integrated Health Care Centers (see Figure 3 for Award Winner—Duke Medical)

This initial listing identifies the *complexity of the service delivery system,* the need for a comprehensive review of the market served, the quality assurance standards applied to these diverse healthcare providers, and the growing need to conduct a COMPREHENSIVE NEEDS ASSESSMENT as mentioned previously and outlined within the PP/ACA and Meaningful Use standards.

Many of the mission-driven healthcare systems will survive and thrive as their objectives continue to focus on QUALITY HEALTHCARE FOR THE MOST CONSUMERS WITHIN THEIR REGION AT THE MOST AFFORDABLE COST. This approach will gain momentum through the governing tenants of both Meaningful Use and Accountable Care (See Figure 1a for Illustration of Electronic Medical Record (EMR) Step-By-Step Process).

As a corporate member of the healthcare Advisory Board Company, the author has recently reviewed their *"Eleven Insights on the Future of Care Management".* These insights are relevant to healthcare planning, service delivery, policy change and architecture. In addition to this research, the firm of Lattimore Black Morgan & Cain ("LBMC") has recently conducted several COMMUNITY HEALTH NEEDS ASSESSMENTS (CHNA) as defined herein and included in the ACA, 501 (c) (3) requirements (particularly general requirement No. 4) required for each facility within a system. The studies should follow the parameters summarized below:

I. Objectives, Overview and Approach (Input From Stakeholders):
   a. Local Providers
   b. Legislative Bodies

c. Consumer Groups
d. Third Party Payers
e. Consumers

II. Executive Summary of Community Findings:
a. Economic Impact
b. Development Opportunities
c. Gaps Within Region
d. Action Plan

III. Demographic Profile, Service Area and Market Status

IV. Social Determinants (Defined In Tandem With the Client):
a. Economic Status
b. Educational Status
c. Housing Character
d. Employment Status
e. Health Insurance and Insurability
f. Community Needs Index
g. Current Service Delivery Programs and Locations

V. Key Health Indicators (May Vary By Community and Context Of Market)
a. Diabetes and/or Kidney Disease
b. Mental Health
c. Preventive and Public Awareness
d. Cardiovascular
e. Neurological
f. Women, Infants and Children
g. Cancer
h. Others By Disease Specific Categories

VI. Data Gaps Identified Within The Market:
a. Service Gaps
b. Provider and Recruitment Gaps
c. Technology and Systemic Needs

VII. Conclusions

VIII. Cited Works and Exhibits

IX. Appendix and Data References and Reports
a. Recent Area wide Plans
b. Recent Public Health And/or Area wide Issues Or Concerns
c. Anomalies within the Market (Natural Disasters, Market Forces, Population Shifts, etc.)

This listing is an example of how the NEEDS ANALYSIS PROCESS becomes a key attribute of the global planning and information dissemination methodology. This work product when utilized in a transparent and collaborative manner is a rationale framework for public healthcare service delivery and process improvement. This information may also be used by private parties in a competitive manner which does offer a number of challenges for both the legal and regulatory bodies to consider. These issues will be addressed in more detail as the PP/ACA programs gain momentum moving forward into 2014 and beyond.

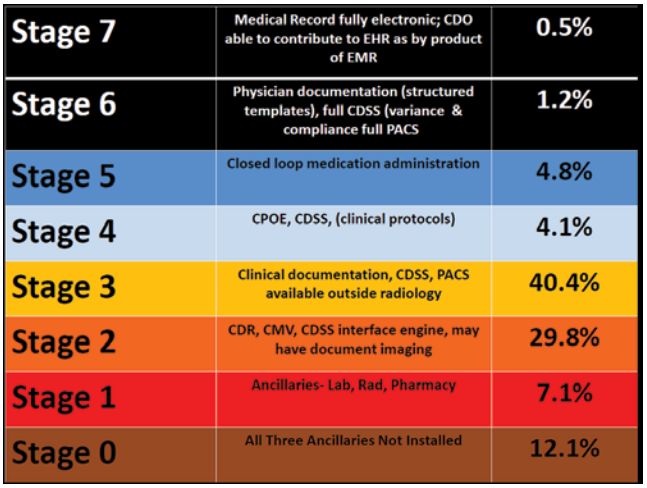

FIGURE 1a: Meaningful Use Illustration (American Recovery and Reinvestment Act—ARA, 2009) 7-Stage Roll Out Diagram From 2009 HHS Statement

Diverse Market Forces

The need to protect information, manage competitive markets and design accessible public systems challenges all parties from the federal and private sector perspectives. It is apparent that the growing number of linkages between public and private sector healthcare programs will continue. Comparisons to the not-for-profit Kaiser Foundation program and the Kaiser HMO including others, for example; the Cleveland Clinic affiliation with Community Health Systems (CHS), Lifepoint affiliations with Duke Medical and numerous religious affiliated networks provide opportunities to bundle services, reduce waste, improve access, streamline IT/EMR efforts and improve overall service delivery (see Figure 3).

