Using Human Factors Methods and Simulation to Improve the Design of Work Environments

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Learning Objectives

**Knowledge**
- Understand importance of human factors and simulations evaluations in workspace design

**Skills**
- Apply some of the techniques to identify opportunities for improvement in your own environments
- Identify opportunities where human factors evaluations should be used
eSIM

- educate Simulate Innovate Motivate
- Provincial Simulation Program
Human Factors

Human Factors is the scientific study of how people interact with workspaces, equipment, tools, information and others.

For example:

A **perfectly designed** space would be easy and efficient to work in and staff are satisfied with the space.

A **poorly designed** space would be difficult and inefficient and staff would be frustrated to work in the space.

**Human factors** provides methods to evaluate the healthcare system and make design recommendations for improvements.
Welcome/Introductions

Split into groups of 3 or 4

• Names of group members
• Area of Expertise
• Interest in this topic
Why Workspace Design is Important
Human Factors and Workspace Design

• Human Factors in the design of workspaces has many benefits:
  o Reduce lifecycle costs (changes, retrofits, etc)
  o Rationalize a design --- evidence for / against
  o Improve front-line engagement --- end-user focused evaluations
  o Increase readiness for change --- new space, new processes…

• How does Human Factors achieve these benefits?
Design Evaluation Methods

Planning/Functional Program → Schematic Design → Detailed Design → Construction → Occupancy

- Live Observation (of similar space)
- Table Top Simulation
  - Mock-up
  - Simulation
  - Commissioning Simulation
- Live Observation (of built space)

Human Factors → eSIM
Design Evaluation Methods

PROACTIVE

Planning/Functional Program

Schematic Design

Detailed Design

Construction

Occupancy

Live Observation (of similar space)

Table Top Simulation

Mock-up

Simulation

Commissioning Simulation

Live Observation (of built space)

Value Added

Human Factors

eSIM
Table Top Simulation
Mock-up (Tape Out)
Mock-up (Full Scale)
Clinical Commissioning
eSIM vs Human Factors Objectives

eSIM

- Orient staff to new workspaces
- Identify processes that will be performed
- Identify gaps that need to be addressed
- Identify latent safety threats prior to patient care
- Ensure staff are comfortable working with the new equipment in the space

Human Factors

- Ensure the physical space is adequate to accommodate all staff and equipment needed
- Optimize the location of supplies to improve workflow and efficiency
- Engage staff/patients in the design process
Clinical Simulations

Learning Objectives

• Environmental Set Up – Identify opportunities for improvement

• Transport Routes – Identify hazards associated with transport routes used during simulations

• Daily Operations in NICU – Test “normal” flow of a day in the life of NICU

• Communication Devices – Identify how the devices were used in the scenarios and any difficulties encountered
Evaluation Process

1. **Determine what and how to evaluate**
2. **Create scenarios**
3. Recruit participants / equipment
4. Conduct evaluation
5. Debrief with participants
6. Analyze data
7. Generate design recommendations
8. Share findings
9. Plan for subsequent evaluations
**Mock-up Evaluations: Scenario Development**

### Scenario 1

**Intra-abdominal bleeding with hemodynamic instability**

**Background information:**
A 22 year old male is involved in a motor vehicle crash on the Deerfoot. He is transferred by Calgary EMS ground ambulance to the ER front door but is recognized to be in shock. He is taken directly to the Interventional Trauma OR Suite (ITOR) to undergo resuscitation bypassing the regular trauma bay in the ER. IN the ITOR he requires intubation, resuscitation, vascular access, and rapid diagnosis of the site of his haemorrhage.

**Personnel**
- Trauma surgeon
- Trauma resident
- OR nurses
- Anesthesiology team (resident, RT)
- Interventional Radiology team (radiologist and techs)
- Perfusionist
- Cardiac Surgeon
- Cardiac Nurses

**Equipment**
- Laparotomy set-up
- Major vascular set-up
- Biomedicus pump
- Cell saver
- Fibrin glue cooker
- Portable X-ray machine
- Ultrasound
- IV pumps including level I infuser
- IV tubing and 36 inch tubing extension
- Anesthesia equipment including ventilator

