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Microsoft

Designing Great Hardware for the Windows 10 UI

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Windows 10 User Experience Team

Introduction and Agenda

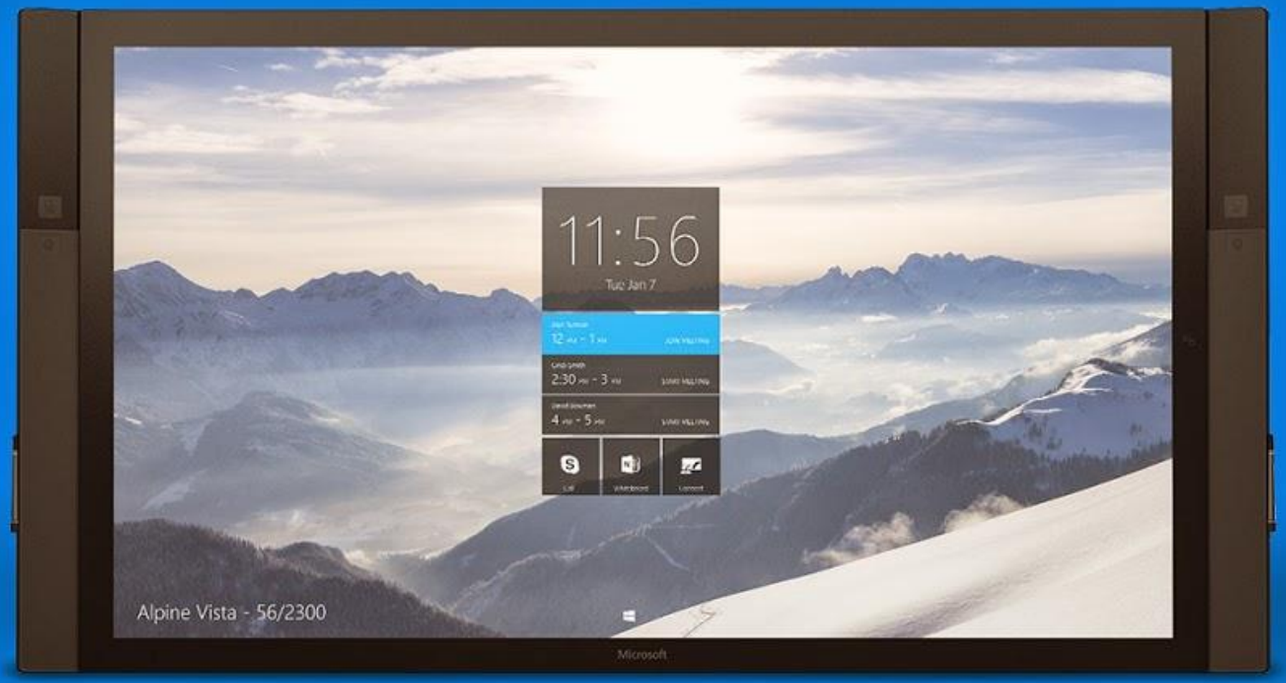
Session Introduction

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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Microsoft

Windows 10


NETFLIX
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UI Walkthrough

Start

Cortana

Action Center

Snap

Task View

Virtual Desktops

Windowed Apps

Precision Touchpad

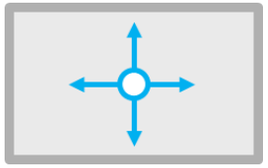
Improving Productivity with Windows 10

Overview

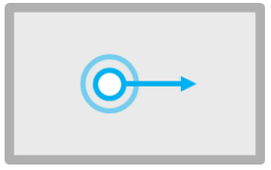
We've significantly reduced the cost of Precision Touchpads and replaced edge gestures with new, easier-to-use multi-finger gestures.

