






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.**



01 /

**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

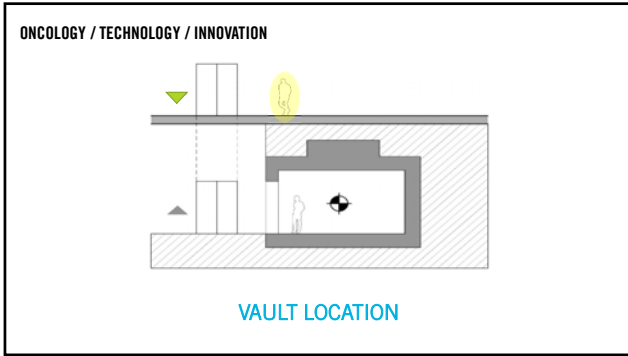
BUT FIRST...

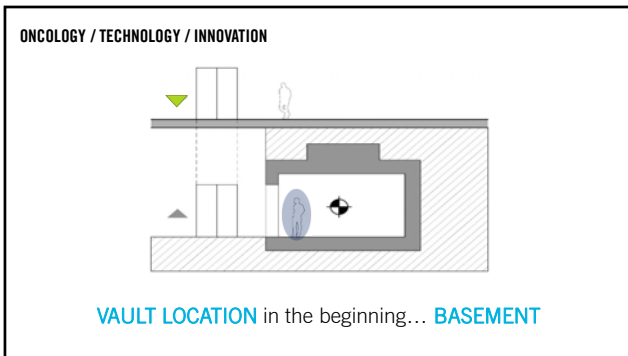
A REVIEW OF THE TYPICAL TREATMENT ENVIRONMENT

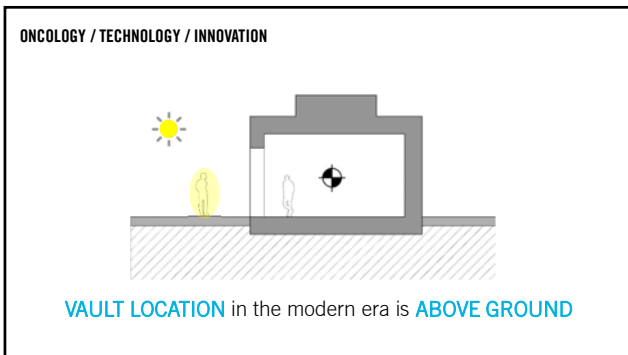
ONCOLOGY / TECHNOLOGY / INNOVATION



TECHNOLOGY in the early 1900s.....INNOVATIVE BUT SCARY







ONCOLOGY / TECHNOLOGY / INNOVATION



WITHIN THE VAULT... SAME PATIENT EXPERIENCE

ONCOLOGY / TECHNOLOGY / INNOVATION

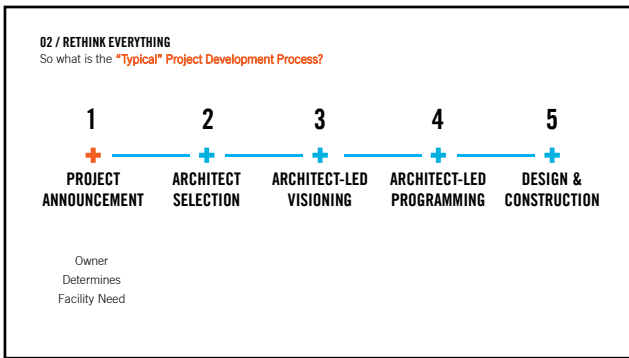


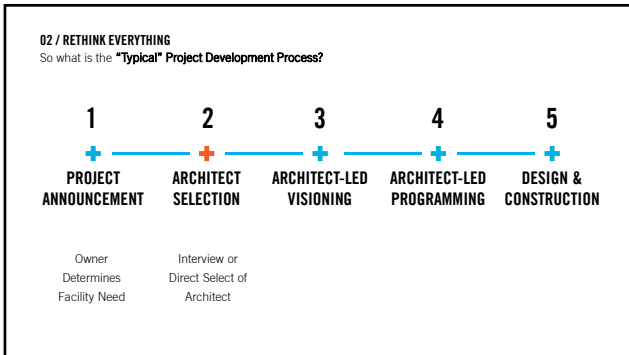
TECHNOLOGY AND POSITIVE DISTRACTIONS CAN CONTRIBUTE TO AN IMPROVED PATIENT EXPERIENCE... BUT THESE PHOTOGRAPHS ARE NOT THE REALITY OF PATIENT OR STAFF EXPERIENCE

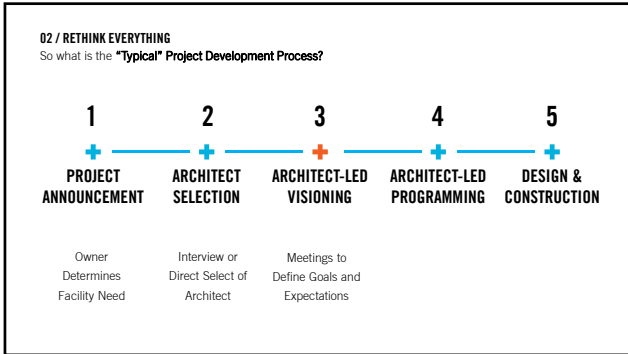
ONCOLOGY / TECHNOLOGY / INNOVATION – REALITY IS....

