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2014  
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**Radical Procedure  
Extends Life of a 30 Year  
Old OR Suite**

**SURVIVAL**  
The **FITTEST**

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**PANEL PRESENTATION**

- USING CASE STUDY TO FOCUS ON:
  - PLANNING.
  - IMPLEMENTATION.
  - COMMUNICATIONS.
- INTERACTION ENCOURAGED.

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**RADICAL PROCEDURES EMPLOYED**

- Contracted entire project 4 years in advance of completion to minimize learning curve of contractors.
- Phasing developed in reverse order of original construction sequence to maintain full operational capacity of OR Suite.
- Utilized evidence based design layout within the existing OR rooms sizes.

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### DOES THIS LOOK FAMILIAR?



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### IS THIS THE NEW NORM?



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### DISCUSSION MODERATOR



Managing Partner  
Capital  
Performance  
Management

- Robert L. Black, Jr.
  - Certified Construction Manager (CCM)
  - Former member of Board of Governors Construction Management Certification Institute
  - Member of the Construction Management Association of America (CMAA)
  - CMAA Person of the year 2006
- FASHE
- Certified Healthcare Constructor

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**PANELIST**



- **Craig Renno**
  - Certified Construction Manager (CCM)
  - Certified Healthcare Constructor (CHC)
  - Certificate of Achievement in Lean Six Sigma
  - Member of Construction Management Association of America (CMAA)
    - Past Exam Committee subject Matter Expert

Partner  
Capital Performance Management

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**PANELIST**



- **Michael Montgomery**
  - Certified Healthcare Constructor
  - Construction Project Coordinator for Owner
  - BS in Construction Engineering Technology
  - Responsible for all projects at a 312 bed hospital campus with over 30 off-site clinics and a service area of 22 counties.

Project Coordinator  
Mosaic Life Care

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**LEARNING OBJECTIVES**

- Examine how a strong master plan provides a foundation for adaptability and change.
- Devise strategies for technology integration, space and systems upgrades without impact to EOC.

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### LEARNING OBJECTIVES

- Employ budget/scheduling management to overcome impacts of clinical changes to an ongoing project.
- Apply effective communications promoting collaboration, and encourage innovation, and process and operational improvements.

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### LEARNING OBJECTIVES

- What are your expectations from this presentation?
  - Who is our audience?
  - Are you anticipating a project with similarities?
- What brought you to this session?
- Are there issues you expect to be addressed?

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### SURGICAL SUITE COMMONALITIES

- Notorious to renovate.
- Environment of care risk is elevated.
- Consume enormous amounts of power.
- Technology expanding exponentially.
- Spatial needs are increasing.
- Procedures are becoming less invasive.

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**IMPORTANCE OF PLANNING**

- Provides a global view and direction.
- Establishes program plotted against time.
- Creates a platform to examine the impact of each project on the overall infrastructure.
- Tests for adaptability based on change factors.
- It is dynamic and evolving.

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**IMPORTANCE OF PLANNING**

- Trends
  - Surgical facilities are responding to evolving surgical techniques and ways to enhance the safety and efficiency of surgical care.
  - Hybrid OR's are being used for cardiothoracic or vascular surgery.
  - Robotics is in ever increasing use.
  - Integration of invasive imaging within surgical suite has grown sharply.

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**IMPORTANCE OF PLANNING**

- Minimizing space is essential in controlling cost, but it must meet program requirements or be supported by evidence based design.
  - General OR 600-650 NSF.
  - Cardiovascular, Orthopedic, and Neurosurgery 650-800 NSF.
  - Surgical Suites require space for public, surgery, support areas, PACU, Phase II recovery, anesthesiology, and physicians and staff areas, and offices.

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**IMPORTANCE OF PLANNING**

- The following slides illustrate how even the best plans have to evolve and adapt.

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**IMPORTANCE OF PLANNING**

- **2000** Original master plan for surgical suite anticipated only cosmetic changes by 2010.
- **2004** Demand for a vascular OR tested plan.
- **2005** A proposed plan was developed but tabled pending a re-examination of Surgical Suite needs based on advents in technology, minimally invasive procedures, and patient growth.

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**IMPORTANCE OF PLANNING**

- **2006** Commitment to expand and renovate the entire Surgical Suite.
- **2007** Decision to add robotics.
- **2008** Construction started on expansion shell.
- **2009** Renovations begin.
- **2010** Robotics abandoned.
- **2011** Hybrid introduced with plan changes.
- **2013** Project completed.

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WE PLANNED FOR THIS



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WE PLANNED SPACE FOR THIS



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WE NEEDED SPACE FOR THIS



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**IMPORTANCE OF PLANNING**

- Planning looked at the following:
  - Improvements to the CUP.
  - Emergency power availability.
  - System replacements.
  - Access for construction.
  - Operations and patient safety.
  - Impact to support, therapeutic, and service areas.

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**IMPORTANCE OF PLANNING**

- Avoids unexpected complications.
- Anticipates issues.
- Eliminated reactive responses.
- Provides options.
- Creates a model on which to base future decisions and control the impacts of changes.
- Understand the impact of Technology Integration.