1-Finger

Left Click
Double-Click

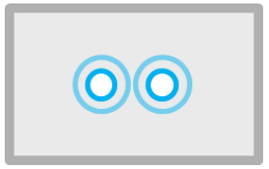


Move
Cursor

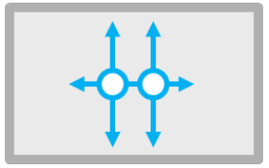


Tap + Slide

2-Finger



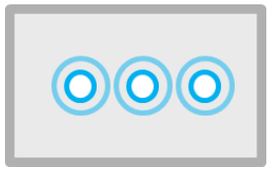
Right Click



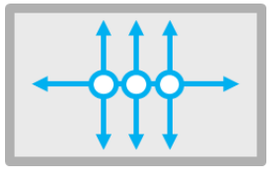
Scroll / Pan

Pinch / Zoom

3-Finger

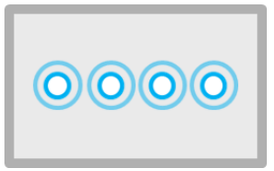


Invoke
Cortana



Multitasking
Gestures

4-Finger



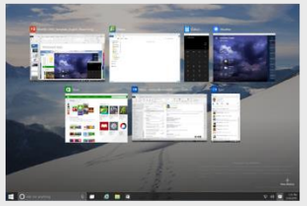
Invoke
Action Center

Demo
Precision Touchpad

Summary of Multitasking Gestures

By implementing Precision Touchpad you can instantly make your customers more efficient and productive!

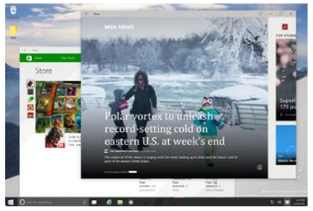
Task View



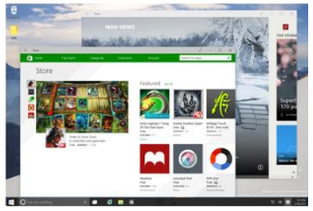
Move cursor and tap to select an app

Dismiss Task View

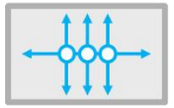
Alt+Tab



OR

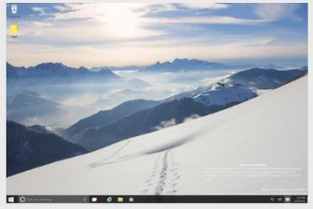


Hold



Continuing to press down and change focus in Alt+Tab, release to commit the switch

