

DRAFT DOCUMENT

I'm Dr. Ross Koppel, a sociology professor and a PI at the school of medicine – both at the University of Pennsylvania. I'm a PI on an AHRQ project creating a guide to address HIT's unintended consequences. I'm chair of the evaluation working group of AMIA, an evaluator on a SHARP project, and a senior researcher on NSF and NPSF projects. I've written a few dozen articles on HIT and patient safety.

First, a comment on the related questions about HIT's use by the visually impaired: Vendors have succeeded in providing equal HIT access for visually impaired clinicians. Ironically, this has been accomplished via HIT user-interfaces that are hard to navigate, have many confusing menus and drop-downs, generate irrelevant and obscuring pop-ups, and require so much clicking and scrolling, that even perfect vision is of limited value.

Now to your four questions:

- **What is the state of art of measuring usability? What can and cannot be measured?**

As colleagues on these panels have already noted, there's a robust human factors science that could be employed to make HIT more usable. It's also true that to enhance marketing and reduce vendor liability, HIT systems do not just encourage local customizations, they absolutely require tens of thousands of local implementation choices, each of which affects usability. By compelling vast variations across medical settings, the current structure mitigates, or perhaps even invalidates, the value of E.H.R. bench testing and linked certification. Conversely, a commitment to standardization would both increase usability and reduce HIT-related medical errors.

- **What are the areas of usability measurement which we know enough to be helpful to industry?**

Given the absence of usability and usability measurement in HIT, any and all scientific methods of measurement would be very helpful.

- **What areas of usability measurement are still theoretical and not ready to be applied in a commercial setting?**

None. As we teach in epistemology and research methods: The goal of science is to build theory and the goal of scientific theory is to guide experimentation. Human factors is probably more robust a science than several areas of medicine.

- **Can usability be measured in a way that does not stifle innovation?**

Measurement undoubtedly has a cost, but it's trivial compared to its value to patient safety and to *improving* HIT. More directly, measuring usability would encourage innovation. This question, in fact, turns the matter on its head. We've had innovations in bells and whistles while core functional usability was largely ignored. With insufficient focus on usability we've experienced loss of innovation where it's most needed. We didn't force physicians to buy i-phones and we don't force teens to employ the functionality of systems that have been evolutionarily well designed. Good design and functionality are mutually reinforcing and encourages voluntary adoption. If HIT were more usable, our current carrot and stick policies would have been superfluous.

In sum, measuring usability would spur, not deter, innovation; usability has been ignored at the peril of patient safety and to the detriment of HIT's efficacy.

Thank you very much.