



# Building User Experience With Human-Centered Design

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Craig Joseph, MD, FAAP, FAMIA  
Chief Medical Officer, Nordic Global

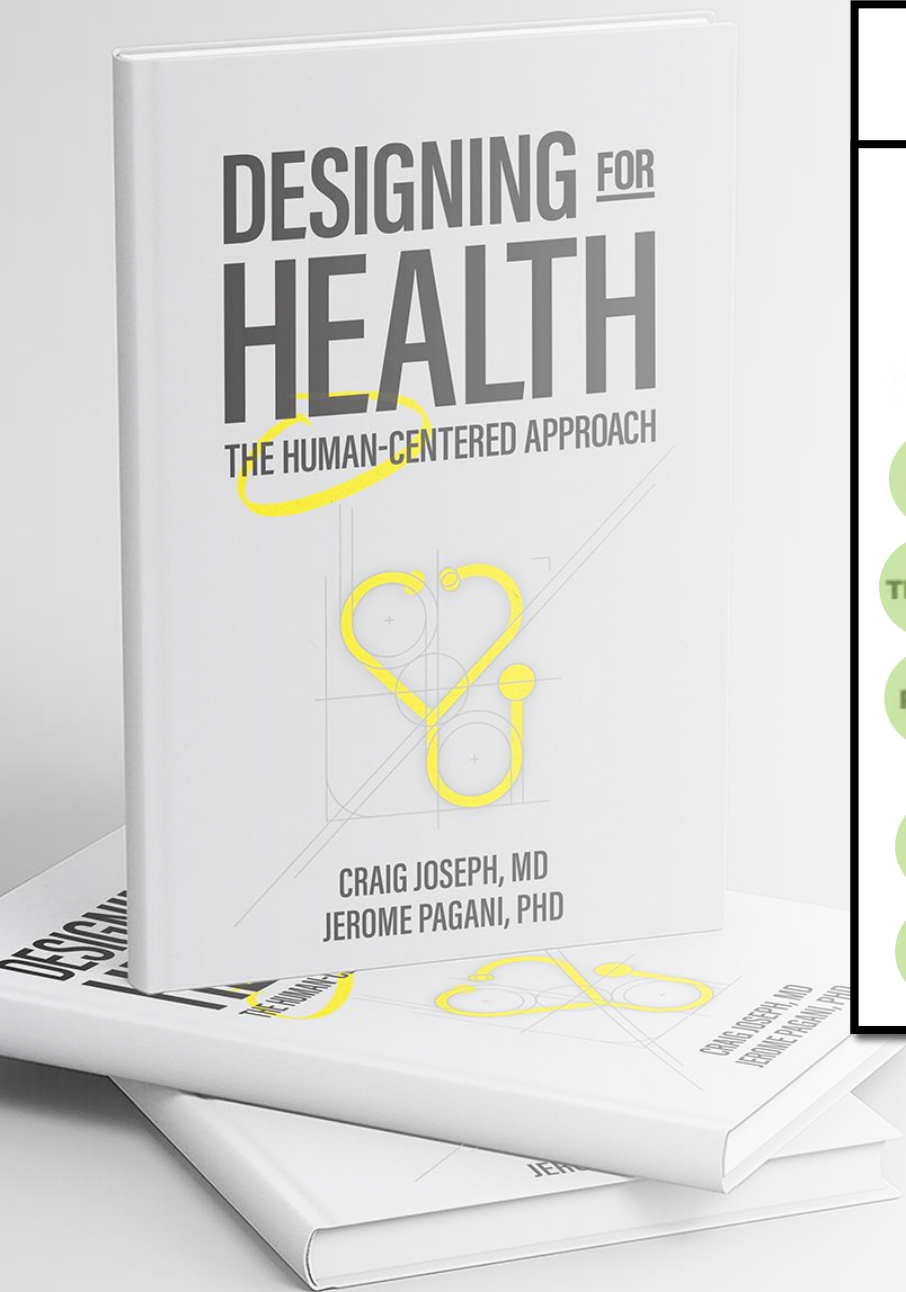
Chris Holland, MBA  
Director of User Experience, Emory Healthcare



# DESIGNING FOR USER EXPERIENCE

- ➔ Make it easy to do the right thing
- ➔ Get rid of stupid stuff
- ➔ Start with the end in mind
- ➔ Ensure transparency and predictability
- ➔ Listen to your users
- ➔ Continuously improve