Show Desktop

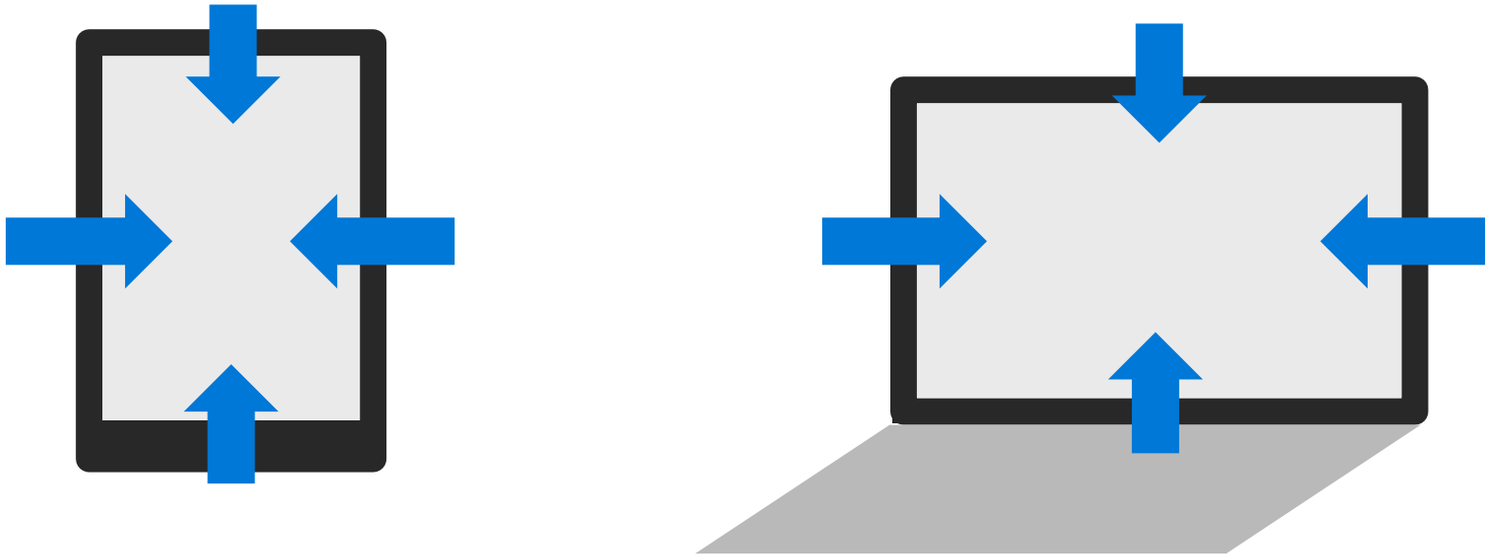


New Touch Swipe Gestures

Overview

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

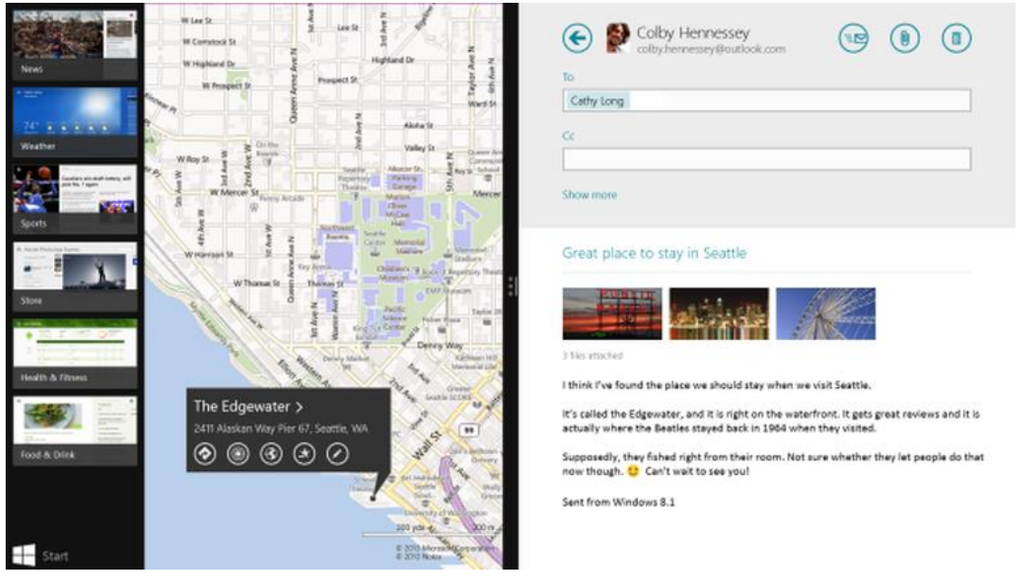
Edge gestures on all four sides of the screen provide quick access to important system UI in Windows 10.