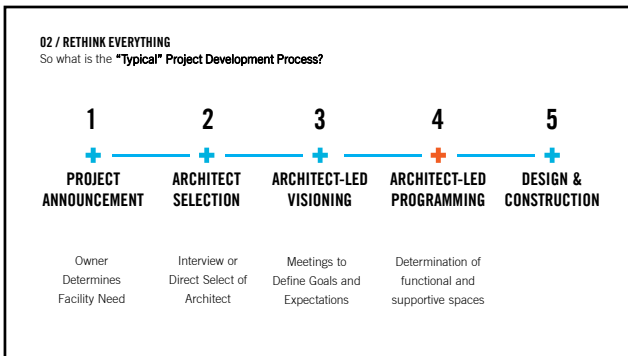


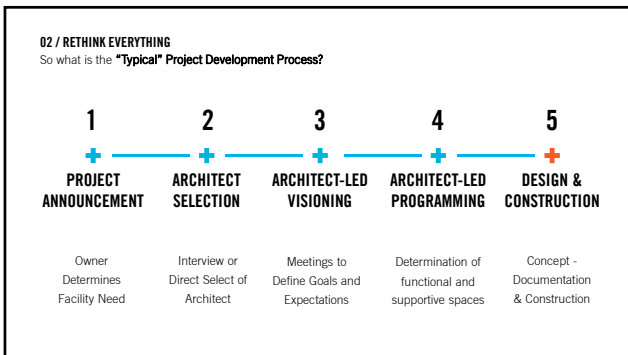
02 / RETHINK EVERYTHING. (PART 1 - PROCESS)