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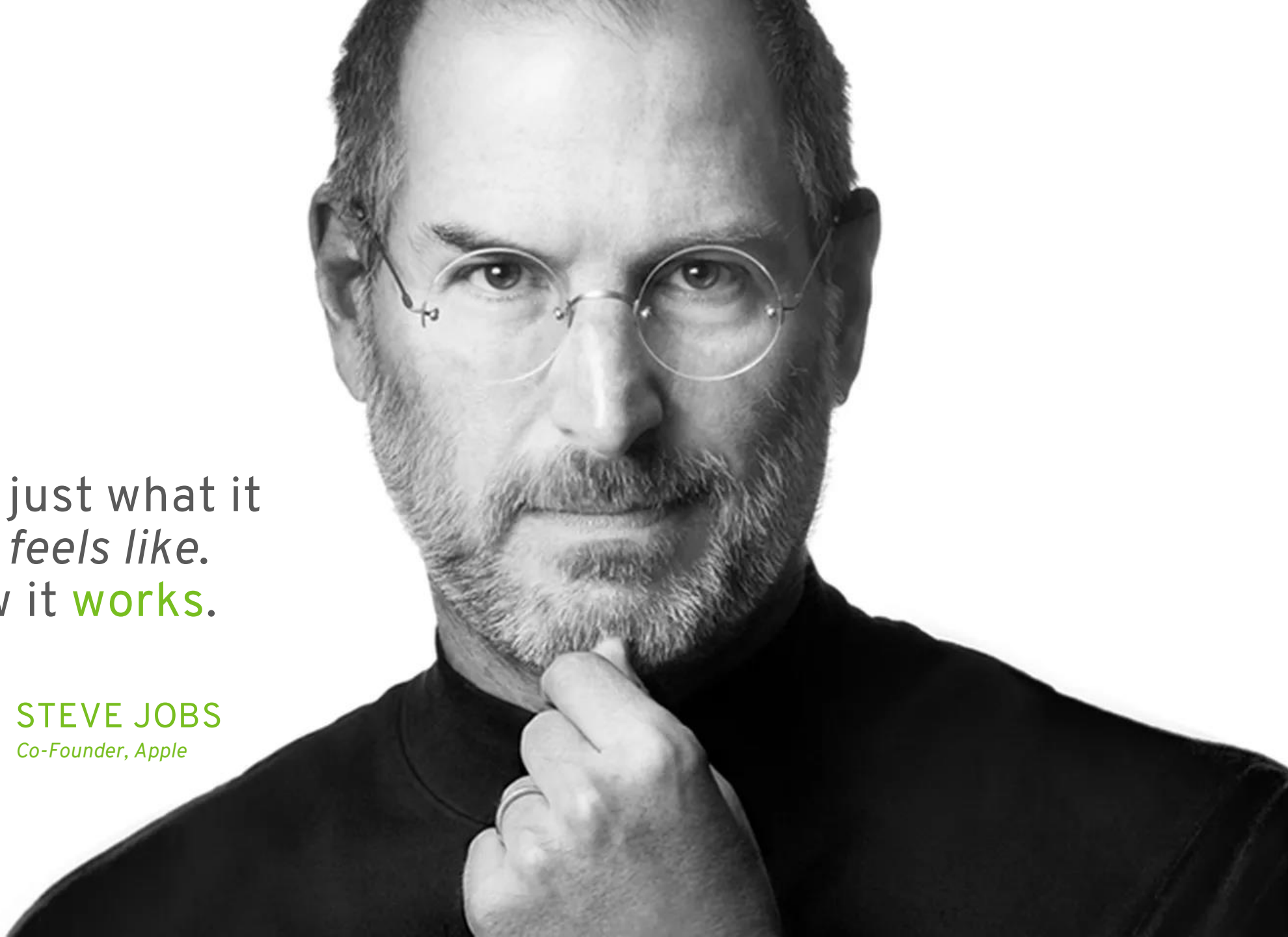
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Design is not just what it  
*looks like and feels like.*  
Design is how it **works.**

**STEVE JOBS**

*Co-Founder, Apple*





MAKE IT EASY  
to do the right thing

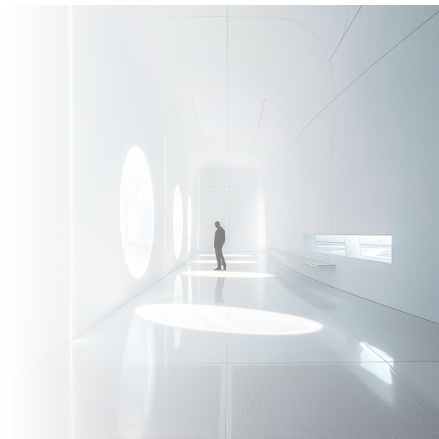
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# Make it easy to do the right thing

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## ASSUMPTIONS

- ⇒ We *humans* behave predictably (*for the most part*) even when we aren't behaving rationally
- ⇒ Humans *mostly* make similar choices under similar circumstances



# Choice Architecture

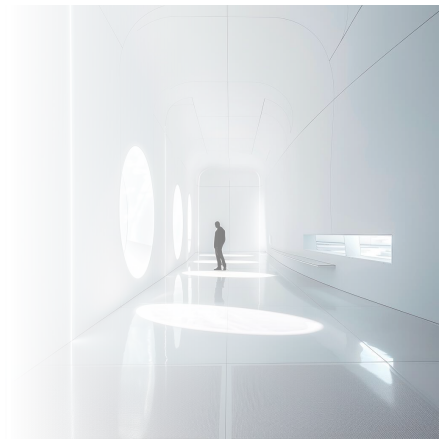
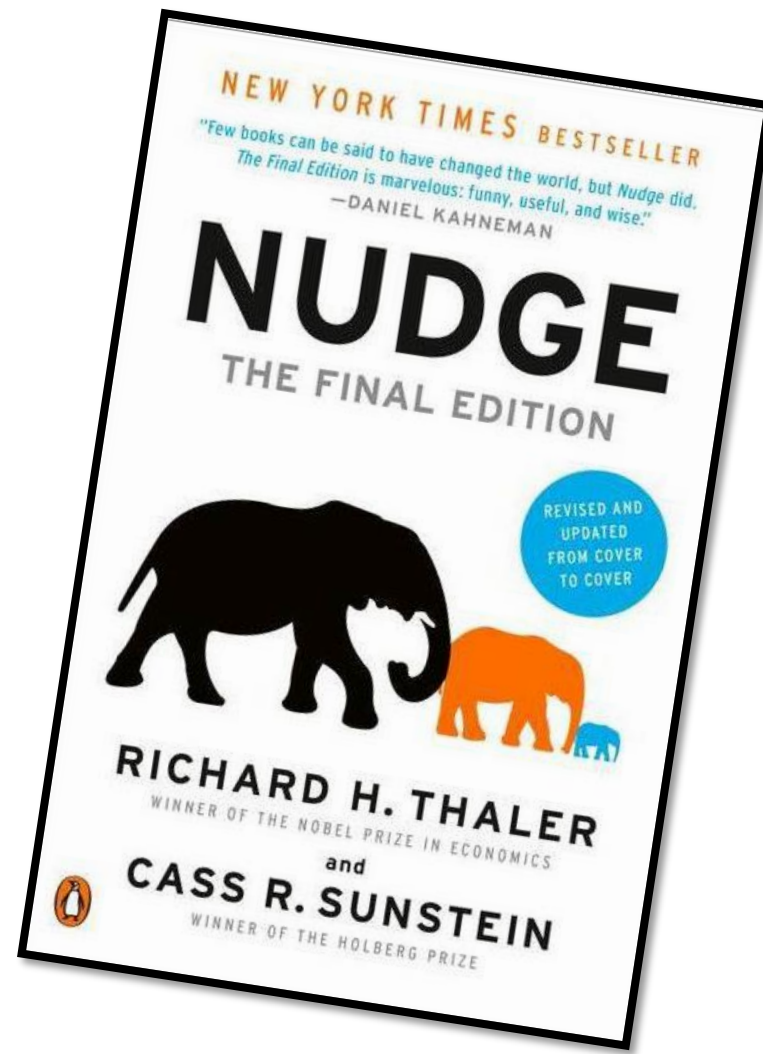
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## DEFINITION

