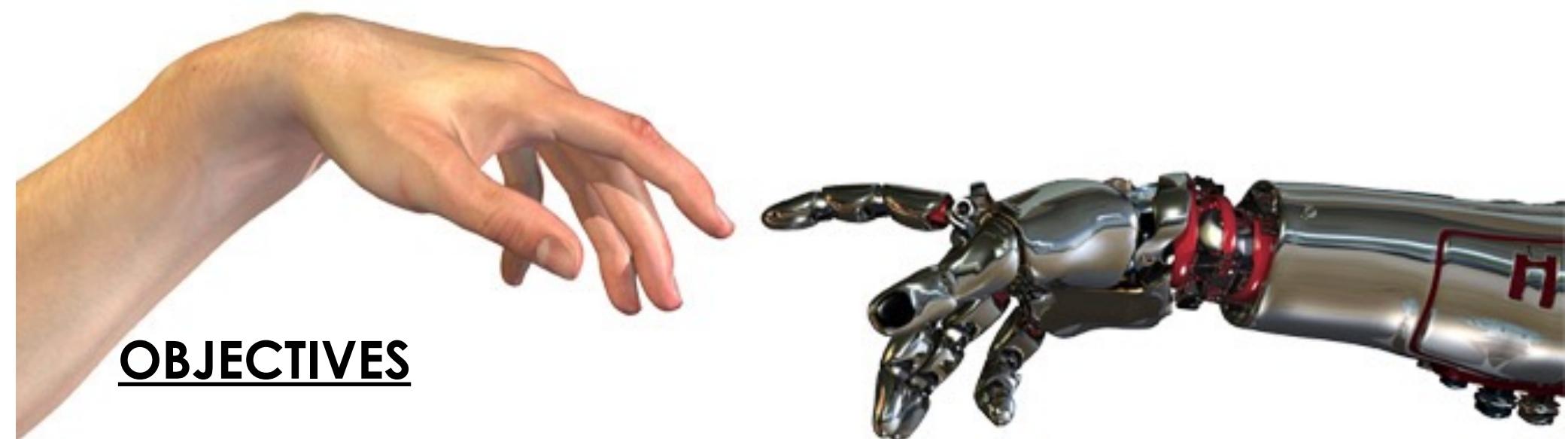


Human-Computer Interaction

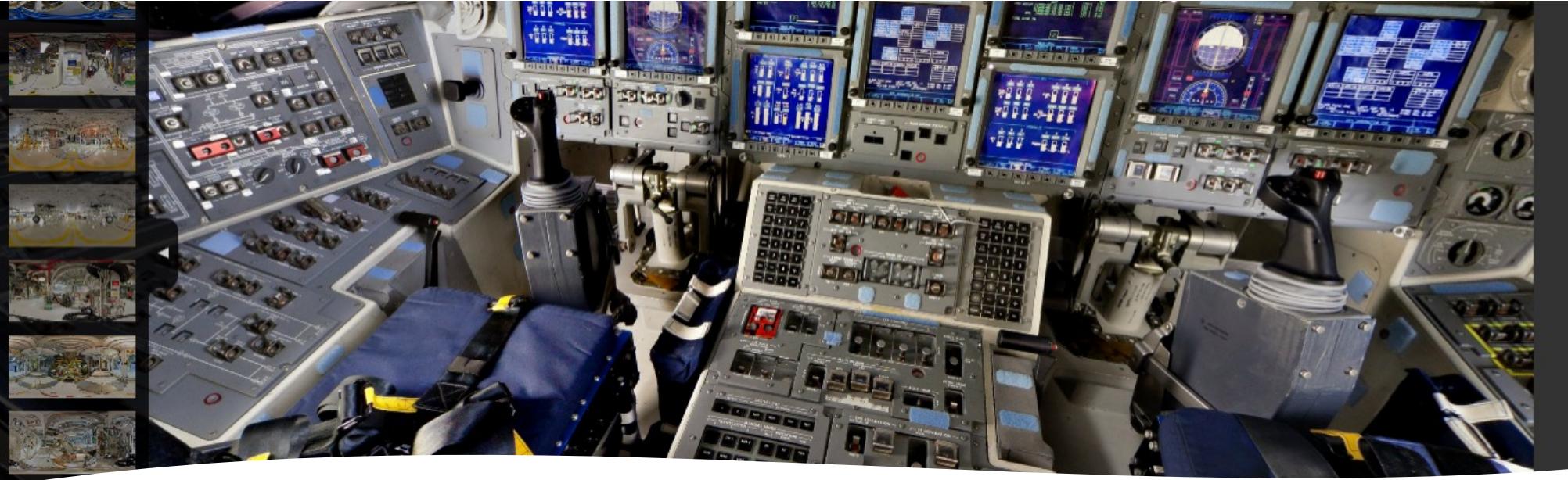
Intro to Human Factors (HF)