**Evaluation Objectives:**

- Proper positioning of equipment booms and lights around the OR table
- Accessibility of supply cabinets & Physical space for sterile OR tables
- Identification of site of hemorrhage requires c-arm and DI staff to perform angiography
  - Equipment mobility to bring in the c-arm and DI surgical tables
  - Team dynamics between surgical and DI teams
Activity #1: Scenario Development

You have been tasked with designing a bathroom in a home and want to ensure the design will meet the end user needs.
Activity #1: Scenario Development

Based on your experience:

- What are some major frustrations or concerns with the bathroom environment we want to make sure we address in the design?
- What are the common tasks performed in this space?
- Are there other users who need to use the space?
- What equipment & supplies are needed in the space?
- What scenarios might you develop to test out the design in order to address the issues identified above?
Evaluation Process

1. Determine what and how to evaluate
2. Create scenarios
3. Recruit participants / equipment
4. **Conduct evaluation**
5. Debrief with participants
6. Analyze data
7. Generate design recommendations
8. Share findings
9. Plan for subsequent evaluations
Conduct Evaluations: Tabletop
Conduct Evaluations: Tabletop

- Printed floor plan
- Tokens (i.e. lego or game pieces)
- Post-it notes
- Pens/sharpies
- Tape
- Camera
## Conduct Evaluation: Tabletop

<table>
<thead>
<tr>
<th>Emergency Scenarios</th>
<th>Evaluation Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 yr old female presents for triage</td>
<td>New triage process and area</td>
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<tr>
<td></td>
<td>Evaluate use of Pyxis machine, decentralized nursing stations, and wireless communication</td>
</tr>
<tr>
<td>45 yr old male presents with chest pain</td>
<td>Evaluating expedited triage (due to chest pain), Pyxis use (retrieval of medication such as aspirin)</td>
</tr>
<tr>
<td>23 yr old arrives via ambulance</td>
<td>Evaluate the use of other services such as lab/DI etc. i.e. 23 year old has an appendectomy (requires DI) and has to be sent to the OR (transfer to OR)</td>
</tr>
<tr>
<td>67 yr old male chest pain cardiac-arrest, family observed</td>
<td>This will engage multiple stakeholders and determine if the space will support code blue response</td>
</tr>
<tr>
<td>76 yr old male treated in ER and designated for admission to inpatient unit (discuss flow from ER to inpatient unit)</td>
<td>Flow from ED to inpatient unit. Evaluate ED hold</td>
</tr>
</tbody>
</table>

**Note:**

- ED: Emergency Department
- Pyxis: Hospital drug dispensing system
- DI: Diagnostic Imaging
- OR: Operating Room
Conduct Evaluation: Tabletop
Conduct Evaluation: Tabletop

Benefits

• Low cost and time commitments
• Involves end users in the design process
• Used to simulate real work processes
• Can (and should) be done early in design process
Activity #2: Tabletop Evaluation

Break into your previous small groups
(3-4 people/group)
Activity #2: Link Analysis

- Motion Patterns
- High traffic areas
- Inefficiencies in workflow
Activity #2: Tabletop Evaluation
Activity #2: Tabletop Evaluation

Task #1: Put away the tools, dishes, utensils in your kitchen

Dishwasher
Sink
Stove/Oven
Refrigerator
Activity #2: Tabletop Evaluation

**Task # 2:** You have 3 bags of groceries, please put away your bags of groceries (one bag at a time in order)

- **Bag 1:** Bread, bacon, peanut butter, and jelly
- **Bag 2:** Cookies, potato chips, and orange
- **Bag 3:** Coffee, bananas

Track motion through the kitchen using a **blue pen** as you move through your kitchen.
Activity #2: Tabletop Evaluation

Task # 3: Make breakfast (eggs, bacon, peanut butter toast, orange, glass of milk, coffee)

Track motion through the kitchen with the red pen
   - Don’t forget your utensils, dishes and pans for cooking
Activity #2: Tabletop Evaluation

• What issues did you identify?

• What changes would you make to the design of the kitchen?