Designing the context in which people make decisions

## WHAT IT REALLY MEANS

The answer depends on how you frame the question



# Choice Architecture

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EXAMPLES  
EATING HEALTHY FOODS IN  
HEALTHY PROPORTIONS





# Choice Architecture

EXAMPLES  
EATING HEALTHY FOODS IN  
HEALTHY PROPORTIONS



Which is bigger?

49% or 86%

# Choice Architecture

EXAMPLES  
SAVING FOR RETIREMENT

49% vs. 86%

Madrian BC and Shea DF. "The power of suggestion: Inertia in 401(k) participation and savings behavior." *Quarterly Journal of Economics*. 116;4(2001):1149-87.



# Science!

Research

JAMA Cardio  
Effect  
to Increase  
A Cluster

**Harvard  
Business  
Review**

Srinath Adus  
Kevin G. Volp  
Corinne Rhoc  
Ann M. Cavel  
Christopher K

**Behaviora**

**How  
Cost-  
With**

by Kushal

*Journal of the American Medical Informatics Association*, 00(0), 2022, 1–6



<https://doi.org/10.1093/jamia/ocac238>

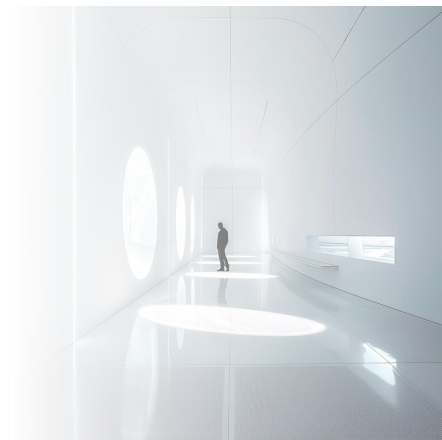
Brief Communications



Brief Communications

**Behavioral “nudges” in the electronic health record to reduce waste and misuse: 3 interventions**

Carrie K. Grouse<sup>1</sup>, Maggie W. Waung<sup>1</sup>, A. Jay Holmgren<sup>2</sup>, John Mongan <sup>3,4</sup>, Aaron Neinstein <sup>5,6</sup>, S. Andrew Josephson<sup>1</sup>, and Raman R. Khanna<sup>7</sup>



# Make it easy to do the right thing

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a *very* fancy implementation guide



# Make it easy to do the right thing

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a *very* fancy implementation guide

## SIMPLIFY CHOICES

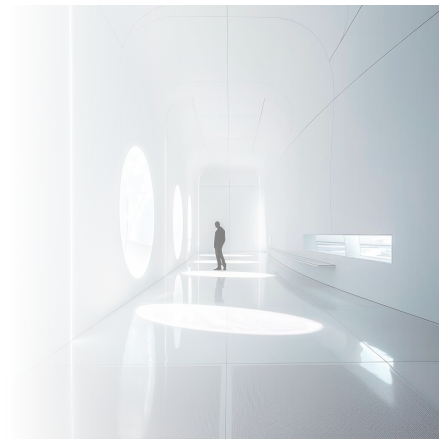
- ✓ Don't offer up every appointment time; select a few to reduce decision fatigue

## OFFER DEFAULT OPTIONS

- ✓ Most of us stick with pre-selected options
- ✓ Opt-out for a home-visit for a nurse instead of needing to opt-in

## GIVE IMMEDIATE REWARDS

- ✓ Praise healthy decisions (*"You sent daily weights for a week!"*) and even offer up unexpected discount cards



# Make it easy to do the right thing

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a *very* fancy implementation guide

## FRAME INFORMATION

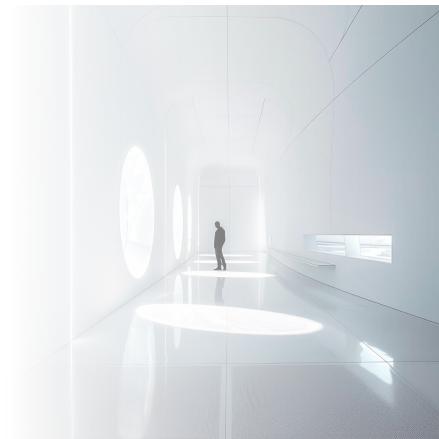
- ✓ Emphasize benefits rather than risks
- ✓ Example: a health screening is needed to “stay healthy” (positive framing) vs. “avoid illness” (negative framing)

## PROVIDE SOCIAL PROOF

- ✓ Display statistics of how many other patients have signed up for a flu shot
- ✓ Share testimonials about good outcomes from following medical advice

## PERSONALIZE INFORMATION

- ✓ Med refill reminders based on a patient’s specific health history vs. a generic statement





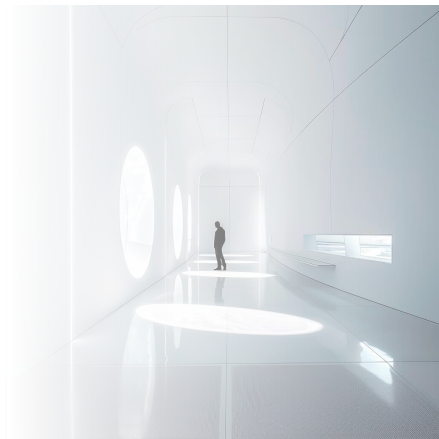
## GETTING RID OF STUPID STUFF **GROSS**

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# Getting rid of stupid stuff (GROSS)

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# GROSS

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The NEW ENGLAND JOURNAL of MEDICINE

## Getting Rid of Stupid Stuff Perspective

NOVEMBER 8, 2018

Melinda Ashton, M.D.