OBJECTIVES

- 1.) What is Human Factors?
- 2.) What is the Human – Tech Ladder and why do we care as Computer Scientists?
- 3.) Where did Human Factors begin? A quick historical perspective of where Human Factors came from.





HUMAN FACTORS FROM A 360 VIEWPOINT

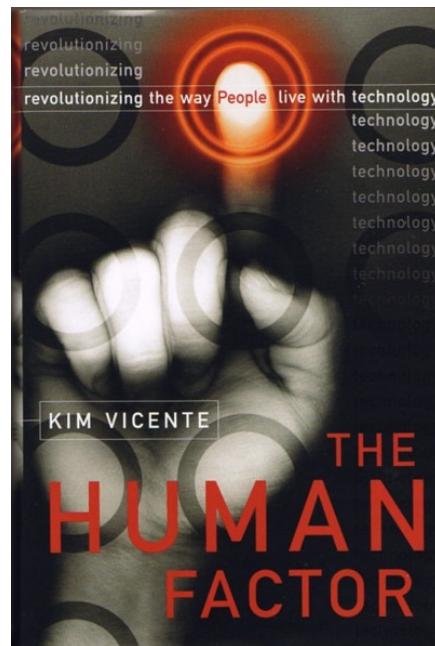
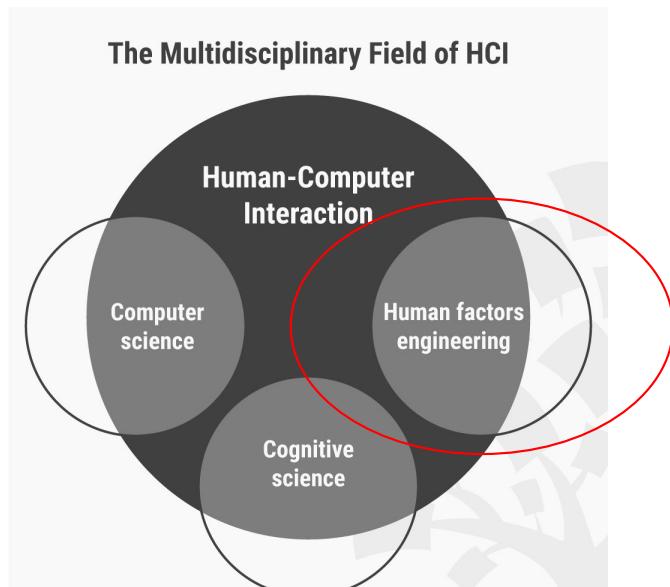
Design the controls & displays the next astronauts will use to get to Mars.

Where do we even begin?

Navigate for yourself ...

<https://blog.kuula.co/virtual-tour-space-shuttle>

Human Factors (HF)



CS/engineers are Notoriously Mechanistic...the good, the bad, and the ugly!

What is Human Factors?

Why do we even care as CS folks?

Seeks to optimize the relationship between technology and the human

Designing jobs, products, operations, tasks, work environments so they are compatible with human capabilities & limitations.



Incorrect Posture



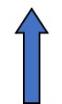
Correct Posture



Prior to WWI the only test of human to machine compatibility was that of trial and error. If the human functioned with the machine he was accepted, if not he was rejected.

