



The Human

Design Thoughts

Fitts' Law

1. The farther away a target is, the longer it takes to acquire it with the mouse.
2. The smaller a target is, the longer it takes to acquire it with the mouse.

The inverse of both statements is true as well
(closer and bigger targets can be more
quickly acquired.)

Representation

$$\text{Movement Time} = a + b \log_2(\text{distance}/\text{size} + 1)$$

- *a* and *b* are empirically known constants
- *distance* is the distance from starting point to center of the target
- *size* is the width of the target **measured along the axis of motion**

Fitts' Experiments!!!

How Fitts' law affects UI

- There are two main ways to improve mouse efficiency:
 - put the controls closer or make them bigger.
- Useful aspects of applying Fitts' Law to computers is that screen size is bounded.
 - No matter how far you move your mouse to the left, the cursor will never go farther than the left side of the screen.
 - In a Fitts' Law sense, you can think of the edges of the screen as being infinitely wide.

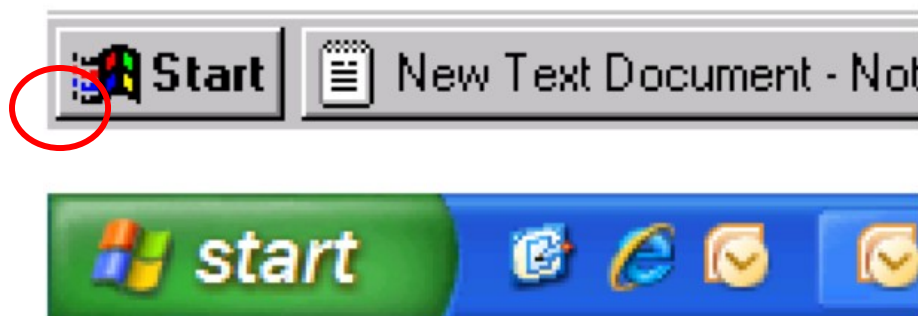
slam your mouse to the
left/right as fast and as hard
as you want and you won't

Continue...

- The Windows taskbar is a mile-high
 - you can move your mouse to the bottom of the screen quickly and **only worry about targeting horizontally**
- Four places on the screen that are effectively both infinitely wide and infinitely tall.
 - The four corners
 - Regardless of how distant a corner is from your current mouse position, you can get to the corner in no time at all

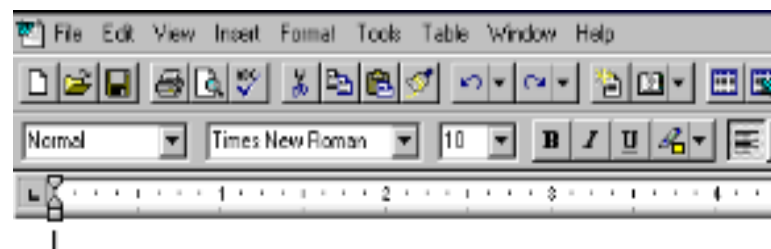
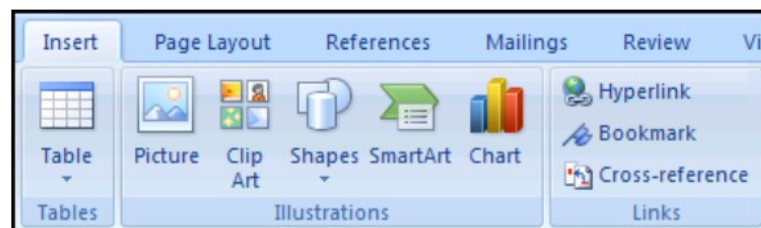
Windows button!!

- Start button in Windows is seemingly located in an ideal place for fast acquisition
- Prior to windows 2000, start button had dead pixel along the left and bottom side of it which results missed clicks

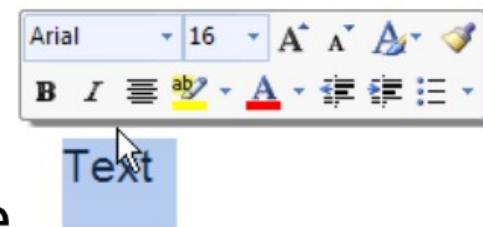


Office 2007 and Fitts' law

- Most controls in the Ribbon are labeled and the buttons are bigger and easier to target.
 - This helps Discoverability and usability considerably

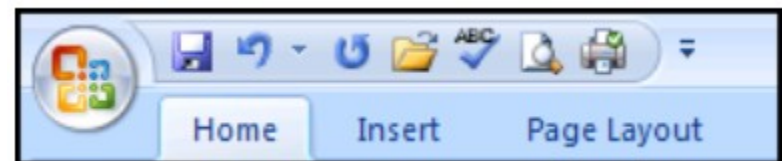


- The Mini Toolbar was designed with Fitts' Law in mind as well.
- The controls on the Mini Toolbar are small
 - *size is small*
 - But the *distance* is also small
 - $Movement\ Time = a + b \log_2(distance/size + 1)$
 - The Ribbon is designed to increase *size*; the Mini Toolbar is designed to reduce *distance*. Both of these affordances help to reduce



Quick Access Toolbar

- Historically, the top edge of the screen is used for the title bar. Having a title bar is probably necessary, but it's a huge waste of easily-targeted space.
- Microsoft take advantage of the title bar space to help make certain controls faster to target
 - This is why Quick Access Toolbar is located in the title bar by default.



How might we improve this?

You are cordially invited to Robert and Alexandra's delectable after-dinner party. Wine and nibbles will be served. When: June 30th, 2018 at 9:30pm. Where: the pad. If you need directions, ping us. Kindly let us know if you'll be attending by June 1st.

Chunking or grouping by introducing whitespaces

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Use size contrast to indicate hierarchy

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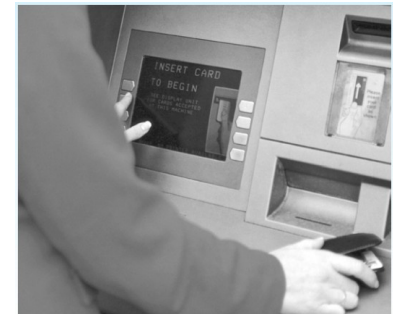
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Short Term Memory (Design Thoughts)

- Depends on
 - Emotions, Situation and Age etc.
- Our mind have tendency to flush short-term memory on completing a task
- Early ATMs gave the customer money before returning their bank card. On receiving the money the customer would reach closure and hence often forget to take the card.



During the Second World War a new cockpit design was introduced for Spitfires. The pilots were trained and flew successfully during training, but would unaccountably bail out when engaged in dog fights. The new design had exchanged the positions of the **gun trigger and ejector controls**. In the heat of battle the old responses resurfaced and the pilots ejected. Human error, yes, but the designer's error, not the pilot's.



Topic Studied in Chap: 01

- Cognition

- Memory

- STM

- LTM

- Sensory

- ICONIC

- » **Vision**

- » Perception

- Echoic

- » **Hearing**

- » Perception

- Thinking

- Problem solving (Gestalt, problem Space, Analogy)

- Mental Models

- Reasoning (Deductive, Abductive and Inductive)

- Skill Acquisition

- Psychology

- Perception

**Your Task is to create
Semantic Network Model**

