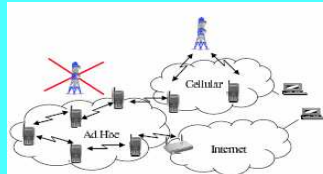# Sydney PC User Group
Smartphones SIG
Mtg 3 – Intro (cont.)

John Shiel

Mobile Phones with fast connection, easy text entry

Agenda

- **Operating Systems**
  - Timeline
- **How Mobile Phones Work**
- **Usability – importance**
- **Adv mobile applications**
  - Mapping
  - Music
- **6:50pm Coffee break**
- **Downloadable applications**
  - Monitoring resource usage (to extend battery life)
- **Phone review**
  - HTC Desire
  - Others

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Last Month

- Technologies
  - Battery
  - Multi-tasking
  - Usability
  - Fast comms speed
  - Compression formats
  - Video conversion
  - Flash storage
  - Smaller and faster processors
- Applications
  - Mapping,
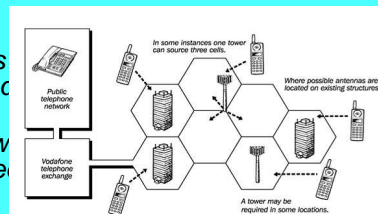 - Browsing,
  - Video,
  - Photos,
  - Monitoring
  - Radio

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How Mobile Phones Work
http://www.vodafone.com.au/personal/aboutvodafone/healthmobile phonetechnology/howdoesthemobilephonesystemwork/index.htm

- Mobile phones
  - Sophisticated two-way radios
  - Use radiofrequency (RF) signals to transmit and receive voice and data
  - Your call communicates with low powered radio transceivers called **base stations**

- **Base stations** or "cells"
  - Interlinked to create the cellular network
  - Collect phone signals and pass them on
- During a Call
  - Phone can communicate with several different base stations
  - When a call starts, phone & base station adjust to the minimum power level required to maintain a quality call
    - "Adaptive power control"
      - One of the most efficient communications systems available today.
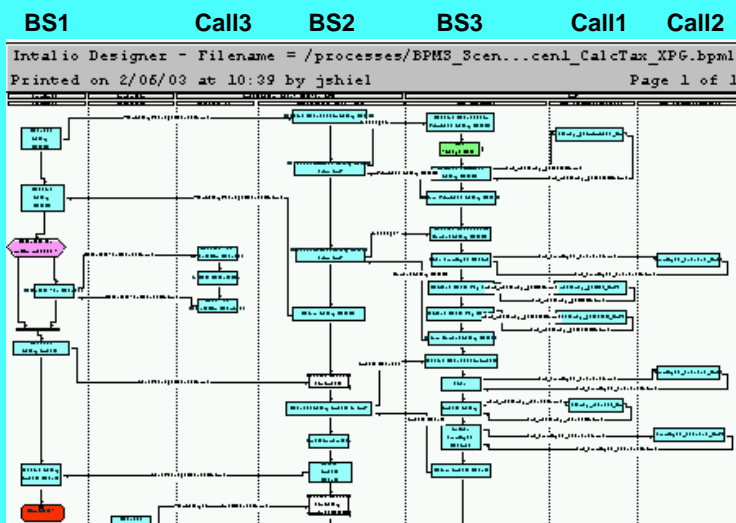
4

Mobile phones call handoffs

- **■ *Mobile phone in lift***
  - • *Faraday cage*
    - – *Will boost its power to reach cell*
- **■ *Very powerful protocols***
  - • *Parallel communicating processes*

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Parallel Communicating Processes
Lanes could represent "Base Stns - BS" or "Calls"
BPMS UTS Seminar, (Shiel, 2004)

BS1	Call3	BS2	BS3	Call1	Call2

Intalio Designer - Filename = /processes/BPMS_Scen...cen1_CalcTax_XPG.bpml
Printed on 2/06/03 at 10:39 by jshiel   Page 1 of 1
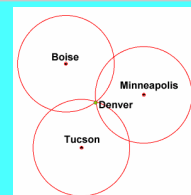
6

Usability - Importance
Consider Nokia 6710 Nav.

