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The Borg is Here!

The Cyborgization Of Humans
And What This Means For Our Lives In The Future And Today

Synopsis of the July 2004 WFS Washington DC chapter dinner program presented by Mark Bayliss, CEO, Visual Link Inc., with Joel Coulter and Roosevelt Ellison; summarized by Dave Stein

When we think of the Borg shown in *Star Trek: First Contact*, we think of a dehumanized alien species melded from human and machine parts. Most of us do not think we are even close to having the level of technology depicted in that film. Well, we're wrong, according to Mark Bayliss, CEO of Visual Link Inc. and speaker at our July 2004 dinner program, co-sponsored by the American Society for Technical Innovation (ASTI).

From a body-worn, voice-activated, high-power processor, to a single eye visual display of 2"x2", Visual Link Inc. and Xybernaut Corporation have combined mobility, communications, battery innovations, compression and visualization technologies to create a new level of communications and computing technology – high level mobile computing in vehicles and on people. Their purpose is to increase human mobility, efficiency, productivity, performance and safety. Assisted by Joel Coulter and Roosevelt Ellison of Xybernaut Corporation, who demonstrated wearable computer products, Bayliss discussed the envisioned impacts of this new technology on health, business, warfare, and lifestyles.

TECHNOLOGICAL TRENDS

Technological trends are evolving to enable mobile, low power, low cost, global education, and e-commerce. One's future cellphone might also be his/her PDA, computer, GPS locator, MP3, video game console, and even concierge combined into a single hands-free, wearable device. A computer that can be worn on one's belt, and that consists of a screen with a wrist band, is already here. It has the same power as the common desktop.

"FORCING FUNCTIONS"

As Bayliss pointed out, real estate agents were a pivotal market that drove the cell phone industry. In like manner, many of the enabling innovations for wearable computers came from Japan, largely as a result of the hectic pace, the close quarters, and the communications infrastructure. The technology

enabled their commuters to check e-mail, read the news, and check stock prices while riding on their subways. Personal space, so highly valued in the US, is virtually nonexistent in Japan.

Nowadays, other sectors are driving the market. Law enforcement agencies need secure communications and higher data rates for voice messaging. Presently, their radio transmissions can often be intercepted by anyone with a scanner. They need better capability and equipment, complete with biometrics protection when the communications units are unattended or in repair.

Emergency communications including 911 dispatch, Civil Air Patrol, and other first responders also require high data rates and secure links. Others who can benefit from wearable computers are those who need their hands free, including members of the US military and the US postal service, said Bayliss.

THE THIRD WORLD ADVANTAGE

Ironically, developing countries have at least one advantage over the US, according to Bayliss, even though IT-based content development and e-commerce models have made possible the immense growth that the US has experienced. Developing countries can leapfrog the US because they have no bureaucracy nor cumbersome infrastructure. For this reason, they are free to build an IP based infrastructure that is primarily wireless and supports voice communications. In contrast, copper wire phone lines that were never intended to support the information age are still prevalent in parts of the US.

Since much of the world's population increase is in these developing countries, Bayliss sees considerable markets there. For example, in Africa, the jobs and money are on the coast, and people must travel there to make money to support their families. They can benefit immeasurably from cyber cafes. South America and the Middle East can similarly benefit.

SO WHAT WILL WE SEE?

One envisioned consequence is mobile education – classrooms with Web cybercasting capabilities, online learning portals, and mobile instructor stations. On the more mundane side, the technology may change our dining habits, by enabling one to order food before actually going to the restaurant.

A wired third world, enabled by small, wearable computers that are communications-capable, will bring numerous consequences of its own. Right now, conventional IT and power generation technology help maintain the digital divide. Power generators require too much maintenance and are too expensive to power conventional computers in other parts of the world. For their part, our computers heat our office buildings, and then we use air conditioning to maintain human comfort! In India, the cost for a T1 line is high, continued Bayliss, such that relatively few lines must serve many people. So, the only affordable basing for conventional computers on a large scale is in the US and Europe – where in some places, the copper wire infrastructure maintains its rule. Bayliss envisions that the wearable computers can be powered by improved solar arrays that are relatively small, thereby obviating the need for batteries that must be discarded when spent. Similarly, removable computer cores will do their part to minimize waste disposal. There is the additional possibility that wearable computers can reduce computer power consumption in other parts of the world – a welcome development in light of the energy crisis.

Combined communication/geolocation capabilities will facilitate emergency response by finding the closest responders. When dispatched, these responders can then train "just in time" for an emergency situation, predicted Bayliss. Continuing, he noted that voice recognition technology may not be reliable during emergencies, when there is a stress factor, and that present-day voice recognition technology might not even recognize voice commands when one is in a bad mood.

Bayliss indicated that certain technologies such as voice recognition / activation technologies are still largely premature for deployment, even though they are more prevalent. Humans can hear one word from among several conversations and "tune in" to the conversation of interest. Computers are nowhere near this capability.

As always, the real future rests with those who are now children or who are yet to be born. Children, already accustomed to keyboards, typing, and chat rooms – even though they are too busy to clean their bedrooms – are already interested in digital wearable communications. As Bayliss indicated, there is increased connectivity among youth, as opposed to increased isolation. This may eventually lead to more international communications among children. Bayliss speculated that while communication among children might now center around social trivia and be largely devoid of content, the children will eventually have to deal with communications content.

BACK TO THE PRESENT

Coming back down to earth from the age of the Borg was not easy for the attendees. Yet, they resigned themselves to the fact that while linear spacetime will never limit the imaginations of futurists, it – and the "real world" – continue to hold sway over their physical bodies. And so, some attendees departed by Metro, perhaps sadly wishing that they could check their e-mails, obtain stock quotes, and catch up on the news like their counterparts in Japan. The larger numbers who departed by "iron horse" might well have fared better in the news department, depending on their timing and their choices of radio station, but even they could not "best" their Metro colleagues in news-on-demand – that is, unless they were Web-enabled passengers. Thus, the quest to squeeze more productivity – or for some, more stimulation – into the day continues. For now, the stimulation crowd has its answers in FM and AM radio, CD players, or hand-held video games, depending on whether they are driving or riding. Until the Borg is truly here, the productivity crowd will have to settle for tapes or CDs that convert their respective vehicles into "universities on wheels"!

It's not over yet!

*Brought from the chapter's interactive Web forum straight to **Future Takes** – just for you!*

Carl Pinches

Backcasting.

Assume it is 2025 and that 50% of adults are wearing computes at any give point in time. The line between working and not working has blurred. Instead of stopping for two 15 minute coffee breaks out of an 8 hour day to talk to your friends and family many workers take one-hundred 15 second breaks for continuing Chats (using text messaging for the most part). This requires wearable computers so you do not need to drop off a chat just to move around. Every few minutes during work related meetings and conference calls, an interrupt will be standard so participants can check their Chats.

POINTS FOR THE CLASSROOM (send comments to forum@futuretakes.org):

Now it's your turn to give your neurons some exercise and continue the saga:

o   *Consider the following potential consequences of mobile, wearable computers and of the capability to be constantly "plugged in." Will the capability become a mandate? How will the mobile education capability, or IT in general, change universities and schools as we know them? How will it change academic research? What are the implications to quiet, contemplative "down time"? To vacations? To social life? To information overload? To stress in general? To cultural diversity?*

o   *Will mobile, wearable computers alleviate or aggravate the "not enough hours in the day" challenge?*

o   *Also, considering that the drivers of these communications technologies have included the real estate market, police and emergency response forces, postal workers, and time-challenged commuters – what technologies will next be driven, and who will drive them?*