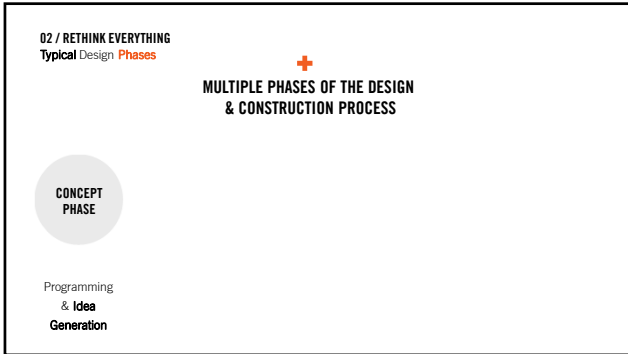


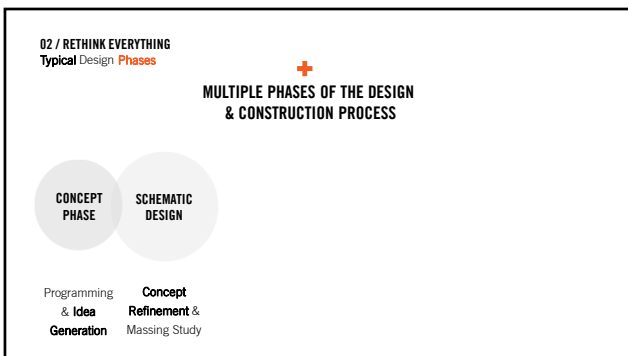


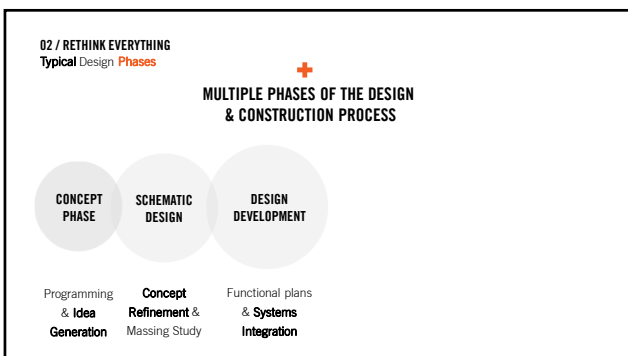


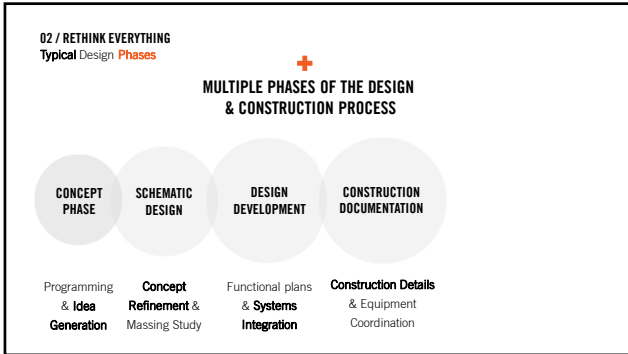


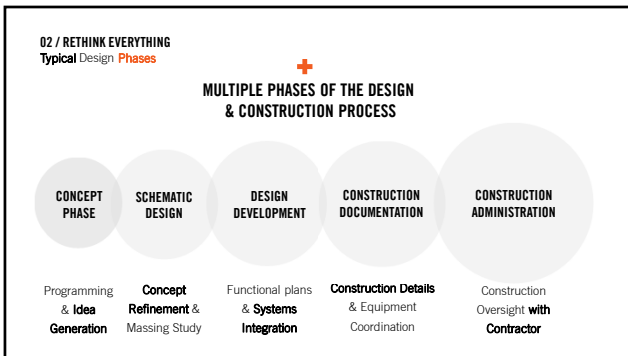


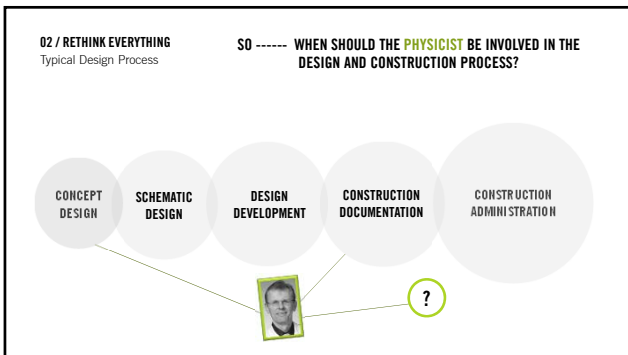


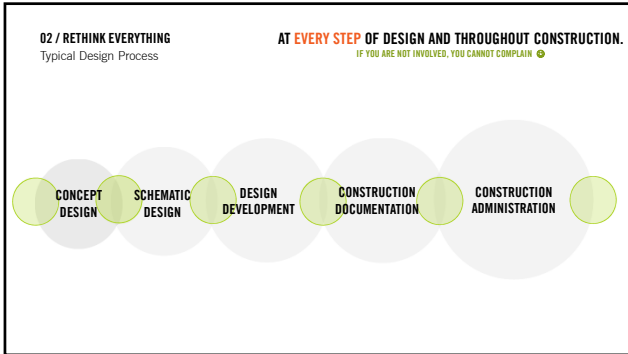


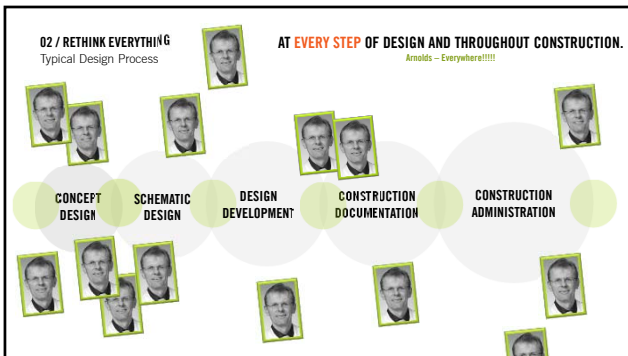












02 / RETHINK EVERYTHING
Typical Design Process

WHAT IS THE TYPICAL TEAM STRUCTURE FOR DESIGN AND CONSTRUCTION?

02 / RETHINK EVERYTHING
 Typical Team Structure

OWNER REPRESENTATIVES

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

02 / RETHINK EVERYTHING
 Typical Team Structure

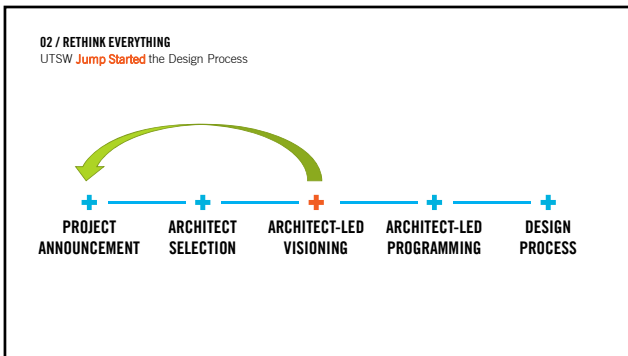
OWNER REPRESENTATIVES	DESIGN REPRESENTATIVES
C-Suite (Executives / Owner)	Architect
Real-Estate Representation	Civil Engineers
Development Partners	Interior Designers
Department Administrators	Mechanical Engineers
Physicians (User)	Electrical Engineers
Radiation Therapists (User)	Plumbing Engineers
Clinicians (User)	Structural Engineers
Physicists (User)	Low Voltage / Tele Data Designers
Patient Representation	Medical Equipment Planners
More!	More!

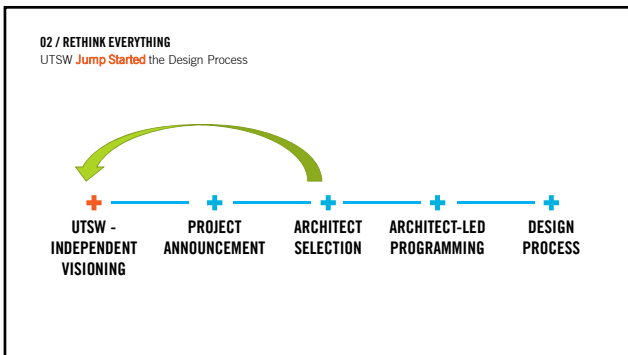
02 / RETHINK EVERYTHING
 Typical Team Structure

OWNER REPRESENTATIVES	DESIGN REPRESENTATIVES	CONSTRUCTION REPRESENTATIVES
C-Suite (Executives / Owner)	Architect	General Contractor
Real-Estate Representation	Civil Engineers	Electrical trade partner
Development Partners	Interior Designers	Mechanical trade partner
Department Administrators	Mechanical Engineers	Plumbing trade partner
Physicians (User)	Electrical Engineers	Concrete contractor
Radiation Therapists (User)	Plumbing Engineers	Steel contractor
Clinicians (User)	Structural Engineers	Demolition contractor
Physicists (User)	Low Voltage / Tele Data Designers	Conveyance Contractors
Patient Representation	Medical Equipment Planners	Exterior Systems Contractors
More!	More!	More!