**M**any health care organizations are searching for ways to engage employees and protect against burnout, and involvement in meaningful work has been reported to serve both func-

Ashton M. "Getting rid of stupid stuff." *NEJM*. 379;19(2018):1789-91.

# GROSS

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## how to's

### STREAMLINE APPOINTMENTS

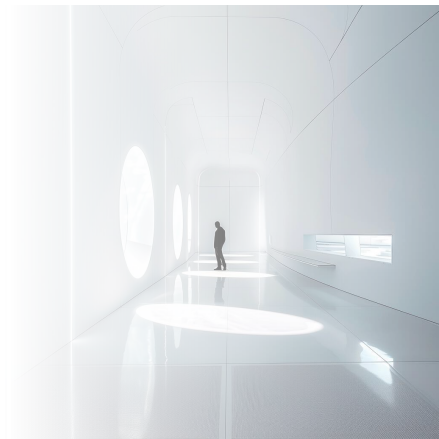
- ✓ Allow patients to fill out most paperwork ahead of time (paper = stupid)
- ✓ Ask patients to confirm already-collected data as opposed to re-entering it

### REDUCE CHECK IN STEPS

- ✓ Give patients the option to check in via their phone or a kiosk
- ✓ Added benefit: patients are more likely to pay money via phone/kiosk

### DECLUTTER PATIENT PORTALS

- ✓ Hide anything that isn't paying a bill, viewing test results, scheduling appointments, or renewing prescriptions behind a dropdown list



# GROSS

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how to's

## ELIMINATE REDUNDANT WORK

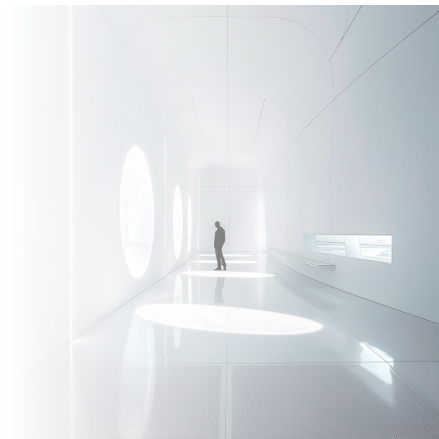
- ✓ Can a post-op visit be done via telehealth? Or with a non-physician?
- ✓ Schedule the next visit before the patient leaves this visit

## REFINE EMAIL NOTIFICATIONS

- ✓ Too many emails can desensitize us to what's really important

## AUTOMATE ROUTINE PROCESSES

- ✓ Prescription refill
- ✓ Chronic disease monitoring





START WITH  
the end (user) in mind

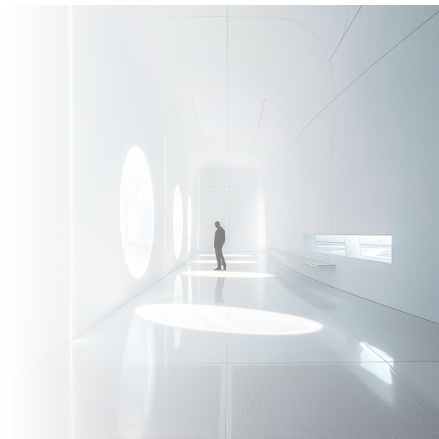
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# Design engagement for real people

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## ACKNOWLEDGE THE REAL WORLD

- ✓ Build slack and forgiveness into your EHR, ERP, and CRM
- ✓ Meet your people (patients and staff) where they are
- ✓ Keep asking:
  - ✓ What is the goal of this campaign/tool/workflow?
  - ✓ Is this the best way to achieve this goal?

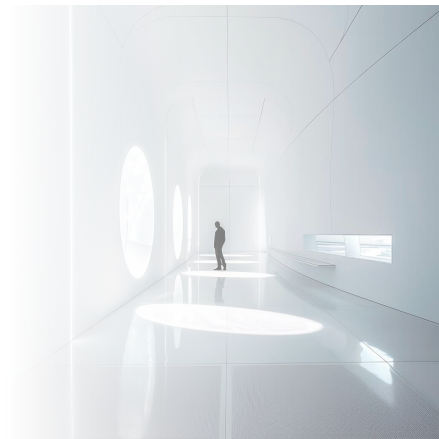


# Start with the end (or end user) in mind

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## UNDERSTAND YOUR TARGET MARKET

- ✓ Primary care physicians? Pediatric cardiothoracic surgeons?
- ✓ Floor nurses? MAs in outside clinics?
- ✓ Management by walking around (MBWA)  
*(in healthcare, we call this “rounding”)*