Systemwide Urban Planning, Needs Assessments and Facility Master Planning: More Than Traditional Thinking; A Global Challenge With Added Value Long Term

The use of the terms “areawide planning” and “functional programming” suggest different meanings to different people. As architects for buildings, we see these terms being *asset driven* and *tangible* commodities that may be sized, formed, moved around, expanded, constructed

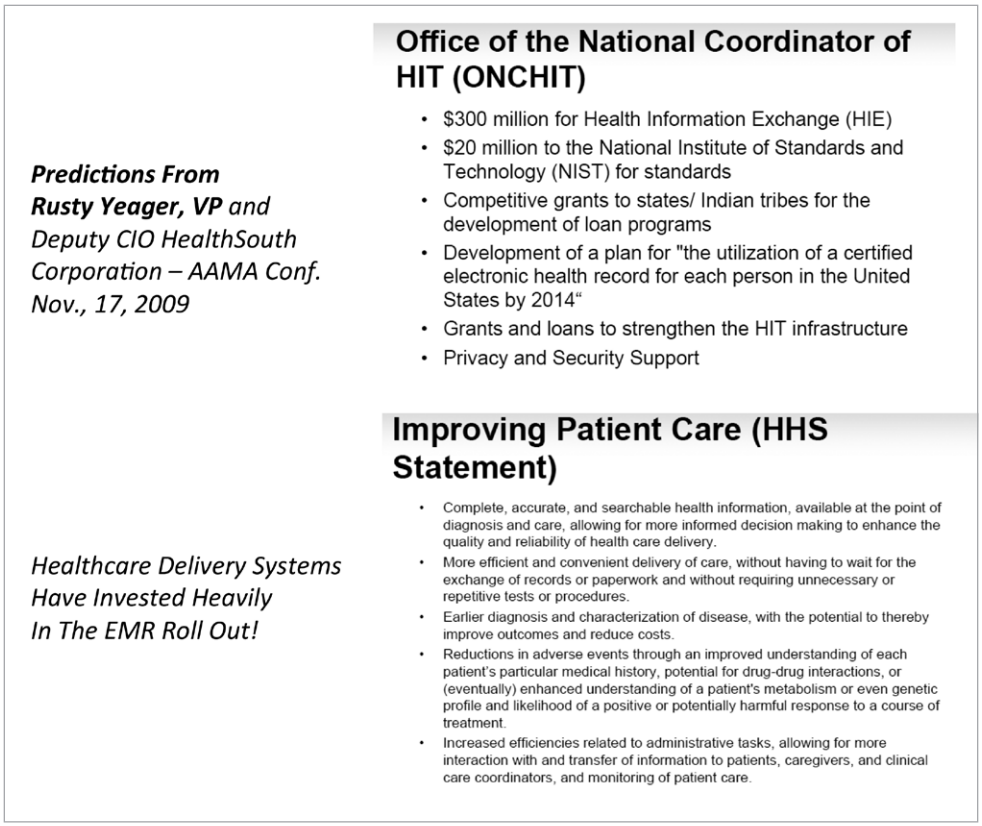

FIGURE 1b: The Urban Context (Major Factors Impacting Healthcare Design)

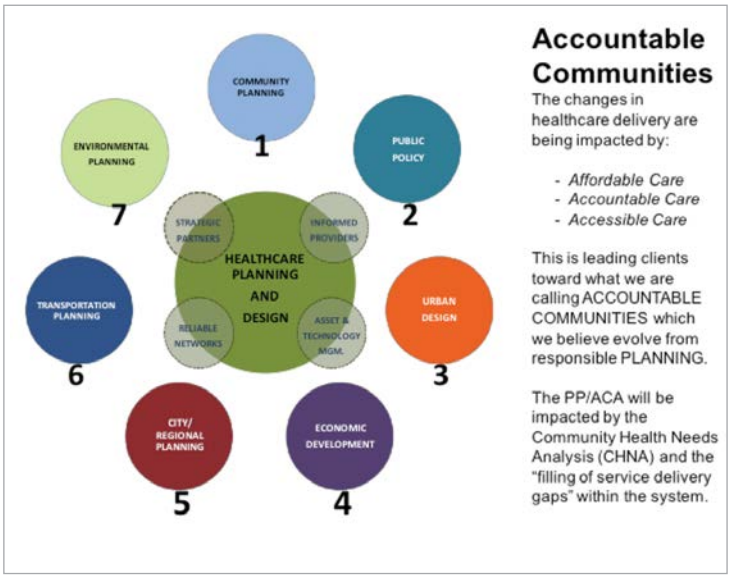

FIGURE 2: The Urban Context (Major Factors Impacting Healthcare Design)

totally new and demolished over time. Defining the "best practice" methods to be utilized is the challenge. We believe the relevant factors to consider within the urban plan are the ones described in Figure 2 herein:

Within a system, it is this author's opinion, that the terms vary by situation and therefore, offer the following step-by-step strategy for FACILITY AND SYSTEM PLANNING being conducted on either the micro or macro level. How the advisor/consultant enters the assignment determines the level of detail and sophistication required. Under the American Institute of Architects (AIA) professional practice recommendations, the Owner is responsible for the program and the plan.