• Other thoughts…
Efficiency Principles

- Things you use often should be easy to get to
- Things that are used together should be stored in the same area
- Reduce the distance travelled
- Maximize space usage (i.e., Storage)
Conduct Evaluation: Mock-ups
Conduct Evaluation: Video Capture

- Video Capture
Conduct Evaluation: Video Capture
Evaluation Process

1. Determine what and how to evaluate
2. Create scenarios
3. Recruit participants / equipment
4. Conduct evaluation
5. Debrief with participants
6. Analyze data
7. Generate design recommendations
8. Share findings
9. Plan for subsequent evaluations
## Analyze Data: Video Analysis

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Comment</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Camera</td>
<td>Camera Time</td>
<td>Scenario Time</td>
<td>Good Angle</td>
<td>Category</td>
<td>Comment</td>
<td>Tally of Issues</td>
<td></td>
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<tr>
<td>2</td>
<td>Corner</td>
<td>00:01:35</td>
<td>00:00:12</td>
<td></td>
<td>Access Issues</td>
<td>Dr. sees it will be difficult to get tray to HOB</td>
<td></td>
<td>Access Issues: Access</td>
<td></td>
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<tr>
<td>3</td>
<td>FOB</td>
<td>00:12:12</td>
<td>00:00:16</td>
<td></td>
<td>Access Issues</td>
<td>Nurse moves arm to make room to maneuver table to HOB</td>
<td>Access Issues: Arm Movement</td>
<td>Access Issues: Access</td>
<td></td>
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<tr>
<td>4</td>
<td>Station</td>
<td>00:12:17</td>
<td>00:00:16</td>
<td></td>
<td>Access Issues</td>
<td>Nurse moves arm to make room to maneuver table to HOB</td>
<td></td>
<td>Access Issues: Access</td>
<td></td>
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<tr>
<td>5</td>
<td>Corner</td>
<td>00:01:39</td>
<td>00:00:16</td>
<td></td>
<td>Access Issues</td>
<td>Nurse moves arm to make room to maneuver table to HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Window</td>
<td>00:12:05</td>
<td>00:00:16</td>
<td></td>
<td>Access Issues</td>
<td>Nurse moves arm to make room to maneuver table to HOB</td>
<td></td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Corner</td>
<td>00:01:48</td>
<td>00:00:25</td>
<td></td>
<td>Access Issues</td>
<td>CRRT needs to be moved to allow tray to get to HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
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<tr>
<td>8</td>
<td>FOB</td>
<td>00:12:30</td>
<td>00:00:34</td>
<td></td>
<td>Access Issues</td>
<td>Difficult moving table to HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
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<tr>
<td>9</td>
<td>Window</td>
<td>00:12:24</td>
<td>00:00:35</td>
<td></td>
<td>Access Issues</td>
<td>Taking work surface to HOB is very difficult due to pinch point w/ sink</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>10</td>
<td>Corner</td>
<td>00:02:08</td>
<td>00:00:45</td>
<td></td>
<td>Access Issues</td>
<td>Oscillator needs to be moved</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>11</td>
<td>FOB</td>
<td>00:12:47</td>
<td>00:00:51</td>
<td></td>
<td>Access Issues</td>
<td>Move oscillator to make room at the HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>12</td>
<td>FOB</td>
<td>00:13:00</td>
<td>00:01:04</td>
<td></td>
<td>Access Issues</td>
<td>Space for more equip at HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>13</td>
<td>Corner</td>
<td>00:02:38</td>
<td>00:01:15</td>
<td></td>
<td>Access Issues</td>
<td>Dr. says as far over the bitter for the oscillator</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>14</td>
<td>Corner</td>
<td>00:03:04</td>
<td>00:01:41</td>
<td></td>
<td>Access Issues</td>
<td>Need a garbage as well at HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
</tr>
<tr>
<td>15</td>
<td>FOB</td>
<td>00:13:38</td>
<td>00:01:42</td>
<td></td>
<td>Access Issues</td>
<td>Need garbage at HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>16</td>
<td>Window</td>
<td>00:13:43</td>
<td>00:01:54</td>
<td></td>
<td>Access Issues</td>
<td>Brought garbage to HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>17</td>
<td>FOB</td>
<td>00:14:40</td>
<td>00:02:44</td>
<td></td>
<td>Access Issues</td>
<td>MD has difficulty getting to the sight rite over the table, moves the table, lift up the sight rite to get it over the table legs and places it at the other side of the HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Corner</td>
<td>00:04:10</td>
<td>00:02:47</td>
<td></td>
<td>Access Issues</td>
<td>Reach through arm to put supply on table</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Corner</td>
<td>00:04:15</td>
<td>00:02:52</td>
<td></td>
<td>Access Issues</td>
<td>Create room (move arm &amp; equip) to get site site to HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>FOB</td>
<td>00:15:05</td>
<td>00:03:09</td>
<td></td>
<td>Access Issues</td>
<td>Able to bring pole to HOB</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Corner</td>
<td>00:04:35</td>
<td>00:03:12</td>
<td></td>
<td>Access Issues</td>
<td>Need plug in at HOB for site site</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>FOB</td>
<td>00:15:10</td>
<td>00:03:14</td>
<td></td>
<td>Access Issues</td>
<td>MD moves the IV arms to create more space at the HOB pushes the pumps towards the sink and away from the pt (with tubing cords they might have pulled out of the patient)</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Station</td>
<td>00:15:30</td>
<td>00:03:29</td>
<td></td>
<td>Access Issues</td>
<td>Lots of movement at HOB to bring in equipment (sight rite, tray, etc)</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Corner</td>
<td>00:04:53</td>
<td>00:03:30</td>
<td></td>
<td>Access Issues</td>
<td>RN able to get around right arm</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Window</td>
<td>00:16:40</td>
<td>00:04:51</td>
<td></td>
<td>Access Issues</td>
<td>Dialysis equip? moved to make more space for RN at bedside</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
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<tr>
<td>26</td>
<td>FOB</td>
<td>00:17:23</td>
<td>00:05:27</td>
<td></td>
<td>Access Issues</td>
<td>Nurse moves the ultrasound machine away from the bed to access the patient</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
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<tr>
<td>27</td>
<td>Corner</td>
<td>00:07:33</td>
<td>00:06:10</td>
<td></td>
<td>Access Issues</td>
<td>Dr. &amp; RN need to get around arm to tie gown on Dr</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>FOB</td>
<td>00:19:31</td>
<td>00:07:35</td>
<td></td>
<td>Access Issues</td>
<td>Cannot move arm to make space for sight rite because nitric is in the way</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Window</td>
<td>00:20:63</td>
<td>00:08:14</td>
<td></td>
<td>Access Issues</td>
<td>Adjusts arm to enter info into pump because could reach or see pump monitor</td>
<td>Access Issues: Other equipment</td>
<td>Access Issues: Access</td>
<td></td>
</tr>
</tbody>
</table>
Analyze Data: Link Analysis