02 / RETHINK EVERYTHING
Typical Team Structure

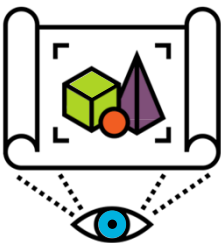
	DESIGN AND CONSTRUCTION TEAM	
C-Suite (Executives / Owner)	Architect	General Contractor
Real-Estate Representation	Civil Engineers	Electrical trade partner
Development Partners	Interior Designers	Mechanical trade partner
Department Administrators	Mechanical Engineers	Plumbing trade partner
Physicians (User)	Electrical Engineers	Concrete contractor
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Physicists (User)	Low Voltage / Tele Data Designers	Conveyance Contractors
Patient Representation	Medical Equipment Planners	Exterior Systems Contractors
More!	More!	More!





Envisioning a Future Plan = A Vision and Strategic Alignment

02 / RETHINK EVERYTHING



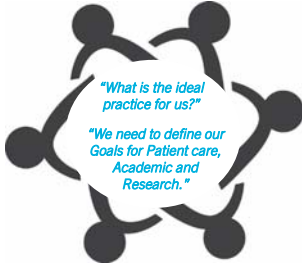
A VISION AND STRATEGIC ALIGNMENT SHOULD BE:

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."

02 / RETHINK EVERYTHING
UT Southwestern's Journey – Mission and Goals

GOAL AND VISION

Create a master expansion project plan based on thoughtful review, assessment and department priorities.

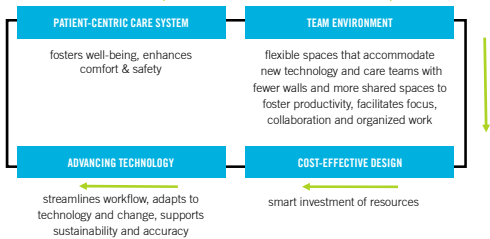
AREAS OF FOCUS

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



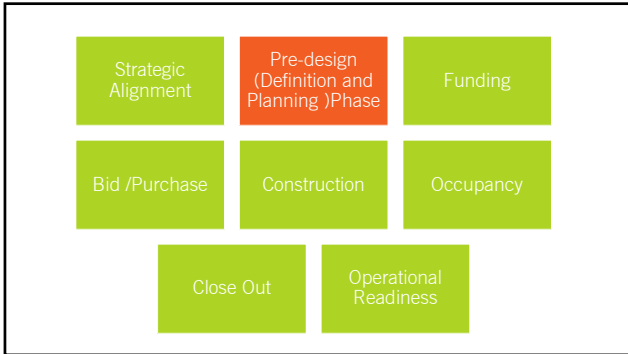
02 / RETHINK EVERYTHING
UT Southwestern's Journey – Mission and Goals

Most importantly, four core elements drove our mission:



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.

What is the beginning? Installed Linac? Empty building? Ground breaking? No, way earlier!

Understand there is a real time commitment requirement from the physicist for the duration of design and construction!

TECHNOLOGY SELECTION

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

TECHNOLOGY SELECTION

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.

TECHNOLOGY SELECTION - COMPUTING

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

Recommendation: if nothing else, TPS and R&V 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.

SPACE - PHYSICS STORAGE

Manager: remember, \$ / square feet are expensive. I can give you this corner.

Physicist: we have expensive, precisely calibrated equipment to house, not to wheel through the Rockies to reach Tx room

Recommendation: Understand your equipment. Proximity to vaults crucial.

Active participation in Schematic Design phase is essential to your department's functional representation

SPACE – ENGINEERING STORAGE

Manager: remember, \$ / square feet are expensive. I can give you this other corner.

Physicist: 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.

Recommendation: Understand your team and their need. Proximity to vaults is crucial.

Vendors are people too.

SPACE - SHIELDING

Manager: make it thin! Concrete and lead are expensive!

Physicist: I will, but first tell me what are we going to treat.

Recommendation: it is vital to spend enough time with physicians and administration to understand the workload and occupancy factors for shielding calculations.

KEEP LOGS, AVOID THE BLAME GAME

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.

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

D2 / 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 work flow. We need your input.


The new center design will optimize the patient experience, clinical work flow and integrate future technologies into the building, and ultimately create a center with world class function.

02 / RETHINK EVERYTHING
UT Southwestern's Journey – The Project Charter

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.

