

WLAN

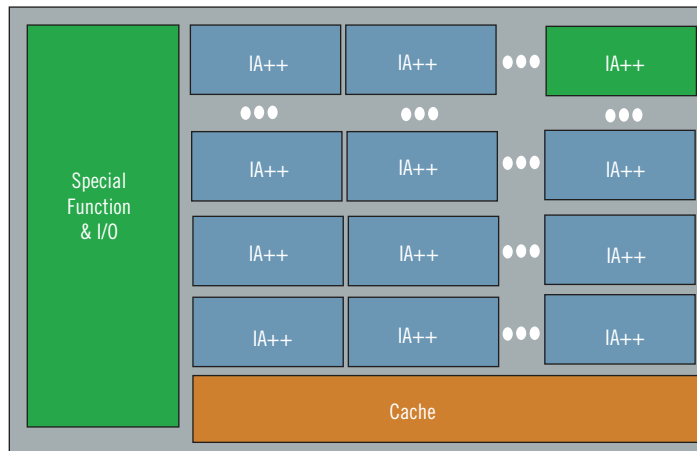
Intel's adoption of 802.11b in 2001, replacing the consumer-focused HomeRF standard, saw the US semiconductor vendor contribute to Wi-Fi's rapid growth particularly in notebooks. It is estimated that more than 90% of notebooks shipped in 2007 incorporated Wi-Fi technology.

Intel offers three PRO/Wireless PCIe mini cards for notebooks, of which the 3945ABG and 2915ABG operate in the 2.4GHz and 5GHz spectrum, while the 2200BG only functions at 2.4GHz. As is inferred by their names, these cover a/b/g or b/g profiles. Intel will add two new modules – Wi-Fi Link 5100 and 5300 – that will offer Wi-Fi a/g/n and will support 1x2 or 3x3 MIMO.

Application processors

Within its Centrino business and consumer notebook platforms, Intel's GM965/PM965 Express chipsets incorporate its Generation 4.0 Integrated Graphics Engine and the Mobile Intel Graphics Media Accelerator X3100. The X3100 supports features that include OpenGL 1.5, HD video playback up to 1080p and from early 2008 supported such features as Direct X 10 and shader model 4.0 support. It is expected to be replaced on the soon-to-be announced Centrino 2 platform by the Cantiga GM and PM chipsets.

Figure 4.17: Larrabee architecture for Visual Computing



Source: Intel

Intel's scalable multi-core visual computing chip codenamed 'Larrabee' will significantly improve the company's future graphics potential. With first introductions into servers in late 2009, it could be seen in notebooks from mid-2010. However, perhaps most important is that Larrabee is composed of multiple IA cores, and uses common IA libraries, meaning that it is able to compute the full x86 instruction set. This will eliminate the requirement for programmers to learn another language such as AMD's CTM or as Nvidia's CUDA.

Chapter 5

Mobile broadband devices

Introduction

MBD definition

The definition of mobile broadband devices (MBDs) details the convergence of the mobile handsets market and portable computer devices as opposed to the converged network. There is some disparity in the mobile industry over the use of MBD definitions; there is a wide variety of nomenclature that is, in general, based on device screen size as this will dictate the device use case and the device's 'pocketability' as well as giving a good indication of its processing capabilities and applications. To this end, terms such as mobile Internet device (MID) and ultra-mobile PC (UMPC) have become synonymous with the MBD segment.

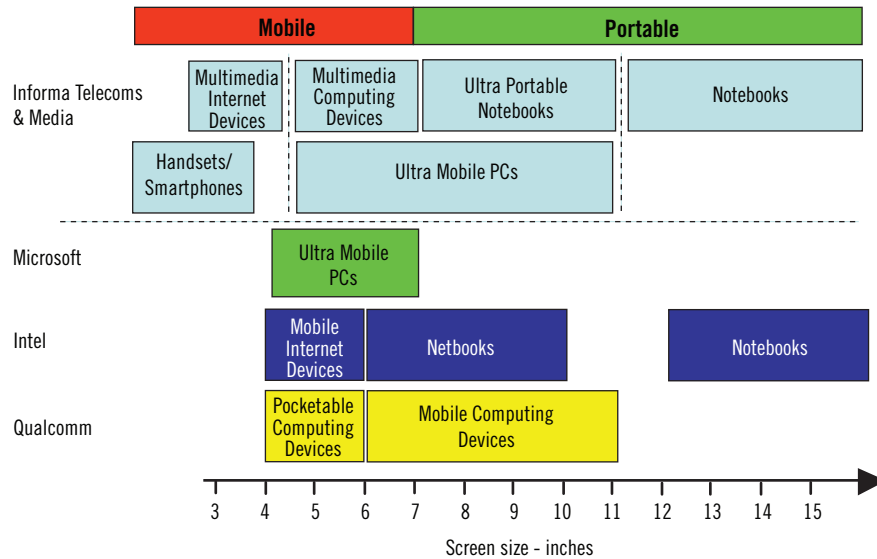
However, to best characterise and quantify the total MBD market, Informa Telecoms & Media has divided it into the following five main segment headings, using screen size the main metric:

- Mobile handsets, including smartphones – up to 3.5 inch screen
- Multimedia Internet devices (MIDs) – 3 to 4.5 inch screen
- Multimedia computing devices (MCDs) – 4.5 to 7 inch screen
- Ultra-portable notebooks (UPNs) – 7 to 11 inch screen
- Notebooks (including broadband datacards, USB dongles, etc.) – screens over 11 inches.

Based on analysis of device form factors, technology roadmaps and likely use cases, Informa Telecoms & Media has identified the evolution of an UMPC market. In order to best evaluate and quantify this diverse segment, Informa Telecoms & Media has chosen to sub-divide it into two categories, namely MCDs and UPNs. Fig. 5.1 outlines the definitions used by Informa Telecoms & Media compared with those determined by some leading mobile industry players.

While these segments form the focus for the analysis by Informa Telecoms & Media, it is by no means an exhaustive list as additional portable consumer electronic devices, such as GPS modules, in-car, telematics, digital cameras and portable gaming platforms, could also be included in the mix as they compete on many levels with Informa Telecoms & Media MBD definition, but perhaps have yet to integrate the prerequisite WMAN or WWAN broadband connection.

Figure 5.1: Mobile broadband device industry definitions



Source Informa Telecoms & Media

As anticipated, there is overlap between the MBD segments, but it is in the definition of the segments and the use of segmentation strategies that creates a distinct device. While Informa Telecoms & Media's analysis here looks at portable devices, from mobile handsets to notebooks and most things in-between, it excludes desk-top computers, games consoles (such as Nintendo's Wii) and set-top boxes.

Market segmentation

There are a number of main features that consumers will commonly consider when it comes to purchasing a mobile broadband device:

- **Portability:** the size and weight of the device limits the number of occasions when the device will be with the user, less so for convergence devices like mobile handsets but particularly true for notebooks.
- **Screen size and resolution:** for many applications, a significant importance will be placed on this factor as users engage in particular activities, such as Internet browsing, video playback and word processing, for longer periods of time and will desire large, bright and responsive displays.
- **Price:** the price the user has to pay either directly or the additional charges through a service contract. This will also be reflected in the replacement cycle where, generally speaking, it is much shorter for handsets (1-2 years) than for notebooks (4-5 years).