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NB IN TABLET MODE AS DIGITIZER

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NB in tablet mode as digitizer

Active pen support is increasingly available on notebooks. However, there’s still a market of active pen users that prefer to use a separate pen digitizer as pen inputs device which allows off-screen inking. Using active pen on current notebooks do not allow off-screen inking. This invention includes a method to use the existing panel on the notebook as digitizer when external display is available.

Under the current design of notebooks, pen digitizer on notebook’s function is turned off and doesn’t allow pen inputs when it’s in in external display only mode. To use active pen on notebooks, it’s also best to have it on a flat surface. If not, the hinge design doesn’t provide sufficient support for pen use. Under these scenarios, users always must look down to see the pen strokes and does not have the ability to view the complete screen with the hand blocking a portion of the screen. The drawing area will also be restricted by smaller screen of notebooks

This invention is to introduce a method to enable our existing NB to be used as pen digitizer while in tablet mode. Normally, when display mode is set to external monitor only. Panel turns off and HW will pull a report switch pin connected to the touch/pen controller to turn off the digitizer function. In this invention, touch controller will implement a new I2C command to ignore and resume report switch. Pen SW application will monitor each of trigger conditions listed below. When trigger conditions listed below are meet, pen application will request the pen driver to send an I2C command to the pen controller firmware. Pen controller firmware will ignore the report_switch signal and allow digitizer to function with specified settings. Trigger conditions will include In Tablet Mode in operating system, feature enabled in Touch application, and display mode – External Monitor only.

Since the touch application controls the enabling of the feature, it can support other customizations. Within the touch application:

1. Feature Option (AC only for unintended power consumption)
   a. Enable: AC only, Enable: Always, Disable
2. Digitizer Mode
   a. Touch only, Pen only, Touch and Pen
3. Orientation support
   a. Landscape, Portrait, Landscape 180 degree, Portrait 180 degree,
4. Mapping Ratio
   a. Fit, Stretch
5. Monitor
   a. Monitor 1, Monitor 2, etc

In conclusion, the inventions will enable off-screen inking by enabling existing notebook device to serve as pen digitizer device. It provides additional value add to notebook device and cost savings opportunity for users that want off-screen inking. This invention also requires no hardware change within existing
notebook designs while simplifying the design complexity by leveraging OS device mode without interactions with notebook’s embedded controller. With the touch application support, it will be able to support different scenario customizations like orientation, aspect ratio mappings, and others without restrictions of notebook placement on desk.

*Disclosed by Simon Wong and Matt Lin, HP Inc.*