This may vary by building type, but this is generally the case. I some cases, architects and engineers offer this as a "free or reduced fee service" to gain a competitive advantage in the marketplace. This is not recommended for reasons outlined herein. Developing an Integrated Project Delivery (IPD) Team has gained some ground in recent years, but is often discounted due to the perception of increased owner risk beyond the traditional project delivery methods. There are a number of risk sharing programs evolving within larger healthcare delivery systems providing owners the option to engage consultants and pay them on the basis of savings incurred.

As we move into the ACA era and continue, in many states, with the CON programs, we will gain insight into the value of properly prepared and conducted community needs assessments prepared in tandem with Strategic Plans and Facility Master Plans. This would be the ideal course of action and is recommended for future consideration. As endorsed by the American Institute of Community Planners (AICP) and other urban and community planning professionals, this approach to one segment of the community, ie; healthcare and human services, will likely become the model for a new era of improved resource management and leadership accountability across the full continuum of community development and long term sustainability.

The opportunity to address the quality of the built environment" is enhanced utilizing these broader based planning methods. Over time, it is apparent that the sustainability of our earth's greatest gifts of atmospheric air quality, water and natural resources will combine with natural and man-made disaster relief to offer greater safety potential to the residents of our planet earth. This is illustrated in Figure 2 as the "core elements" which encompass:

- Strategic Partnerships
- Informed and Integrated Providers
- Reliable Networks
- Asset and Technology Management

An Illustrative Approach To The Master Plan

STEP ONE: Situation Assessment and Cultural Character (Leadership and Board Discussion). When engaged to study a facility problem, the key consideration by the consultant is to determine where the leadership team may be "strategically" within their service delivery program (every provider of healthcare is different). The services, policies, personalities, and procedures (legal status) drive their mission, vision, values, goals and objectives. Is there a clear set of policies and procedures in place, effective board of governance, and service delivery program that follows both the regulatory requirements of the region being served and those same mandates by both licensure and accreditation bodies within their service jurisdiction?

These authorities having jurisdiction (AHJ) and accrediting bodies like The Joint Commission on Accreditation of Healthcare Organizations (TJC/JCAHO), vary by category of care from acute to long term care, rehabilitation, and post-acute care. The consultant should understand the "context" of the service delivery continuum and see the potential problems and opportunities from an informed and experienced basis of understanding. Team members may be selectively added as necessary (financial, legal, strategic, clinical, process improvement, architectural, engineering, environmental,

FIGURE 3a (above): Duke Integrated Health Center (An Award Winner Cited By AIA and Honored By Academy of Architecture for Health)

FIGURE 3b (right): Website background from the Duke Integrated Medicine program.

etc). The role the architect plays will vary from single building site to "global system" advisor.

As mentioned in the Advisory Board Company's recent study report entitled: *"Research Briefing: Eleven Insights on the Future of Care Management",* the following should be considered by the consulting team (paraphrased and expanded planning and design implications inserted by the author for comparative purposes):

1. Care Management is the Best Way to Reduce Costs.
2. The Ideal Care Management Organization Will Look Different in The Future.
3. Change Care Management Capabilities Incrementally and Strategically.
4. Define and Commit to a Vision and How One Might Achieve That Vision.
5. Cultivate and Staff for Care Management Leadership Throughout the Continuum.
6. Evaluate, Define and Leverage Existing Infrastructure (Buildings Impact Access and Service Delivery).
7. Connect the Infrastructure and Define the Organizational Pathways (Systems Integration Empowered Through Meaningful Use Are Mandating Change).
8. Focus On Patient Service Delivery Pathways, High-Risk ROI and Systemwide Implications (Revenue Enhancement Must Balance With Entitlements and Market Needs)
9. Scrutinize and Beta Test Your Care Management Roll-Out Plan for Short Term and Mid-Term Business Case Implications.
10. Engage the Consumer, Patients, and Family In Their Own Healthcare (Public and Private Third Party Providers Will Mandate This Behavior).
11. Becoming a Population Manager Is A Cultural Transformation Endeavor (The Role of the Physician and Care Giving Extenders Is Changing).

For further reference, these sources; advisory.com/caremanagement, advisory.com, advisory.com/crimson and evolenthealth.com.