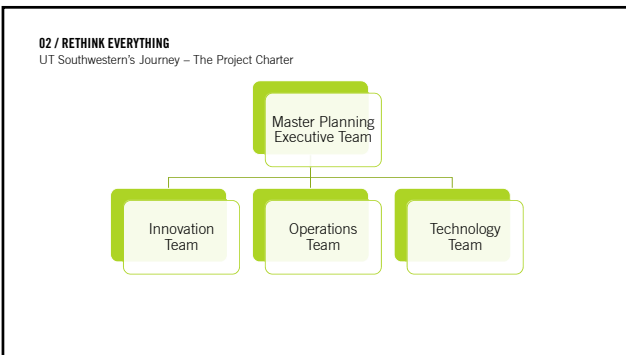


02 / RETHINK EVERYTHING
UT Southwestern's Journey – The Project Charter

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**





02 / RETHINK EVERYTHING

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

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



02 / RETHINK EVERYTHING

UT Southwestern's Journey – The Project Charter

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

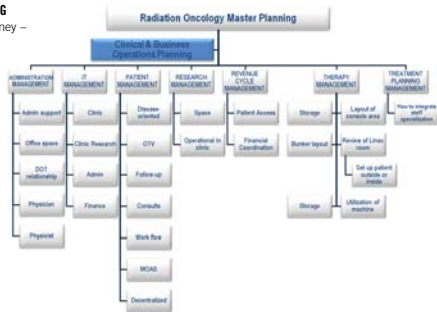
During the 3 months, each committee was challenged to meet and report weekly to department executive leadership

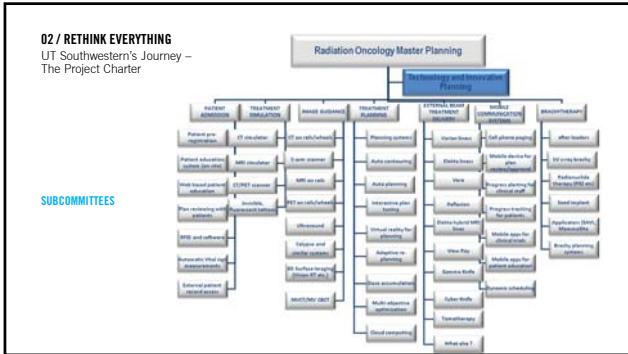


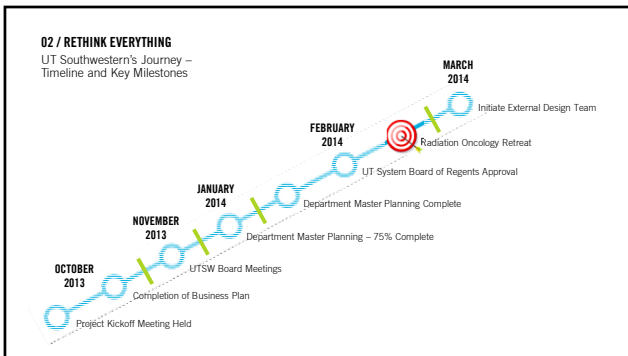
02 / RETHINK EVERYTHING

UT Southwestern's Journey – The Project Charter

SUBCOMMITTEES

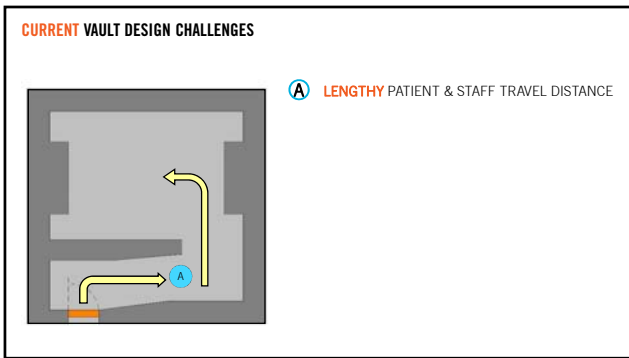


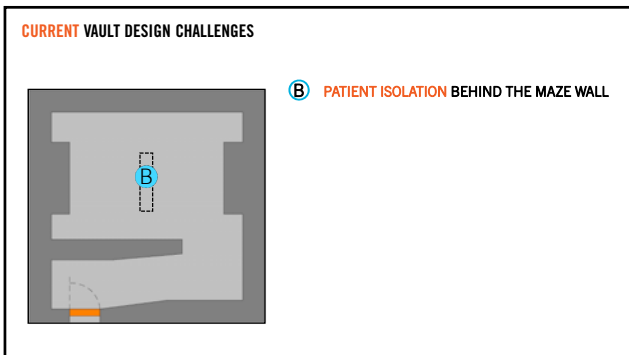




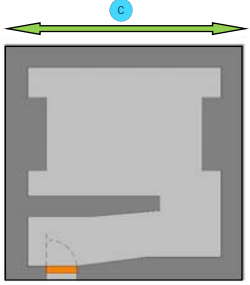


REVIEW THE TRADITIONAL MAZE VAULT LAYOUT



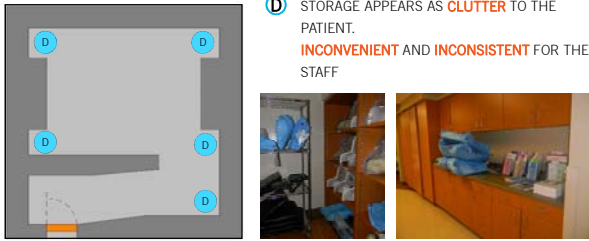


CURRENT VAULT DESIGN CHALLENGES



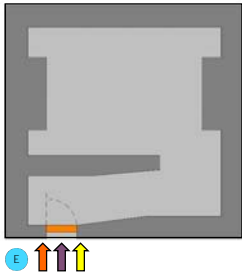
C HIGH \$ PER SF - LARGE VAULT FOOTPRINT

