PROJECT MANAGEMENT ESSENTIALS: INCREASE YOUR IMPACT BY UNDERSTANDING THE BIGGER PICTURE

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SPEAKERS

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AGENDA

01 / The Evolution of Oncology Care
02 / Rethink Everything
03 / Outcomes + Lessons Learned
04 / Q & A
BUT FIRST…
A SHORT STORY.

THE EVOLUTION OF
ONCOLOGY CARE

THE COMMON GOAL OF
TECHNOLOGY AND ARCHITECTURE
IN ONCOLOGY PATIENT CARE IS TO…
IMPROVE PATIENT OUTCOMES.

SOME BENCHMARKS INCLUDE:
• SURVIVAL RATE
• PATIENT EXPERIENCE
• PATIENT COMFORT DURING TREATMENT

WHAT IS THE NEXT CONTRIBUTION FROM ARCHITECTURE – IN TERMS OF IMPROVING PATIENT OUTCOMES?

HOW CAN THE BUILT ENVIRONMENT BETTER CONTRIBUTE?

HOW CAN THE PHYSICIST’S UNDERSTANDING OF PROJECT MANAGEMENT BETTER CONTRIBUTE?
THE PHYSICIST HAS AN IMPACT ON PATIENT CARE THROUGH SCIENCE

THE PHYSICIST ALSO HAS AN IMPACT ON PATIENT CARE THROUGH ARCHITECTURE AND DESIGN

BUT FIRST...

A REVIEW OF THE TYPICAL TREATMENT ENVIRONMENT

TECHNOLOGY in the early 1900s........INNOVATIVE BUT SCARY
VAULT LOCATION in the beginning… BASEMENT

VAULT LOCATION in the modern era is ABOVE GROUND
ONCOLOGY / TECHNOLOGY / INNOVATION

WITHIN THE VAULT … SAME PATIENT EXPERIENCE

ONCOLOGY / TECHNOLOGY / INNOVATION

TECHNOLOGY AND POSITIVE DISTRACTIONS CAN CONTRIBUTE TO AN IMPROVED PATIENT EXPERIENCE...

BUT THESE PHOTOGRAPHS ARE NOT THE REALITY OF PATIENT OR STAFF EXPERIENCE

ONCOLOGY / TECHNOLOGY / INNOVATION – REALITY IS…

CLUTTER HAS A NEGATIVE IMPACT ON PATIENT EXPERIENCE

CLUTTER HAS A NEGATIVE IMPACT ON STAFF EXPERIENCE AND EFFICIENCY
So what is the “Typical” Project Development Process?

1. PROJECT ANNOUNCEMENT
2. ARCHITECT SELECTION
3. ARCHITECT-LED VISIONING
4. ARCHITECT-LED PROGRAMMING
5. DESIGN & CONSTRUCTION

Owner
Determines
Facility Need

Owner
Interview or
Direct Select of
Architect
So what is the “Typical” Project Development Process?

1. PROJECT ANNOUNCEMENT
   - Owner Determines Facility Need

2. ARCHITECT SELECTION
   - Interview or Direct Select of Architect

3. ARCHITECT-LED VISIONING
   - Meetings to Define Goals and Expectations

4. ARCHITECT-LED PROGRAMMING
   - Determination of functional and supportive spaces

5. DESIGN & CONSTRUCTION
   - Concept - Documentation & Construction
MULTIPLE PHASES OF THE DESIGN & CONSTRUCTION PROCESS

Programming

Concept

Refinement & Massing Study

Functional plans & Integration

CONCEPT PHASE

Schematic Design

DESIGN DEVELOPMENT

CONCEPT PHASE

Schematic Design

Design Development
Typical Design Phases

- Programming & Idea Generation
- Concept Refinement & Massing Study
- Functional plans & Systems Integration
- Construction Details & Equipment Coordination
- Construction Oversight with Contractor

Multiple Phases of the Design & Construction Process

Concept Phase
- Schematic Design
- Design Development
- Construction Documentation

Concept Design
- Schematic Design
- Design Development
- Construction Documentation
- Construction Administration

SO ----- WHEN SHOULD THE PHYSICIST BE INVOLVED IN THE DESIGN AND CONSTRUCTION PROCESS?
02 / RETHINK EVERYTHING
Typical Design Process

AZ EVERY STEP OF DESIGN AND THROUGHOUT CONSTRUCTION.
IF YOU ARE NOT INVOLVED, YOU ARE NOT COMPLAINT.

