软件交互设计

基本概念、设计目标、设计原理、设计过程

GUI设计规则、KLM效率模型、Fitts定律

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Fitts定律

- **W (Windows):** working area, more than one window on the screen
- **I (Icons)**, graphical icon, easy to understand
- **M (Menu),** hints for functions can be selected by user
- **P (Pointing Devices)** Devices like mice to control objects on the screen

GUI Widget Layout

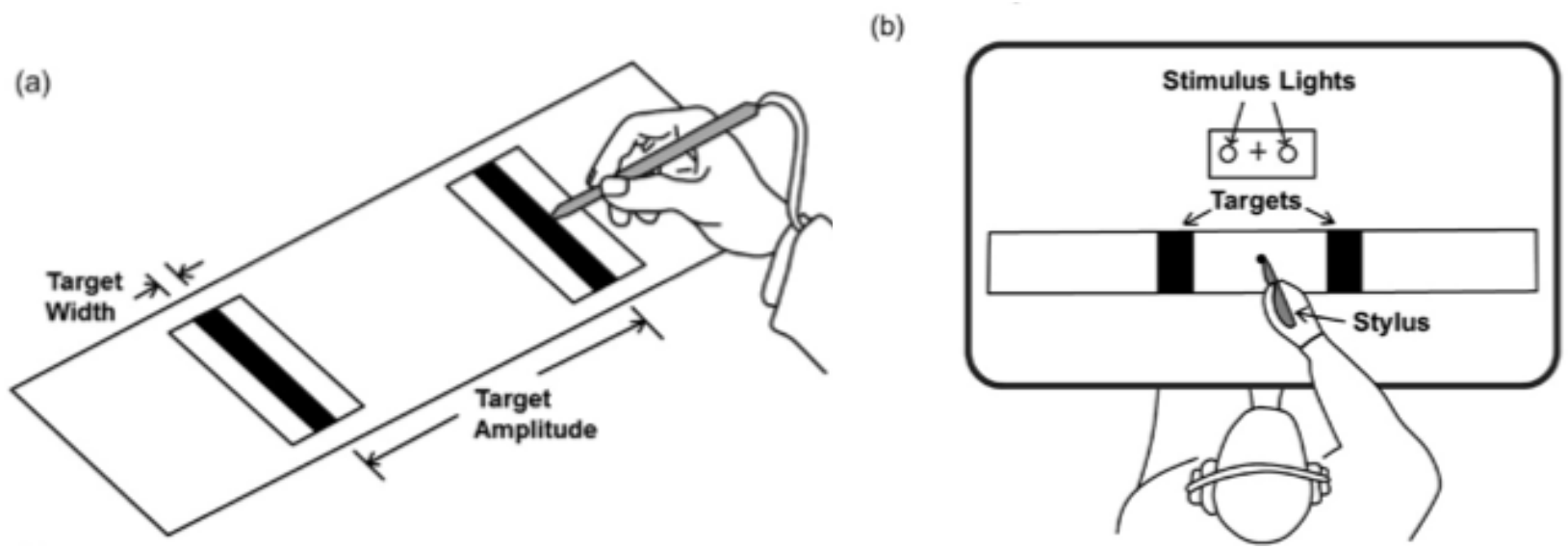
Pointing Device:

- Mouse
- Touch
- Gesture
- Motion sensor

Pointer: cursor

- Motor Space
- Visual Space
- Control/Display Ratio

Fitts定律：来源



The relationship between task difficulty and the movement time (MT) is linear. ID=log2(2A/W), MT=a+bID

In Fitts, P. M. (1954). *The information capacity of the human motor system in controlling the amplitude of movement*. Journal of Experimental Psychology, 47, 381-391.