CURRENT VAULT DESIGN CHALLENGES



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


CURRENT VAULT DESIGN CHALLENGES



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

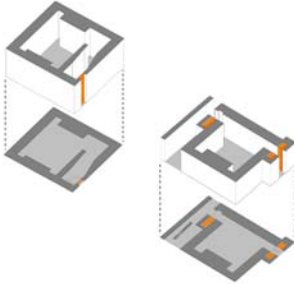
ALL EQUIPMENT IN AND OUT OF A SINGLE DOOR

ONCOLOGY / TECHNOLOGY / INNOVATION
UT Southwestern Medical Center - Radiation Oncology



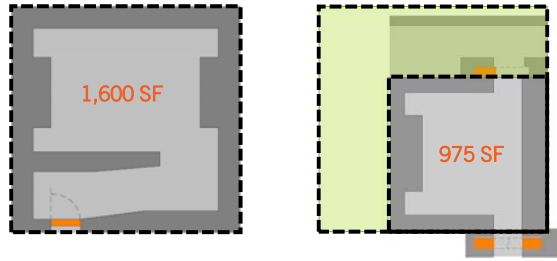
PERHAPS - THE NEXT EVOLUTION IN RADIATION ONCOLOGY CARE IS **NOT** ANOTHER APPLICATION OF TECHNOLOGY TO THE VAULT

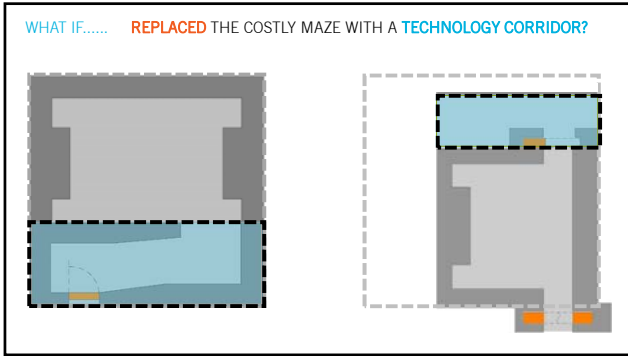
PERHAPS IT'S A TOTAL **RE-IMAGINING OF THE ENTIRE VAULT ITSELF**

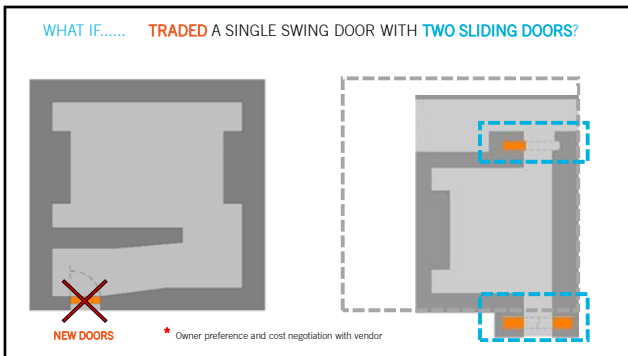


**WHAT IF...
WE COMPLETELY REIMAGINED
THE TREATMENT VAULT?**

WHAT IF..... **REDUCED** THE STANDARD MAZED-VAULT FOOTPRINT BY 600 SF?

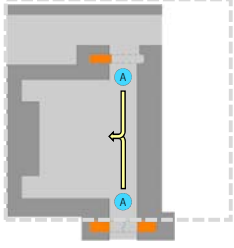






REDEFINED THE RADIATION THERAPY VAULT

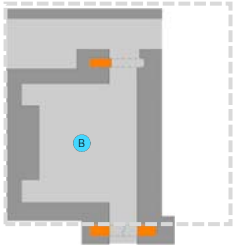
REDEFINED VAULT DESIGN SOLUTION



A SHORTENED PATIENT & STAFF TRAVEL DISTANCE

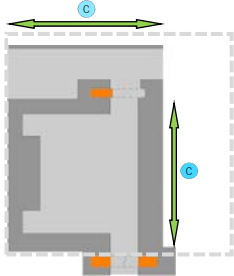
BETTER PATIENT EXPERIENCE
BETTER STAFF EXPERIENCE
MORE EFFICIENT TRANSFER OF EQUIPMENT

