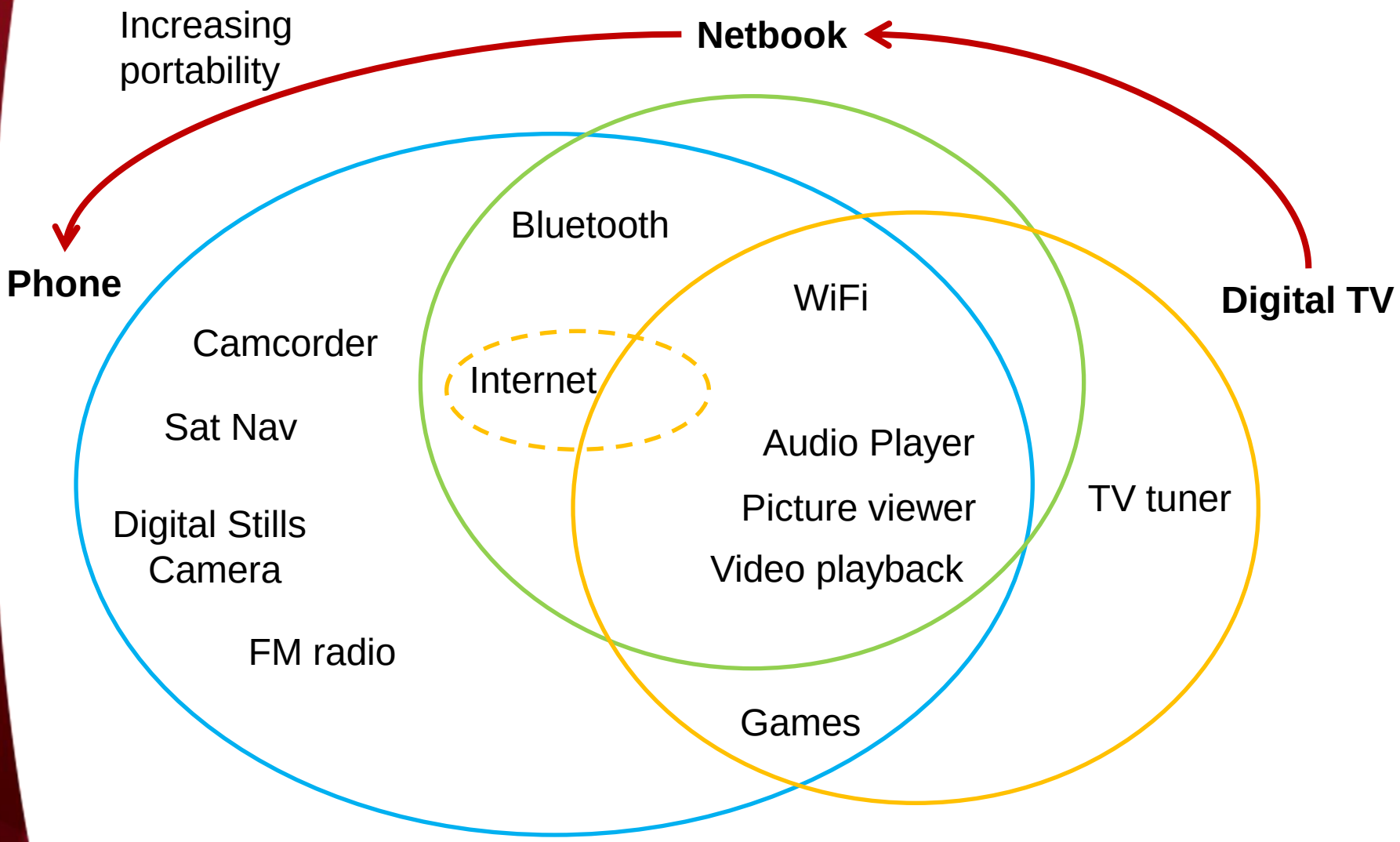
OpenOS, the phone and the converged device