Objectives of Human Factors

*Fit the task/product/system to the person,
not the person to the task/product!*



Efficiency of work/task



Health & safety



Quality of work life &
job satisfaction

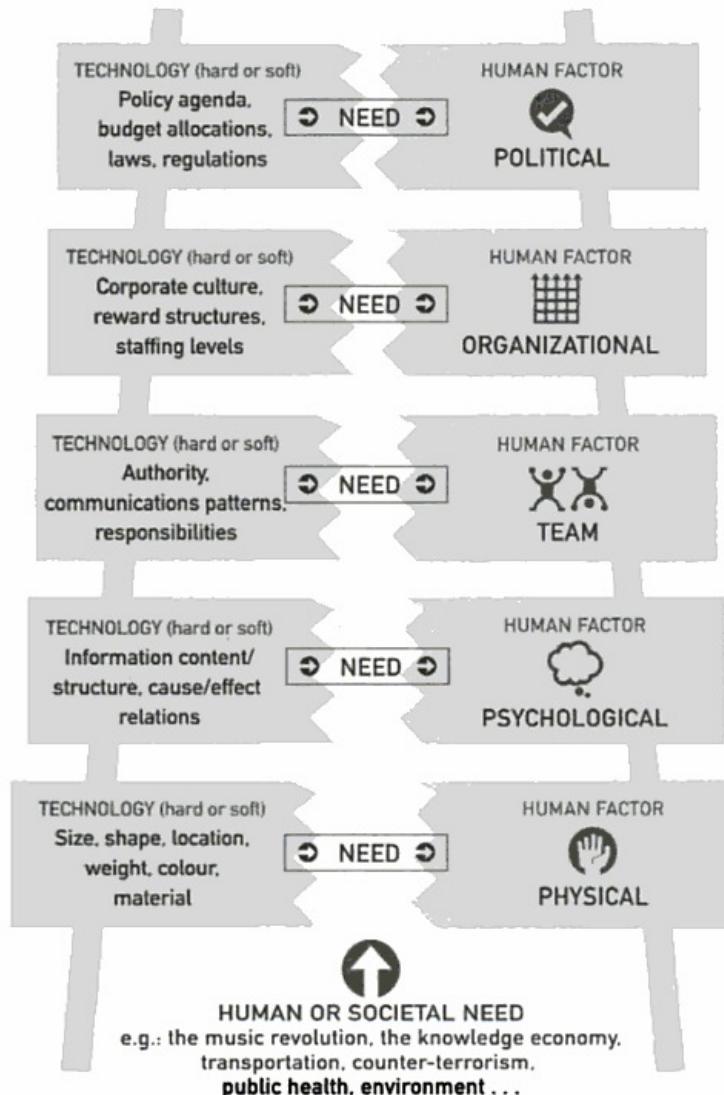
The Human-Tech Ladder

Technologies as diverse as stove tops, hospital work schedules and airline cockpit controls lead to 'human error' because they neglect what people are like physically, psychologically, and in more complex ways.

The results range from inconvenience to tragic loss of life...

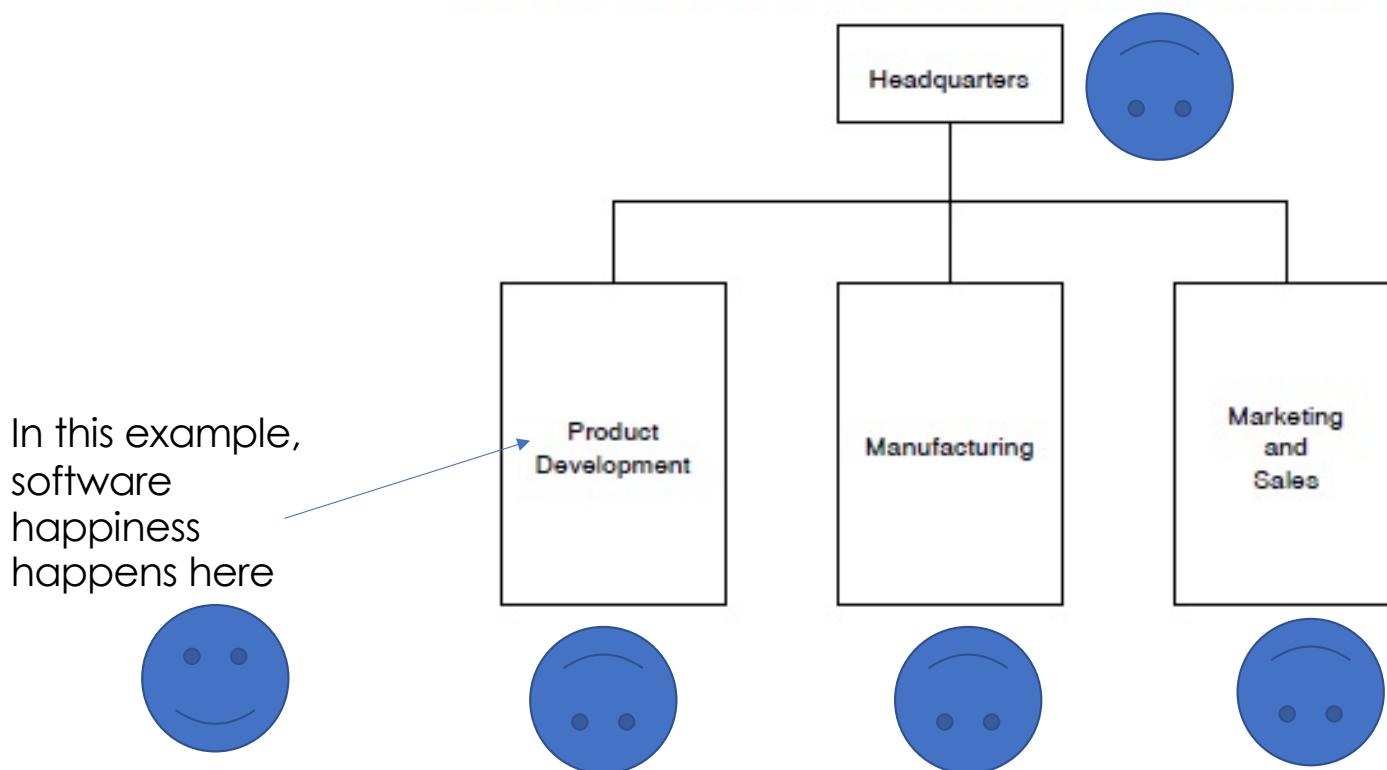
We should focus not just on better products or better practices, but the fit between them...

