AHRQ and NIST – EHR Usability Roadmaps

Matt Quinn
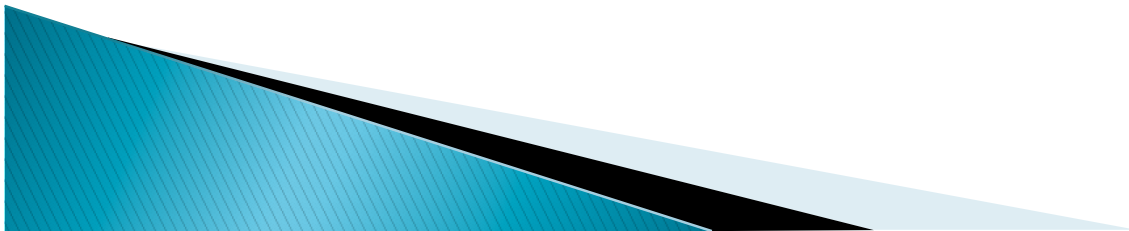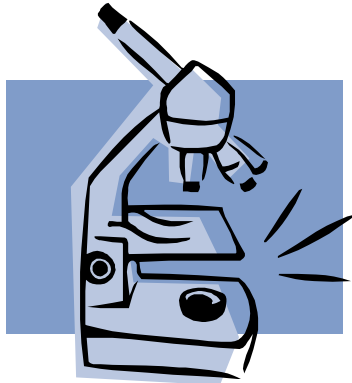
matt.quinn@nist.gov

Agenda

- Roles of AHRQ and NIST
- What's at Stake
- Current State of Usability in Certified EHRs
- Projects to Support Improved Usability
- Moving Forward
- June 7 NIST Workshop
- Questions

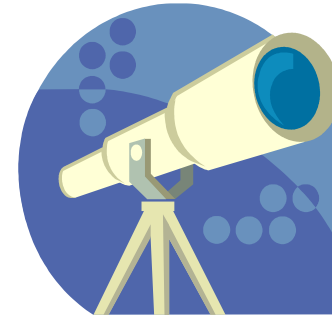# Research in HHS
What is AHRQ's "Space"?

NIH

Biomedical research to prevent, diagnose and treat diseases

CDC

Population health and the role of community based interventions to improve health
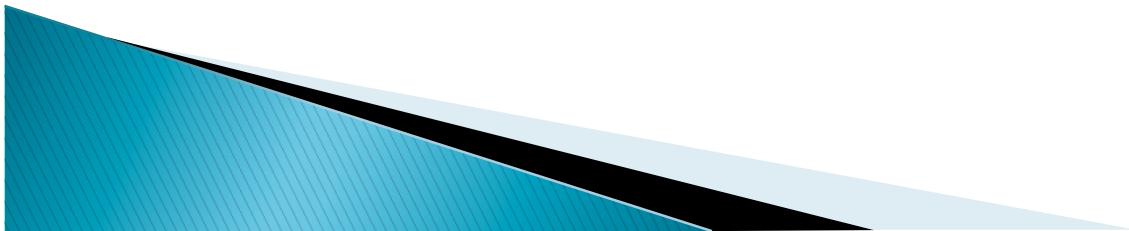
AHRQ

Long-term and system-wide improvement of health care quality and effectiveness

Mission and Role of NIST

- NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life

- NIST Laboratories conduct research that advances the nation's technology infrastructure and is needed by U.S. industry to continually improve products and services
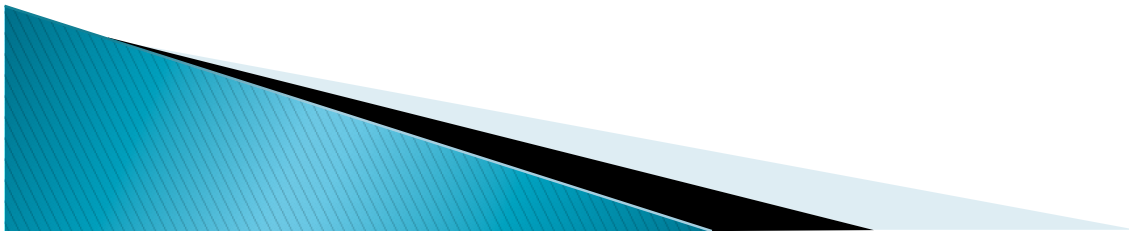
Importance of Usability