July, 2010

Sneak preview

- **Convergence**
  - Functionality
  - Media
  - Hardware
- **What about SW**
  - Convergence
  - Where is the value
  - Where are the problems
  - How does OpenOS help
- **Where are we going**

Features have converged



2000: different media for different content

Web1_0.html

2010: Convergence in media

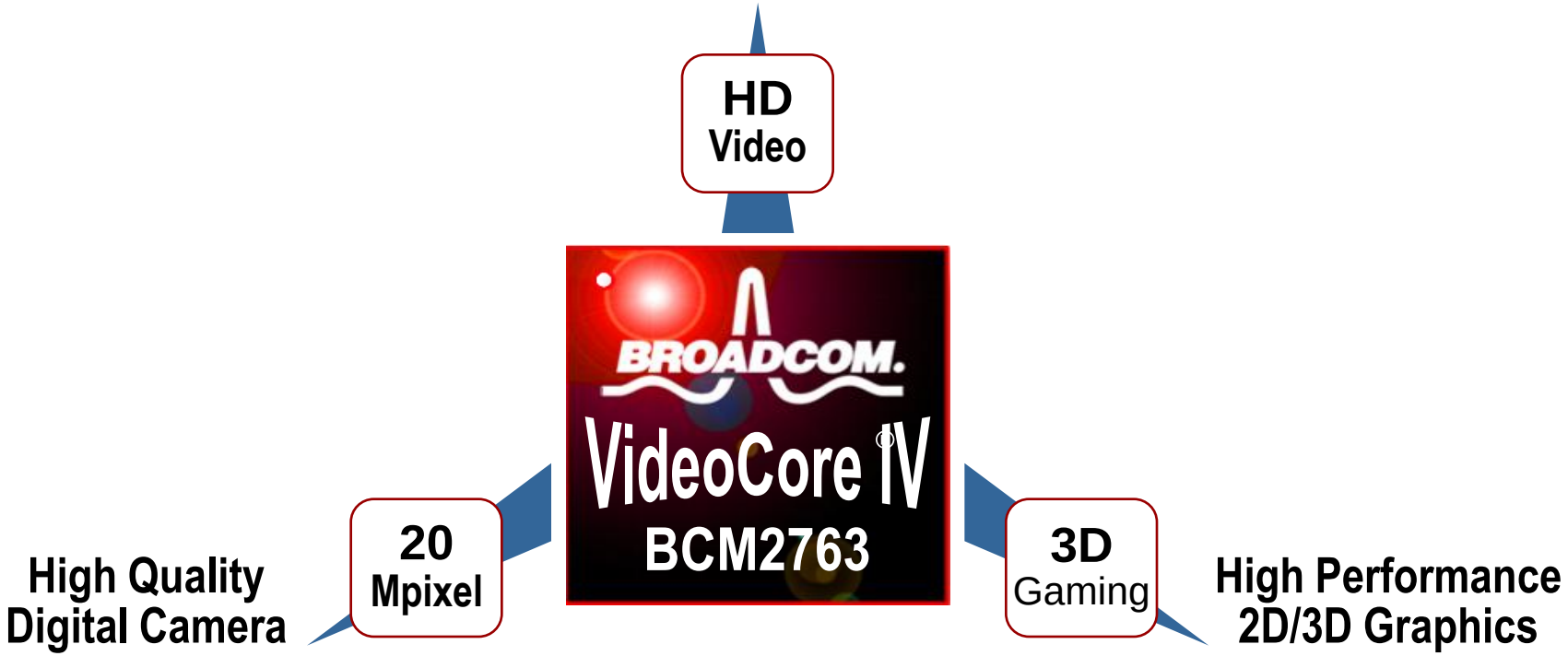
- **Most media are digital**
- **Storage on PCs, NAS, FLASH, in the cloud**
- **Connectivity increasing in ubiquity and data rates**

- **Produce content anywhere, store it anywhere and access it anywhere, on any device**
- **Simply need:**
  - Good connection
  - Ability to decode and display content

- **As media less specific – device more generic**
- **Drives ambiguity in market segments**