- From Vicente, 2006 the Human Factor Book

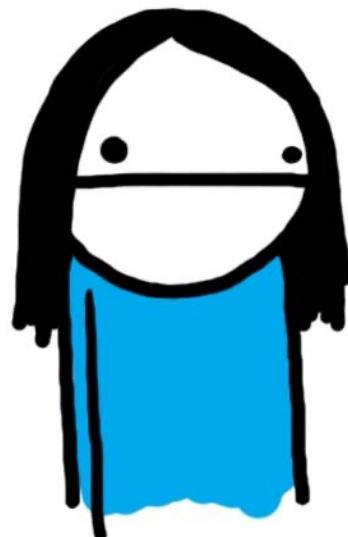


Who talks to who?

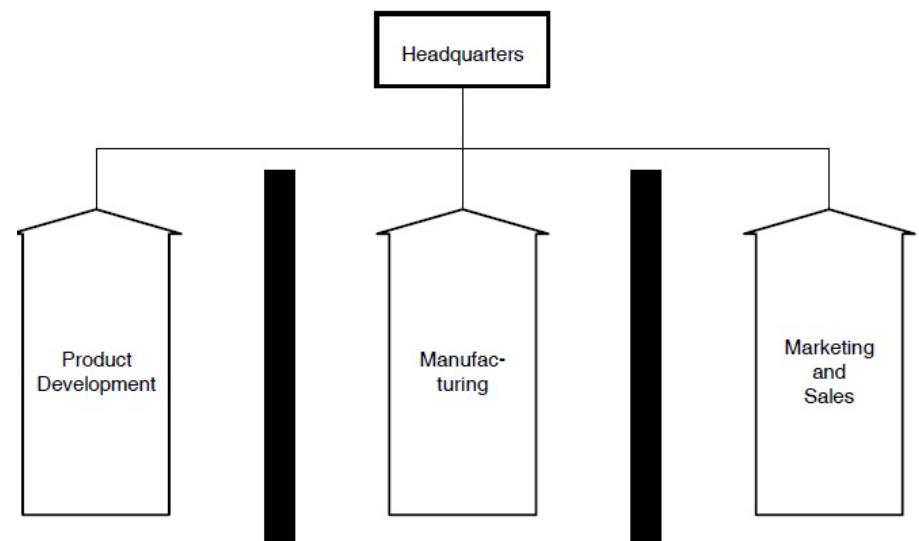