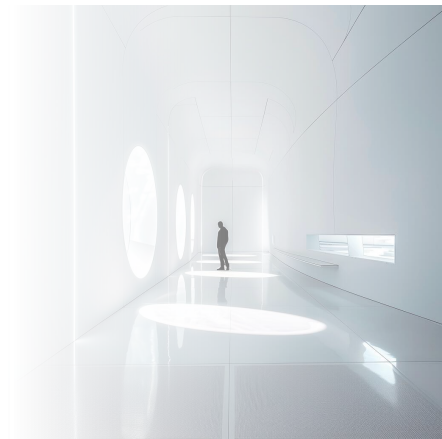
ENSURE

transparency and  
predictability

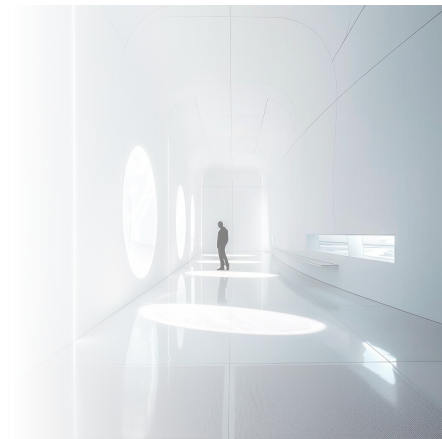
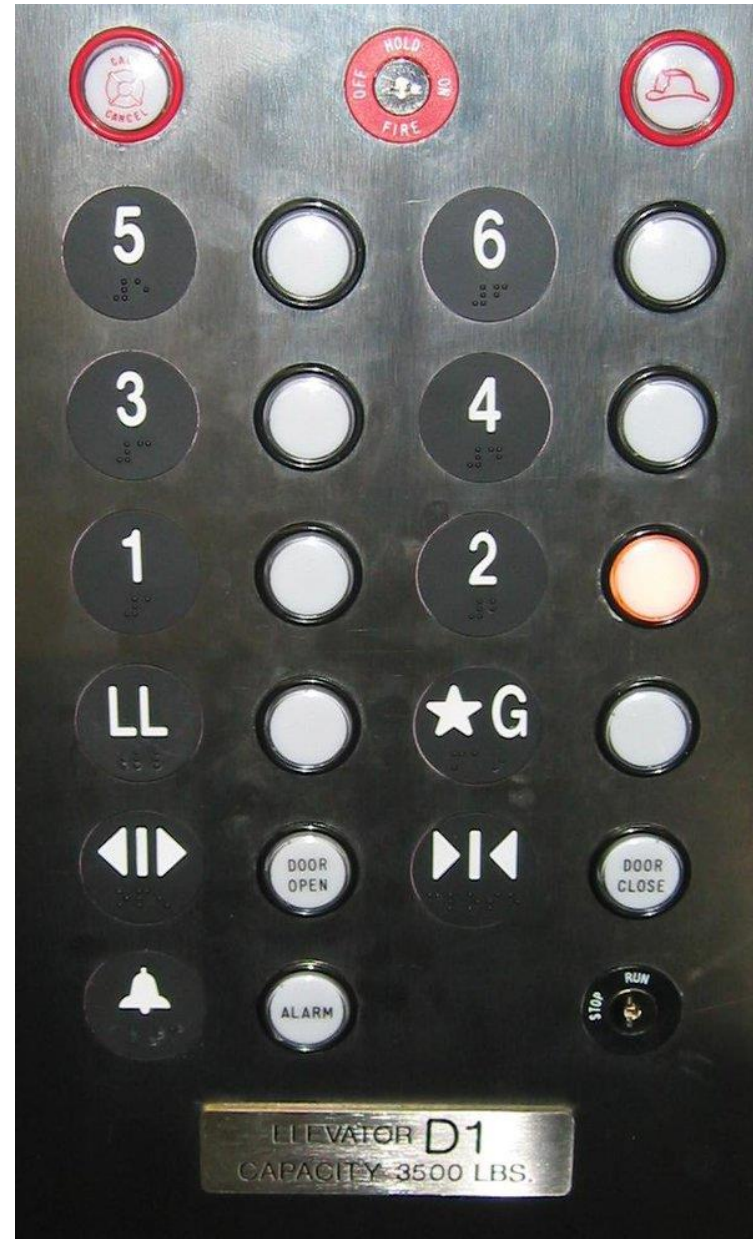
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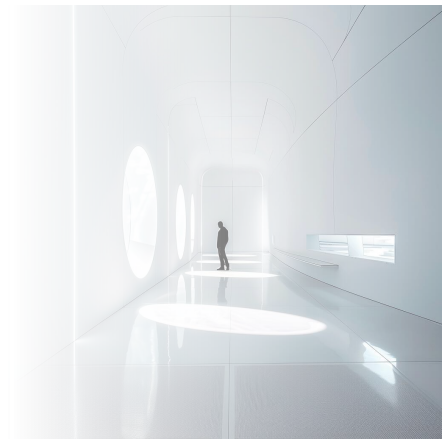
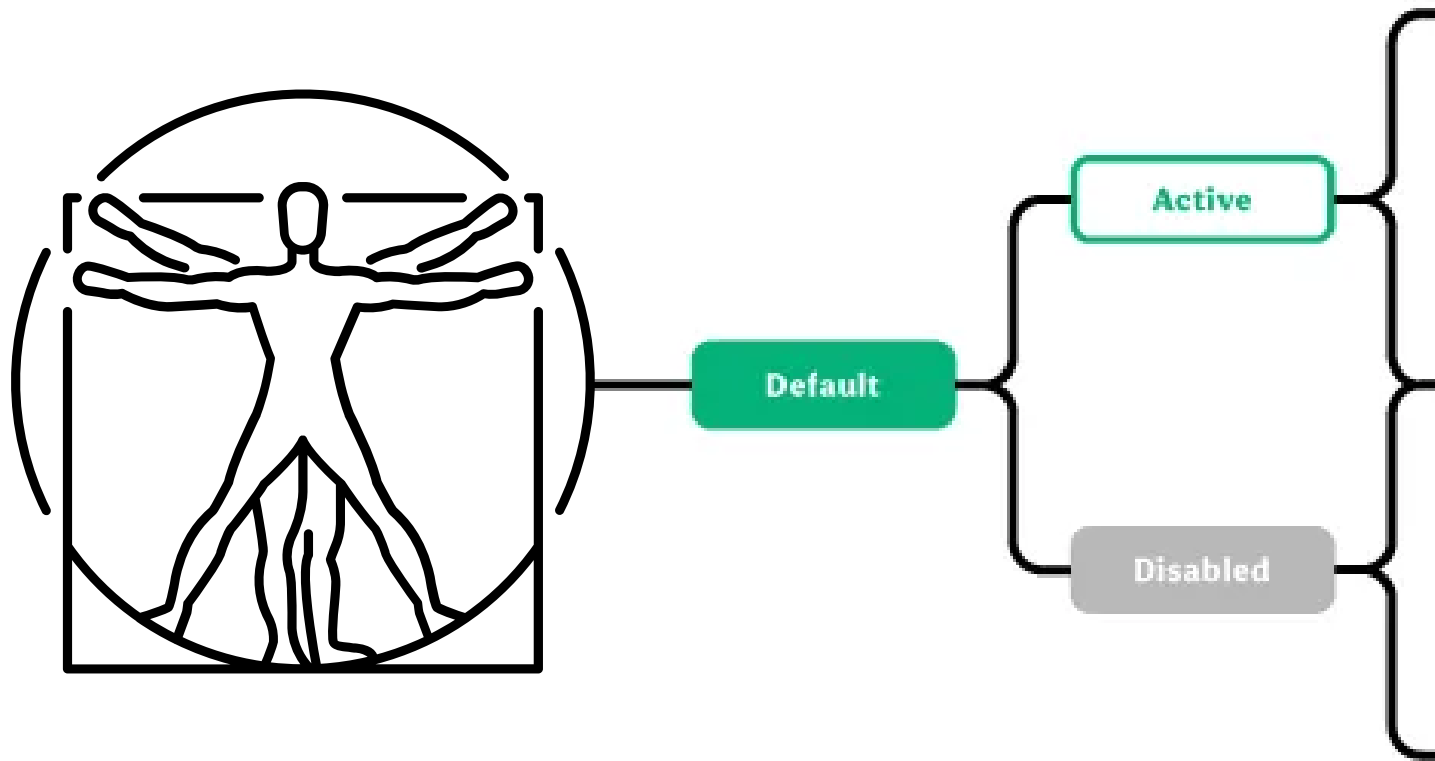
Just stop



