

EHR Vendor User Centered Design

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Disclosures

- No real or perceived conflicts to disclose
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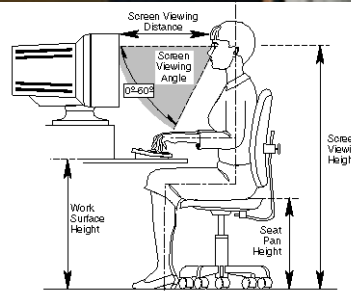
Human factors center... inside a large health system

- 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



ED Pharmacist
NOT ON DUTY

TBC TBC TBC

EKG EKG EKG

PATIENT

AGE

MD

RN

CHIEF COMPLAINT

V.S.

DIET

DISPO.

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1L

2R

2L

3L

3R

4R

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5L

5R

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12R

12L

13L

13R

14

Jan

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Syncope

EKG

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CLABS CT
 DABED
 Face CT ☐ Ophtho Clinic

Pelvic US

CLABS ☒ ICD (-) neg

438 SL Jale Abd
 7m2 SR Jale Abd

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 ADMIT

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☐ Urology

EKG

PENDING
ADMIT

EKG

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C.C.

hip Pain

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C.C.

Lupus → MCA's HR 133

PENDING
ADMIT

Abrasion

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

Vendor	Est. Revenue	Employees	Usability Staff
Vendor A	\$1 billion	5000+	20-30
Vendor B	\$300-500 million	2000	30+
Vendor C	\$100-200 million	500	NA
Vendor D	\$100-200 million	2000	30+
Vendor E	\$40 million	500	1-5
Vendor F	\$20 million	250	1-5
Vendor G	\$20 million	150	NA
Vendor H	\$10 million	60	NA
Vendor I	\$300,000	10	NA
Range	\$300,00 - \$1 billion	10-5000+	0-30+

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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