We submit that usability is one of the major factors—*possibly the most important factor—hindering widespread adoption of EMRs.* Usability has a strong, often direct relationship with clinical productivity, error rate, user fatigue and user satisfaction– critical factors for EMR adoption.
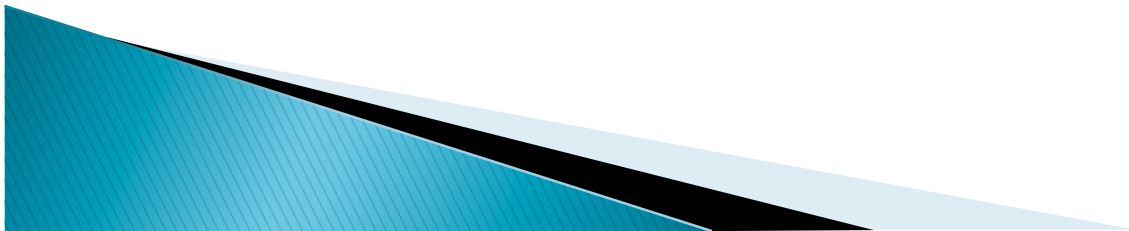
– "Defining and Testing EMR Usability: Principles and Proposed Method of EMR Usability Evaluation and Rating" HIMSS Usability Taskforce, June 2009

http://www.himss.org/content/files/HIMSS_DefiningandTestingEMRUsability.pdf

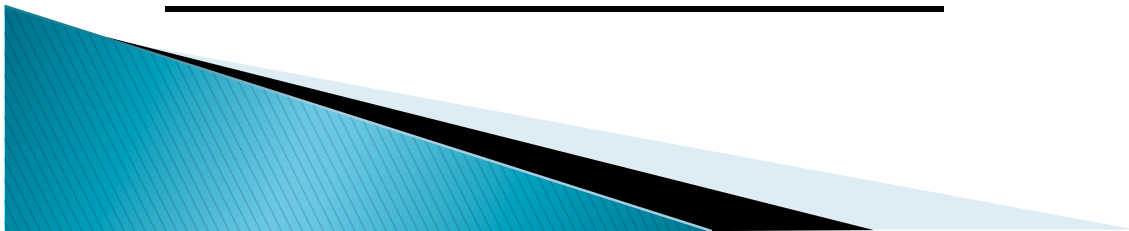# Current State of Usability

- "Usability" is an oft-cited limitation in the use of health IT

- Usability, while recognized as critical for successful adoption and meaningful use, has not historically received the same level of attention as software features, functions and technical requirements

- Lack of understanding at all levels of usability as a <u>scientific discipline</u> (vs. opinion of users)
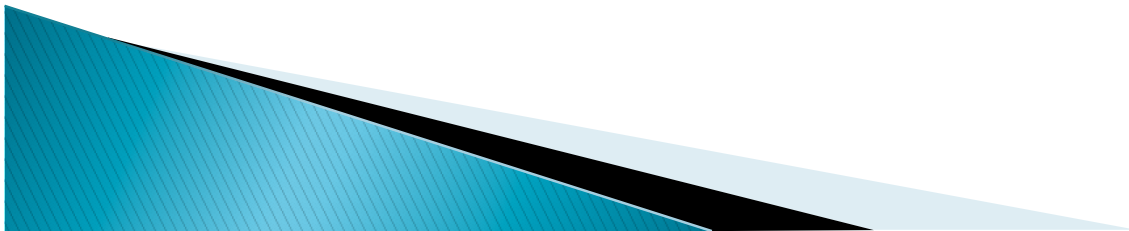
Vendor Practices Report

- Use of user-centered design processes, and specific resource personnel with expertise in usability engineering <u>not common</u>

- Specific <u>best practices and standards</u> of design, testing, and monitoring <u>not readily available</u>

- Usability viewed as <u>competitive differentiator</u> – collaboration almost nonexistent

- <u>Reported perspectives on critical issues</u> such as <u>allowable level of customization by customers</u> <u>varied dramatically</u>

- <u>Vendors reported a variety of formal and informal processes for identifying, tracking, and addressing patient safety issues</u> related to the usability of their products.