Functional View of an Organization



The Silo Phenomenon

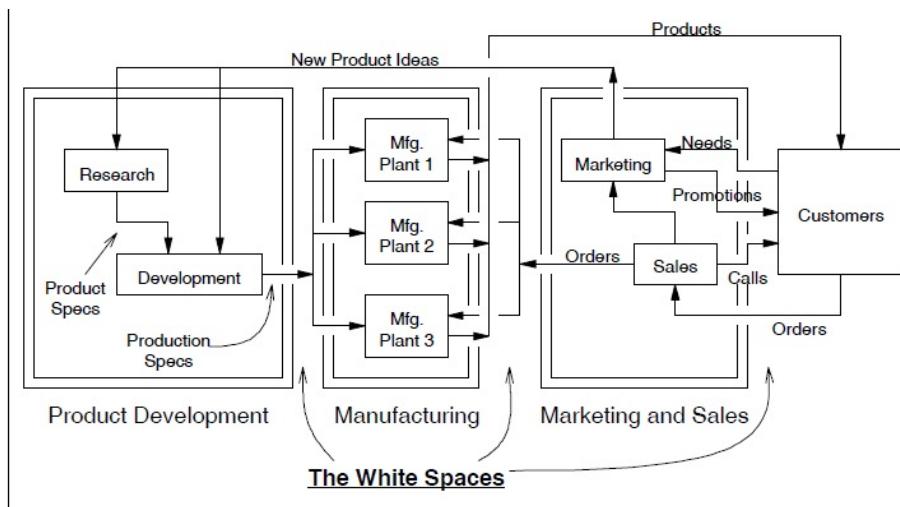


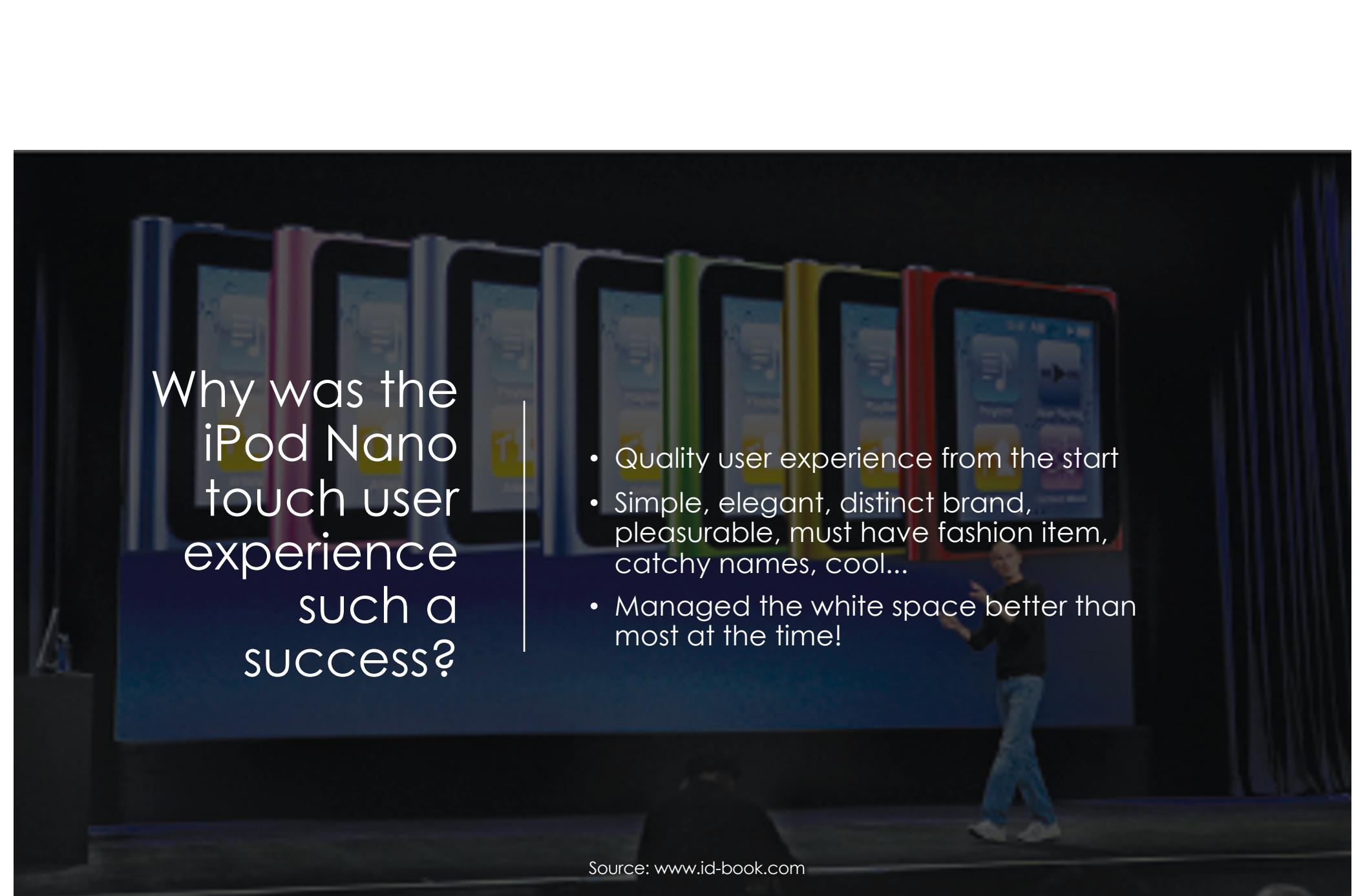
hot.
talking
to
you.