Left Edge Swipe: Task View

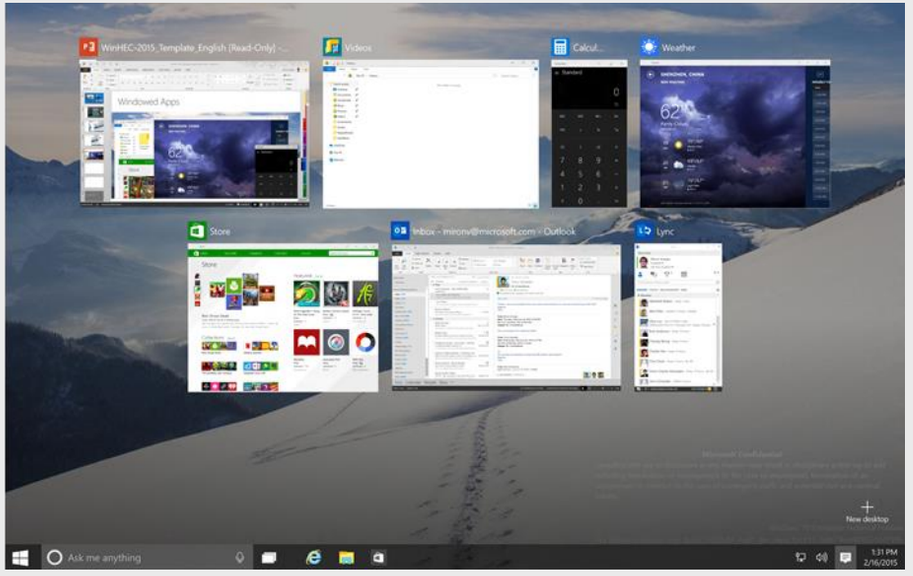
Windows 8.1

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



Windows 10

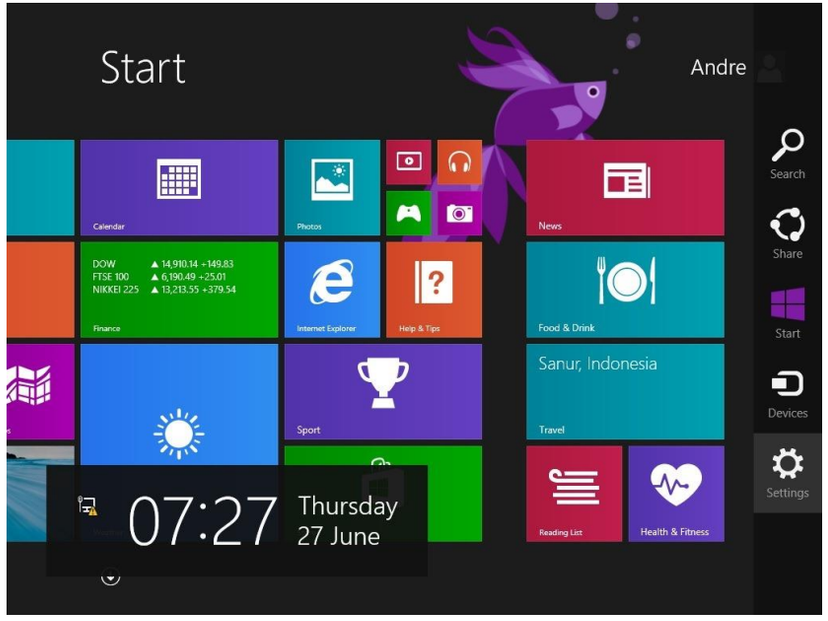
Bring up a grid of most recently used apps (Task View).



Right Edge Swipe: Action Center

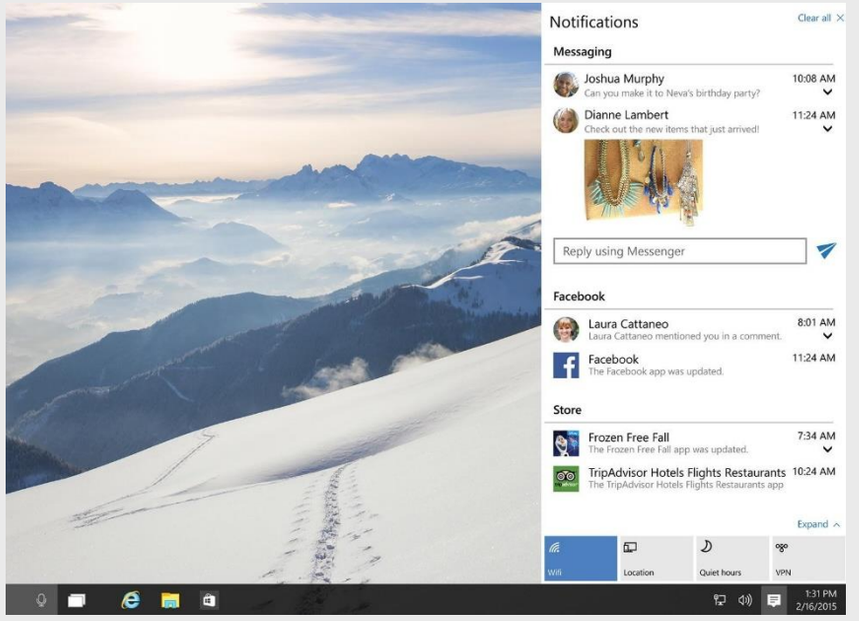
Windows 8.1

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.