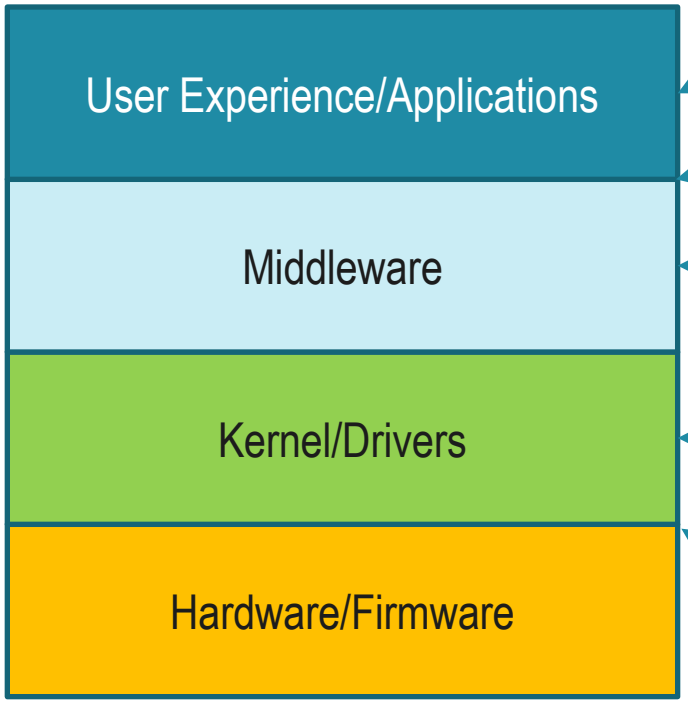
Convergence in HW capabilities

High Definition Video Record and Playback



At Mobile Phone Power Levels

What about convergence in SW?