- **First and foremost**
  - *It is a phone !!! Small size, weight*
  - *Easy to make calls*
  - *Simple keys*
    - *Slideout/in to answer/stop calls*
      - *Configurable*
  - *Buttons or shortcuts for frequent functions*
    - *Maps*
    - *Camera start, Shoot photo/video*
    - *Volume*
    - *"Soft" keys*
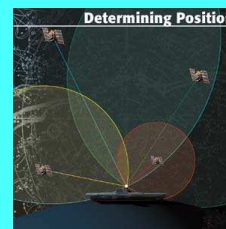   - *6 User definable shortcuts to anywhere*

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Mapping

- **GPS – Global Positioning System**
  - *How it works*
    - *Satellites*
    - *Triangulation*
      - *4 simultaneous equations – distance to each satellite*
      - *Lat, Long, Altitude*
- **A-GPS – Assisted GPS (phone cells)**
  - *Indoor GPS*
- **Finding local services**
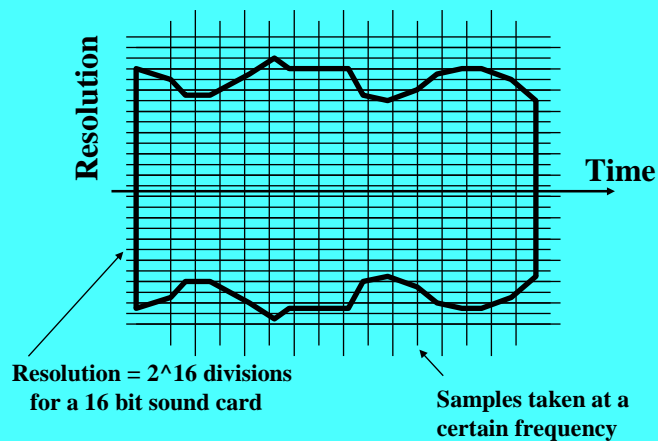 - *Restaurants*
  - *Service stations*

2-D location
- circles of distance

3-D location
- Spheres of distance

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Digital Music
Started with Wave files

Resolution (vertical axis), Time (horizontal axis)

Resolution = 2^16 divisions for a 16 bit sound card

Samples taken at a certain frequency

Music – common lossless formats
Not common on phones

- WAV
  - Proprietary format from Microsoft and IBM
  - Sampled whole tune
  - Needed a sound card only
  - Huge files 10MB/min
- AIFF
  - Apple's proprietary format
  - Sampled whole tune
  - Needed a sound card only
  - Huge files 10MB/min
- MIDI
  - Instrumental music only
  - Sampled notes, stored notes as text
  - Needed a player & sound card to generate notes
  - Recent Windows come with player midi library (Roland)
  - Small files 20kB/min

Music - *Lossy formats*
Common on phones

- ■ *MP3*
  - • *MPEG-1 Audio Layer 3*
  - • *Developed by Fraunhofer IIS, AT&T-Bell Labs, Thomson-Brandt, CCETT, and others*
  - • *Patented digital audio*
  - • *Reduced parts of sound accuracy*
  - • ***Nokia & many others***

Nokia 5800 Express Music
"Comes with Music"
1 yr free downloads

- ■ *AAC*
  - • *Advanced Audio Coding*
  - • *ISO and IEC stds - part of MPEG-2 & MPEG-4*
  - • *Developed by Apple, Fraunhofer IIS, AT&T Bell Laboratories, Dolby, Sony & Nokia*
  - • *Better than MP3 at similar bit rates*
  - • ***iPhone, Sony Ericsson W705, Android etc.***

iPhone
iStore

- ■ *WMA*
  - • *Windows Media Audio (for mobiles)*
  - • ***Windows mobiles***

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Cuppa

- ■ *Back at…*

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Downloaded free applications

- **Wiki**
  - *Updates via data downloads*
    - *Small increments only*

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Downloaded free applications

- **Skype**
  - *Free phone calls if using Wi-Fi*
  - *Needs*
    - *Hot spot or*
    - *Mobile broadband*

