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The Laptop

Jan. 20, 2009

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Laptop, 1992

- Apple Macintosh Duo 230
  - 640x400 Monochrome Display
  - 33 MHz Processor
  - 8 MB RAM
  - 0.1 GB disk storage
  - 4.2 lbs
  - 24W charger
  - $2800

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Laptop, 2008

- Apple MacBook Pro
  - 1440 x 900 Color display
  - 2GHz Dual Processor
  - Graphics Coprocessor
  - 2000 MB RAM
  - 160 GB disk storage
  - 5.4 lbs
  - 85W charger
  - $2800

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Traditional Laptops

- Continual improvement:
  - More computing power
  - More non-volatile storage
- Constant Price Floor
- Designed for Office Environments

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Laptop, 2008

- OLPC XO

-1200 x 900 Color Display

-466 MHz Processor

-Graphics Coprocessor

-256 MB RAM

-1 GB solid-state storage

-Digital Camera

-Wireless

-1.45 kg

-17W charger

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Why an XO ?

- Sunlight Readable Display
- Low Power
- Robustness
- No moving parts (Other than buttons)
- Simple to Repair

XO Display

- Sunlight readable (reflective/transmissive)
- 1200 x 900 monochrome
- Slightly less resolution in color
- Replaceable LED backlight
  - Low power, low cost, safe
  - At 50 C, difficult to reach 5 year lifetime

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XO Low Power

- Battery performance strongly dependent on software activity !
- Available today:
- Charging battery:
  - Max draw of 17 Watts
- Not charging:
  - Less than 1 watt in sleep
  - Avg 4 – 7 watts while running w/ peaks up to 9W
- Hardware ready for suspend/resume
  - 40K cycles tested vs. 20 for normal laptop
  - About 4 hours of battery life during normal use
  - 24-48 hours of battery life in sleep mode

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XO Robustness

- No disk drive !
- No fans !
- Sturdy case
  - ABS/PC bumpers
  - Steel plate in base
- 1.5 m drop test
- Water and dust proof keyboard
- 5 year lifetime