UX/Runtime environment increasingly important

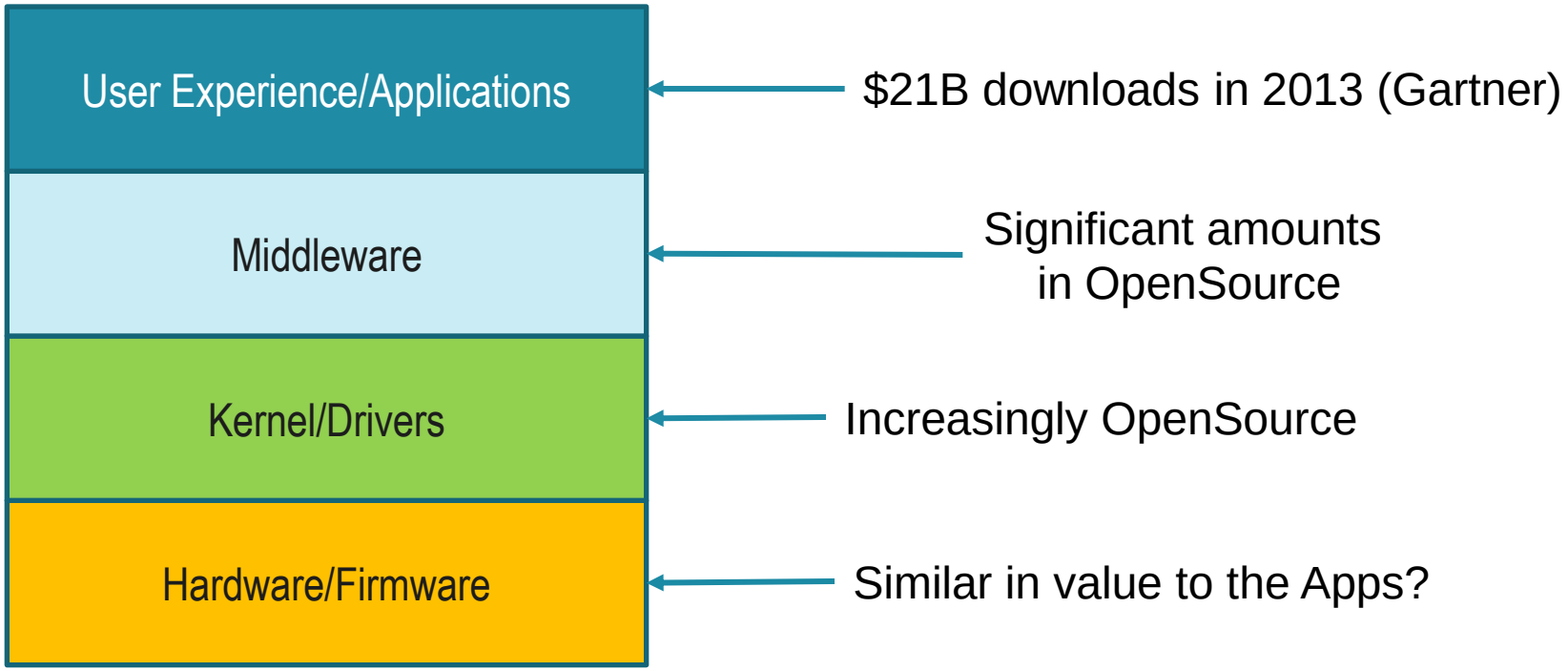
Much better defined interface

Lots of variation but increasingly OpenSource

Increasingly OpenSource

Better defined interfaces
- Symbian Hardware Abstraction
- Khronos

Where is the value?



Integration is the big problem

- **Stops capabilities of the HW reaching the consumer**
- **It's not scalable**
  - Sometimes per device
  - Sometimes per platform (if lucky)
- **Big issues with multi-vendor platforms**
  - No single party has all the source
  - Very hard to debug
  - Very easy to blame the other party!
  - Slow, inefficient, costly and poor quality

OpenSource is a key enabler

- **Ensures everyone has access to the source**
- **Traditional ownership by OEM for integration is moving to Silicon vendors**
  - OEMs focus on Apps, User experience and services rather than OS
- **Natural integration at top of middleware rather than the bottom**
  - Integrate once per vendor-specific HW platform
  - Mimic many advantages of vertical integration of Apple and RIM
- **Some vendors increasingly able to provide all Si in phone**
  - Predict more platform offerings from Si vendors
  - Pre-integrated
  - Quick TTM
  - Ensures capabilities of latest silicon really reach the consumer
  - Si vendors better able to differentiate and offer demonstrable value at the UX layer
- **Will Si vendors take more of the value or will the Mobile brands win-out?**
  - 'Intel Inside' vs Nokia?

Phone platforms will extend to other markets

- **Integrated platforms to User-layer will push to other market segments**
  - Functionality already in phones
  - Nothing media specific
  - Pre-integrated so proven and fast TTM
  - Ubiquitous User experience when accessing data
  - Ready-made app-stores to service new devices

- **Already happening**
  - Google TV using Android
  - iOS on iPad
  - MeeGo for Netbook, Handset, In-vehicle, Connected-TV, Media phone
  - Symbian?

Fragmentation is still an issue

- **Now at the services and App-stores**
  - iOS (iPhone)
  - Ovi-store on Qt
  - Android
  - Bada (Samsung)
  - Microsoft?

- **Likely to see competition for a few years followed by consolidation**

Where next: Ubiquitous user experience

- **User experience is device agnostic**
  - Move data, apps and look-and-feel across devices
  - Same UX layer running everywhere
  - Content in the cloud with different local caching in different places.

- **Phone *is* your computer and entertainment centre**
  - Content in cloud with some cached locally
  - Mobile PVR?
  - Change screen-size, power supply and peripherals
  - Phone, laptop, desktop, TV, Games console

- **Apps layer understood by many devices**
  - Easier to share or extend sessions across multiple devices and users

Conclusions

- **Devices are converged in all but the SW**
- **Value is increasingly in the apps**
  - Pull-through for devices
  - Still value in silicon
- **Integration is the big problem**
- **Middleware integration moves to the Si vendor**
  - Increasingly selling platforms rather than chips
- **Platforms will address multiple market segments**
  - Economy of scale
  - Ubiquitous consumer experience
  - My content and my applications, anywhere I want , any way I want it.

Thank You