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## DYNAMIC MAPPING OF PHYSICAL PEN ACTIVE ON PAD

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## **Dynamic Mapping of Physical Pen Active Area on Pad**

**Abstract:** The active area of a touchpad or click pad of a laptop or notebook computer can be dynamically split into different regions according to different modes based on triggers by the active pen or pad.

This disclosure relates to the field of portable computers.

A technique is disclosed that enables the active area of a touchpad or click pad of a laptop or notebook computer to be dynamically split into different regions and allows users to utilize both functions simultaneously.

Since the pandemic began customers have adapting their workspaces and workstyles – therefore changing their workflows. A majority of professional laptop users now work using at least their dedicated laptop screen in conjunction with other monitors; in other words, they have the input interface such as a laptop keyboard available for their use. In addition, a significant number of professional laptop creatives now use a pen peripheral with their laptop. However, most consider their on-the-go experience to be inferior when compared to their in-the-office and/or at-home experiences. In addition, many users do not have the space to connect a pen tablet to their desktop arrangement, or don't have the time or find it inconvenient to do so before their conference call in which they need to instantly collaborate and ideate. In many situations they desire to have the active touchpad or click pad map only to a specific application window. For example, a user may wish to use the active pen on the pad to sign a digital form. However, because the pen is mapped to the entire displayed document, the area of the pad in which the signature must be applied is unusably small.

According to the present disclosure, a touchpad or click pad is provided that supports an active pen capable of dynamically resizing the active pen area on the display and mapping that area to the entire physical active area of the pad, in different modes based on triggers by the active pen or pad.

The technique has an active pen service layer installed that monitors the in-focus application window's location and dimensions, along with text field canvas activation, location, and dimensions. When the pad firmware detects the active pen signal and determines the raw coordinate data, it sends the data up to the active pen service via the pen driver. Based on the mode selection, the active pen service translates the coordinates based on the mapped area set. If a text field canvas has been activated, the active pen service will automatically translate any incoming pen data based on the dimension of the canvas dimensions and location.

Several modes for Active pen area on the display may be supported in the OS. First, a Full Screen mode that maps the entire physical area of the pad to the entire physical area of the display. Second, an Application in Focus mode that maps the entire physical area of the pad to the application window in focus only. Third, a 1:1 Pad Dimension mode that maps the exact physical dimension of the pad to a subset of the display, which creates a direct 1 to 1 mapping of the ink strokes written on pad versus the ink displayed on the display in terms of size and aspect ratio; the user can use the pen swipe to expand the area dynamically. Fourth, a Text Input Canvas mode that maps the entire physical area of the pad to the text input canvas only. Fifth, a Customized mode that maps to a specified size or section of the display; the pen button cycles through different sizes when

pressed, while the pen may be used to draw a diagonal line to indicate the desired mapping area.

Modes can be switched based on settings from the active pen button control, active pen gestures, and pad touch gestures. For the active pen button control, a Bluetooth button press, or Pen Barrel button press generates a command to the active pen service via Bluetooth or active pen protocol to switch between modes. For active pen gestures, with a defined gesture (e.g., a fast pen swipe at the top edge of the physical pen supported pad), the active pen service detects the active pen gesture and switches between modes. For pad touch gestures, with a defined gesture (e.g., a fast touch swipe from the edge of the physical pen supported pad, or a double tap in the corner of the physical pen supported pad), the pad firmware sends an I2C command to the pen driver and notifies the active pen service to switch modes.

The disclosed technique advantageously presents a better user experience by providing different modes of active pen input mapping operations from the touchpad or click pad. It does not restrict the user to only full screen mapping. Active area mapping automatically switches between full screen/application in focus and text input canvas based on text input canvas activation. Mode switching can be triggered by the user via various means from both the pen and pad.

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