

Wireless life 2020

Ian Pearson Futurologist, Sept 2006

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Mobile phones are now owned by more than half the world's population, not bad when you remember that 5 years ago, less than half the world's population still hadn't made their first phone call. So where will it all go next?

Just as PDAs were first hinted at in Star Trek, the Hitchhiker's Guide to The Galaxy was a superb piece of prescience by Douglas Adams. It wasn't a scientific device like Star Trek's tricorder, it was a general purpose device that did just about everything IT. It provided fully context dependent information for every circumstance, enormous computation capability, positioning and tracking, communicated anything, with a full multimedia encyclopedia. We would take it for granted that it also took photos.

So, how close are we? Leaving aside communication with Vogon Cruisers, the rest is all plausible in our 2020 time frame, and more. Already, memory sticks are selling quickly at 4GB capacity, which holds about 20% of all my music or half my photo collection. Of course, photo and video resolutions will increase and we might even have lots of 3D content, but by 2020 memory sticks or their future equivalent will probably be big enough to hold your whole music, photo and video collection and any other personal data. Of course, all that can easily be incorporated into portable devices. However, it won't be possible to hold everyone's data on just one such device, and especially not real time data, so the portable device must still provide ultra-high speed access to networks to allow people to access other stuff. It will also know precisely where you are, who you are, what you are doing, now and next. So the 2020 portable device will have huge data storage and computation capability, help you navigate, manage your diary, and access networks at high speeds. All that is just incremental change from where we already are. But there will be more fundamental changes.

Top end displays by then will be heads-up, fully 3D and totally immersive. Think active contact lenses, overlaying computer generated imagery on everything you look at. Cheaper models will be glasses based. Active contact lenses will use lasers to create images directly on your retina, with as much resolution as your eyes can cope with. The images will change as you move your eyes, creating a totally immersive

virtual world. With accurate positioning and some image recognition, augmented reality will become the normal view of the world. Location based information and services will be abundant, and some will appear in your view as you look around. Building appearance will depend on the taste of the person looking at it. So will the appearance of other people. People, building and objects will emit a digital aura that contains alternative digital appearances as well as lots of marketing information. Of course, people will emit all kinds of data about themselves. The fact is that people love to advertise themselves all the time. They spend a lot of time, money and effort to portray just the right image in their clothes, make-up, accessories, web sites, even their language and gestures. All of these port one way or another into the augmented reality world. You may well broadcast a different image according to the viewer. So your portable will act as a digital filter, deciding what you want to see and how you want to see it, and a personal advertiser, marketing you to the rest of the world. You will walk around in a digital bubble, which will link all your toys electronically through a secure gateway to the rest of the world, intelligently filtering everything in both directions according to context.

The digital bubble has many uses. As well as gathering real time data on what is nearby that might be of interest, it is also interacting with other people's bubbles, introducing you to other people who also would like to meet you. So your business life will be easier because it will be easier to make new business contacts. And your social life will improve too. You will meet nice new friends and lovers. You will also know if one of your best friends is just down the road right now so you can arrange to go for a coffee together.

The digital bubble is just one tiny component of the infrastructure supporting this virtual environment overlaying the physical world with endless layers of digital world. Chips will be everywhere. Sensors, processors, communicators, storage. The portable device will connect to all of these to gather lots of information, process it, and present it to the user. Augmented reality is another business and social platform of similar significance to the internet. It takes everything that the net can do to the next stage, overlaying it all on the real world. The virtual environment sites today are mostly just on-line environments, and so are most multi-player games, but we are starting to see a trickle of sites and games that are making the transition onto the real world. It will become a flood soon as people realise the potential. Why not extend the art galleries to cover the whole of a city, so you can look at art works while you walk to your destination? Why not mix location with the on-line tribalism of the virtual environments to identify all the people you walk past who belong to the same tribes? We will see whole new ways of organising urban culture, new forms of gangs, new ways of arranging political demonstrations, even social art forms. Flash mobs have been mostly fun so far, but huge global demonstrations could be coordinated just as easily. Virtual fashion will take off, as will electronic makeup. Digital appearances will interact with makeup that contains particle aligned to electric or magnetic fields, produced by electronics printed directly and invisibly onto the skin surface. Makeup becomes kaleidoscopic for some people, or a full video display for others. All of this could be coordinated by the portable device.

The portable could even monitor your health and control drug delivery where required. Active skin, the idea of printing directly onto the skin surface, would include the capability to print into the skin too. Electronics deep inside the skin could monitor blood chemistry. This information could be relayed via mobile communications to the hospital computers, which, knowing your medical history, could then remotely control smart membranes that allow just the right amount of drug to diffuse through the skin into your body. Devices such as this could help monitor and control illnesses such as diabetes.

Tracking and security could also use this kind of technology. Services such as public transport could interact with people's portables. Knowing when a bus could arrive is very useful in helping to decide when to travel. Knowing the precise location of the potential customers would allow buses to pick people up where they are instead of needing bus stops. Furthermore, having lots of identification technology on portables increase security to a point where people may well be prepared to share their own cars and pick up hitchhikers again.

Of course, what we use our mobiles for today most of all is for messaging, but they are still very primitive. By 2020, messaging will be much improved. You will be able to send messages to the driver of the car in front, or the person in the car next to you at the traffic lights (assuming that we still have traffic lights in an age of electronically driven cars communicating in real time with traffic management systems). Instant voice messaging such as "Scotty, beam me up" will work, because the "Scotty" bit of the message tells your mobile precisely who it is it is meant for, helped by context analysis, and the whole message can be easily routed to him without any effort to dial or push buttons. Groups of teenage girls will love being constantly in touch with each other in this way. Most of all, flirting will become much easier. If you fancy someone on a distant bar stool, you will be able to send the message just by pointing your phone in the right direction.

And then of course, the communication itself will use all of the above technologies to allow you to effectively be with the other person. You will be able to shut out the real world and see only the computer-injected images, seeing the other person in full life sized 3D as if they were there, with 3D sound too. And the active skin will allow your nervous systems to be stimulated with signals that you already recorded before, such as what a handshake or a hug feels like. The same electronic signals will be put back into the same nerve ending they were recorded from, making communications into a full sensory experience.

And of course, it almost goes without saying that all the electronics to do all of this will be so compact it will fit into almost any piece of jewellery or onto a patch printed on your arm, so the physical phone might well have vanished into history, just three decades after appeared.

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