WHAT IS THE TYPICAL TEAM STRUCTURE
FOR DESIGN AND CONSTRUCTION?
## Typical Team Structure

### Owner Representatives
- C-Suite (Executives)
- Real Estate Representation
- Development Partners
- Department Administrators
- Physicians (User)
- Radiation Therapists (User)
- Clinicians (User)
- Patient Representation
- More!

### Design Representatives
- Architect
- Civil Engineers
- Interior Designers
- Mechanical Engineers
- Electrical Engineers
- Plumbing Engineers
- Structural Engineers
- Low Voltage / Tele Data Designers
- Medical Equipment Planners
- More!

### Construction Representatives
- General Contractor
- Electrical trade partner
- Mechanical trade partner
- Plumbing trade partner
- Concrete contractor
- Steel contractor
- Demolition contractor
- Conveyance Contractors
- Exterior Systems Contractors
- More!
# Typical Team Structure

## Design and Construction Team

<table>
<thead>
<tr>
<th>Role</th>
<th>Roles/Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-Suite (Executives / Owner)</td>
<td>Architect, General Contractor</td>
</tr>
<tr>
<td>Real-Estate Representation</td>
<td>Civil Engineers, Electrical trade partner</td>
</tr>
<tr>
<td>Development Partners</td>
<td>Interior Designers, Mechanical trade partner</td>
</tr>
<tr>
<td>Department Administrators</td>
<td>Plumbing trade partner, Structural Engineers</td>
</tr>
<tr>
<td>Physicians (User)</td>
<td>Medical Equipment Planners, Exterior Systems Contractors</td>
</tr>
<tr>
<td>Radiation Therapists (User)</td>
<td>(More!)</td>
</tr>
<tr>
<td>Clinicians (User)</td>
<td>(More!)</td>
</tr>
<tr>
<td>Patient Representation</td>
<td>(More!)</td>
</tr>
<tr>
<td>Medical Providers</td>
<td>(More!)</td>
</tr>
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</table>

## UTSW Jump Started the Design Process

The design process began with an independent visioning session followed by project announcement, architect selection, architect-led visioning, architect-led programming, and finally the design process.
Envisioning a Future Plan =
A Vision and Strategic Alignment

A Vision and Strategic Alignment should be:
1. A clear and understandable vision
2. Understood by everyone and at all levels
3. Open to adjustments as the team encounters challenges and opportunities in the project

02 / RETHINK EVERYTHING

UT Southwestern’s Journey — Leadership Sets the Stage

Three Challenges in Existing Department
1. 5 clinical areas across the campus
2. Patients, providers, and staff often required to move between centers
3. Patient volume increases leading to capacity issues and long hours

“What is the ideal practice for us?”
“We need to define our Goals for Patient care, Academic and Research.”
GOAL AND VISION
Create a master expansion project plan based on thoughtful review, assessment and department priorities.

AREAS OF FOCUS
Patient care, clinical work flow, technology and the future development of the program.

Most importantly, four core elements drove our mission:

- Patient-Centric Care System: fosters well-being, enhances comfort & safety
- Team Environment: flexible spaces that accommodate new technology and care teams with fewer walls and more shared spaces to foster productivity, facilitates focus, collaboration and organized work
- Advancing Technology: streamlines workflow, adapts to technology and change, supports sustainability and accuracy
- Cost-Effective Design: smart investment of resources

Project Leaders must be engaged at the phase most important for the user...

Their experience and judgement is
ROLE OF THE PHYSICIST – PLANNING AND DESIGN

SCHEDULE IMPACT

We can do better than: hey physicist, what did you say? How much time do you need for commissioning?

Physicists can efficiently help only if they are involved from the beginning of the project.


Understand there is a real time commitment requirement from the physicist for the duration of design and construction.
Manager: Let's buy a linac from vendor V. I just had a conference call with them and they are running Memorial Day specials on 4MV linacs.

Physicist: Can you tell me what is it you want to do? Can I suggest few options to consider?

Recommendation: Always better to build housing for technology than to try to fit technology to housing.