STEP TWO: Recognizing The Healthcare System Has A Variety of Care Places and Room-By-Room Service Delivery Spaces (Leadership and Service Line plus Physician Discussions). The fact gathering process in an advanced healthcare delivery system is data driven and integrated with information available on-line via protected pathways, but easily accessible by the consulting team (companies offer these archival services with high levels of proficiency supportive of advanced asset management and space inventory methods). This fact finding and data gathering process combines the following data-based efforts into several planning pathways. These pathways will overlap contingent upon the sophistication of the provider and their status within their overall asset development programs (reflective of assets owned, managed and leased).

- Work Loads and Data Management Systems Reflecting Historical Utilization (Required to Determine Key Planning Units and Statistics Illustrating Usage Trends)
- Market Share Data Comparable With Data Available Through Private and Public Sources
- Facility Information Reflective of Existing Conditions, Including, For Example:
  - As-Is Floor Plans, Site Plans and Current Functional Affinities
  - As-Is Energy and Engineering Data Suitable to Determine Historical Utilization
  - As-Is Maintenance Records and Equipment Data Suitable to Define Operational, Safety and Security Measures and Metrics
  - As-Is Planning and Design Studies Suitable to Determine Progress
  - As-Is Life Safety, ADA, ICRA and PHAMA Considerations
  - As-Is Network Data Suitable to Determine Engineering Conditions, Low Voltage Requirements and Gaps Within the Existing Engineering and IT Systems

These documents and related data bases form the foundation for on-going planning and facility master zoning and re-purposing endeavors that occur as the campus master planning (MP) process rolls out and individual buildings are assessed for "current condition, value, added value and sustainability over time". In every case the master plan (MP) may focus on single buildings but more appropriately would be assessed on a system wide basis to permit a re-allocation and re-distribution of resources as defined herein. A key consideration in the management and MP of existing assets is the following:

- Will a Comprehensive Master Plan (MP) Assessment Provide Meaningful Global Information to Off Set the Incremental Costs of Fragmented Planning Methods?
- Will This MP Process Also Provide Means and Methods for
- Improved and Enhanced Business Planning and Budgeting Over Time?

The experienced answer to these overarching questions is an unequivocal yes, but often the "trial and error, lumps and bumps and band-aid methods" occur repetitively until healthcare leadership recognizes the implications of this errant methodology. Experienced architects, planners and designers are equipped to demonstrate these concerns, but are often over-ridden by fiscally conservative managers who cannot see or understand the "big picture".

In this new era of accountable care and needs-based analysis (including the buildings), we will begin to see more clearly the OPPORTUNITIES FOR ASSET MANAGEMENT AND ENHANCEMENT. It does appear the following drivers are legitimate considerations:

- Many Healthcare Campuses Include Antiquated And Obsolete Buildings (Incremental and Inefficient Expansions Over Time)
- Many Hospitals Are Over Sized and Forced Into Awkward Renovations By Dated Codes and Obsolete Standards (AHJ's Are Rapidly Improving Methods and Standards)
- Many Healthcare Systems Have Created Inefficient Non-Integrated Systems That Are Not Properly Positioned Within Their Marketplace or Community
- Many Buildings Are Technologically Dated, Energy Wasteful and Inefficient
- Many Users Face Daily Labor Challenges Due to Inefficiency and Poor Design
- Many Systems Aren't Properly Integrated Within The Careplace and Workplace
- Most Older Hospitals Are Not Re-Useable and Don't Meet Current Standards or Codes
- Most Older Buildings Aren't Safe and Create Both Service Delivery and Safety Liabilities
- Many Building Linkages Are Improperly Packaged and Designed
- Newer Buildings Offer Advantageous Wayfinding
- Newer Buildings Are More Efficient and Provider Friendly
- Newer Buildings Are One Time Costs Paid Back Readily Through Increased Business
- Newer Buildings Offer Better Image, Character, and User Convenience
- Newer Buildings Meet Codes and Standards and Improved Process and Performance Methods (Innovative Service Methods Balanced With Creative Design)
- Newer Buildings Are Typically Less Costly to Operate and Maintain
- Newer Buildings Offer Energy and Maintenance Pay Back
- Newer Buildings Offer Major Consolidation Opportunities (Reduce Capital Demands and Asset Ownership Responsibilities)
- Newer Buildings Are More Readily Packaged Within Better/Lower Cost Construction Areas (MOB's and Clinics and Outpatient Centers Have Fewer Cost Restrictions)
- Newer Buildings Are Sustainable
- Newer Buildings Offer Both Retention and Recruitment Opportunities With Significant ROI Factors
- Newer Buildings Can Be Placed in The Right Location for the Right Reasons and the Right Time for the Right Cost and Reasonable ROI
- Buildings May Be Managed By External Parties or Real Estate Investment Trusts (REIT)

STEP THREE: Functional Programming Service-By-Service and Building-By-Building. The fact gathering, situation assessment and clinical aggregation of services strategically leads comfortably into the architect/engineer phase of programming. This is space programming as compared to service delivery programming but is fundamental to the training of architects and embodies these overlapping and "matrixed" tenants; Goals, Facts, Needs, Concepts and Issues compared with Function, Form, Economy and Time. These tenants are ingrained in the overall design process and must be applied on an as-need basis during the development of every healthcare related project. A description of this "matrix" is illustrated on Figure 4 herein.

