An Owners Entry Into BIM
Introduction

UCHealth

- Innovative Nonprofit Health System
- Poudre Valley Hospital, Medical Center of the Rockies, University of Colorado Hospital, Memorial Hospital, Broomfield Hospital, Grandview Hospital, and Colorado Health Medical Group

FY 2016 Data
- 1,620 Hospital Beds
- 2,575,000 Outpatient Visits
- 357,000 Emergency Department Visits
- 66,000 Surgeries
- 113,300 Inpatient Admission and Observation Visits

- 6.3MSF Buildings
- Over 17,000 UCHealth Employees
Introduction

UCHealth

University of Colorado Hospital

Memorial North

Medical Center of the Rockies

Memorial Central

Poudre Valley Hospital
Introduction

UCHealth – In Construction or Design

- Longs Peak Hospital (C)
- Highlands Ranch Hospital (C)
- Cherry Creek Health Center (D)
- SHC Denver/CU Sports Performance (D)
- Greeley Hospital (C)
- Memorial North Expansion (C)
Bio

Michael B. DuLaney

• BIM Manager
• 20 Years with a CM/GC
  • Regional BIM Manager
  • Sr. Scheduling Engineer
  • Transition Planning Database Developer
  • CAD Administrator
  • AGC Washington Contractor Award for Best Use of BIM for New Construction

• 10 Years as a Designer and Drafter
• BS Information Systems Management, summa cum laude
An Owners Entry into BIM - Where to Start?

• Evaluate Staff, Relationships, and Capabilities
• Evaluate Internal Technology Systems
• Get to Know the Designers and Contractors
• Policies and Procedures that Impact BIM
• BIM & Integrated Workspace Management System (IWMS)
• So, What Does This Owner Want?
• Where UCHealth is Going
Evaluate Staff, Relationships, Capabilities

• Interview Staff
  • Initially zero BIM capable staff
  • One CAD person in Central and South
  • Coordinators have some CAD experience
  • Training coordinators in BIM

• Learn the Business
  • FD+C – Facilities, Design and Construction
  • Interview Design and Construction Staff
  • Interview Facilities Staff
  • Interview Medical Equipment Planning

• Find a Group
  • Reach out to industry groups such as BIM for Healthcare Owners
Evaluate Internal Technology Systems

- Computer Maintenance and Management System (CMMS)
  - Attended CMMS training
  - CMMS is not graphic
  - Decided to implement Facilities Asset Management System
    - Graphical
    - Mobile
    - Customizable
    - Complements CMMS
    - Access Warranties and O&Ms
Evaluate Internal Technology Systems

• Information Systems (IS)
  • Healthcare IS supports medical systems, medical staff, and Health Insurance Portability and Accountability Act (HIPAA) requirements
  • Security is paramount which makes file sharing difficult with designers and contractors
  • IS considers BIM, CAD, and IWMS software non-standard and support is limited
Evaluate Internal Technology Systems

- UCHealth uses a browser-based collaboration and document management system
  - Document management group recommended using outside system due to expected size (terabytes) of BIMs
- Medical Equipment Planning System
  - Web based but sloooooow
  - Has access to various vendor equipment
  - Some vendors in system have CAD and BIM files of their equipment
Get to Know the Designers and Contractors

- Survey Contractors and Architects:
Get to Know the Designers and Contractors

• UCHealth has room templates
  • Not 100% followed but act as a start and guide
  • Revisions considered after project completion

• Offer lessons learned (what drives our PMs crazy) to Designers and Contractors
  • T-Stats blocked by case work or furnishings
  • Tile cut out for light switches
  • Power on one side of office/data jack on the opposite side
Policies and Procedures that Impact BIM

• Lawyers advice on standards and requirements:
  “Tell them (Designer, Contractor) what you want but not how.”
  Caveat:
  • One still needs to know what is possible

• Centers for Medicare and Medicaid Services (CMS) Reimbursement
  • Ways to Calculate Areas
    • Center Line Room
      • Easiest but room calculations can’t return usable (net) areas
    • At wall Finish
      • More time consuming but room calculations return usable areas
      • Prorate wall thicknesses and dead areas
    • Be consistent in calculations for CMS
      • There is not a standard for CMS room area calculations
      • Models work best!
Policies and Procedures that Impact BIM