Fitts定律：原理

$T = a + b\log_2(D/S + 1)$ **describes the time taken to hit a screen target:**

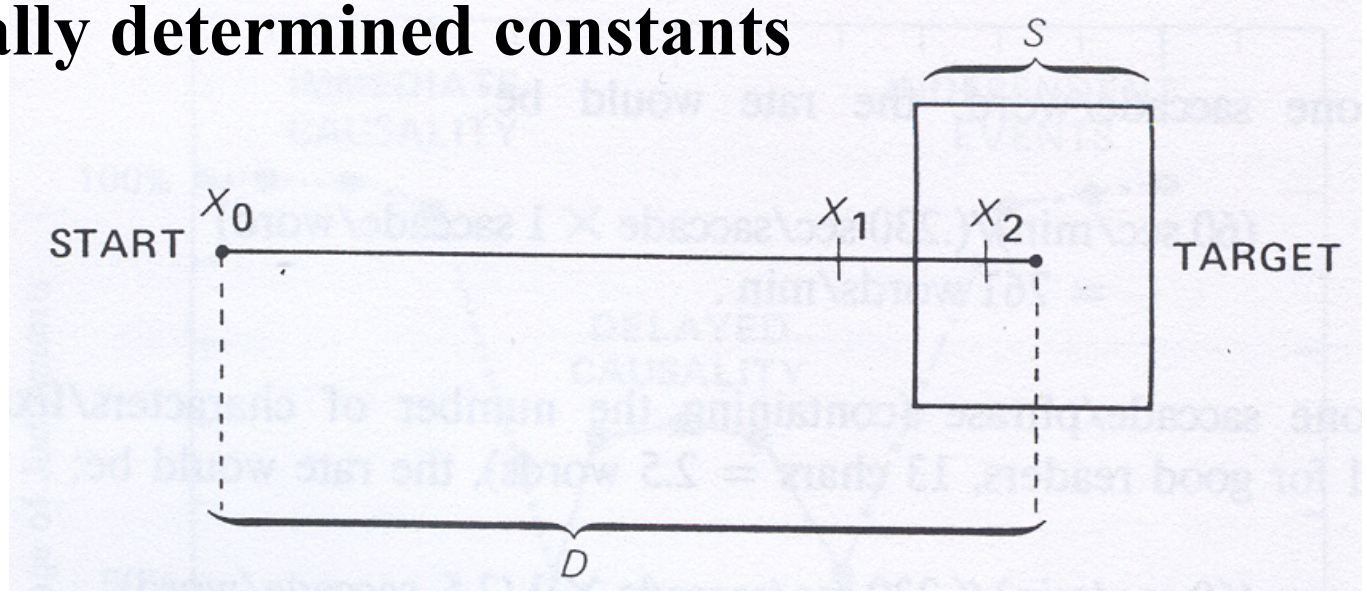
where: **a and b are empirically determined constants**

a=50, b=150

T is movement time

D is Distance

S is Size of target

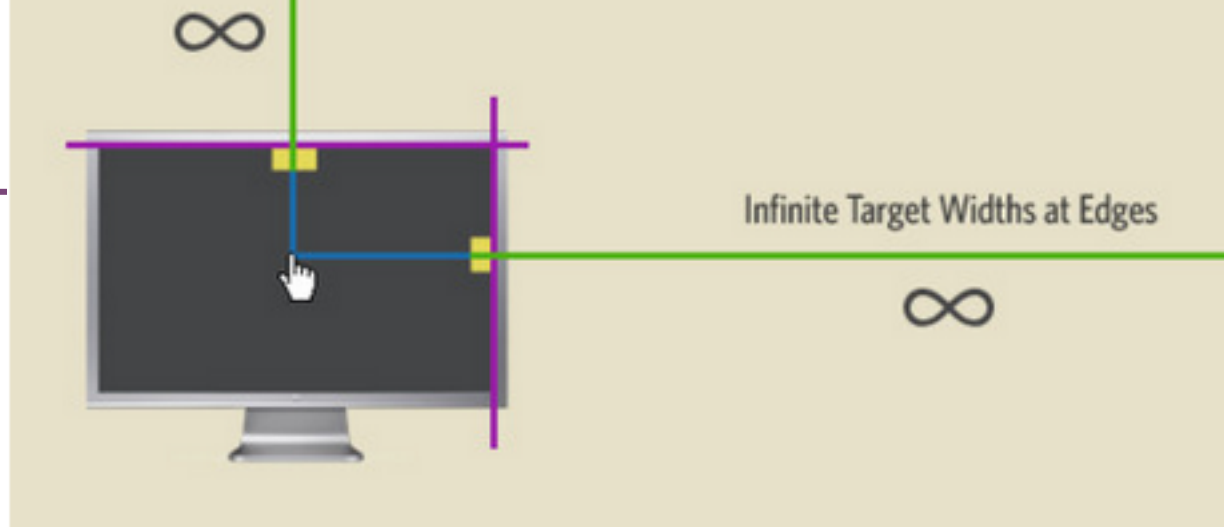


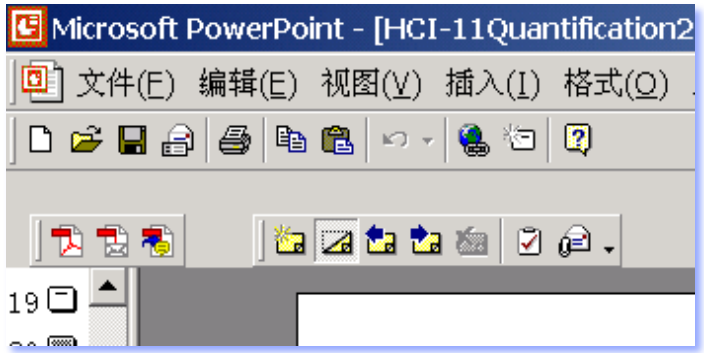
$\Rightarrow$ **targets as large as possible**