- Motion Patterns
- High traffic areas
- Inefficiencies in workflow
Analyze Data: Bumps
Activity #3: Video Coding

Watch the video on your own and:

• Record issues you identify
• Record bumps
Activity #3: Video Coding

- What issues did you identify?
- What bumps did you record?

- Tubing & equipment at the head of the bed- difficult to get around patient
- Code blue cart blocks access into and out of the exam room
- Cramped space around the bed
- Difficulty accessing supplies
Activity #3: Video Coding
Mock-up Evaluation Outcomes

Original Design

Modified Design
Mock-up Evaluation Outcomes

Initial design

Modified design
Commissioning Evaluations
Commissioning Evaluations: Scenarios

Transport  Day in the Life  Medical Emergency
Commissioning Evaluations: What do we Find?

- Miswirings of Code Blue/Staff Assist Buttons
- Adolescent Mental Health Seclusion room – able to ‘hang’ mannequin
- Code Room Set Up – Hindrance of pillars for access to medications – reset up of space/equipment
- Nurse Communication System – unable to contact/speak with NICU/Labour and Delivery
- Building Deficiencies– lack of self opening doors from Labour and Delivery to NICU en-route with neonate/warmer/staff
Commissioning Evaluations: What do we Find?
Evaluation Process

1. Determine what and how to evaluate
2. Create scenarios
3. Recruit participants / equipment
4. Conduct evaluation
5. **Debrief with participants**
6. Analyze data
7. Generate design recommendations
8. Share findings
9. Plan for subsequent evaluations
Debriefing Sessions
Debriefing Sessions

- Human Resources/Staffing/Roles
- Equipment Resources
- Processes/Procedure Flow
- Environmental Set Up of Spaces
- Transport Routes
- Communication Issues
- Parking Lot
Clinical Commissioning Audit Tool

<table>
<thead>
<tr>
<th>Before Simulation Session</th>
<th>After Simulation Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel confident in my ability to...</td>
<td>I feel confident in my ability to...</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
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</table>