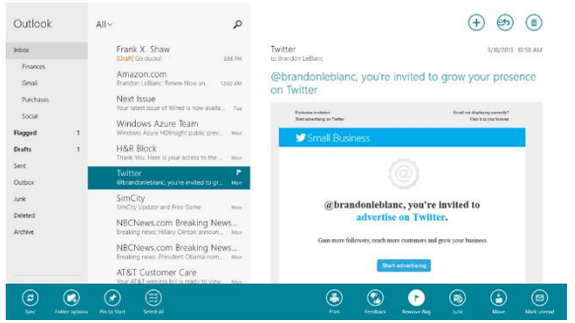


Top Edge Swipe: Multitasking

Windows 8.1

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

1



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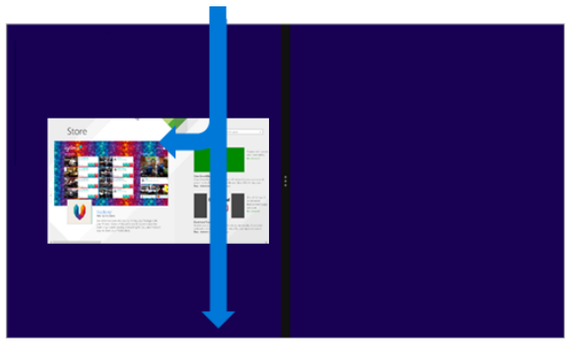
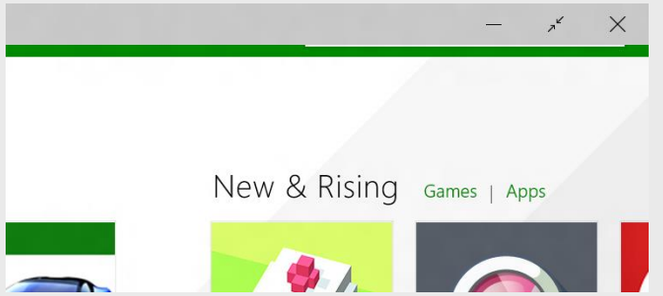


Windows 10

Bring up a hidden title bar (short swipe) or snap/close an app in Tablet Mode (long swipe).

1



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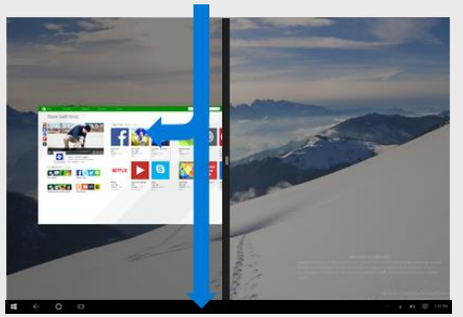
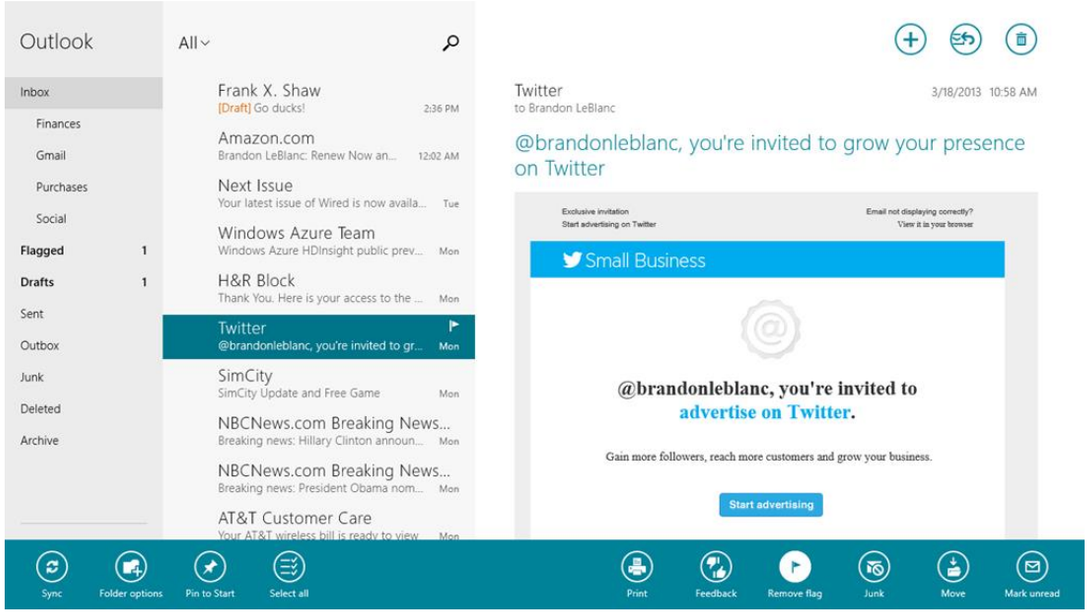


