CATT-06
Optimizing Windows Keyboard and Mouse Settings to Accommodate Physical Impairment

Heidi Koester, Ph.D.

hhk@kpronline.com
Koester Performance Research
Ann Arbor, MI

www.kpronline.com

Handouts are available at: www.atia.org/orlandohandouts

Overview

• Brief Introduction

• Keyboard Settings
  • What's built-in to Windows
  • Optimizing via Keyboard Wizard

• Pointing Settings
  • What's built-in to Windows
  • Optimizing via Pointing Wizard

Scenario

• Windows computer user
  • Can use standard keyboard and pointing device (e.g., mouse, trackball, trackpad)
  • But experience and/or physical impairment affects use

• Assuming the keyboard and pointing device are appropriate for the user, next step is to leverage the built-in Windows settings to best meet user's needs

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Built-in Windows Settings

Keyboard	Mouse
Repeat delay	Pointer speed
Repeat rate	Enhance pointer precision
Sticky Keys	Double-click time
Slow Keys	Double-click distance
Bounce Keys	Use double-click
	Object size

Great Features, BUT:

• Not always used effectively

• Lack of user awareness
• Requires lots of digging through Control Panels
• Not all settings can be user-adjusted
• Maintenance over time may be neglected

Built-in Keyboard Settings

Setting	Definition	Adjust if:
Repeat Delay	How long key must be down before auto-repeat starts	User holds keys longer than 0.5 seconds
Repeat Rate	How quickly key repeats, once start	User holds keys longer than 0.5 seconds
Sticky Keys	Press chorded keystrokes one key at a time	User has trouble pressing 2+ keys at once

Built-in Keyboard Settings, cont.

Setting	Definition	Adjust if:
Slow Keys	How long key must be down before it is accepted	Errors have very short hold times
Bounce Keys	Minimum time between repeated keystrokes, before 2nd one is accepted	User bounces unintentionally on the same key

Adjusting Keyboard Settings in Win XP

Keyboard Control Panel

Accessibility Options

Adjusting Keyboard Settings in Win 7

Keyboard Control Panel
(if you can find it)

Ease of Access Center

Manually adjusting keyboard settings

- All settings are available via control panels
- However:
  - Requires a fair amount of digging
  - Terminology not always clear
  - Quasi-duplicate settings can be confusing
  - What are the best values to use?

Alternative Approach: Keyboard Wizard

- For Sticky Keys and Repeat settings

- Recommends the best settings, based on user's typing
- Activates those settings, at user's discretion

Keyboard Wizard Demo

- For Sticky Keys and Repeat settings

Type a Sentence
Type the sentence exactly as shown. Click Next when you are done.

The Red River may flood Northern Texas!

the Red Riv

Slide 1

Keyboard Wizard example

- 68 y/o woman with multiple sclerosis
- Reports some difficulty with typing

- Runs through Keyboard Wizard
- Adjusting auto-repeat settings:
  - Improved typing speed 50% (from 2.2 to 3.2 wpm)
  - Reduced errors 32 pp (from 60% errors to 28%)

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Built-in Pointing Settings

Setting	Definition	Adjust if:
Pointer speed	How far mouse cursor moves for a given user movement	↓ if mouse seems jittery ↑ if can't move across whole screen
Enhance pointer precision	'On' enables a 2-stage gain control algorithm	If it's off, turn it on
Object size	Size of UI components, such as file icons, menu items, & caption buttons	Increase size if trouble homing in on targets

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Built-in Pointing Settings, cont.