2. Were there any unanticipated gaps that occurred today that would have ultimately affected patient care?

3. Lessons learned from today’s simulation and debrief. Please provide specific examples on any of the key learning based on the key themes listed below:
   - Communication (within the Unit) (close loop, call his/nursing, overhead announcements/notifications, emergency codes, notification boards, schedules, staff assignments, parent/child communication, cell phone coverage, outside land lines)
   - Flow Process
     - Day in Life - from arrival, report, handover, patient care, gathering supplies, workflow, space organization, pinch points.
     - Order Sets - following order sets, ease of transitioning to next phase or order at next step in communication pathway.
     - Medical Crisis - how to call for help, gathering of emergency carts, routes for responding teams
   - Equipment/Supplies
     - Missing supplies, need for new carts, functionality of carts, placement, adequate numbers of supplies
   - Staffing/Support/Human Resources
     - Orientation and training, scheduling needs for new space (staffing, health care providers, and support staff) need for another clinician to a particular shift.
   - Facility Issues
     - Misalignments of communication systems, card access, door access, openings, layouts of rooms (medication, supply, specialty equipment)

Based on today’s debrief, what are 2-3 actionable outcomes and/or changes at a system level do you think need to occur prior to the new space opening?

Thank you for completing the eSM Learner Evaluation for Clinical Commissioning.
Design Evaluation Methods

Planning/Functional Program
Schematic Design
Detailed Design
Construction
Occupancy

Live Observation
(of similar space)

Table Top Simulation
Mock-up
Simulation
Commissioning Simulation
Live Observation
(of built space)

Human Factors
eSIM
Design Evaluation Methods

**PROACTIVE**
- Planning/Functional Program
- Schematic Design
- Detailed Design
- Construction
- Occupancy

**REACTIVE**

- Live Observation (of similar space)
- Mock-up
- Simulation
- Commissioning Simulation
- Live Observation (of built space)

**Value Added**
- Human Factors
- eSIM
Evaluation Process

1. Determine what and how to evaluate
2. Create scenarios
3. Recruit participants / equipment
4. Conduct evaluation
5. Debrief with participants
6. Analyze data
7. Generate design recommendations
8. Share findings
9. Plan for subsequent evaluations
Typical Recommendations

% of Recommendations

Tabletop | Tape out mock-up | Mock-up simulation | Commissioning

Wayfinding | Further Evaluations | Technology (IT) | Process | Infrastructure | Equipment | Detailed Design
## Evaluation Methods – Comparison

<table>
<thead>
<tr>
<th>Method</th>
<th>Design Influence</th>
<th>Realism</th>
<th>Validity</th>
<th>Objectivity</th>
<th>Control</th>
<th>Cost</th>
<th>Time Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Observation</td>
<td>Low to Medium</td>
<td>Very High</td>
<td>Medium</td>
<td>Low</td>
<td>Very Low</td>
<td>Very Low</td>
<td>Days to Weeks</td>
</tr>
<tr>
<td>Table Top Simulation</td>
<td>Medium to High</td>
<td>Low</td>
<td>Low</td>
<td>Low to Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Days to Weeks</td>
</tr>
<tr>
<td>Mock-up (Tape Out)</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Low to Medium</td>
<td>Weeks to Months</td>
</tr>
<tr>
<td>Mock-up (Simulation)</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Low to High</td>
<td>Months</td>
</tr>
<tr>
<td>Commissioning Simulation</td>
<td>Medium</td>
<td>High</td>
<td>Very High</td>
<td>High</td>
<td>High</td>
<td>Low to Medium</td>
<td>Weeks to Months</td>
</tr>
</tbody>
</table>
Engagement
Conclusions

• It is essential that new healthcare environments are evaluated early in the design process to identify safety threats while we are still able to address them.

• The financial impact to change walls, make modifications and re-do space configuration is cost prohibitive once the project is ready to open.

• Revisit the functional plan of spaces with the clinical departments on a regular basis throughout the design and construction process to ensure they still are appropriate.

• Involvement of Human factors and eSIM as a consultative piece to oversee potential problems prior to bricks and mortar.
Learning Objectives

Knowledge
- Understand importance of human factors and simulations evaluations in workspace design

Skills
- Apply some of the techniques to identify opportunities for improvement in your own environments
- Identify opportunities where human factors evaluations should be used
Questions

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