# Which is better design?



# There *are* ideal designs...



# Ensure transparency and predictability

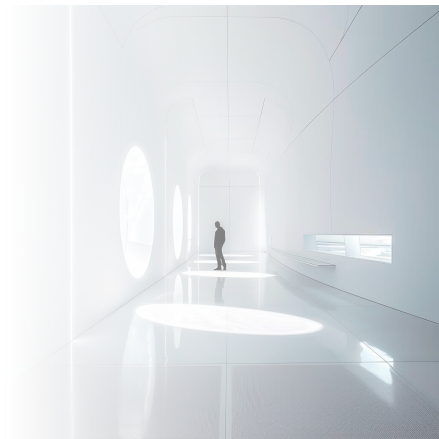
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## TRANSPARENCY

- ✓ Understand all the factors/choices/inputs
- ✓ Create a useful mental model
- ✓ Offer only the minimal information necessary

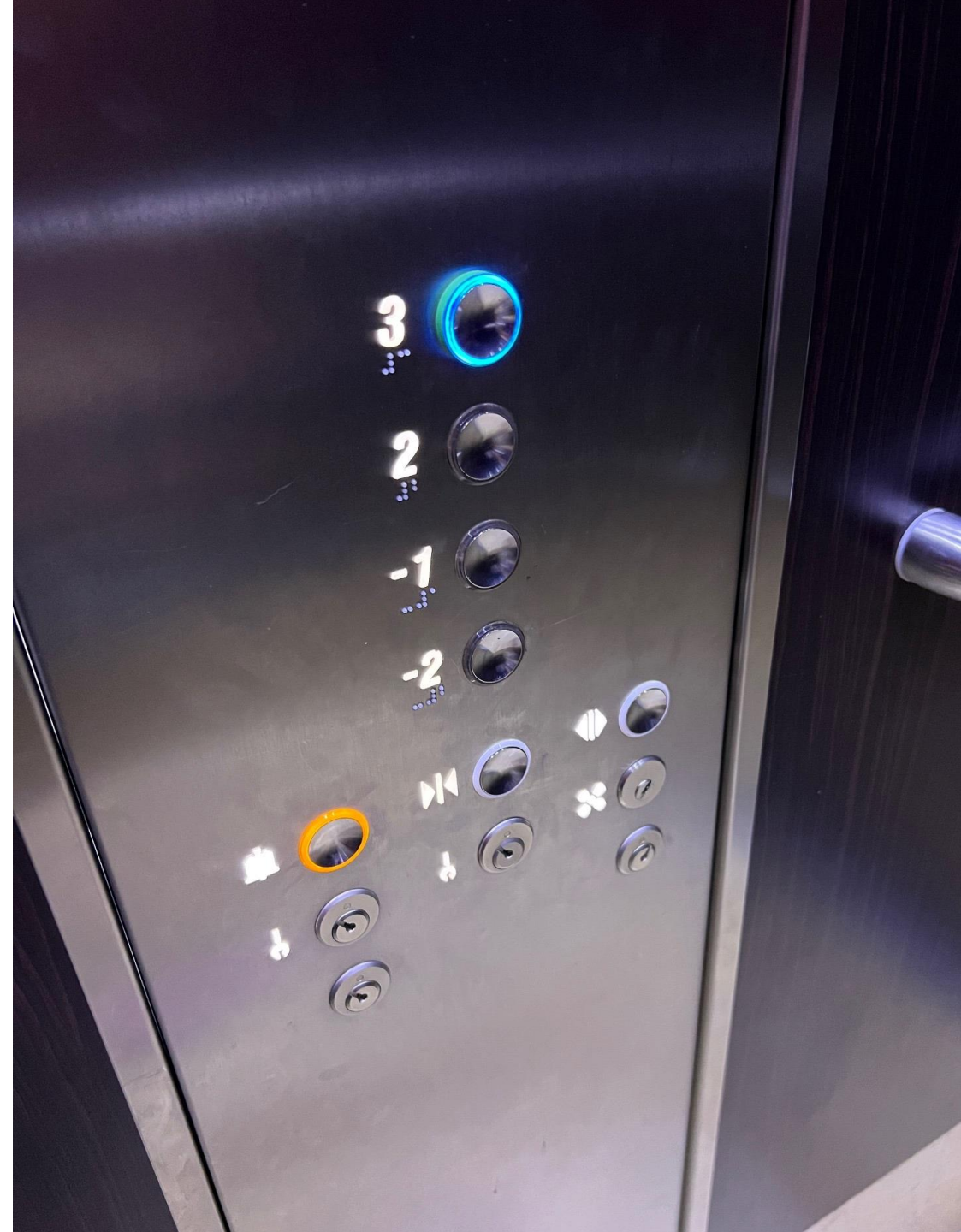
## DECIDE:

*Transparent for whom? For what purpose?*



Ground level?

