Multi-touch Input Challenges

Jim Gettys
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One Laptop Per Child

Touch Challenges

- No standard hardware interface or kernel driver, but kernel system call interface exists

- Base Window System

- Toolkit(s) need work to help multi-touch

- Window manager(s) need work

- Soft keyboard application

- Applications!

OLPC **must** ensure at least one of each!

Note: *That doesn't mean we do it all ourselves – in fact, we'll fail unless it is a community effort*

Low Level X Window System – touch hardware Plumbing

- Input Driver – the effort depends on hardware technology from relatively simple to a serious performance limited image processing problem and extensive firmware

- Two parts: kernel driver and X driver

  - OLPC must own this problem for our hardware

- Issues: Have not selected the touch technology

X Window System - MPX

- Peter Hutterer – Red Hat is the designer/lead
  - *A really hard problem: backward compatibility*
  - Search YouTube for "MPX"
- MPX == Multi-*Pointer* X – just integrated into X.org source, will be in next release
- Need to get from Peter's prototype "touch" blobs to standard protocol – effort just beginning in X Input Extension, Version 2
- Not possible to do more than kibitz/help with the core due to learning curve; but "we" can help by offloading Peter **everywhere** else

Toolkits

- Two toolkits of most interest: GTK+ (must), and Qt (need) need update for multitouch

- Maintained in small communities of 5-10 people, typically with 2-3 leads; input area of these toolkits has been stable for 8 years:

- Probably 1-2 person effort per toolkit for a year

- Non-trivial design work; but not as hard as the X work already done

- the question is *who* has the right expertise, and *who* pays for them (to ensure schedule)?

X11 Window Manager

- OLPC already needs to change to a different window manager – Matchbox causes interoperability issues with "standard" applications

- Window managers need work to support multi-touch – they set up the routing of input

- Each is maintained by small groups, of the Gnome/KDE and other projects

- Issue: community hardware availability, and ensuring *at least one* window manager suiting our needs exists by ship

Keyboard application

- Is "key" to a good keyboard experience on touch technology – vibrators, etc???

- Rollover issues raised by the touch technology

- Good I18N support – Input methods for complex scripts

- This might be modest work based on existing artifacts, but I believe will be a place we *should* sweat some serious blood, and *probably will need to start over from scratch*

- Issue: hardware availability

Applications

- Of all sorts may need update

- The ones we own, we'll need to update to the extent we want touch support

- Some sugar work likely required: our UI idioms may need some rework (e.g. Hover) depending on touch technology

- Issue: hardware availability

Next Steps

- Evaluate/select touch technolog(ies)

- Figure out who is already doing what – I will know somewhat more after LPC next week

- Schedule/recruit/enlist/inspire the people we must have applied to the problems to succeed