Setting	Definition	Adjust if:
Double-click speed	Maximum time between clicks in a double-click	User double-clicks take longer than 0.5 seconds
Double-click distance	Controls maximum distance between clicks in a double-click	User moves cursor even a tiny bit during double-clicks
Use double-click	Choose single- or double-click to open items in Win Explorer	Set to single- if double-click still too hard after adjusting

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Adjusting Pointing Settings in Win XP

Mouse, Folder Options, & Display/Appearance Control Panels

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Adjusting Pointing Settings in Win 7

- Same panels as in XP, but tougher to find
  - e.g., Appearance and Personalization/Personalization/Window Color/Advanced
- Mouse control panel is now discoverable in Ease of Access Center
  - Otherwise, still can't adjust these settings in EAC

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Manually adjusting pointing settings

- Some settings are available via control panels
- However:
  - Requires a lot of digging
  - Terminology not always clear
  - Double-click time is not available
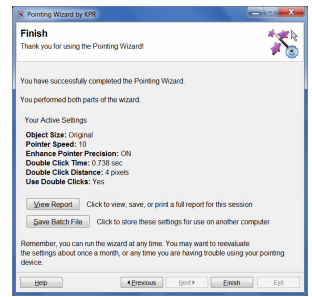 - What are the best values to use?

Slide 1

Alternative Approach: Pointing Wizard

- Recommends the best settings, based on user's pointing ability
- Activates those settings, at user's discretion

Slide 2

Pointing Wizard Demo

- Object Size
- Pointer Speed
- Enhance Pointer Precision
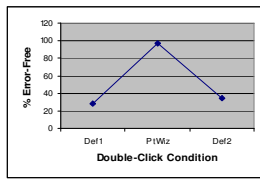- Double-click Time
- Double-click Distance
- Use Double-clicks

Slide 3

Pointing Wizard example

- 57 y/o man with history of stroke
- With default double-click settings:
  - About 70% of double-clicks required multiple attempts
  - 7 or 8 attempts not uncommon
- With wizard-recommended settings
  - Only 3% of double-clicks required multiple attempts
  - Double-click distance was the most important change

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Do the Wizards Work?

- Four effectiveness studies
- Classification Success:

Setting	Sensitivity	Specificity
Sticky Keys	100%	88%
Pointer speed	100%	83%
Object size	100%	50%

Sensitivity: how well wizard identifies true need for change
Specificity: how well wizard screens out those who don't need changes

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Do the Wizards Work?

Performance Benefits:

Setting	Subjects who benefited (%)	Speed increase (%)	Accuracy increase (%)
Repeat settings	17% (2/12)	36	96
Sticky Keys	50% (6/12)	14	100
Pointer speed	25% (3/12)	9 to 23	40
Double-click settings	79% (19/24)	20	30
Object size	45% (5/11)	19 to 59	17 to 33

'benefited': received notable increase in speed or accuracy in the ABA protocol

Slide 6

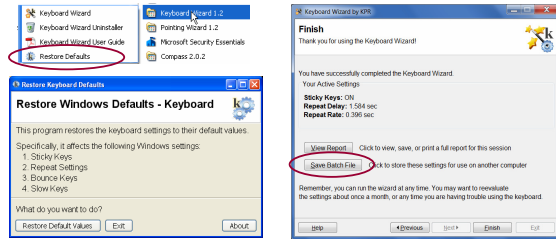### Can end users run the Wizards?

- Six usability studies, in iterative cycle

- End users were able to:
  - Run each wizard independently
  - Complete each wizard in less than 6 minutes

- Ease-of-use rating averaged over 4.5 (scale of 1 to 5)

4

Some bonus features

- Restore default settings at any time
- Save settings to bring to any other Win computer

Windows Settings: Summary

- Built-in Windows settings can make a real difference to some keyboard users

- Manual adjustment of settings is useful, but complex and imprecise

- Keyboard and Pointing Wizard simplify the task and yield better settings

Wizard Availability

- Resources at KPR website, kpronline.com
  - Wizards, $16.95 each
  - Compass + Wizards bundle, $195
  - Demonstration videos

- Also available in Compass bundle through Infogrip

Final Words

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- Thanks for being here today!

- Contact: Heidi Koester
          hhk@kpronline.com

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