Sensor technologies leading a convergence of human interface and product differentiation

Ian Olsen, Executive Director, Optical Sensors Business
Social Connection “The Cigarette”

Sensors:
- Optical – One’s Eyes
- Tactile – Fingers
- Audio – Mouth

Talking

Social Connection “The Cell Phone”

Sensors:
- Optical – One’s Eyes
- Tactile – Phone in hand
- Audio – Phone

Calling

Social Connection “The Smart Phone”

Sensors:
- Optical – Camera
- Tactile – Touch Screen
- Audio – Music/Phone

Text.mailing

Cell Phone Darwinism:
The Growth Engine:
Mobilewallas breaks down the four mobile marketplaces:

- Apple – 590,138 (59.95%)
- Android – 320,315 (32.54%)
- BlackBerry – 43,544 (4.42%)
- Windows – 35,479 (3.60%)

Matt Brian Mobile Editor for The Next Web.
Sensors Drive Apps and Sales:

14 sensors!
Mobile Phone Market: Continues to grow

- Driven mainly by ubiquitous low cost carrier service
- The dominant Smart Phone driver has been mainly apps
- Apps driven by human interface and sensory awareness
- Sensors enabled by process and technology
Investors Fuel the Apps Dev:

VC Investment ($) in Mobile & Telecom by Sub-Industry, Q2 2012

- Photo: 15%
- Video: 14%
- Wireless Telecom Equipment: 12%
- Storage & Systems Management: 8%
- Conferencing & Communication: 8%
- Advertising, Sales & Marketing: 7%
- Application Development: 7%
- Travel: 5%
- Gaming: 3%
- Government: 3%
- Location-Based & Navigation: 3%
- Security: 3%
- Healthcare: 2%
- Application & Data Integration: 2%
- All Other: 2%

www.cbinsights.com
The Human Interface

The Environmental Interface

Sensors

The Enabler:
Evolution of the Human Interface:
- Messenger
- Mail
- Telephone
- Video
- Multimedia (Peak)
- Contextual Motion / Text-email

Immersion Media
User interacts with the content
User becomes part of the media
User is immersed in the media

Sensor collaboration and matrixing
Immersion Experience:
The Environmental Interface:

Evolution of the Environmental Interface:
- Finger/Nose/Ear/Eye
- Thermometer/telescope /compass
- Barometer/Altimeter
- Geiger counter/Dosimeters
- Blood Pressure/Heart Rate/Glucose/CO₂/NOx/etc
- UV/IR/Ambient light/Color Temperature/etc

Environmental Awareness

Users become in touch with their physiology
User become in touch with the environment
Early Warning & Remote diagnostics

Sensor protecting and diagnosing people
The Sensory Ecosystem:
Simplified view of a smart-phone board

MEMS & Sensors in red (scope of this report)

- BAW filters
- BAW duplexers
- RF switch / variable capacitor
- TCXO oscillators

- Accelerometer
- Gyroscope
- Electronic compass
- Pressure sensor

- Silicon microphone

- P. sensor
- Gyro
- Camera
- Microphone
- WLAN Module

- CPU / GPU Module
- Stacked Memories
- Baseband

- Bluetooth, FM / GPS Module
- Audio Module
- Power Management
- Battery charger
- Touch driver
- Display interface
- Digital TV Module

- Cellular Radio Module
- Camera Module
- LED flash
- PA

- MEMS micro-mirror
- CMOS Image Sensor
- Auto-Focus actuator

- Front camera
- ALS & Proximity sensor
- Microdisplay

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Are Mobile Devices Stalled?

Game developer Rovio has announced that Angry Birds, the game which was propelled into stardom by mobile platforms such as Android and iOS, has been downloaded more than 500 million times, making it the most downloaded game in history.
No – We are at the a unique inflection point

Sensor Collaboration
- Data integration
- Functional enhancement
- Collective computation

3D Display
- Creation of virtual reality
- Adding depth to data and media
- Immersion media

Sensor Infusion
- New sensor technology
- Richer data streams
- Multi stage sensor path

Surround Images and sound
- Broaden scope of experience
- Increase functionality by multi object View
The Mastermind: Gene Roddenberry?

= ?