The important considerations for healthcare include the matching of work loads and volumes into Key Planning Units (KPU) that define the "realistic needs" for those clinical and service line programs that may be considered in most healthcare projects, for example; the number of exam rooms, the number of procedure areas, the number of imaging spaces, the quantity of emergency rooms and the number of beds for both inpatient and outpatient programs. The assimilation of existing plans with the existing spaces on a room-by-room basis and compared to the new spaces in a linear and parallel fashion offer immediate clarification for the following programmatic efforts:

- Comparison of Existing To New Areas (Gaps in Functionality and Code Compliance)
- Comparison of Existing Space To Proposed Space For Short Term and Long Term
- Accurate Tabulation For Pricing
- Accurate Tabulation For Operational Assessment
- Accurate Tabulation For On-Going Master Zoning and Process Mapping

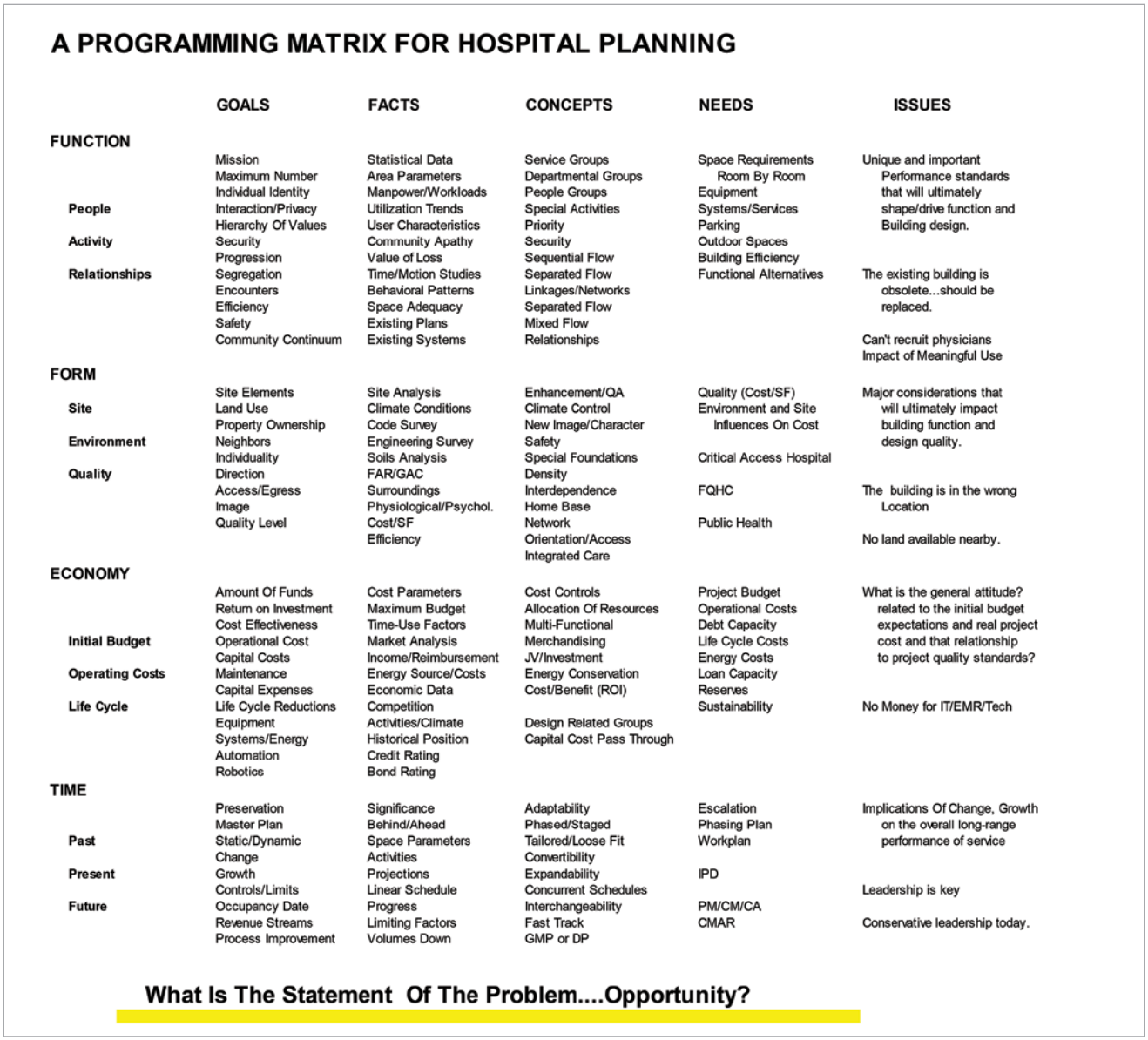

FIGURE 4: Functional Programming Matrix (Illustration for Comparative Purposes)

- Planning Blocks or Dominos For Relocation and Re-Alignment
- Planning Blocks for New Site Selection and Improved Image and Branding
- Planning Blocks and Spaces Linked Electronically To Engineering and Budget Forms

Utilizing an interactive space planning process that aligns existing services with new programs and expanded services is mandatory (see Figure 4 herein). The traditional "Excel Spread Sheet" and parallel data based management and programming "tool kits" are both reasonable methods and may be combined with more contemporary methods of space management including the Onuma models which are gaining ground in university and federal sector programs. The ability to combine space analysis with "space arrangement" is key to efficient and "real time" results.

