

Harmonic Convergence: Connectivity Wins

(Part 2 of 4)

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In the next several months Advisor is devoted four issues to take a look at trends in the IC industry based on my data gathering and, most importantly sitting down with some industry folks. I've synthesized my thoughts into a series of themes that I hope you will find of use. In the previous issue I looked at the Proliferation of Clients. I will now focus on how all those clients get connected. I would appreciate your views on the near-future as you see it unfolding, so contact me at cdilisio@dside.com

What are the near-term technology themes and the opportunities for ICs (2003-2005)? The themes based on all the conferences, readings and musings fall into four categories:

- Proliferation of Clients¹
- Connectivity of Clients and Peripherals
- Integration and Infrastructure to Support Clients
- Presentation Foreground, Complexity to Background

The previous issue we explored the proliferation of clients, now we look at how these clients are being connected to share information and provide more value.

Connecting Everything Everywhere – Wirelessly!

The good news for the IC business is that we are seeing an explosion of devices that are wirelessly connected to a network. Wireless connectivity comes in many forms from cellular (2.5G, 3G), Wi-Fi (802.11a, b, g), Bluetooth and even FM.

¹ IDC defines a **client** as “a device capable of performing functions on its own and/or connecting to shared resources and delivering meaningful information to the person using it.”

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We will see that connecting seamlessly to whatever standard(s) win the battle. You will be able on your notebook, tablet PC or Handheld to jump from 802.11 to cellular when the 802.11 hot spot is unavailable and use Bluetooth for your peripherals along the way. Low speed services using FM will emerge.

Microsoft is working to roll out DirectBand Network, which uses ordinary FM radio frequencies to beam customized information services to everyday devices using Smart Personal Object Technology (SPOT).

At the office PC replacement cycle is lengthening. PC desktops will get smaller as they will get smaller without the capability of internal expansion for PCI or drive slots. If a worker needs to expand his PC the IT department will no longer "crack the case, but add storage or other peripherals through USB 2.0 or firewire, which means that Larry Ellison's "Network Computer" will become a reality.

Our home will be highly networked just like our offices. Home given the ease and cost will likely be wireless. The home PC will serve as a gateway from the broadband connection, store our MP3, digital images and video and route it throughout the home — wirelessly.

802.11 looks like the likely protocol in the home network, but Ultra Wide Band could emerge as a likely candidate for transporting video signals as this requirement emerges.

Computer and home entertainment equipment will be connected through common mechanisms like firewire, USB 2.0, 802.11 and Bluetooth. Gone will be the days when you have to have the jumble of wires behind your home entertainment center or computer. Computer keyboards, mice and handhelds could easily and effectively be connected wirelessly using Bluetooth.

However, wireless base stations location need to be powered along with many of the peripherals in the home or office. Based stations could be line powered Ethernet. Other devices will need alternatives to recharge the batteries if we are to eliminate more wires.

Mobility and Low Power Consumption Key.

Consumer markets appear to require greater levels of mobility and if not mobile the capability to consume less power. Power consumption

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will be a critical requirement of most systems design even above performance.

In the big push to connect clients I think we will see multiple silicon configurations. As we move connectivity to the consumer market the network will become an off-the-shelf appliance from Circuit City or Best Buy.

Opportunities for Semiconductor Vendors — Connectivity of “Clients”

- **RF Technologies** — There will be a great need for low cost, low power consumption receivers and transmitters. Look to Intel, Broadcom, Intersil, RF Micro Devices, and Marvel.
- **Frequency Agile Technologies** — If we are going to be wireless we need devices that can span different protocols easily. Look to Intel, Intersil, Texas Instruments and start-ups like Atheros.
- **Power Management** — Again, mobility will require power and better power management. Also, if you want to eliminate cords you need to reduce the lump and cord power supply to clients and peripherals. Look to companies like Power Integrations, ON Semiconductor, Linear Technology and Maxim Technologies.

I hope you find this view of the future helpful. D-Side Advisors believes that new business models must emerge for the IC industry to capitalize on the changes taking place.

D^Side Advisors can help!

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D^Side Advisors are consultants to senior management in the semiconductor and semiconductor equipment industries assisting companies become the leaders in profitability in their chosen markets.