EHR Vendor User Centered Design

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National Center for Human Factors in Healthcare,
MedStar Health
Disclosures

• No real or perceived conflicts to disclose
• Dr. Fairbanks receives research grant funding from AHRQ and NIBIB
Human factors center... inside a large health system

- MedStar Institute for Innovation
  - Catalyze innovation
- MedStar Health
  - 10 hospitals, 20 diversified healthcare corporations
    - 120 Affiliated and employed physician practices
- National Center for Human Factors in Healthcare
- Physicians with HFE expertise
- PhD & MS Human Factors Scientists, clinicians, nurses
Human Factors Engineering:  
Optimize the relationship between technology and the human user  

“We don’t redesign humans; We redesign the system within which humans work”
The Two Bins of Usability

User Experience (UX Design)

User Interface Design
Displays and Controls
Screen Design
Clicks & Drags

Cognitive Task Support
“Workflow Design”
Data Visualization
Functionality
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<th>RN</th>
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Additional notes:
- Hip Pain
- Lupus
- 16
- 16
- 14
- EKG
- Pending Admit
- Pending Admit
Vendor User Centered Design Liaison Project

• Goal: Understand vendor UCD processes and challenges
• Contractors to ONC (via the SHARPC Program of the University of Texas)
• National Center for Human Factors in Healthcare team:
  – Raj Ratwani, PhD, Project Director & Co-PI
  – Terry Fairbanks MD MS, Co-PI
  – Zach Hettinger MD MS, Co-inv
  – Vicki Lewis, PhD, Co-inv
  – Nat Benda BS, RA
Vendor User Centered Design

• Objective:
  – Understand vendor UCD processes and challenges
  – UCD: any formalized process for incorporating user needs throughout design, development and usage

• Method:
  – Onsite meetings primarily with:
    • Usability experts
    • Business Analysts
    • Product Managers
## Summary of Vendors Visited

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<th>Vendor</th>
<th>Est. Revenue</th>
<th>Employees</th>
<th>Usability Staff</th>
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<td>$1 billion</td>
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<tr>
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<td>2000</td>
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<tr>
<td>Vendor C</td>
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Categories of Vendor UCD

No True UCD

- Focused on customer requests
- Responding to user feedback is UCD
- No formalized method for incorporating and testing user needs throughout design and development

Basic UCD

- Understand UCD and its importance
- Striving to implement UCD processes
- UCD is not fully integrated yet

Well Developed UCD

- Rigorous UCD processes in place
- Efficient testing methods
- Extensive infrastructure
# Challenges

## No True UCD
- Context and exposure
- General process
- Support

## Basic UCD
- Resources
- Participant access
- Use case development

## Well Developed UCD
- Detailed work flow analysis
- Safety data

## General
- Timelines and summative testing
- Legacy systems and the patient
Customization and Training Challenges

- **Customization**
  - Significant change to the certified EHR

- **Training**
  - Cannot makeup for usability shortcomings
  - Training is often offered as an added cost
Discussion and Questions

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Project Director and Co-PI

Terry Fairbanks, MD, MS
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Co-PI

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