- Usability and accessibility of systems <u>not currently addressed in certification</u>
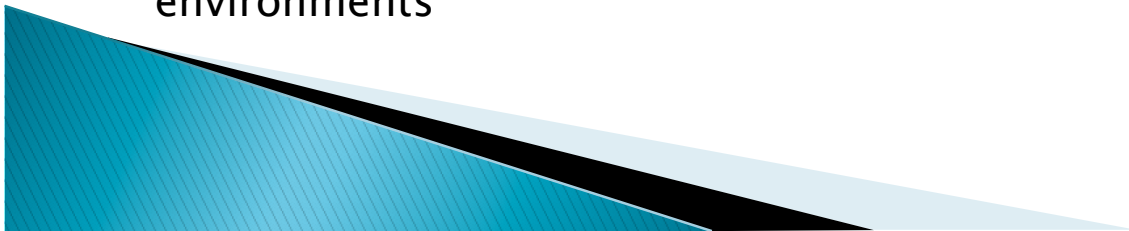
Perceived problem with measuring EMR usability

"measuring usability – it is so subjective. It is somewhat like judging art or architecture – what is beautiful (or useful) to one person, is ugly or un-useful to another. Trying to have an independent group judge your product's useability [sic] is like putting the federal government in charge of something – you will ultimately have standards that are broad, whitewashed, mired in legal ramifications and which render a system utterly "unuseful."

– Veteran of Healthcare IT, MrHISTalk Blog

Key Points from NIST Workshop

▸ **Usability is often misunderstood and we need education now**
  ◦ Among vendors and purchasers, usability is often equated with user satisfaction
  ◦ People use systems that they like, comfortable with, give them value w/out overload
  ◦ Helping people avoid and recover from errors (easy-to-follow paths vs. alerts)
  ◦ Educating and providing resources for both developers vendors and buyers

▸ **We know a lot about usability and can provide (some) guidance now**
  ◦ Developers do not have to start from scratch for either accessibility or usability
  ◦ Many resources already exist that provide relevant guidance on issues such as user interactions, cognitive load, screen design, message design, etc.

▸ **Usability can be measured**
  ◦ Usability can be measured. Both qualitative and quantitative measures exist
  ◦ A single usability score does not give enough information to help vendors or buyers
  ◦ Many factors impact usability, incl workflow, time pressure, physical & social environments
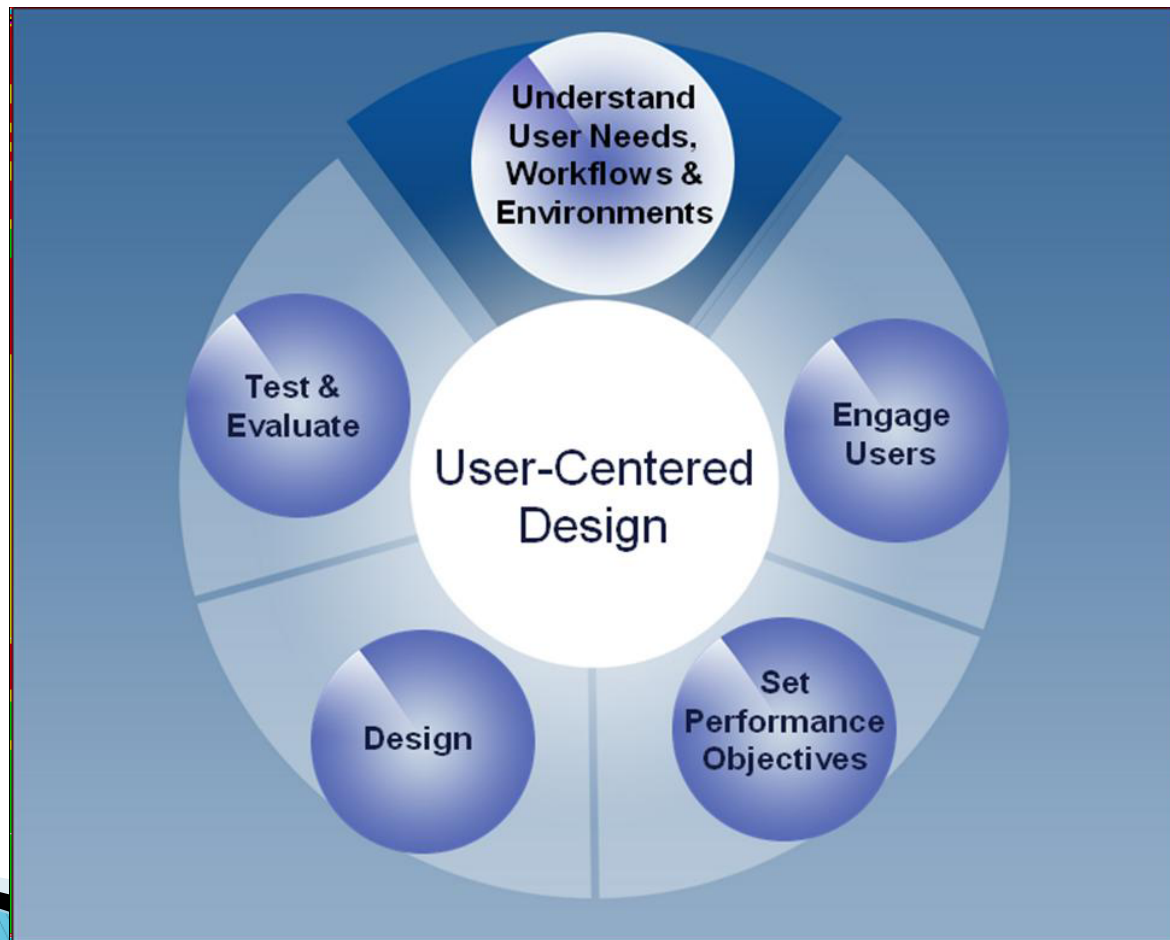
AHRQ & NIST Activities