Bottom Edge Swipe: Taskbar

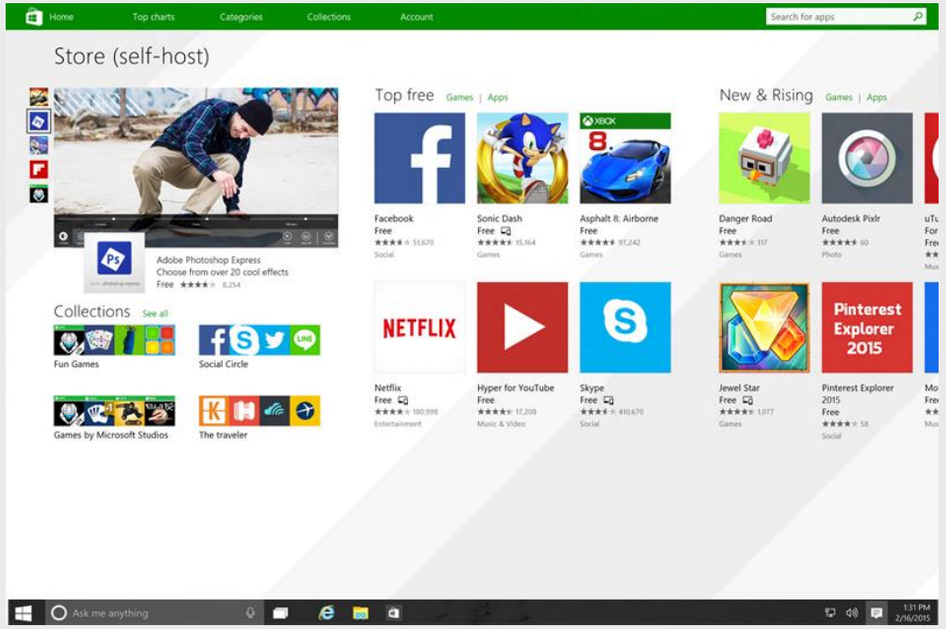
Windows 8.1

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

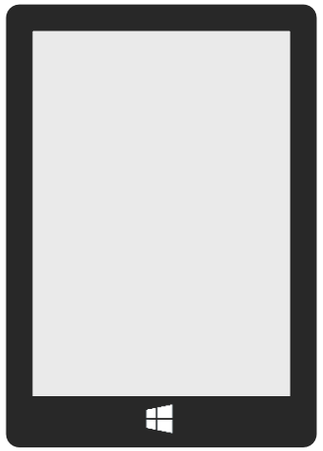
Pure tablets and devices that can dock to external monitor + keyboard + mouse.

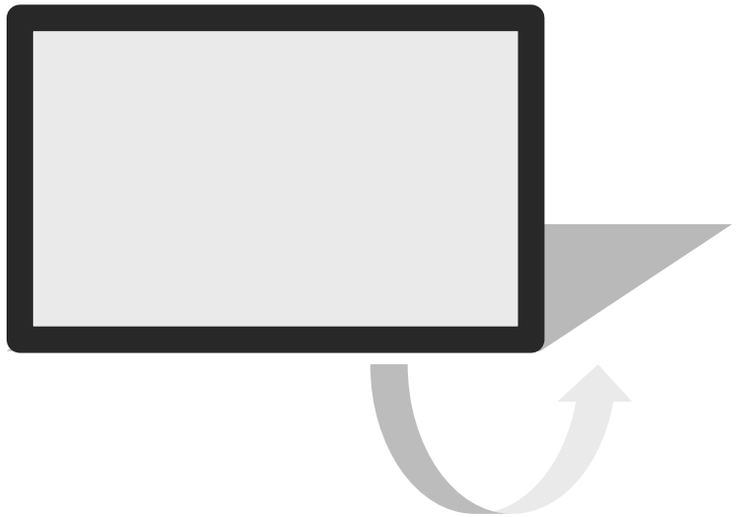
Detachables

Tablet-like devices with custom-designed detachable keyboards.