REDEFINED VAULT DESIGN SOLUTION



B PATIENT ISOLATION MINIMIZED WITH REMOVAL OF THE MAZE WALL

REDEFINED VAULT DESIGN SOLUTION



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

REDEFINED VAULT DESIGN SOLUTION

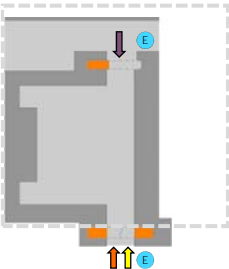
TECHNOLOGY CORRIDOR



D INCREASED & ORGANIZED STORAGE –
ELIMINATES CLUTTER AND REDUCES COST



REDEFINED VAULT DESIGN SOLUTION

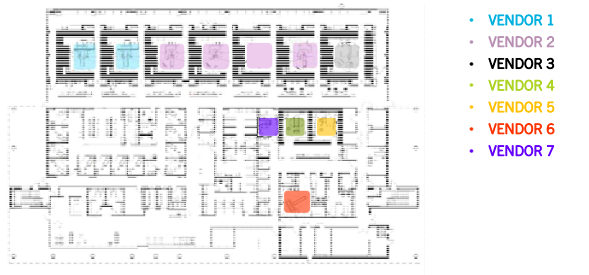


E TWO ACCESS POINTS; SEPARATION OF
EQUIPMENT, STAFF & PATIENT

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

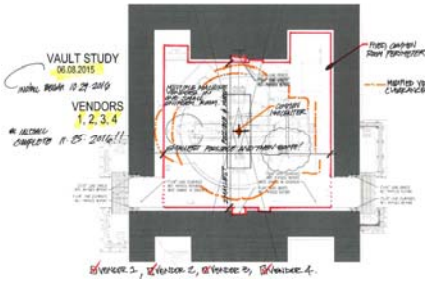
**HOW DID THIS TEAM SUCCESSFULLY APPLY
THIS REDEFINED DESIGN SOLUTION AT
UT SOUTHWESTERN MEDICAL CENTER?**

ONCOLOGY / TECHNOLOGY / INNOVATION
UT Southwestern Medical Center Cancer Center



- VENDOR 1
- VENDOR 2
- VENDOR 3
- VENDOR 4
- VENDOR 5
- VENDOR 6
- VENDOR 7

MODERN VAULT DESIGN SOLUTION

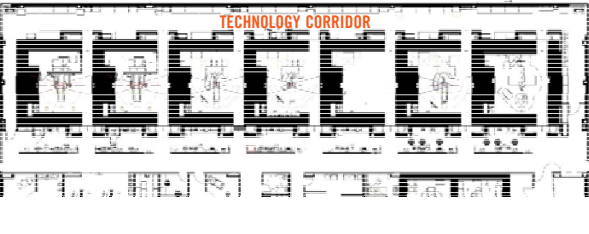


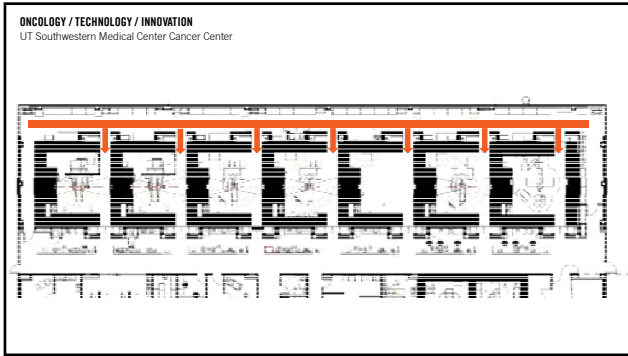
PUCKER FACTOR – the small universal room

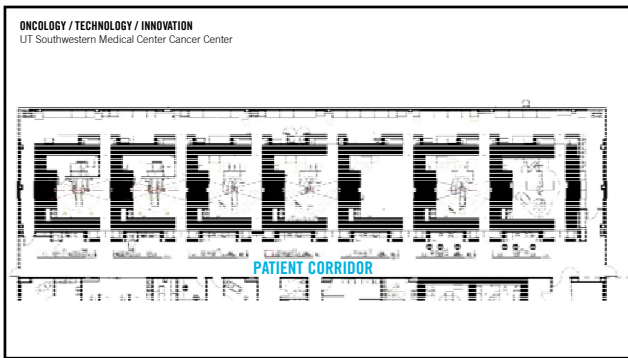
- Overlay of 4 different pieces of major equipment.
- Specific clearance requirements for each.
- We requested less space for each vendor.
- **1.5 years from completed documentation to confirmation of equipment "fit"**

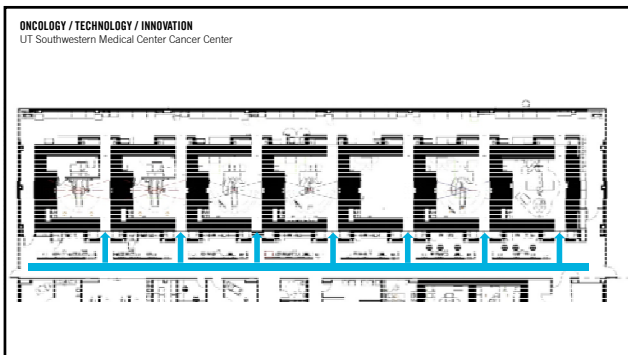
VENDOR 2, VENDOR 3, VENDOR 4, VENDOR 5

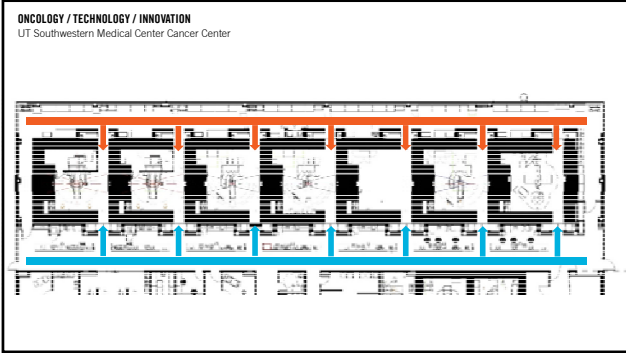
ONCOLOGY / TECHNOLOGY / INNOVATION
UT Southwestern Medical Center Cancer Center