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Physicist responsibility is to advise the team: Foresee and discuss in room and out of room secondary technology needs

Recommendation: if we do not inform and communicate requirements, no connections nor space will be allocated

Build a “smart” building. Data collection and analysis is the future. Connecting the teams together in unconventional ways is the future.

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Advise the team: Foresee and discuss data handling solutions – clinical physics needs with IT options.

Recommendation: if nothing else, TPS and R&E will keep existing for some time. Understand the technology and advise accordingly solutions (servers, cloud, remote connections)
TECHNOLOGY UTILIZATION

Architect: I have drawn many linac rooms. No worries, I can handle it.

Physicist: But I just talked to the clinical director and we need to start a TBI program

Architect: What’s TBI?

Recommendation: avoid surprises, allocate proper space dictated by patient need. Clear and early communication with the team is critical.

SPECIAL PROCEDURES

Manager: I am not sure about radioactive material usage. Will decide later. You can do them in CT or Tx room right?

Physicist: Yes. But need a hot lab. NRC or the state will shut us down if we mishandle storage of rad. mat.

Recommendation: brainstorm a lot about program development, what everything do you plan to do and advise architects.

Delayed decisions will have a negative impact on design documentation which will delay construction completion.

SITE SELECTION

Manager: I can squeeze this new building on this site.

Physicist: Can you tell me the time scale this site should provide service?

Recommendation: Think about flexibility and consider expansion needs.

Expansion requirements must be incorporated at the programming and conceptual phases of design. A lack of consideration by the team can have a costly impact on future expansion programs.
SITE SELECTION

Manager: If we built on this side of the street, it is cheaper!
Physicist: It is off campus. Is the power reliable?
Recommendation: Think about patients on table when power goes out. Do you need generators to power the whole building?

SPACE - STAFFING - NUMBERS

Manager: How many staff members do you have? You guys can squeeze in here (forever) right?
Physicist: But we are expected annual patient growth that should follow by physics and dosi expansion.
Recommendation: Understand patient number growth, procedure growth and their influence on physics and dosi head count.
Always consider future growth but know that a construction budget and schedule are generally finite.

SPACE - STAFFING - LOCATION

Manager: you guys can squeeze in here (forever) right?
Physicist: It is not about office size. It is about location and connectivity to the team.
Recommendation: Always press for physicist being mingled with MDs and dosi mingled with MDs.
<table>
<thead>
<tr>
<th>SPACE - PHYSICS STORAGE</th>
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<tbody>
<tr>
<td><strong>Manager:</strong> remember, $/square feet are expensive. I can give you this corner.</td>
</tr>
<tr>
<td><strong>Physicist:</strong> we have expensive, precisely calibrated equipment to house, not to wheel through the Rockies to reach Tx room</td>
</tr>
<tr>
<td><strong>Recommendation:</strong> Understand your equipment. Proximity to vaults is crucial. Active participation in Schematic Design phase is essential to your department's functional representation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPACE – ENGINEERING STORAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manager:</strong> remember, $/square feet are expensive. I can give you this other corner.</td>
</tr>
<tr>
<td><strong>Physicist:</strong> but our engineers need space too. We are planning to have a shared contract with the vendor. Spare parts need to be stored on site for them.</td>
</tr>
<tr>
<td><strong>Recommendation:</strong> Understand your team and their need. Proximity to vaults is crucial. Vendors are people too.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPACE - SHIELDING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manager:</strong> make it thin! Concrete and lead are expensive!</td>
</tr>
<tr>
<td><strong>Physicist:</strong> I will, but first tell me what are we going to treat.</td>
</tr>
<tr>
<td><strong>Recommendation:</strong> it is vital to spend enough time with physicians and administration to understand the workload and occupancy factors for shielding calculations.</td>
</tr>
</tbody>
</table>
Physicist at arbitrary stage: excuse me, where is the physicist storage?
Architect: Well, it is right here!
Architect & Managers: What 30m² we said we can fit 30m²?
Recommendation: Any design change, square footage reallocation should be a team decision. Physicist must be proactive in maintaining logs to avoid the blame game.

KEEP LOGS, AVOID THE BLAME GAME

HOW DID OUR TEAM BEGIN TO CREATE A NEW PATTERN OF COLLABORATION?

