

Bluetooth in logistics

- *Will it still slip between the cup and the lip?*

Circa 1998

Work environments unshackled from a cabled existence. Seamless, cost-effective, connectivity between computing devices and peripherals. Increased worker productivity and group collaboration. The Bluetooth promises are many!

Circa 2000

Three years down the lane, Bluetooth is yet to deliver. Shipments yet to meet projected targets, technology concerns yet to be addressed. Disillusionment precedes cynicism across industrial sectors that Bluetooth promised to revolutionize. Many feel Bluetooth was taking too much time to make the transition round the hype-cycle curve to real time applications!

Circa 2001

Proponents dismiss the criticism. Deloitte& Touché, the research major, quotes Chairman of the Bluetooth SIG (Special Interest Group), " the Bluetooth products must interoperate. So, we had to make sure no one could launch products that weren't compatible. Our philosophy is, Don't do it just fast, do it right".

July 2001

United Parcel Service Inc announces \$100 million project to deploy wireless LAN and short range Bluetooth network across its global distribution hubs. This, perhaps, is the world's largest wireless implementation! Suddenly, the tempo is set. The logistics world is prompted into taking a second and this time, a longer look, at what exactly Bluetooth can do to enhance the industry environment.

The UPS project

- *A glimpse into the mammoth endeavor*

Till date the UPS package tracking system had workers use ring scanners that were cabled to small computers on the wrist. The new system replaces this with a Bluetooth embedded cordless ring scanner that feeds data to a hip-mounted Windows CE terminal, that in turn uses 802.11b standard to communicate to the wireless LAN. One server is to aggregate data at each of UPS' 2,000 distribution hubs. Further, these will relay data to the centralized tracking system in New Jersey. The initial deployment awaits testing at the mammoth distribution capacity at Chicago.

The implementation is expected to considerably improve worker productivity by eliminating the impeding cables. " The integration of a wireless Bluetooth ring scanner is of great importance. The primary use of Bluetooth is for cable replacement and this (i.e. package sorting on conveyors) is a perfect example of where cords are a big problem", states David Salzman, Program Manager - UPS.

What makes the UPS project unique is that it embodies the *first successful marriage between Bluetooth and 802.11b wireless LAN standard*. Till now pitted against one another, as claimants to the same industrial wireless pie, the current project demonstrates how the two can be made compatible to yield better user value. Operating in the same 2.4GHz radio frequency band, the two wireless standards were presumed to pose serious interference problems. Their co-existence in the same facility was almost ruled out, for Bluetooth, being an aggressive hopper, had a good chance of knocking off or degrading another radio signal within range. The UPS project has overcome the challenge with proprietary technology that with the aid of an intelligent software in the 802.11b access point, signals the 802.11 radio to be quiet.

802.11b and Bluetooth

- *Where does each fit in?*

"Bluetooth is never going to be a full wireless LAN, but, it can be a component to it (and enhance value) rather than be a competitor", says analyst Michael Wall in the Frost & Sullivan Bluetooth Report. A few points to drive home the actual:

* 802.11b is a high throughput, device- to- server (i.e. LAN access point) technology; whereas, Bluetooth is primarily a device- to - device technology. Bluetooth provides a simple way to move and synchronize information in a close setting.

* It does not make sense to equip a small portable device, with the need for close proximity communication, with large, high power consuming, long-range 802.11b. Bluetooth is better suited to the situation.

It is to the industry's credit if it realizes the true potential of both these complementary technologies. Use the appropriate technology where its core applications are and derive maximum benefit. The UPS project could become a benchmark of sorts, if it succeeds!

Bluetooth in logistics

- *Envisaged prototypes.*

Bluetooth provides a simple, cost effective solution to device connectivity needs, to facilitate data transfer. Primarily, it has been touted as a cable replacement technology. The greatest complaint against cabled networks, apart from their complicated configuration requirements, in a warehouse environment, as otherwise, is that it considerably hinders worker movement and lessens man- hour productivity. Moreover, it often requires additional purchase of proprietary cables for specific devices.

In a typical warehouse/distribution center, Bluetooth will increase labor efficiency; improve process velocity and overall productivity. This, is attributed to Bluetooth's intrinsic potential to move and synchronize data in a localized setting. Bluetooth supports both point-to-point (a la scanner to hip terminal) and point- to-multipoint device (For e.g.: scanner to terminal, printer, fax) connectivity. Bluetooth can do away with belt-mounted printers used to generate bar code labels. Warehouse operators can use Bluetooth devices to record inventory, enhance product visibility and easier traceability.

Conventionally, forklift operators have been equipped with data scanners tethered to vehicle-mounted terminals. Replacements with Bluetooth enabled scanners afford the mobility required to even scan items away from the truck. This enhances worker convenience for, more often than not, operators are required to scan both the material being moved as well as the location where it is picked or placed.

Bluetooth's ability to form ad hoc communication channels with enabled equipment can even facilitate transfer of relevant data from terminal to the floor manager's PDA. Ideally, Bluetooth can form a universal bridge between computing devices and office peripherals located in close proximity, without interrupting the existing data networks.

How does Bluetooth cut costs?

Bluetooth has inherent power conserving features. They automatically alternate between three power modes designed to save battery life. The device shifts to a low output or withhold mode as soon as traffic volume lessens or stops.

Security, interoperability et al...

Bluetooth devices can have built in encryption, verification and authentication features. It is possible to place device in a 'discoverable mode' only to a select, predetermined set of users. The inherent Frequency Hopping nature of Bluetooth, by itself becomes a security feature, since only receivers who know the pattern can correctly interpret the communicated data.

The Bluetooth SIG, formed in 1998, has 2,500 members till date, including vendors, manufacturers and systems integrators. Much of the efforts expended by SIG are on promoting interoperability between Bluetooth-enabled devices. With such industry participation, Bluetooth can still be a winner, like its royal namesake.

Conclusion

The Frost & Sullivan Bluetooth Report, which conducted a perception survey amongst 120 IT managers and senior executives in US, revealed that most of them were either unaware of the technology or had perception flaws. The report also revealed that many potential users perceive Bluetooth as a wireless area network and not a simple short-range wireless link.

Girdled by perception problems and performance pressures, will Bluetooth still stand its ground as the ultimate short-range cable replacement technology? Is the UPS implementation a harbinger of more real time success stories? Or, will it still slip between the cup and the lip? Lets wait and watch...

BOX CONTENT

Tidbits

- Bluetooth is named after the 10th century Danish King, Herald Bluetooth, credited with uniting the warring Scandinavian factions under a single regime.
- Initially conceptualized by Ericsson, as 'a truly, low cost, low power, radio-based cable replacement' technology.
- Technology specifications developed and maintained by the Special Interest Group (SIG).
- The maximum Bluetooth range is 10mts, which can be extended up to 100mts.
- Ad hoc connections established between two Bluetooth devices is called a Piconet.
- Communications between two Piconets can be established through Scatternets.

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