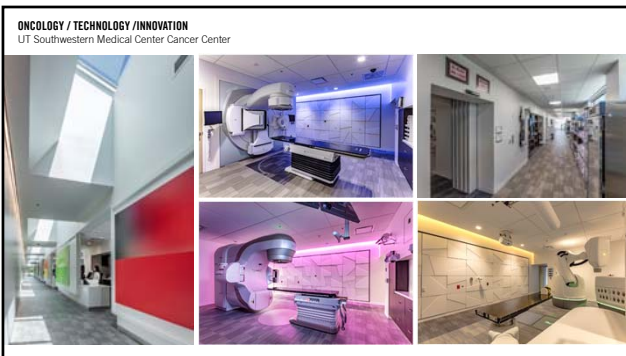


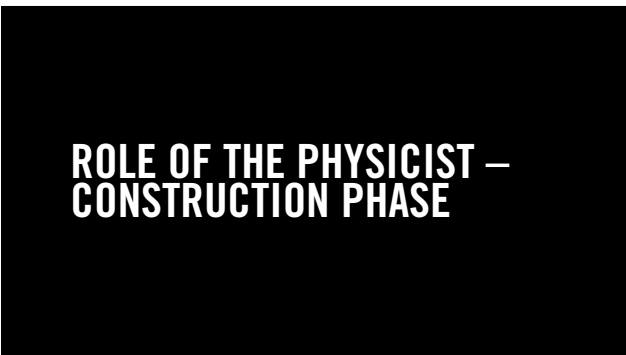












PHYSICS – ACTIVE PART OF CONSTRUCTION TEAM

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.

COMMISSIONING

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.

03 /

OUTCOMES +
LESSONS LEARNED

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



03 / OUTCOMES + LESSONS LEARNED



- Collaborative work space
- Flexibility
- Proximity to clinical areas
- Reducing silos
- Technology

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03 / OUTCOMES + LESSONS LEARNED

- Location
- Waiting Area
- Consultation & Procedure Rooms
- Care Providers
- Technical Issues




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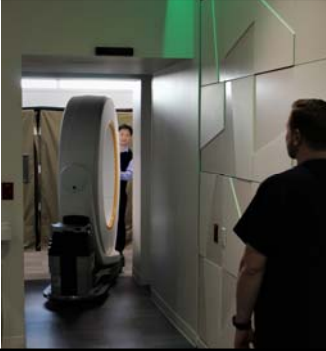
03 / OUTCOMES + LESSONS LEARNED

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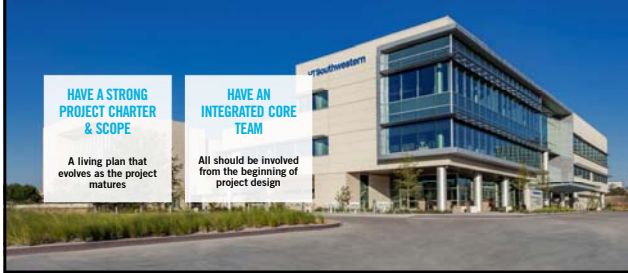
03 / OUTCOMES + LESSONS LEARNED

HAVE A STRONG PROJECT CHARTER & SCOPE

A living plan that evolves as the project matures



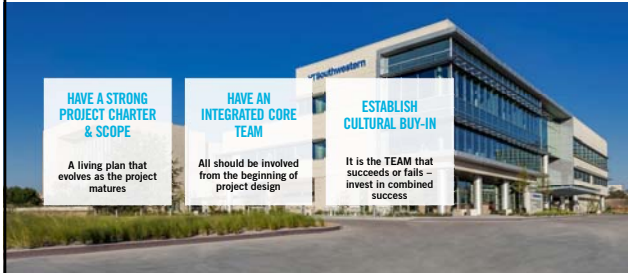
03 / OUTCOMES + LESSONS LEARNED



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

03 / OUTCOMES + LESSONS LEARNED

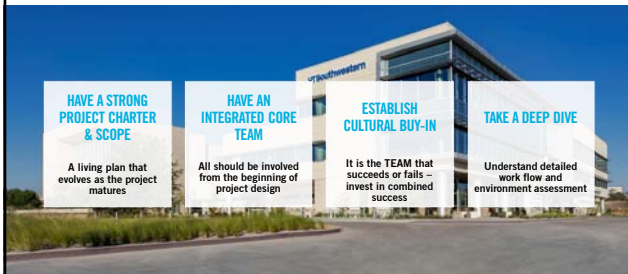


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ESTABLISH CULTURAL BUY-IN
It is the TEAM that succeeds or fails – invest in combined success

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TAKE A DEEP DIVE
Understand detailed work flow and environment assessment

**DON'T BE AFRAID
TO DREAM BIG!**

**04 /
Q&A**