STEP FOUR: Service Line Reviews, Concept Development and Master Zoning (User Reviews and Leadership Updates). This phase of the process brings together the multi-tasked and multi-faceted parties to compare findings and "test strategic objectives". The overlapping attributes of Needs, Strategy, Facility/Engineering and Operations is apparent and applicable as the PROCESS MAPPING, INTEGRATION OF PROGRAMS and RE-ALIGNEMENT of SERVICES begin

to take on form and functional character. This Master Zoning (MZ) process utilizes the planning blocks in tandem with the buildings, sites and components to carefully assess the short and longer term asset implications. Key questions asked at this stage may include:

- Are Our Current Programs On Track For The Market
- Are Our Partnerships and Systemwide Linkages Viable and Sustainable
- Are We In the Correct Businesses and Are Our Priorities In Order
- Are The Volumes Adequate to Support Asset Investments
- Are We Properly Located And Sized For Growth Over Time
- How Do We Fit Programs Into Existing and/or Proposed Locations
- How Do We Consolidate and Streamline Space to Maximize Efficiency of Operation
- How Might We Off Load Losers and Expand Winners
- What Are the ROI Factors and Who Will Facilitate the Changes

The new concepts are prepared in both electronic and digital format through the use of Onuma, Revit, and Building Information Modeling (BIM) formats for purposes of time, cost and spatial assessments (ideally A/E teams are on common and linked formats). The use of BIM technology in tandem with satellite and GPS plus "Google Earth" programs offer accuracy and campus planning refinement on a case-by-case basis with a very high level of efficiency and the optimum use of consultant labor. With these features applied, the informed consultant can benchmark each case, prepare business proformas and insert budgetary information into the overall Owner generated business plans suitable for annual budgeting and project funding.

STEP FIVE: Combining the Planning, Architectural, Engineering and Medical Technology Into a Cohesive and Workable Master Zoning Diagram and Total Project Budget. Previous MP programs have been short sighted in the development of the MP "big picture" due to the lack of understanding of the impact of equipment and technology on the overall capital budget. Without this level of "advanced detail" the Owner and User (building tenant in some cases) misses the mark on the actual needs and project costs. When consultants fail to disclose or discuss these "hidden costs", Owners often fall short of budgets suitable to complete large scale and smaller scale projects adequately. The most salient costs are often the "hidden costs" generally found in existing building renovations and expansions. These costs relate to the engineering, mechanical, plumbing, electrical, low voltage, infrastructure and IT/Cabling needs which demand both technical support and adequate space to operate effectively. See Exhibit No. 5 and No. 6 herein for illustrative budget and space listing details.

STEP SIX: The Master Plan Phasing and Alternative Scenarios. This phase of the project is the combined efforts of all consulting parties to present the short term and longer term road map for development. These scenarios may range from expansion and renovation of the main hospital, to the addition of a new ambulatory care center, to post acute care beds, to a CCRC, to new housing for physicians and families, to urgent care or free standing emergency (ER) departments with the intent to grow this satellite ER program into a full service hospital over time. Many of the strategic moves that may roll out at this phase become both fiscal and facility in nature with planning scenarios that respond to what might be referred to as an "integrated healthcare delivery system". Illustrations of this methodology are provided in Exhibit No. 7 herein.

STEP SEVEN: The Review and Approval Process. Ultimately the completion of MP studies, optional service delivery scenarios and concepts for either new and/or existing buildings requires a review and approval phase by Senior Management and the Board of Directors. In traditional hospital planning this has been relative simple but in the growth of systems and the expansion to broader based efforts this process takes on a totally new and more complex nature. It is important the "big picture" needs assessment be linked to the strategic plan and developed carefully as a "driver of business decisions" with the facility MP and subsequent phased recommendations following the operational, strategic and business objectives. The sequencing and time factors are important. Rolling out these recommendations will require preparation, team planning and concise development. System wide leadership will rely on service units to provide guidance prior to final roll out. Each Owner/System approaches this process differently.