02 / RETHINK EVERYTHING
UT Southwestern’s Journey — Engaging a Culture of Change

OUR LEADERSHIP MESSAGE TO OUR PRACTICE:
Currently, we have a good work environment but areas of opportunity exist in patient care, design, and workflow. We need your input.

The new center design will optimize the patient experience, clinical workflow and integrate future technologies into the building, and ultimately create a center with world class function.
DEPARTMENT-LED INITIATIVES TO CREATE A PROJECT CHARTER:
• Three core committees: Operations, Technology, Innovation
• More than 17 sub-committees met at least once a week to define and recommend program opportunities for 3 months
• 100 personnel involved
PLUS
Master planning retreat to review the committees’ work and facilitate discussion with University leadership, CIP, department and architects.

CONTENTS
• Statement of Scope
  - Vision
• Background
  - Current environment
  - Patient volume and capacity
  - Business model
• Project Objectives
• Dependencies
  - University leadership approval
  - Opportunity and Alignment Plan
  - Key Milestones and Timelines
  - Charter Roles Matrix
  - Charter Team Directory
  - Project Meeting Management
Create an environment at the start of the project where team members:
• Are expected to contribute towards key decisions
• Have authority to make decisions and not operate in isolation
• Are informed of decisions and why
• Are encouraged to highlight risks and issues.

HOW DO WE BREAK TRADITIONAL BOUNDARIES — WITH THE INTENT TO EXPLORE GREATER IDEAS?

CHARTER OBJECTIVES FOR THE COMMITTEES:
Evaluate and develop a recommendation for a model state of the art radiation oncology facility comprised of clinical, research and support space

Review, assess and plan department priorities for a facility expansion in areas of:
• Patient care environment
• Technology
• Clinical work flow
• Future development of the program

During the 3-months, each committee was challenged to meet and report weekly to department executive leadership.
02 / RETHINK EVERYTHING.
(02 - DESIGN)

UT Southwestern's Journey –
Timeline and Key Milestones

OCTOBER 2013
- Project Kickoff Meeting Held

NOVEMBER 2013
- Completion of Business Plan

JANUARY 2014
- UTSW Board Meetings

FEBRUARY 2014
- Department Master Planning – 75% Complete

MARCH 2014
- UTSW Board of Regents Approval
- Radiation Oncology Retreat
- Radiation Oncology Milestone

FEBRUARY 2014
- Initiate External Design Team

JANUARY 2014
- UTSW Board of Regents Approval

DEPARTMENT MASTER PLANNING
REVIEW THE TRADITIONAL MAZE VAULT LAYOUT

CURRENT VAULT DESIGN CHALLENGES

A. LENGTHY PATIENT & STAFF TRAVEL DISTANCE

B. PATIENT ISOLATION BEHIND THE MAZE WALL
CURRENT VAULT DESIGN CHALLENGES

C. HIGH $ PER SF • LARGE VAULT FOOTPRINT

D. STORAGE APPEARS AS CLUTTER TO THE PATIENT. INCONVENIENT AND INCONSISTENT FOR THE STAFF

E. SINGLE ACCESS POINT FOR ALL STAFF, ALL EQUIPMENT AND PATIENTS

ALL EQUIPMENT IN AND OUT OF A SINGLE DOOR
PERHAPS – THE NEXT EVOLUTION IN RADIATION ONCOLOGY CARE IS NOT ANOTHER APPLICATION OF TECHNOLOGY TO THE VAULT. PERHAPS IT'S A TOTAL REIMAGINING OF THE ENTIRE VAULT ITSELF.

WHAT IF... WE COMPLETELY REIMAGINED THE TREATMENT VAULT?

WHAT IF...... REDUCED THE STANDARD MAZED-VAULT FOOTPRINT BY 600 SF?
WHAT IF...... REPLACED THE COSTLY MAZE WITH A TECHNOLOGY CORRIDOR?

WHAT IF...... TRADED A SINGLE SWING DOOR WITH TWO SLIDING DOORS?