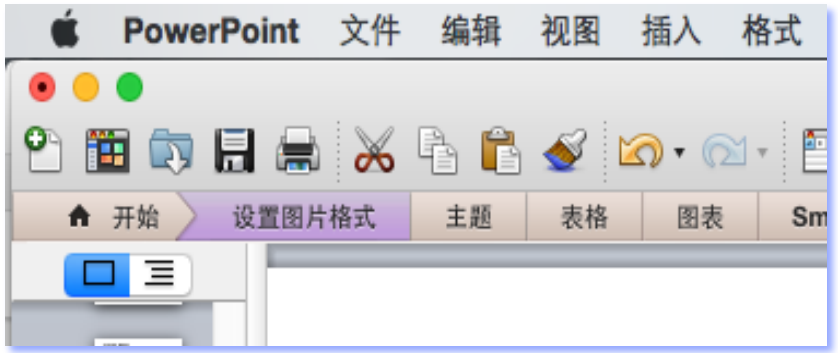
distances as small as possible

Fitts定律：例子

$$T = a + b\log_2(D/S + 1)$$







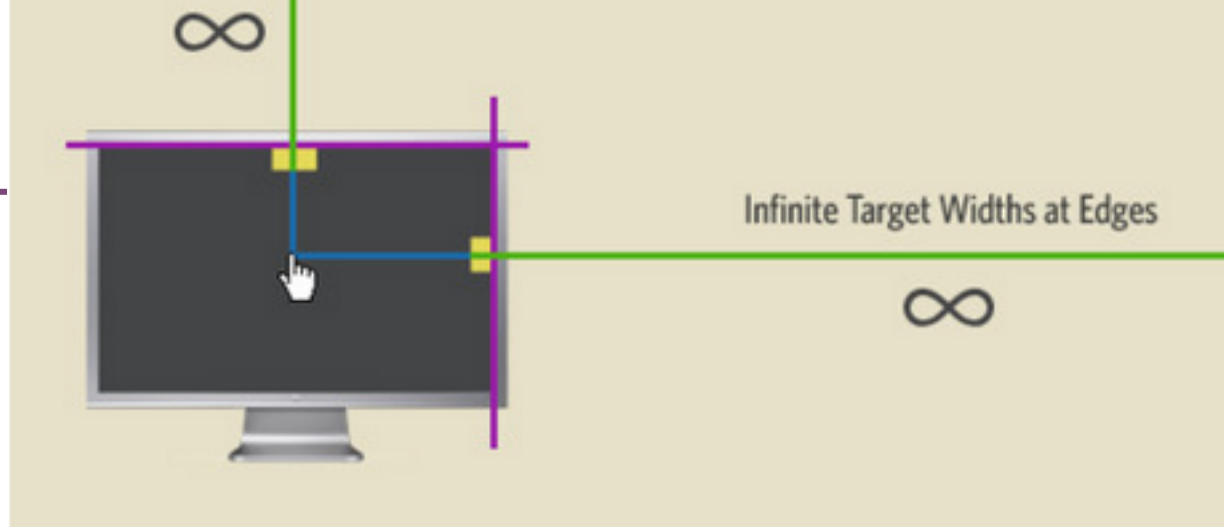
http://www.asktog.com/columns/022DesignedToGiveFitts.html