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**IMPORTANCE OF PLANNING**

- Significance of technology integration impact:
  - Cabling/backbone/equipment closets.
  - Wireless capability.
  - Power.
  - Heat generated.
  - Space.
  - Scalability.
  - Clinical Systems needs.

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**IMPORTANCE OF PLANNING**



Great Moments in Healthcare IT:  
Connecting PACS with EMR

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**IMPORTANCE OF PLANNING**

- Technology closets.
- Cameras, recorders, and other teaching devices.
- Fiber/wireless connectivity.
- Large data monitors.
- Integrated patient data and records.
- Integrated scheduling.
- More equipment tied to connectivity points.
- Complexity of equipment introduced into the surgical suite.
- Emerging applications.

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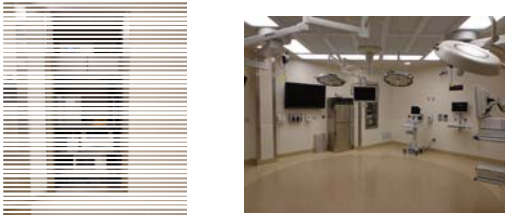
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**IMPORTANCE OF PLANNING**



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**IMPLEMENTATION**

- Why is it important to devise strategies?
  - Define the extent of system upgrades.
  - Accomplish space upgrades and changes.
  - Minimize operational conflicts.
    - Phasing.
  - Maintain the environment of care.
    - ICRA & ISLM Processes and Procedures.
  - Active Budget/Schedule Management.

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**IMPLEMENTATION**  
**DEFINE SYSTEM UPGRADES EXTENT**

- Maximize upgrading of 30 year old infrastructure
- Examine what was proposed vs. existing
- Validate capacities of systems to support program needs
- Ensure systems maintain EOC during and after construction

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**IMPLEMENTATION**  
**DEFINE SPACE UPGRADES/ CHANGES**

- Lean Six Sigma utilized for
  - Process studies to improve efficiencies
  - Maximizing utilization of small OR footprints for new MIS equipment
  - Parity between “standard” operating rooms
- Mock-ups for new processes

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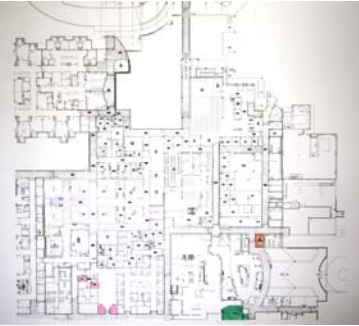
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**IMPLEMENTATION - PHASING**



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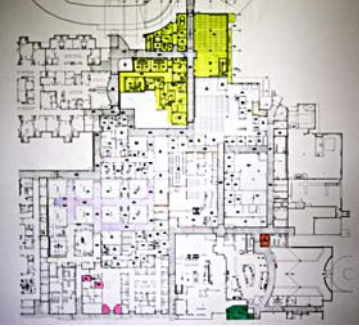
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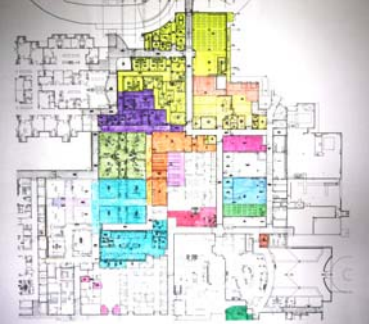
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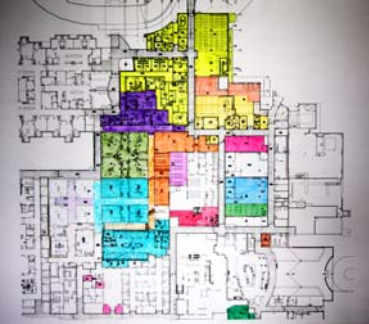
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### IMPLEMENTATION - PHASING



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### IMPLEMENTATION – ENVIRONMENT OF CARE

- Construction increases the risk factor.
- Requires a program that is enforced.
- Establishment of protocols and procedures is essential.
- Reinforcement and training are tools to accomplish compliance.
- Attention to detail is the bedrock of success.

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### IMPLEMENTATION – ENVIRONMENTS OF CARE

**ICRA**

- Established early in planning and design process.
- Project policies and procedures adopted and published.
- Hospitals ICRA specialist recruited into project team.
- Method of Performance Forms required for each level of work.
- Training of all construction personnel prior to being allowed on project.

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**IMPLEMENTATION – ENVIRONMENT OF CARE**

**ICRA**

- Access identified and planned to maintain separation of sterile and non-sterile environments.
- Negative pressure assured by installation of temporary exhaust in every phase.
- Monitoring meters and data recorders provided documentation.
- Dust control protocols enforced including covering and wipe down of carts, tools, and equipment.