REDEFINED THE RADIATION THERAPY VAULT
A SHORTENED PATIENT & STAFF TRAVEL DISTANCE

BETTER PATIENT EXPERIENCE
BETTER STAFF EXPERIENCE
MORE EFFICIENT TRANSFER OF EQUIPMENT

B PATIENT ISOLATION MINIMIZED WITH REMOVAL OF THE MAZE WALL

C MINIMIZE HIGH-COST FOOTPRINT
(31' X 31') REPURPOSE THE $ SAVINGS TO OTHER THE NEW TECHNOLOGY CORRIDOR AND ADDITIONAL VAULT-ACCESS DOORS

VAULT SIZE WILL VARY WITH USER PREFERENCE – DESIGN CAN ACCOMMODATE MOST TECHNOLOGIES AND VENDORS
INCREASED & ORGANIZED STORAGE – ELIMINATES CLUTTER AND REDUCES COST

TWO ACCESS POINTS: SEPARATION OF EQUIPMENT, STAFF & PATIENT

THE ADDITION OF A TECHNOLOGY CORRIDOR CAN INCREASE STORAGE BY NEARLY 50%. STORAGE IS BETTER ORGANIZED AND MORE EFFICIENT

HOW DID THIS TEAM SUCCESSFULLY APPLY THIS REDEFINED DESIGN SOLUTION AT UT SOUTHWESTERN MEDICAL CENTER?
MODERN VAULT DESIGN SOLUTION

PUCKER FACTOR – the small universal room
- Overlay of 4 different pieces of major equipment.
- Specific clearance requirements for each.
- We requested less space for each vendor.
- 1.5 years from completed documentation to confirmation of equipment “fit”
ROLE OF THE PHYSICIST – CONSTRUCTION PHASE
### PHYSICS – ACTIVE PART OF CONSTRUCTION TEAM

Manager: Thanks for your help. We finished planning, I can take over now.
Physicist: OK, you know where to find me if help needed.

One week later: Hey, physicist, can you take a look where you like the QA station to be? Can you inspect the shielding progress, can you ......

**Recommendation:** Administration should encourage physics to be part of weekly construction progress meetings.

Physics should be actively available and checking if construction is proceeding according to plans and be part of on-the-spot decisions.

### ENGINEERS – ACTIVE PART OF CONSTRUCTION TEAM

Manager: We are planning a shared contract after warranty expires. Hire engineers later.
Physicist: Hmm, but we are expensive, we cannot speak for engineers during construction. And also, we need them to be here during machine installation to oversee the details! You know where to find me if help is needed.

**Recommendation:** Administration should encourage very early involvement of engineers. They know their needs. Physics combined with engineering is a dream team.

### PROTECT EQUIPMENT DURING CONSTRUCTION

Manager: Timing is crucial! Do we have a roof? Let’s install machines so you are done with commissioning when the construction company releases the building to us.
Physicist: Look, I found a concrete brick in the thyrotron! Look, if I shine a laser pointer, I nicely see its path in the air dust.

**Recommendation:** Physicists and engineers are the bridge between vendors and construction people. Daily oversight of activities is recommended, especially when equipment is installed but last minute changes are happening.
Manager: Are we done yet?

Physicist: Sorry, we allocated too little time. Propose phased approach potentially!

Recommendation: Physics must be part of weekly meetings to see progress to confirm the commissioning start date.

Physics be part of daily construction meetings to adjust commissioning schedule appropriately for delays or early work finishes.

**COMMISSIONING**

**03 / OUTCOMES + LESSONS LEARNED**

Indicators of a successful project:

- Alignment with the organization’s strategic plan
- Meets or exceeds the intended scope
- Meets or exceeds the need and desires of the key stakeholders
- Enhanced work flow efficiency
- Allows for the highest quality of care provided at an affordable price and operated at the lowest cost
Collaborative work space
Flexibility
Proximity to clinical areas
Reducing silos
Technology
03 / OUTCOMES + LESSONS LEARNED

Location
Waiting Area
Consultation & Procedure Rooms
Care Providers
Technical Issues

HAVE A STRONG PROJECT CHARTER & SCOPE
A living plan that evolves as the project matures.
03 / OUTCOMES + LESSONS LEARNED

HAVE A STRONG PROJECT CHARTER & SCOPE
A living plan that evolves as the project matures.

HAVE AN INTEGRATED CORE TEAM
All should be involved from the beginning of project design.

ESTABLISH CULTURAL BUY-IN
It is the TEAM that succeeds or fails—invest in combined success.

TAKE A DEEP DIVE
Understand detailed work flow and environment assessment.

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Understand detailed work flow and environment assessment.
DON'T BE AFRAID TO DREAM BIG!

Q&A

4/6/2018