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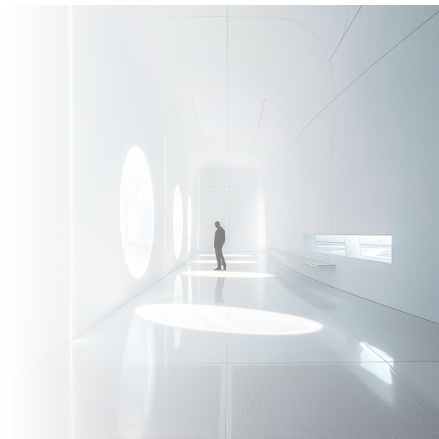


# Ensure transparency and predictability

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## PREDICTABILITY

- ✓ Understand the expected output
- ✓ Decrease anxiety and unnecessary repeat work
- ✓ Take into account context and comfort levels
- ✓ Predictability is achieved via consistency

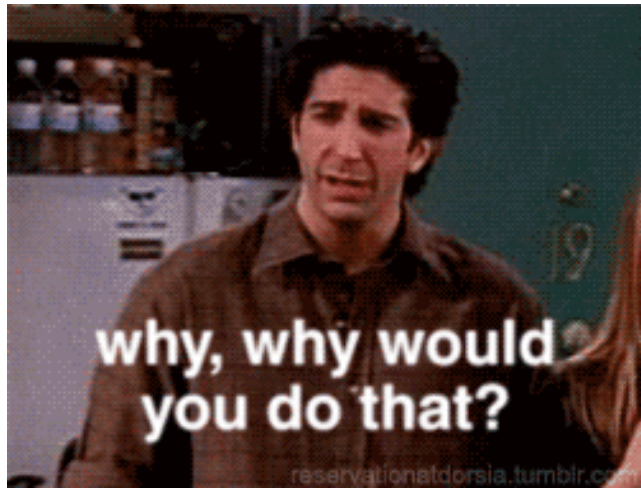


Use Guest  
Room  
Key Card



No  
predictability?

Then no  
muscle  
memory!



Use Guest  
Room  
Key Card





LISTEN  
to your (real) users

---



”

We don't ask consumers what they want. They don't know. Instead we apply our brain power to *what they need*, and **will want**, and make sure we're there, ready.

**AKIO MORITA**  
*Founder, Sony*



# Listen to your (real) users

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## GENERALIZING USERS IS NOT ENOUGH

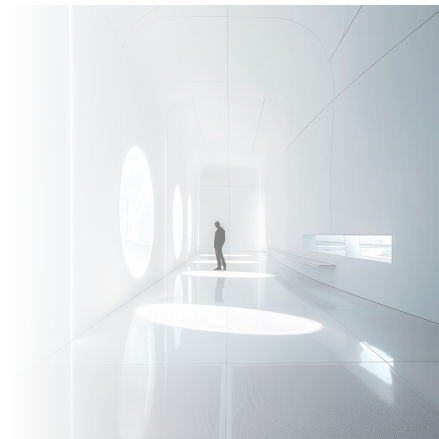
- ✓ No family has 1.9 children

## EXPERTISE IN ONE DOMAIN DOESN'T MEAN ANYTHING ABOUT ANOTHER

- ✓ Being a world-renown neurologist doesn't imply clinical informatics knowledge

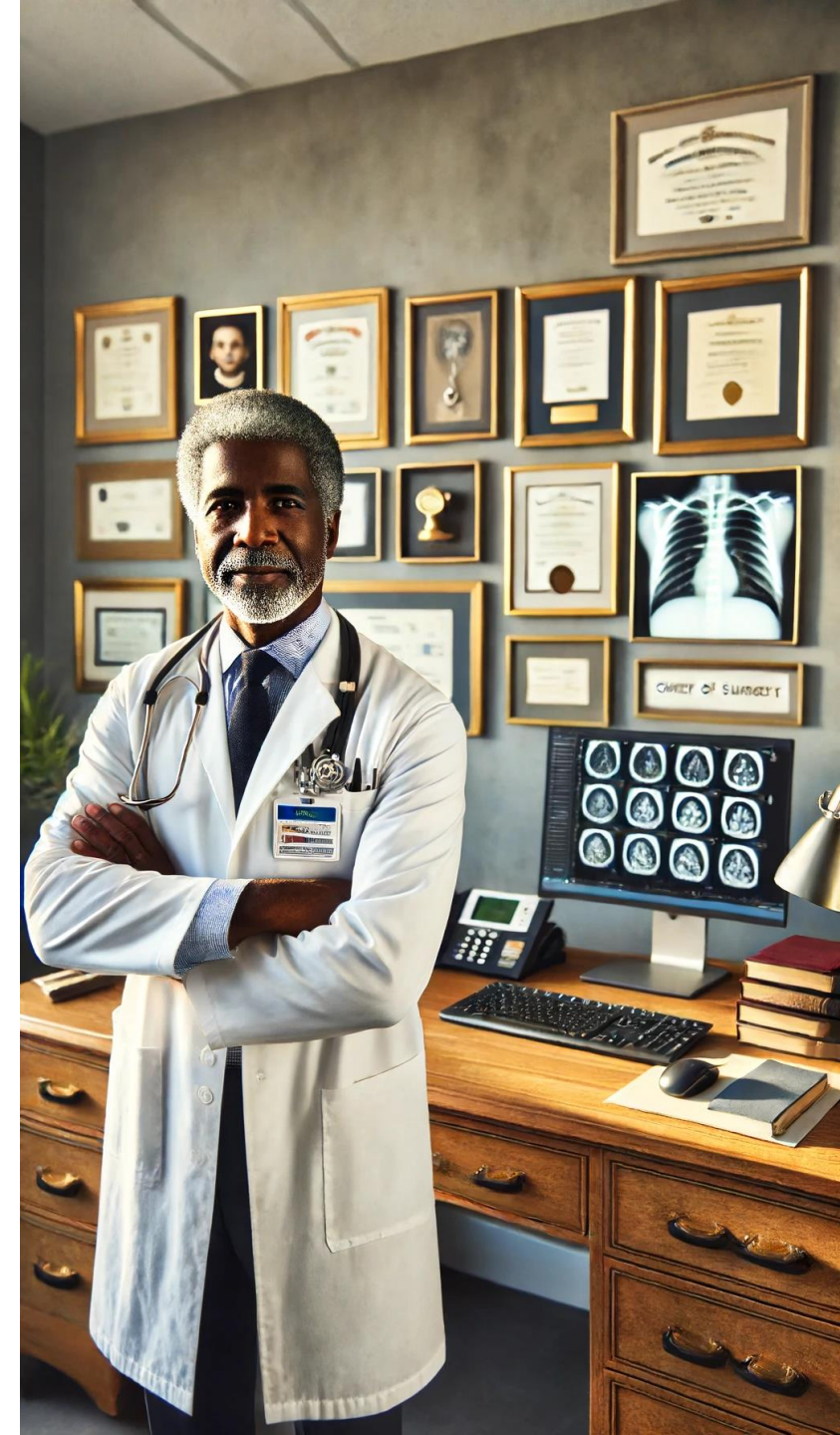
## FIND A USER WHO CAN REPRESENT THEIR PEERS