• Design Assist
  • Primary contract delivery method (CMAR is secondary method)
  • Use the Designer’s model or Contractor’s model for Facilities Asset Management?
    • Designer may stop updating model once Design Assist starts
      • Designer model is typically LOD 300 and is almost ideal for Facilities Asset Management
    • Contractor and trades will use their models
      • More accurate but...
        • Too much of a good thing (too much detail)
        • May not integrate with asset and maintenance management solution as easily as true BIM media authored model
      • Contractor is best for collecting data
Policies and Procedures that Impact BIM

So who should create the Facilities Asset Management model?
BIM & Integrated Workspace Management System (IWMS)

• What is IWMS?
  • Modular based system to manage people, spaces, department and other organizational information

• Can be used for:
  • Transition Planning
  • Strategic Planning
  • Energy Management
  • Life Safety
  • Furniture and Equipment Management
BIM & Integrated Workspace Management System (IWMS)

Space Planning – UCHealth Guiding Principles (Room Standards)
• Directors and above are allocated offices
• Some managers are allowed to share offices
• Cubes for everyone else

IWMS will:
✓ Identify if someone is erroneously assigned an office
✓ Set occupancy levels for rooms (flag if over occupied)
✓ Identify occupiable and non-occupiable spaces
✓ Flag if one is placed in a non-occupiable space
BIM & Integrated Workspace Management System (IWMS)

UCHealth’s Approach

• Purchase IWMS base module first and build from there
• Identify a pilot building in each region and implement IWMS
• Maximize CMS SF by including door thresholds

• North and South Regions are CAD
  • North and South have older CAD based buildings
  • Spaces must be traced with polylines
  • Can trace into the door threshold to pick up the threshold area
BIM & Integrated Workspace Management System (IWMS)

UCHealth’s Approach

- Central Region is BIM
  - Central buildings modeled (approx. LOD 200)
  - IWMS integrates with BIM and places fields in model
  - Model contains inherent data and is easily published to IWMS
  - Maximize area for CMS reimbursement:
    - Visual programming calculates room threshold area and assigns to room
    - IWMS acquires the threshold area and adds to the room area
    - Thresholds are small but multiply the area by the number of doors and it adds up

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BIM & Integrated Workspace Management System (IWMS)

UCHealth’s Approach

• Facility Guidelines Institute (FGI)
  • Not a standard but a guide
  • Joint Commission on Accreditation of Healthcare Organizations (JCAHO) refers to FGI
  • FGI Provides the Room Type and Category Information for the Integrated Workspace Management System
BIM and an Integrated Workspace Management System (IWMS)

Integrating University of Colorado Denver (UCD) Data

- Track UCD staff although they are not UCHealth employees
- Track UCD space survey data for grant reimbursement
  - Similar to the Medicaid/Medicare reimbursement but for higher education
  - Standard - Integrated Postsecondary Education Data System (IPEDS)
  - Challenge - Map UCD space types to UCHealth space types
So, What Does This Owner Want?

Two models: model for IWMS and model for Facilities Asset Management

Record Design Architectural Model

- Record Model & Rooms and SF
- IWMS

Contractor MEP Model & Data

- Facilities Asset Management System
- Map Data
- Computer Maintenance System
So, What Does This Owner Want?

- Relationship With Designers and Contractors
- Advice and Critique From Designers and Contractors
- Well Organized Turnover Packages
- Meet the BIM UCHC Health BIM Standards

Contractor Interviews

- Show me your problem solving with BIM
- Present lessons learned (don’t be embarrassed)
- The tech playing field is level – how are you using BIM?
- What can you do to help me at turnover?
Where UCHealth is Going

- Scanning Existing Buildings
  - Existing and Purchased Spaces
  - Don’t want to spend time “BIMing”
- Smart Signs
- 3D Printing for End User Planning Meetings
- Simplification
  - Smart PDFs for smaller legacy buildings to manage MEP
- Clinical Engineering Integration
- Clinical Informatics
- IWMS
  - Life Safety
  - Strategic Planning
- Contractor Suggested Task Force to Answer UCHealth Requirements
Closing

• There are Two Products
  • The Building
  • The BIM

• Impress upon leadership the value of the BIM product
  • Regular progress demos to immediate leadership
  • Formal demo to others
    • Relate how far software and technology has advanced
    • Explain how FD+C processes were done and how they are currently done
      • Productivity gains
      • Rapid responses
      • Accuracy

• Allocate $$ for the BIM product!
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