Managing the White Spaces in the Systems





Why was the iPod Nano touch user experience such a success?

- Quality user experience from the start
- Simple, elegant, distinct brand, pleasurable, must have fashion item, catchy names, cool...
- Managed the white space better than most at the time!

Source: www.id-book.com

History Lesson ☺...

- During WWII, over 400 planes were lost in a 22-month period because pilots confused the landing gear and flaps controls (generate more lift at slower speed, enables the plane to fly at a reduced speed and less likely to stall)

B-17 Flying Fortress



ILLUSTRATION: ELENA LACEY / GETTY IMAGES

CLIFF HSUNG / BACKCHANNEL 11.13.2019 07:00 AM

How the Dumb Design of a WWII Plane Led to the Macintosh

At first, pilots took the blame for crashes. The true cause, however, lay with the design. That lesson led us into our user-friendly age—but there's peril to come.

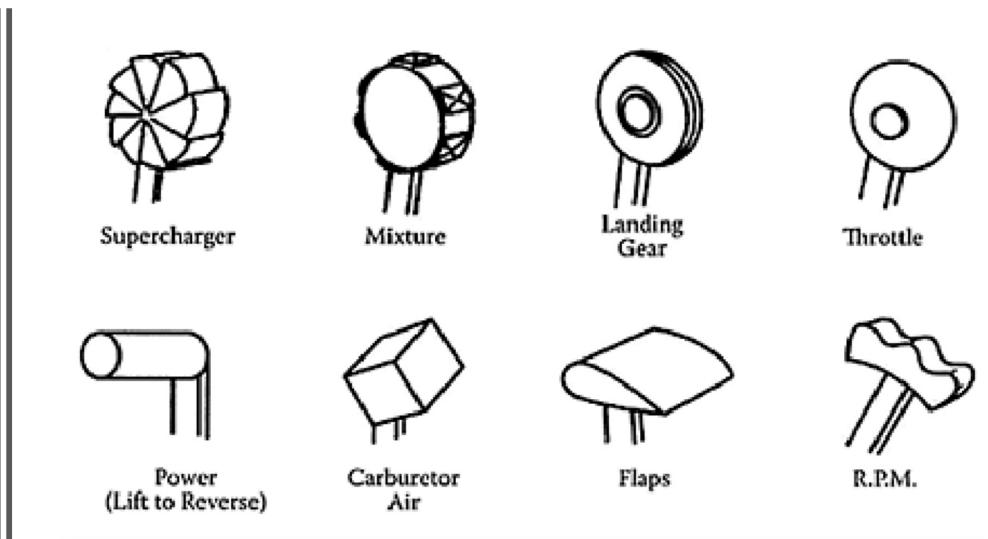
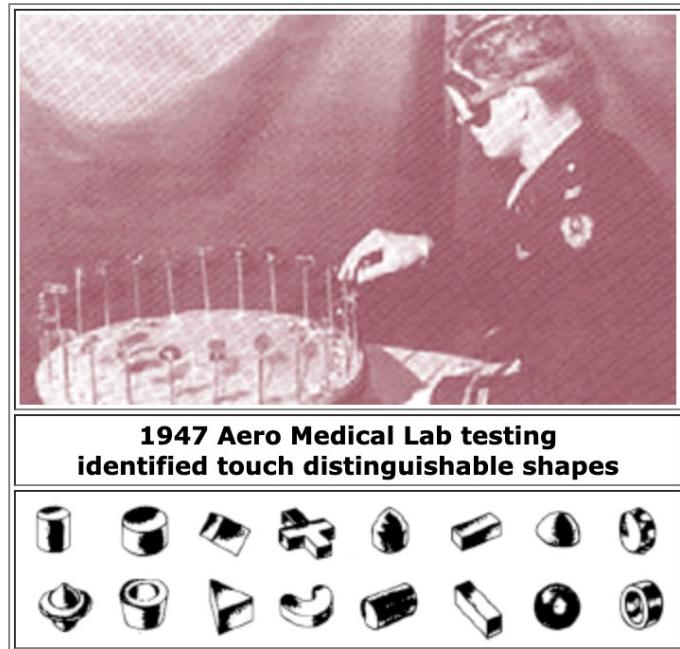
How might you better design aircraft controls if one is confusing the controls when landing ?