Convertibles

Laptop-like devices with keyboards that fold or swivel away.



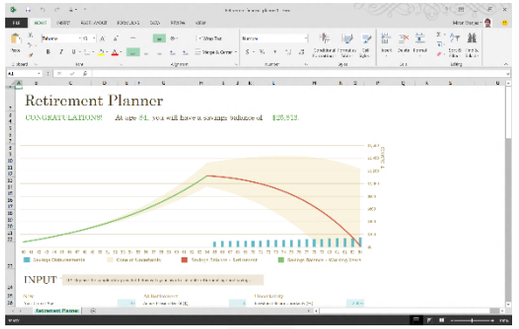


Continuum Design Goals

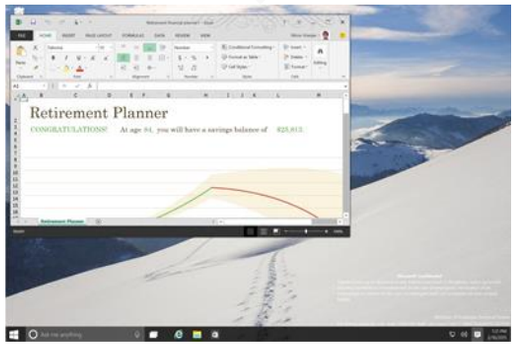
1. Enable both a great tablet *and* a great laptop experience.
2. Put customers in control of the transition between experiences.
3. Create a smooth transition between experiences that preserves the customer's context.