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Android OS - < 2yrs old

http://developer.android.com/guide/basics/what-is-android.htm

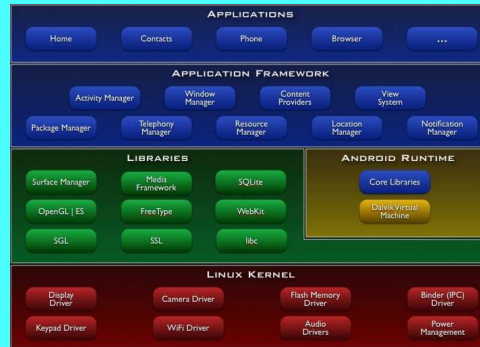- Software stack for mobile devices that includes
  - Operating system,
  - Middleware and
  - Key applications
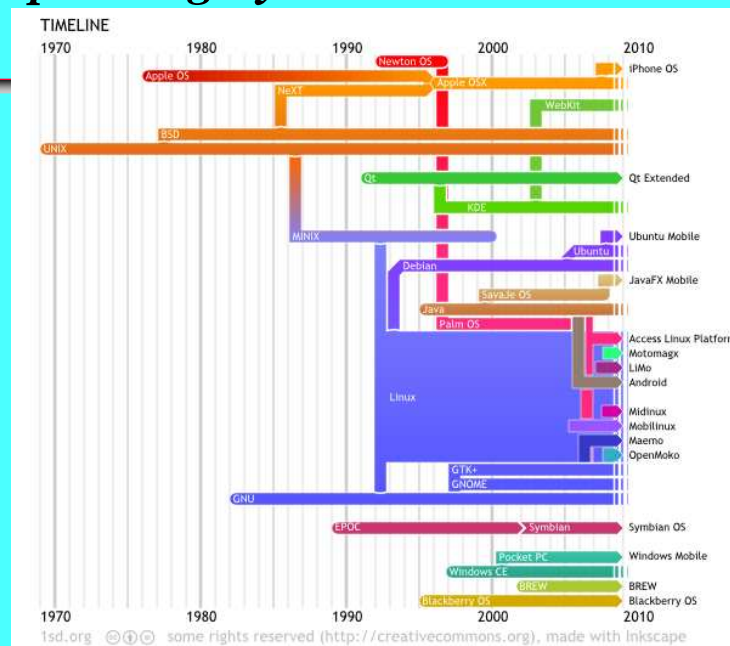- Lower system reqmts
- Designed for web services
  - mail,
  - messenger,
  - Cloud resources
- Great fit for Google

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Operating System Timeline

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Apple & Android compared 3/09

	iPhone 2.2.1	iPhone 3.0	Android
MMS Support	No	Yes	Yes
Copy/Cut and Paste	No	Yes	Yes
Application Notifications	No	Push Notifications	Background Processes
Phone-wide Search	No	Yes (Spotlight)	No
Email Search	No	Yes, but doesn't search message content	Yes (Gmail search box)
Calendar Search	No	Yes	No
3G Tethering	No	Yes (pending carrier signoff)	Yes (3rd-party app)
Voice Over IP	Yes (Wi-Fi only, 3rd-party app)	Available to applications	No
Multiple Notifications	No (modal popup)	No (modal popup)	Yes (pulldown window shade)
File Sharing	No	Yes	Yes (3rd-party app)
Peer to Peer Bluetooth Connectivity	No	Yes	No
Video recorder	No	No	Coming in Cupcake
Built-in Notepad/Notes app	Yes (but no sync)	Yes	Coming in Cupcake (no sync)
Parental Controls	Yes	Yes	No
Stereo Bluetooth A2DP audio	No	Yes	Coming in Cupcake
Accessory application support	No	Yes	

Source:Lifehacker.com

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Advanced Smartphone
HTC Desire – Android
http://www.cnet.com.au/htc-desire-339301153.htm

- Stunning AMOLED screen
- Huge range of preinstalled software
- First class web browser with Flash
- HTC Sense is superb
  - User-definable base screens
- Poor 5-megapixel camera
- Battery needs to be managed by the user
- Can be confusing
  - User interface too variable
  - Different version support
- AU$779 outright

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HTC Desire Specs

- **Social Networking** *Facebook, Twitter, Google Apps*
- **GPS receiver** *Yes*
- **Push e-mail** *Yes*
- **Network Bands** *HSPA/WCDMA: 900/2100 MHz, GSM: 850/900/1800/1900 MHz*
- **Sensors** *Gravity, Digital compass, Proximity sensor, Ambient light sensor*
- **Connectivity** *Bluetooth, Wi-Fi, Next G, HSDPA*
- **Data Services** *GPRS, WAP, EDGE, UMTS, HSCSD, HSDPA*
- **USB** *Yes*
- **Screen resolution** *480 x 800 pixels*
- **Input method** *Touchscreen*
- **Operating system** *Android, V2.1*
- **Supported file formats** *jpg, 3gp, 3g2, mp4, wmv, aac, amr, ogg, m4a, mid, mp3, wav, wma*
- **Digital camera** *Yes – 5Mpx*
- **Synchronisation method(s)** *USB2.0*
- **Weight** *135 g*
- **Processor speed** *1000 MHz*
- **RAM** *576 MB*
- **ROM** *512 MB*
- **Expansion slot** *microSD*
- **Messaging options** *SMS, MMS, E-mail, Instant Messaging, Push e-mail*
- **E-mail protocols** *POP3, IMAP4, SMTP*

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Thank You

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