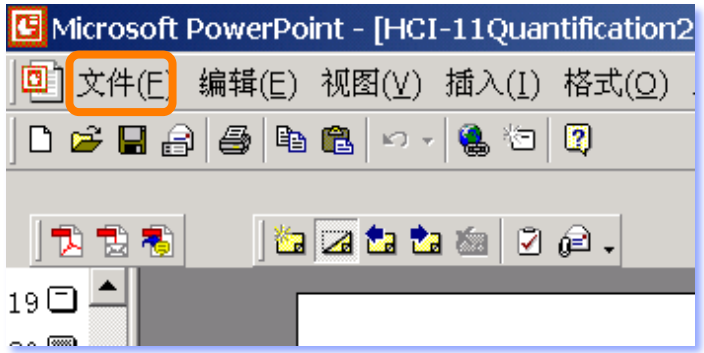
Fitts定律：例子

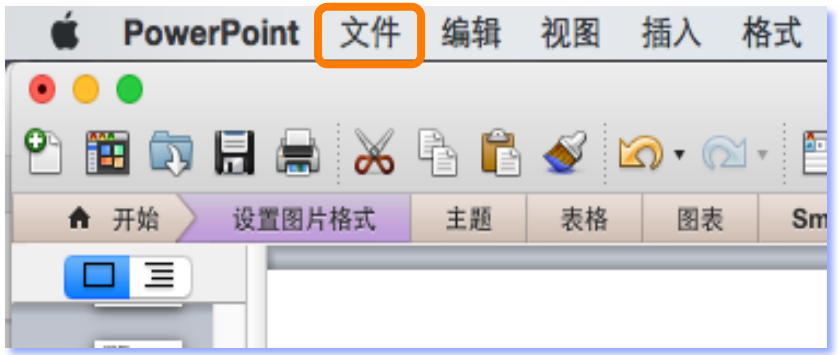
$$T = a + b\log_2(D/S + 1)$$

$50+150\log_2(80/50+1)=256ms$

$50+150\log_2(80/5+1)=663ms$







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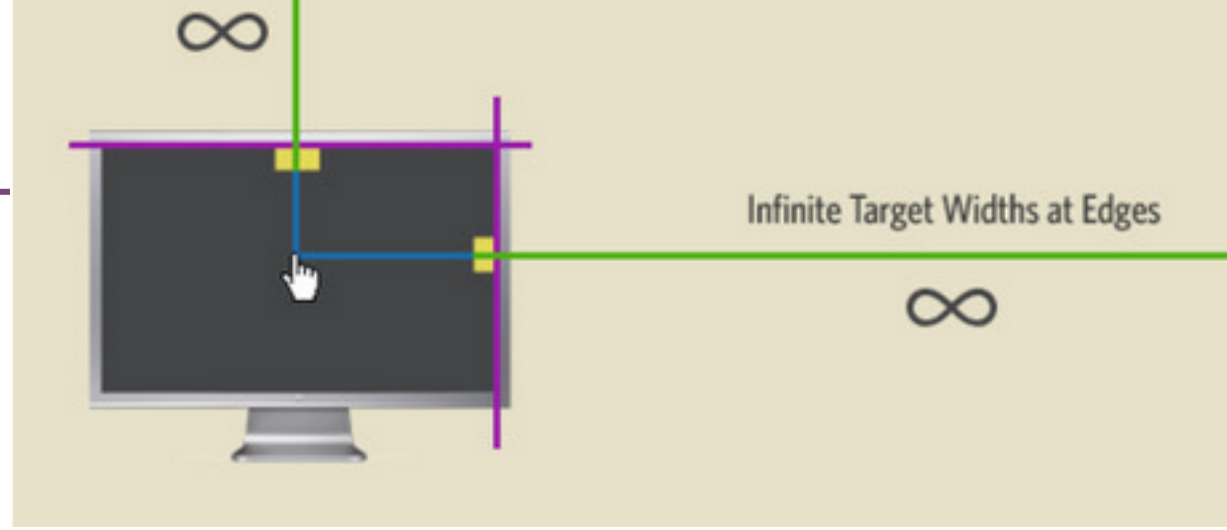

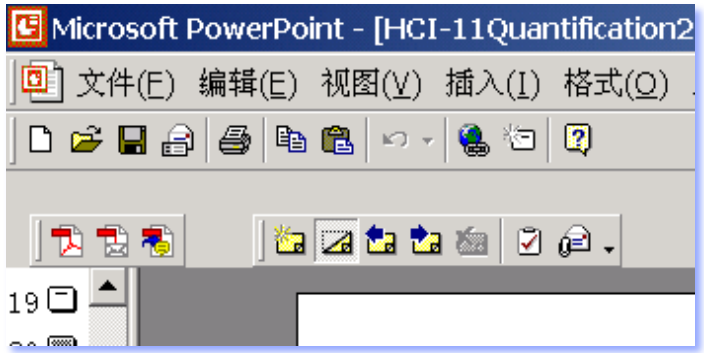

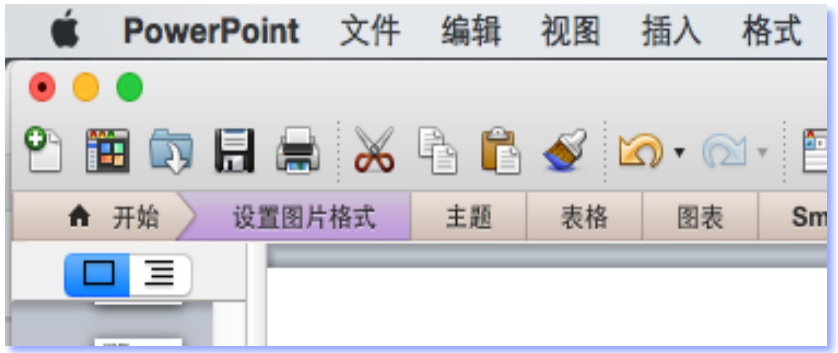

✓ **Fitts' Law based GUI enhancement**

- **Decreasing D**
- **Increasing S**
- **Decreasing D and Increasing S**

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