STEP EIGHT: Deliverables. The traditional "deliverable products" are no longer applicable to the world of "system wide and integrated care". The decision by Owners to approach planning studies incrementally or holistically in a comprehensive manner will impact the way the deliverable products are prepared and delivered. It

Medical Office Building: Project Budget

Preliminary Order of Magnitude

PROJECT BUDGET ANALYSIS FORM
Schematic Design Budget I

Free Standing New Facility

Category of Cost	Area/Unit	$/SF	Sub-Total	Remarks
A. Raw Const Light			$0.00	Basement Under Kitchen
Raw Const Medium			$0.00	Kitchen Renovation At First
Raw Const Heavy			$0.00	
New Construction	24,555	$200	$4,911,000.00	Current SD Building Size
Demolition Phase 2	38,074	$12	$456,888.00	Memory Care New Construction
				Kitchen Equipment To Be Added
Total Area Involved	62,629			(See Equipment Allowance Below)
B. Fixed HVAC/El Equip	(Allowance All New)	N/A		
C. Site Development/Preparation	(Allowance)	N/A	$300,000.00	Utilities and Parking Improvements
Site Development/Signage	(Allowance)	N/A	$100,000.00	With Landscape Improvements
D. CONSTRUCTION COST (SUM of A-C)			$5,767,888.00	Estimate Only - Not Final Bid Number
E. Professional Fees				
Architect/Engineer	(Assume 6% x D)		$346,073.28	For Budgeting Purposes Only
Interior Designer	(Assume 1% x D)		$57,678.88	Assume 1% for Discussions
CM Cost Allowance	(Assume Fixed Fee)		$0.00	
CM Fee/Costs	(Assume 03% x D)		$0.00	Assume Traditional CA Agreement
F. Furnishings & Furniture	(Assume 6% x D)		$346,073.28	Early Estimate For Budgeting Only
G. Moveable/Fixed Equipment	(Assume 5% x D)		$288,394.40	Includes Updated Kitchen Equipment
Communications Equip.	(Assume 2% x D)		$115,357.76	(Evaluate What May Be Moved To New)
H. Administrative Costs	(Assume 1% x D)		$57,678.88	Permits, Legal and Admin. Support
I. Contingency	(Assume 4% x D)		$230,715.52	Assumes 6 Months to Mid Construction
				(Must Begin ASAP in 2006 to Meet %)
J. Debt. Service On Loan	(Separate Budget)		$0.00	By Owner
K. Inflation To Mid Point	(Separate Budget)			Assume Zero At This Time
TOTAL ESTIMATED BUDGET (Line "D" plus "E" - "K")			$7,209,860.00	Budget For Discussion

General Notes:

Budget Range $7 M - $7.5 M Approx Total Project

1) N/A = Not Applicable At This Time.
2) Assumptions Will Require A/E and Owner Verification During Basic Design Services Phase.
3) Construction Cost Line "A" Does Not Include Inflation...Add To Budget Once Schedule Is Verified.
4) Cost per SF Based On Regional Trends and Comparative Building
5) Professional Fees Will Be Negotiated...Percentage May Vary.

FIGURE 5: Illustrative Project Budget (Illustration To Demonstrate Key Budgetary Variables)

RURAL HEALTH CLINIC

Space Designation		No.of Rooms	NSF/ Room	Total NSF	Comments
Waiting Area		1	144	144	Could Share With Provider Based
Seating	12 @ 12 SF				See Midwest Clinic
Reception and Office Area		1	120	120	Window For Check In and Check Out
Reception/Clerical	1 @ 40 SF				
Secretary	1 @ 40 SF				
Files	4 @ 5 SF				
Copy/FAX/Phone	1 @ 20 SF				
Weight and Height Plus Misc Work		1	40	40	
Scales					
Charts					
Shelf/Notes					
Nurse Work Station		1	220	220	
Nurse Work Areas	4 @ 20 SF				
Clean Utility	1 @ 60 SF				
Soiled Utility	1 @ 60 SF				
Pharmacy Locked Unit	1 @ 20 SF				
Laboratory		1	80	80	
Counter/Sink/Shelf	1 @ 20 SF				
Refrigerator	1 @ 20 SF				
Misc Work Space	1 @ 20 SF				
Exam/Treatment		8	120	960	Dedicated to Rural Health
Minor Procedure		1	150	150	Lesions and Misc Clinical Support
Office, Physician		1	560	560	Full Time Physicians
Test Shared Work Area	4 @ 60 SF				Review With Team
Review Physician Consult and Collaboration	4 @ 60 SF				
Data Entry and Internet Connections Plus PAC	1 @ 80 SF				
Lounge/Kitchenette/Meeting		1	100	[100]	Shared With MOB Support
Storage, Pharmaceuticals		1	20	20	Vendor Supplied Items
Storage, General		1	80	80	
Warehouse and Misc Storage Area				0	Large Attached Area Not in Program
Dept. Net Square Feet				2,374	
Dept. Circulation @ 25%				594	
Dept. Walls @ 8%				190	
TOTAL DEPARTMENTAL GROSS AREA				**3,157**	