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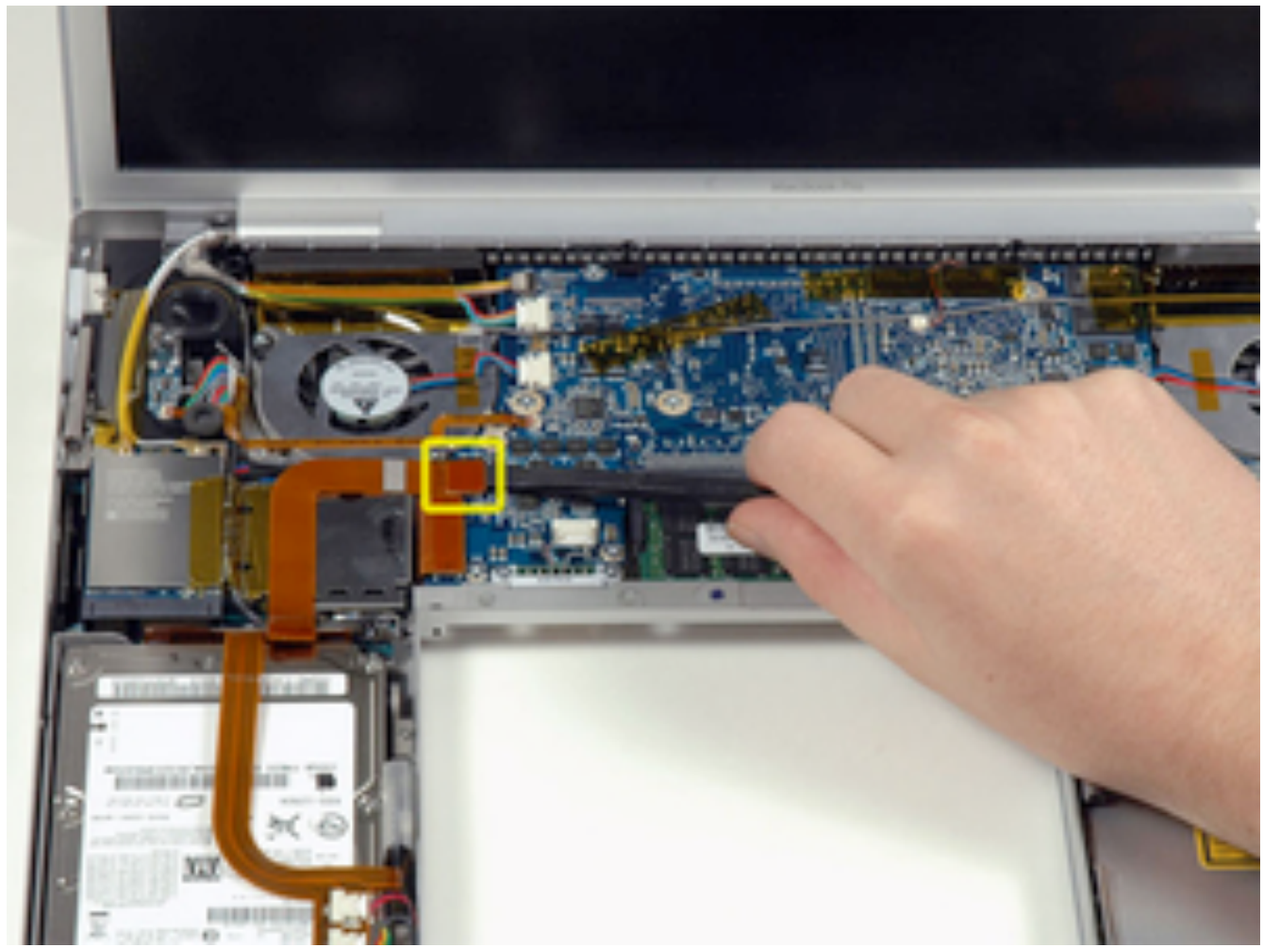
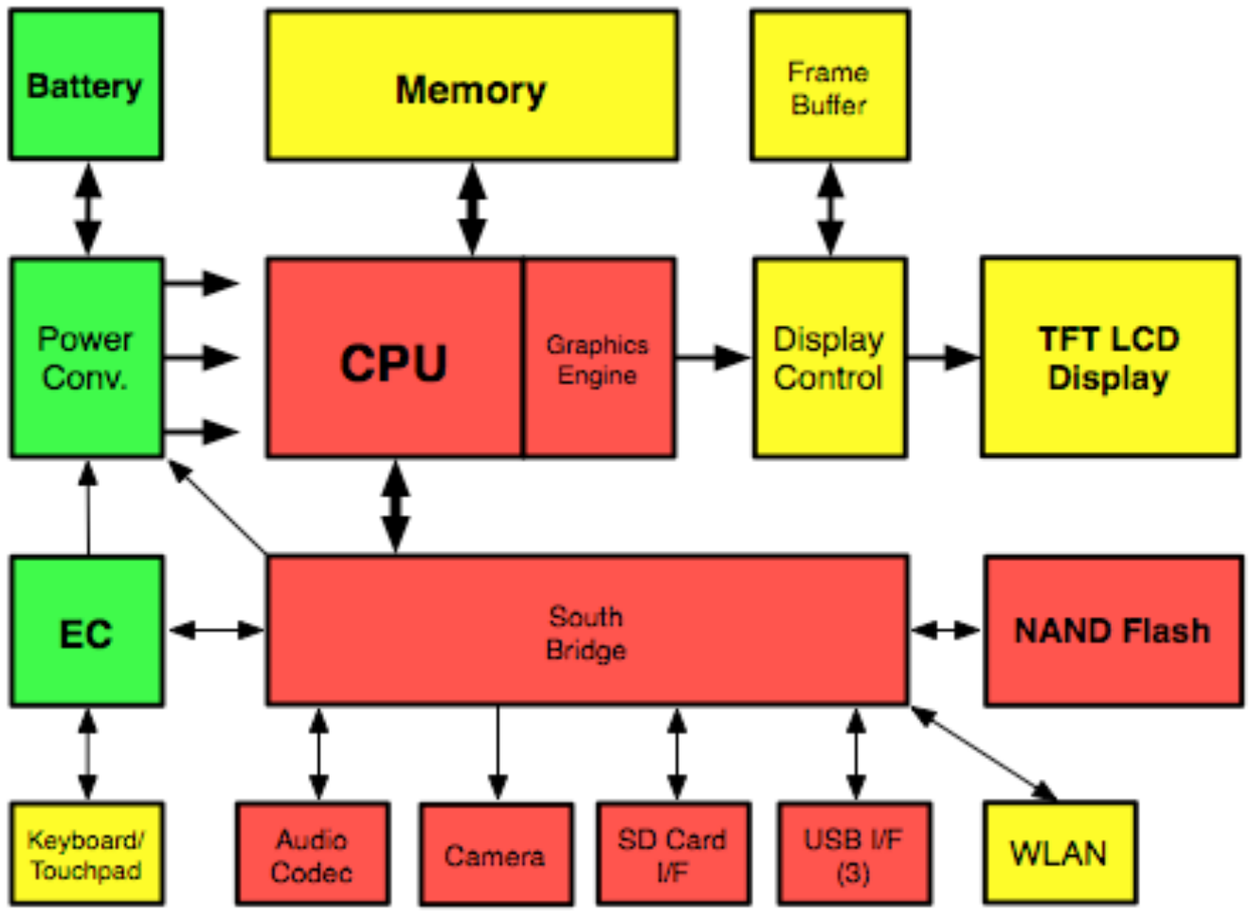
XO - Simple to repair

- Eight screws to replace display
- Single motherboard



Questions?

XO Low Power

- Independently powered subsystems:
  - Display
  - Wireless Net
- Fast suspend/ resume
  - tens milliSec.
- LED backlight