Windows 8.1

Win32 Apps

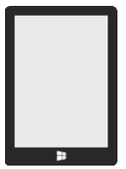


Desktop Environment



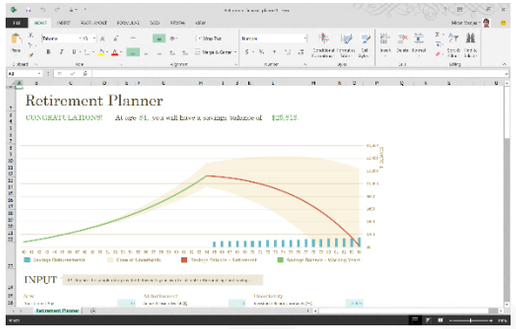
Windows Store Apps

Immersive Environment



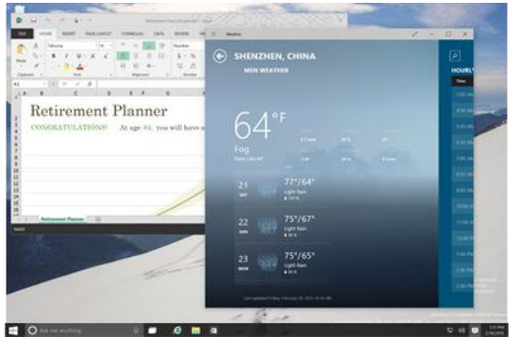
Windows 10

Win32 Apps

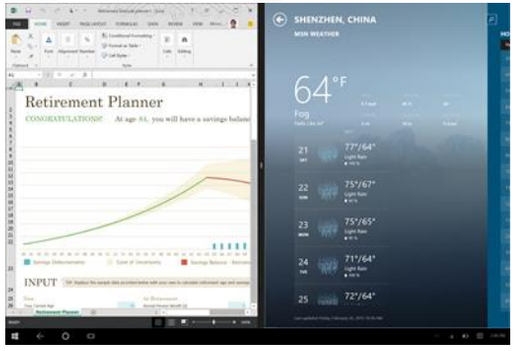


Windows Store Apps

Desktop Environment



Tablet Mode



Introducing Tablet Mode

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

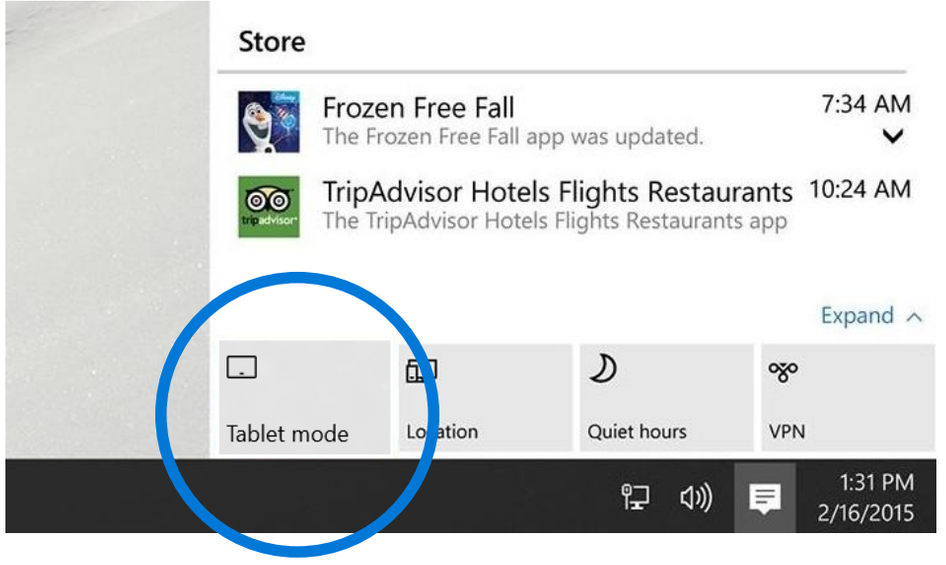
1. Beautiful, touch-optimized Start screen.
2. Immersive, adaptable Windows Store apps.
3. Full support for Win32 apps.
4. Lightweight tablet taskbar with global back button.
5. Lightweight window management model.
6. Auto-invoking touch keyboard.

Demo
Continuum

Entering and Exiting Tablet Mode

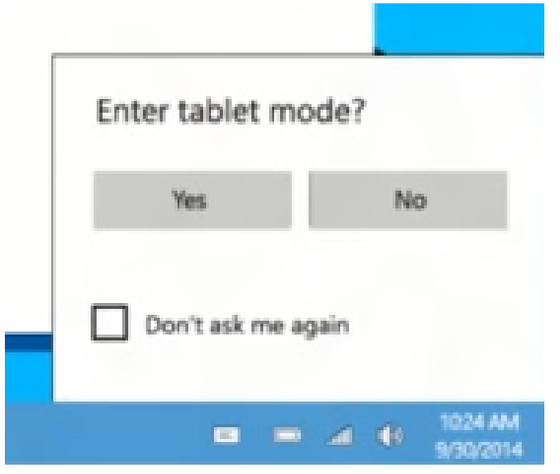
User-Initiated

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

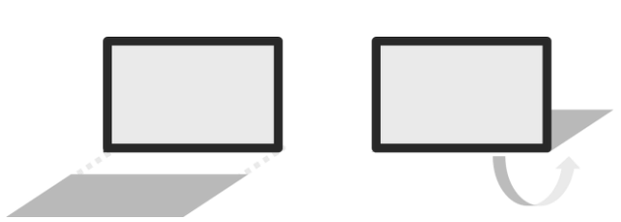


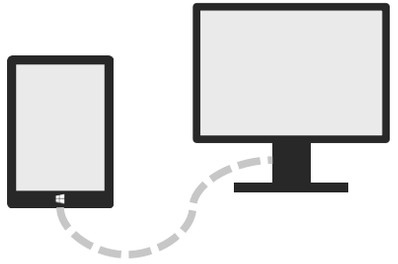
Hardware-Suggested

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

Inbox GPIO Driver (PNP0C60)

ConvertibleSlateMode indicator is toggled

Dock

System detects docking or external monitor

Central Continuum Controller

When my device wants to switch modes

Never prompt me and always switch modes

Notify UI Components and Apps

When my device wants to switch modes

Always prompt me to confirm

Prompt

User decides to enter 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

- https://msdn.microsoft.com/library/windows/hardware/Dn457878(v=vs.85).aspx

ACPI description for ConvertibleSlateMode indicator

- https://msdn.microsoft.com/library/windows/hardware/dn457868(v=vs.85).aspx

ConvertibleSlateMode static unattended Windows Setup setting

- https://msdn.microsoft.com/en-us/library/windows/hardware/dn457883(v=vs.85).aspx

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