- Establishment of Technical Expert Panel
- EHR Usability: Evaluation and Use Case Framework
- EHR Usability: Interface Design Considerations
- NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records (NISTIR 7741)
- Customized Common Industry Format Template for Electronic Health Record Usability Testing (NISTIR 7742)
- EHR Usability Framework
- EHR Usability Program (EUP)

- Vendor Processes & Practices Report
- EHR Usability Evaluation Toolkit
- NIST-Funded Grants

Providing these tools and guidance will empower the vendor community to innovate while being sensitive to the impact and importance of user interface design decisions on medical staff and patients.

NIST IR 7741 – UCD Processes

- Guidance for vendors on best practices for user-centered design

NIST IR 7742 – CIF – EHR Edition

- ISO standard for reporting usability findings... adapted for HIT : allows users to reliably compare application performance with user testing

- Common Industry Format (CIF) for Reporting *Summative* Usability Studies

  - *Assist vendors in demonstrating evidence of usability in their final product in a format that allows both independent evaluation of a single product and comparison across multiple products.*
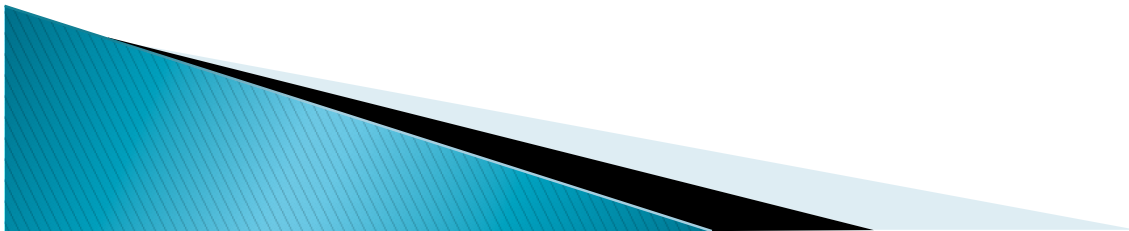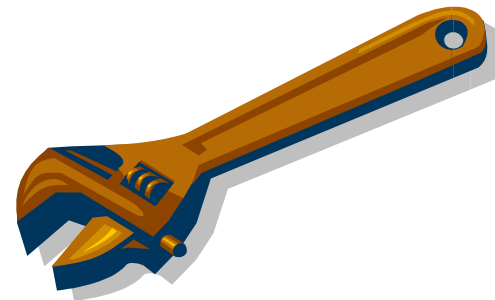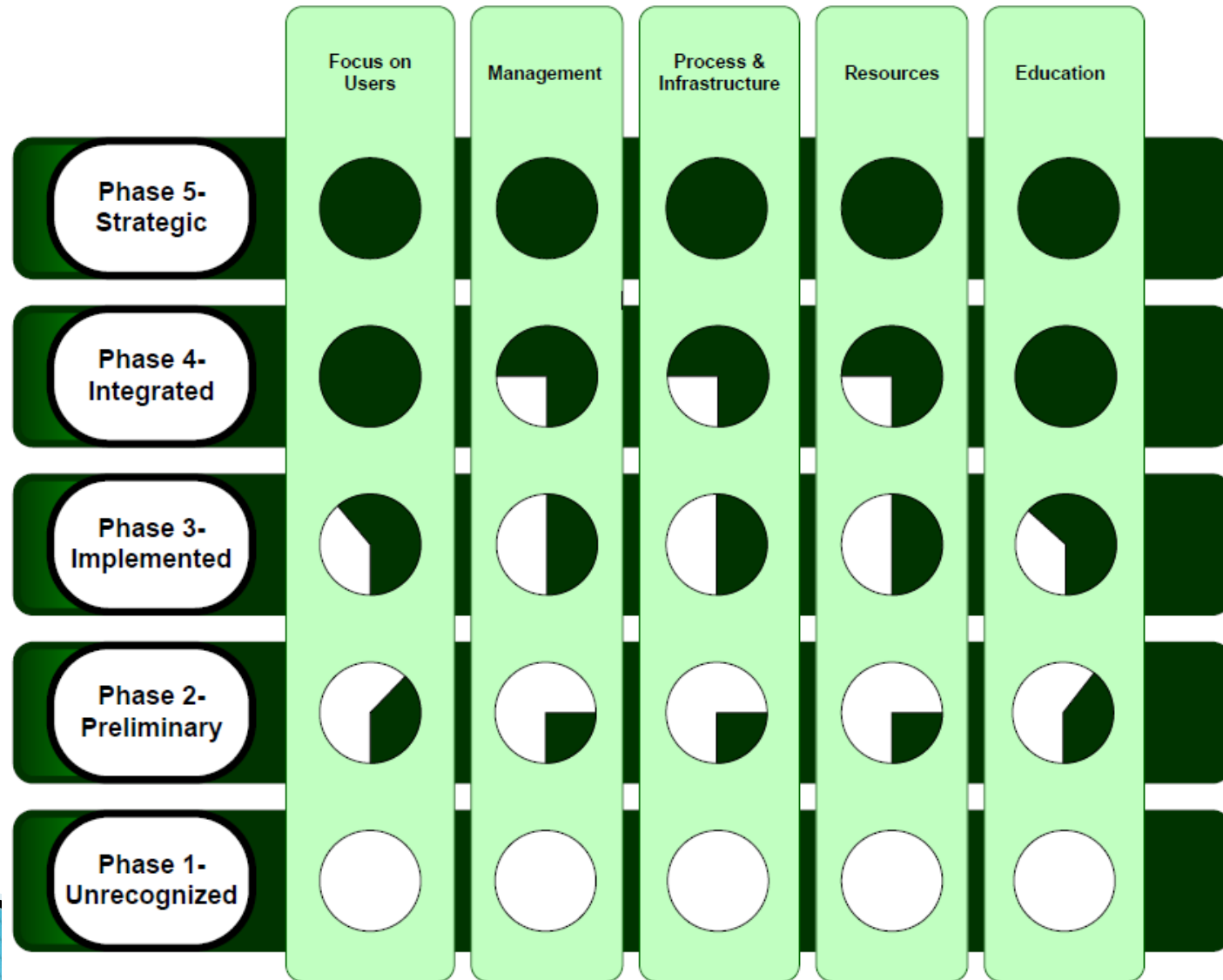
EHR Usability Protocol (EUP)

- Detailed specifications for an objective, repeatable procedure for measuring and evaluating the usability of EHRs

- Goal: establish formal technical methods for measuring usability that will uncover critical usability issues that may impact performance and errors in EHR use based upon known human factors principles, processes and best practices

- Validate that an application's user interface is not leading users to make critical usability, and potential safety-related, errors.

EHR Usability Evaluation Toolkit

- Synthesize available guidelines into objective usability rules
- Develop a toolkit for evaluating usability of primary care practice implementations
- Test toolkit in practices, vendors, certification body
- Disseminate tool through NRC, RECs and Professional Organizations

HIMSS Usability Maturity Model

Where Do We Go From Here?

- Establish foundational understanding
- Develop foundational standards
  - ◦ Use what we know
  - ◦ Share tools and resources
- Refine & execute research agenda
- Establish and build partnerships
  - ◦ Government
  - ◦ Industry
  - ◦ Academia
  - ◦ Healthcare providers

Please Join us on June 7

- A Community-Building Workshop: Measuring, Evaluating and Improving the Usability of Electronic Health Records

- June 7, 2011

- National Institute of Standards and Technology, Gaithersburg, MD

- Registration is Free
- http://www.nist.gov/healthcare/usability/usability-technical-workshop.cfm

➢ **Contact Information**

Matt Quinn
matt.quinn@nist.gov
phone: 301-975-5936