An approach to

Embedded-Communication

Design

Author
Sameer Shah
Sameer@greymatterindia.com

EMBEDDED-COMMUNICATION

Author

Sameer holds a bachelor degree in Computer Science from Mumbai University. Sameer is one of the founders of Grey Matter India Technologies Pvt Ltd, a leading India based software solutions provider Sam specializes in Embedded Domain and has over 3 years of experience. He has Published and spoken extensively on introduction of new technologies in Embedded Communication, specifically Embedded Convergence. Sam is currently researching on business dynamics of Embedded Appliances Marketplace and his likes cover a very broad range form Technologies to Management.

Email : **Sameer@greymatterindia.com**

Introduction

"Embedded Communications is a new era for embedded processors to achieve Internet connectivity for both voice and data transmission. By defining and addressing this era, there is a need to provide enabling technology products and services to help companies harness the power of DSPs and other embedded processors."

Embedded communications is about maximizing the performance of products with embedded DSPs, microprocessors and microcontrollers.

As the performance of silicon continues to improve and the cost continues to decline rapidly, more and more companies will be looking to harness the power of embedded processors to distinguish their products in the market.

On the high-end of the embedded processor spectrum are digital signal processors (DSPs). An increasing number of applications will rely on embedded DSPs to mathematically modify and improve information transmission and signals -- features crucial to the information age. So it is not surprising that leading industry analysts predict that the use of programmable DSPs embedded in applications will accelerate, fueling a DSP market of over $15 billion in 2003.

On the low-end of the embedded processor spectrum are 8/16/32-bit microprocessors and microcontrollers. Companies will be looking to connect billions of embedded processor-based devices to the Internet. In fact, the number of "Internet appliances" (devices with embedded processors which will be connected and controlled remotely over the Internet) is expected to significantly overshadow the growth of PCs by a factor of 10:1 by 2005.

Embedded Communication is the place where computer, consumer, communications, and embedded Internet markets converge. The embedded arena encompasses a whole genre of electronic gadgets and devices catering the needs for a wide range of consumers. Being in touch is the mantra not only for humans but also for the life-like electronic devices that seem to make life worth living for.

The emerging trend of combining the functionality of computers, telephones, pagers, personal digital assistants, televisions and more into single consumer devices or appliances is being fueled by the power of embedded processors. These processors are being used to drive complex and compact systems, which are redefining consumer behavior and creating an entirely new class of embedded applications. Any product or device with an embedded processor will be expected to communicate and transmit information to and from other devices through a standard medium that is universally accepted like the Internet. This leads to integrating the communication protocols like the TCP/IP into the embedded device.

The Need for Speed

Embedded Communication the leading edge technology behind the direction your company is headed...

As we enter the so-called "post PC" era, we begin a second phase of the information age: device information management. Here, it's not the hardware that's important; rather, it's the data it contains or transmits that's key. But this data is only as valuable as it is accessible. That's where embedded communications comes in. The need to access, monitor and control intelligent devices have created refinements in existing communications technologies (e.g., TCP/IP, HTTP, Java, CAN, GSM and WAP) and emerging technologies (e.g., Bluetooth, GPRS, VoIP, Wireless, HomeRF and IEEE 802.11). All these technologies are focused on embedded communications.

Internet connectivity for your device opens powerful opportunities for cost-savings and improved communications by enabling you to utilize the Internet's existing infrastructure for your specific communications needs.

The Internet has rapidly become the global backbone for moving and communicating data over long distances and multiple locations. Tapping into this worldwide network provides an efficient, cost-effective and flexible means to monitor, control and service devices at any given location. Because of its current limitations of latency and available bandwidth from the ISP connection, the Internet is a good solution for off-line messaging from devices with limited processing power.

Utilizing the existing Internet infrastructure for data transfer you can minimize the following costs for:

- Communications
- Infrastructure
- Servicing
- Maintenance
- Time-to-market

At the same time, the Internet will improve your access to remote communications by making information available quicker, easier, more frequently and more affordable.

The Need for Speed

Emerging market

The growth of intelligent embedded devices and the increase in their complexity will "raise the bar" for a development partner that can deliver large number of Internet appliances. This partner shall help with the embedded technology so that the developer can focus on what they know best: their application. As a result, more reliance will be placed on quality off-the-shelf software development tools, Real-time Operating Systems, communication protocols, embedded Web Servers, application services and worldwide support to help with the deployment, integration and testing of these software components. That's what you can do.

Conclusion

Embedded Communication system is one of the most important current areas of technology development driven by the need of *achieving Internet connectivity for both voice and data transmission.*

About Grey Matter India

Grey Matter India is an Indian based technology solutions firm catering to fortune 2000 clients across US, Europe and Middle East countries. Embedded Solutions is one of core GMI's strength and GMI team has developed an Embedded Solutions Framework to deliver innovative, cost effective solutions to the market. With over 250 person years of experience in embedded domain has enabled GMI to cater the market need.

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