This Photo by Unknown Author is licensed under CC BY-SA

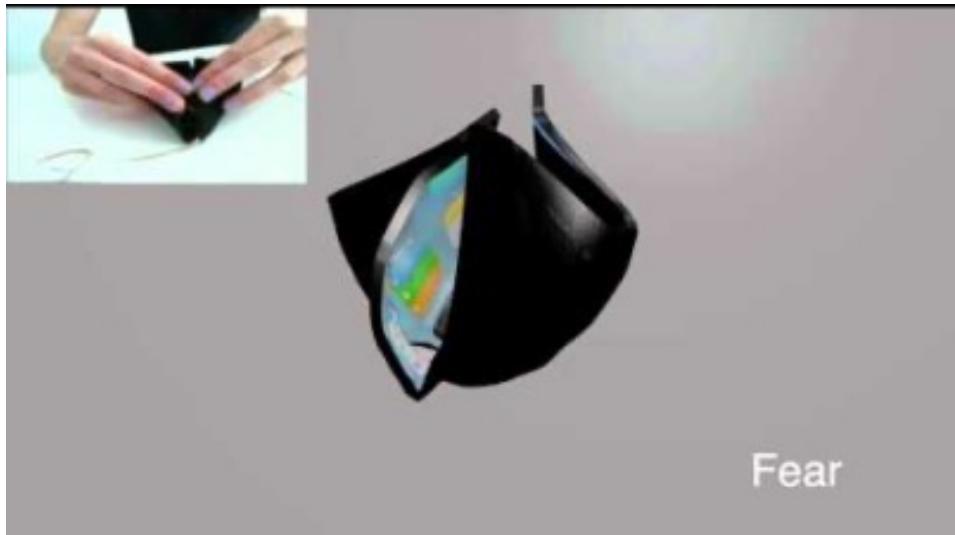
WWII to Now...

Shape constraints/Shape Coding to change behavior



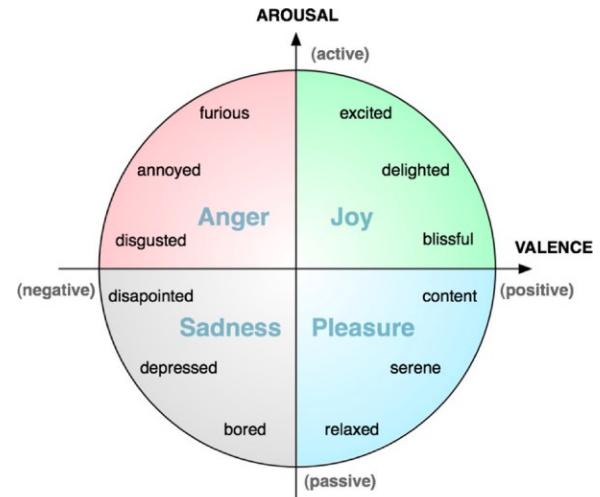
WWII to Now...

Shape constraints/Shape Coding to change behavior



https://www.youtube.com/watch?time_continue=3&v=JQ9eUHHA4bl&feature=emb_logo&ab_channel=ACMSIGCHI

Modern day applications of shape's affect on emotion (measure via arousal and valence).



<http://www.ieee-tcdl.org/Bulletin/v5n3/Hu/hu.html#fn3>