- ✓ The ability to think about others is a gift
- ✓ Ask emergency medicine physicians and radiologists about this skill



If this is your Chief  
of Cardiology, then  
... this is not your  
*real* user.

And why does your Chief have a framed CXR on  
his wall? Seriously? That's weird. And possibly a  
HIPAA violation.





ALWAYS BE

continuously improving

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# Continuous improvement

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## WHEN IMPLEMENTING, TRY TO BE WRONG AS INFREQUENTLY AS POSSIBLE

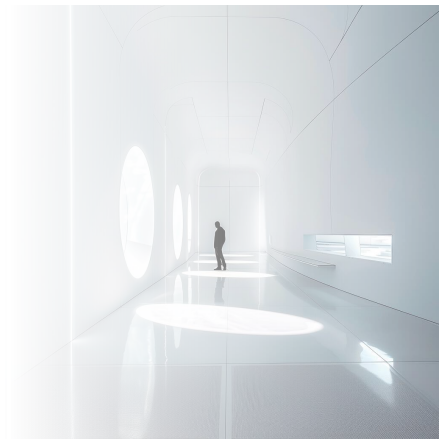
- ✓ To a large extent, whatever we do, some part of it will be wrong
- ✓ Acknowledge this, stop analysis paralysis, and move on

## MEDICINE AND TECHNOLOGY KEEP MOVING FORWARD

- ✓ Remember when we didn't have LLMs? Yeah, me neither.
- ✓ Choosing Wisely highlighted >700 outdated medical practices

## FOLLOW SILICON VALLEY'S MAXIM: FAIL QUICKLY AND CHEAPLY

- ✓ See "Be Wrong as Infrequently as Possible" above



# What happens if you don't implement technology and change intentionally?



**N**O ONE WAS MORE SURPRISED THAN THE PHYSICIAN HIMSELF. The drawing was unmistakable. It showed the artist—a 7-year-old girl—on the examining table. Her older sister was seated nearby in a chair, as was her mother, cradling her baby sister. The doctor sat staring at the computer, his back to the patient—and everyone else. All were smiling. The picture was carefully drawn with beautiful colors and details, and you couldn't miss the message. When he saw the drawing, the physician wrote a caption for it: "The economic stimulus bill has directed \$20 billion to health care information technology, largely funding electronic medical record incentives. I wonder how much this technology will really cost?"

Why was the physician so surprised? Let me tell you about this guy. He joined our pediatrics residency with the rest of the new interns after a two-year stint as the medical officer

aboard an aircraft carrier in the Persian Gulf, a position he had assumed after a single year of general internship in the navy. During the assignment, he had seen this floating city of more than 2500 through every conceivable medical problem from homesickness to gonorrhea, traumatic amputation, and myocardial infarction. He learned to make decisions as significant as diverting an entire aircraft carrier in order to get a patient to a tertiary-care hospital in Bahrain. When you spend a moment with this young physician, you sense innate kindness, humility, and connection to a larger purpose, be this family, country, patients, or hospital. He also has charisma. Students, colleagues, faculty, parents, and kids of every age connect with him. The enjoyment seems mutual. You find him crouching down to meet his young patients at eye level. Evidence of

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A Piece of My Mind Section Editor: Roxanne K. Young, Associate Senior Editor.

JAMA, June 20, 2012—Vol 307, No. 23 2497

“

We need more  
design doing.

**DON NORMAN**

author of *The Design of Everyday Things*



# Summary

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## BE INTENTIONAL

- ✓ *Recognize and apply the fundamentals of human-centered design*

## PASS THE SNIFF TEST

- ✓ *Exceed the expectations of your patients and clinicians by anticipating their needs*  
*(trust your **human** intuition)*

## OBTAIN BUY-IN

- ✓ *Educate and involve your leadership so all levels of your organization are rowing in the same direction*



# Q & A

**CRAIG JOSEPH, MD, FAAP, FAMIA**

Chief Medical Officer, Nordic Global  
[craig.joseph@nordicglobal.com](mailto:craig.joseph@nordicglobal.com)

**CHRIS HOLLAND, MBA**

Director of User Experience, Emory Healthcare  
[christopher.holland@emoryhealthcare.org](mailto:christopher.holland@emoryhealthcare.org)

# THANK YOU!

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