FIGURE 6: Illustrative Space Listing

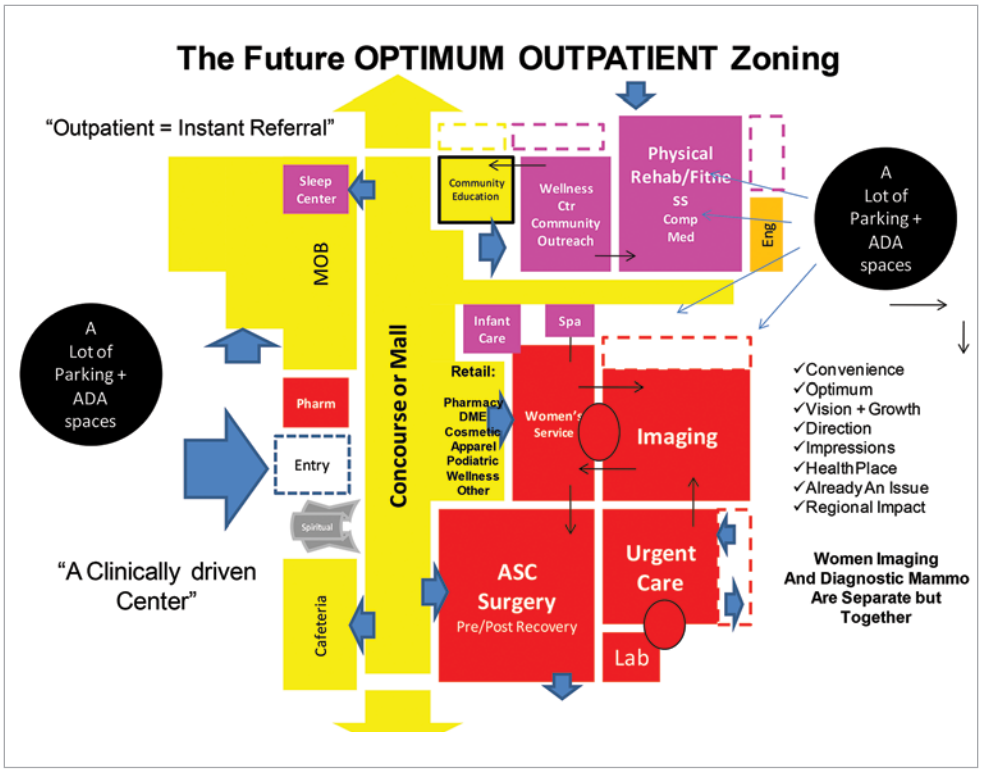

FIGURE 7: Master Planning Diagrams and Illustrative Scenarios (Illustration From Recent Planning Studies Utilizing Prototype Models)

has been our experience over the past two years to deliver fewer hard bound, 3-ring binder reports and more "electronic and super PowerPoint style" reports which are handed to the client at the end of each presentation via CD or thumb drive. In many cases we forward electronic pdf reports via the internet using "drop box", Newforma, ftp site or traditional email attachments. This technology transfer of deliverables requires the following:

- The Use of Computers Or Hand Held iPad Technology In the Field
- The Ability to Produce Work Products Real Time and Deliver At The Site
- The Use of Automation Linked to Owner Provided Assets and Systems
- The Ability to Orient Clients to Service Delivery Methods Using Video Technology
- The Use of Go-To-Meeting (GTM) Technology To Reduce Travel Expense
- The Use of Newforma and Equivalent Technology To Better Manage Data
- The Willingness Collaborate With Team Members In a Transparent Manner
- The Desire to Expand the World Of Healthcare and Systemic Planning Beyond The Norm Into Broader Avenues of Thinking Beyond the Physical Facility
- The Desire to Improve the Global Healthcare Service Delivery Market

In conclusion, it would be ideal to have a "transparent service delivery" world for healthcare where the benefits of the eAsset, eImaging, eMR, ePharm, eLab, eICU, etc. were all linked and working for the greater good of the healthcare consumer. The Meaningful Use principles and those of the HIPAA compliance world have "opened up avenues" for change that embody these integrated measures and systems. Patient privacy and confidentiality will remain a challenge and the ability to create the most appropriate "portals of entry" and "firewalls of protection" will certainly be our future challenges.

Ideally these principles of RESPONSIBLE PLANNING AND PROGRAMMING will become standard operating procedures and, over time, our TEAMWORK EFFORTS will place the planner, strategic thinker, architect, user and healthcare policy maker and board member at the decision-making table together. The more transparent our system, the greater our chances of fair and equitable service delivery. There will never be one "pure standard of care", much like there will never be one "perfect, evidence-based clinical pathway", but there is a VISION FOR AMERICA that we can improve quality, access and reduce costs by being empathetic, technologically savvy and informed.

The American Institute of Architects

1735 New York Avenue, NW
Washington, DC 20006
www.aia.org