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Designing Great Hardware for the Windows 10 UI

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Introduction and Agenda

Session Introduction
There are many exciting improvements to the overall user experience in Windows 10. With your partnership and support, we have a unique opportunity to tightly integrate hardware and software to delight and improve productivity for our customers on tablets, 2-in-1s, laptops, desktops, and all-in-ones.

Session Agenda:
- Overview of new UI improvements in Windows 10
- New productivity gestures using Precision Touchpads
- New edge swipe gestures on touch devices
- Building great 2-in-1 and tablet devices with Continuum
Windows 10 UI Overview
UI Walkthrough

Start
Cortana
Action Center
Snap
Task View
Virtual Desktops
Windowed Apps
Precision Touchpad
Improving Productivity with Windows 10
Overview

We’ve significantly reduced the cost of Precision Touchpads and replaced edge gestures with new, easier-to-use multi-finger gestures.

1-Finger
- Left Click
- Double-Click
- Move Cursor
- Tap + Slide

2-Finger
- Right Click
- Scroll / Pan
- Pinch / Zoom

3-Finger
- Invoke Cortana
- Multitasking Gestures

4-Finger
- Invoke Action Center
Demo
Precision Touchpad
Summary of Multitasking Gestures

By implementing Precision Touchpad you can instantly make your customers more efficient and productive!
New Touch Swipe Gestures
Overview

We’ve relaxed requirements on how the digitizer should perform around screen edges to support a broader range of hardware!

Edge gestures on all four sides of the screen provide quick access to important system UI in Windows 10.
Left Edge Swipe: Task View

Windows 8.1
Bring out the last-used app or the list of most recently used apps (Switch List).

Windows 10
Bring up a grid of most recently used apps (Task View).
Right Edge Swipe: Action Center

Windows 8.1

Bring up the Charms Bar, which includes commonly used system settings.

Windows 10

Bring up Action Center, which shows notifications and commonly used system settings.
Top Edge Swipe: Multitasking

Windows 8.1
Bring up the app commands (short swipe) or snap/close an app (long swipe).

Windows 10
Bring up a hidden title bar (short swipe) or snap/close an app in Tablet Mode (long swipe).
Bottom Edge Swipe: Taskbar

Windows 8.1
Bring up app commands.

Windows 10
Bring up the taskbar when an app is full screen.
Continuum
Productive Tablets and Flexible 2-in-1s
Continuum Shines on 2-in-1s and Tablets

**Tablets**
Pure tablets and devices that can dock to external monitor + keyboard + mouse.

**Detachables**
Tablet-like devices with custom-designed detachable keyboards.

**Convertibles**
Laptop-like devices with keyboards that fold or swivel away.
Continuum Design Goals

1. Enable both a great tablet *and* a great laptop experience.
2. Put customers in control of the transition between experiences.
3. Create a smooth transition between experiences that preserves the customer’s context.
Windows 8.1

Win32 Apps

Desktop Environment

Windows Store Apps

Immersive Environment
Windows 10

Win32 Apps

Windows Store Apps

Desktop Environment

Tablet Mode
Introducing Tablet Mode

A new UI mode designed for tablets and touch-first usage:

2. Immersive, adaptable Windows Store apps.
3. Full support for Win32 apps.
4. Lightweight tablet taskbar with global back button.
5. Lightweight window management model.
6. Auto-invoking touch keyboard.
Demo
Continuum
Entering and Exiting Tablet Mode

User-Initiated
Users can manually enter and exit Tablet Mode on any touch device through Action Center.

Hardware-Suggested
The system can automatically prompt users to enter and exit Tablet Mode when an appropriate hardware event occurs.
How Hardware-Suggested Transitions Work

- **OEM HW Sensor**
- **Injection Driver (e.g., Intel Virtual Button Driver)**
- **Physical GPIO**
- **Dock**
  - System detects docking or external monitor
- **Inbox GPIO Driver (PNP0C60)**
  - ConvertibleSlateMode indicator is toggled
- **Central Continuum Controller**
  - Prompt
- **Notify UI Components and Apps**
  - User decides to enter Tablet Mode
  - When my device wants to switch modes:
    - Never prompt me and always switch modes
    - Always prompt me to confirm

The diagram illustrates the flow of data from the sensor to the system, through the docking process, and ultimately to the user prompting them to switch to Tablet Mode.
Building Hardware-Suggested Transitions

Configure your device drivers and settings correctly for your form factor.

1. If you have a device that is *not* a convertible/detachable, make sure that it has the correct static values via unattended Windows Setup settings:
   - **Laptops:** Set ConvertibleSlateMode as a static value to Clamshell and boot to the desktop.
   - **Tablets:** Set ConvertibleSlateMode as a static value to Slate and boot directly into Tablet Mode.

2. If you have a convertible/detachable device, make sure that:
   - ConvertibleSlateMode is implemented as per guidance (e.g., injection driver is implemented). You can then enable the Continuum prompt via the unattended Windows Setup setting to make the hardware-suggested transition work.
   - **Tablet-like 2-in-1 devices:** boot directly into Tablet Mode.
   - **Laptop-like 2-in-1 devices:** boot to the desktop.
Testing Hardware-Suggested Transitions

Thoroughly verify your ConvertibleSlateMode implementation.

1. Manually test that ConvertibleSlateMode and/or the docked state always accurately reflects the physical state of the system.

2. Test that your toggling implementation doesn’t have the following issues:
   - Unnecessary or rapid toggling of state due to oversensitive sensors or electrical/mechanical design issues.
   - Permanent state inversion/loss of synchronization of the state, sometimes seen when the device enters and exits different power states.
Call to Action

Session Objective(s):
- Learn about new UI improvements in Windows 10
- Learn about new productivity gestures for Precision Touchpad
- Learn about new edge swipe gestures for touch devices
- Understand the new opportunity for great tablets and 2-in-1s running Windows with Continuum

1. Build your systems with Precision Touchpads.
2. Follow edge swipe gesture guidance.
3. Implement Continuum on your tablets and 2-in-1s.
Resources

Input Platform Session at WinHEC
- Learn about hardware requirements in detail for touch, touchpad, pen, and mouse/keyboard.

Windows Hardware Dev Center
- https://msdn.microsoft.com/windows/hardware/

GPIO buttons and indicators implementation guide

ACPI description for ConvertibleSlateMode indicator

ConvertibleSlateMode static unattended Windows Setup setting
Please Complete an Evaluation. Your input is important!

Access Evaluation Forms: