PSU CAPSTONE
Natural Interfaces for Computing

Dan Kalowsky
Software Power Architect
Nick Adams
BIOS Architect
Intel Corporation

March 2012
Natural Interfaces are fun!

• Games are more interactive and immersive
  – Current hardware is... functional.
    – PrimeSense
    – SoftKinect

• Okay... now what?
  – Is there a business use?
  – Is there a home computing use?
State of HCI Today

• OSes are designed for mouse + keyboard
  – No clean mapping to Natural Interfaces (NI)
  – Touch interfaces are better matching for NI, but not complete

• Several libraries already available:
  – OpenNI
    – Open source library for controlling PrimeSense cameras
  – OpenCV
    – Open source library for Computer Vision related functions
  – PCL
    – Point Clouds!
What Intel is looking for

• Challenge: Move Natural Interfaces from a novelty to a competitive reason for business or home use.

• Creative uses for Natural Interfaces
  – Not a re-creation of the whole computer UI
  – Single applications that move beyond the scope of games
    – Twitter client, Instant Messenger app, web browser control?

• The final project idea is open ended, but...
Some Sample Ideas

• Presentation Control
  – Can gestures be enabled/disabled mid-presentation?

• Virtual Whiteboard
  – Projected screen image provides a canvas for creating/drawing.
  – Can this be made collaborative between multiple users?

• Virtual Touchscreen
  – Turn any wall into a touchscreen
  – Can depth provide any advantage to the interaction?