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**IMPLEMENTATION – ENVIRONMENT OF CARE**

**ISLM**

- Sprinkler system maintained and active.
- Fire alarm system maintained.
- Temporary heat and smoke detection added.
- Barrier plan included in documents.
- Security enlisted as a team member and provided fire-watches throughout construction.
- Exits maintained or redefined. No exit closed without alternate means in place.

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**IMPLEMENTATION – ENVIRONMENT OF CARE**

**ISLM**

- Comprehensive phasing exit plans developed for each phase.
- All exit pathways signed and illuminated prior to realignments.
- Advance notice to all caregivers.
- Barriers maintained fire and smoke ratings.

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**IMPLEMENTATION –  
BUDGET & SCHEDULE MANAGEMENT**

- Use economy of scale to leverage purchases of goods and services.
- Budget adaptability within the program parameters.
- Bundling of projects to maximize flexibility.
- Employ opportunities.
- Active schedule management to address:
  - Robotics to hybrid.
  - CPU improvements for energy conservation and capacity.
  - Environmental comfort.
  - Technology needs.

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**IMPLEMENTATION –  
BUDGET & SCHEDULE MANAGEMENT**

- Dynamic Scheduling was employed to address changes introduced by clinical needs.
- Delayed equipment purchases to implement latest technology.
- Managed “cost at completion” to control budget and maximize Owner investment.
- Completed the project under budget with scope changes

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**EFFECTIVE COMMUNICATIONS -**

- SUCCESS WAS BUILT ON THESE STEPS:
  - COMMUNICATE,
  - INFORM.
  - INVOLVE.

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**EFFECTIVE COMMUNICATIONS**

- Establish a surgical suite advisory committee.
- Monthly meetings with:
  - Facilities.
  - Security.
  - Surgical Team Leader.
  - Infection control.
  - Senior leadership.
- Weekly meeting with Departmental leadership.
- Informal daily meetings.
- Mock-ups for visualization and fine tuning.

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**EFFECTIVE COMMUNICATIONS**



Puzzle tools to engage users.

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**EFFECTIVE COMMUNICATIONS**



Ownership through involvement.

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**EFFECTIVE COMMUNICATIONS**

Mock-ups



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**EFFECTIVE COMMUNICATIONS**

C-Arm & Boom      Mock-up C-Arm and Boom



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**EFFECTIVE COMMUNICATIONS**

- Promotes collaboration.
- Encourages Innovation.
- Strives for process and operational improvements.
- Eliminates misunderstandings.
- Provides tools for collaboration.

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**SUCSESSES**

- Development of an integrated Method of Performance program that identifies the tasks to be undertaken and by key word notifies every party involved.
- Evolved a model for operational and process improvements for each new project.
- Empowered input from every level of involvement.

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**SUCSESSES**

- The Joint Commission inspection garnered praise for the process and procedures in place.
- Planning created confidence to change direction mid-stream and the adaptability allowed the insertion of the hybrid OR.
- Projecting costs at completion and aggressively buying out project built reserves to absorb changes.

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**CASE STUDY IMAGES**

- THE FOLLOWING IMAGES REPRESENT THE FINISHED SURGICAL SUITE PROJECT

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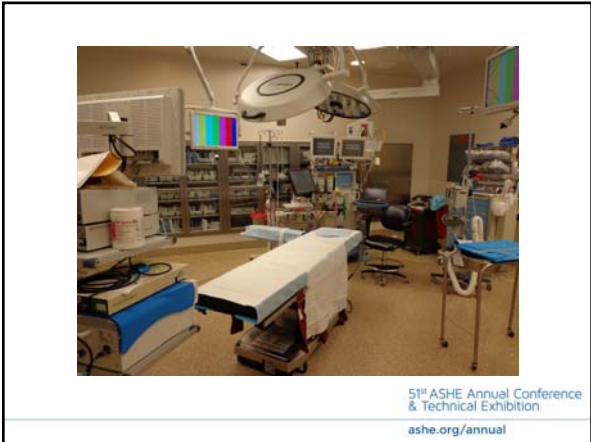
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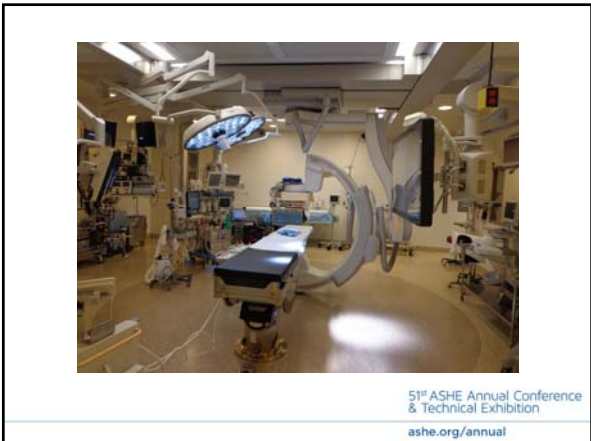
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THIS CONCLUDES THE  
PRESENTATION  
LET'S OPEN THE PROGRAM FOR QUESTIONS  
AND DISCUSSION.

**SURVIVAL**  
OF  
THE **FITTEST**  
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