Inventors' inbox

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Star Trek inspired the original mobile phone design. Our tireless inventors, Mark Sheahan and Patrick Andrews, discuss possible shapes, sizes and functions of mobile phones of the future.

Patrick: Spend 20 minutes scanning any of the myriad gadget-orientated websites and it's staggering how many new mobile devices are made available for sale every day. There seems to be a huge pressure on people, especially young people, to be seen using the latest, fanciest (phone)+ (MP3 player) +(GPS)+(games system) +(projector)+(heart monitor). All of one's 'infotainment' available via a pocketable screen.

I must say, however, that the 'broadband' data rates my laptop dongle can currently achieve are unlikely to support very much more than a scratchy phone call on my regular train commute.

Mark: Yes, even more important than the 'infotainment' value, they are a status fashion accessory for many. I am sure there is an untapped market for empty shells of the latest gadgets.

Patrick: Hmmm, shells. I quite like the idea of using real shells, harvested from the beach as biodegradable (and even attractive) natural covers for mobile devices. They would certainly be strong and light as well as disguising the actual contents.

Anyway, until we get roll-up plastic screens, current devices tend to have a sliding or folding cover and a keypad. This is all a little boring (I blame the 'Star Trek' communicator/tricorder), so maybe it's time to come up with a whole new metaphor. How about a personal UAV which could follow one around, like a pirate's macaw, occasionally passing useful information?

Having a small projector on board would make it possible to have a fairly undistinguished, utilitarian shell and to project onto that a movie when the device is activated. Given that all these gizmos have a significant social display role; this could draw the required level of public admiration and shift the value from the hardware to the less-stealable media content. Maybe that's your empty shells market, Mark?

Battery life is still a major problem for all mobile apparatuses, so I'd like to see a clamshell design the halves of which would be sprung apart (when not in the sealed position). In-between usage periods, a sporty user could repeatedly (and probably ostentatiously) squeeze them together and thus store enough energy to charge the internal battery.

Mark: They (whoever 'they' are) have been promising us roll-up plastic screens for years but, they also believed we would have been holidaying on the Moon and all flying around in cars by now. The future is taking longer to arrive than expected.

I am already bored with the prospect of roll-up plastic screens anyway and want to jump forward two steps and have a virtual (UAV is not practical) Jeeves'/Guardian Angel Device (GAD)/invisible-friend/Man-Friday, six-foot white rabbit called Harvey or, indeed, a pirate's macaw, whatever you want to call it. Controlled via voice activation and speech, available 24/7 to answer all my questions, keep me updated on things which interest me, run my diary, answer the phone, translate, watch my back and much more.

Patrick: Many of these functions are actually available now, via your existing mobile. The only problem is that they aren't that well coordinated or personalised yet. AI simply isn't sufficiently developed to interpret signals from our 'real' world in the same ways as we do (is that my friend across the road or a potential mugger eyeing up my shiny new e-wallet?).

I'd also really like to see sensors which aren't yet readily available on board any mobile devices – such as those which measure atmospheric pollution levels or food hygiene via the chemicals which the rotting process generates.

Mark: Again, I would like to skip forward on your 'projector on board with the shell' idea and wait for moving 3D pictures, using holography, which would also facilitate the virtual imaging of my now not-so-invisible friend idea, called GAD.

Battery life is an issue, although physics is promising wireless power soon for mobile apparatus. I liked your sprung clamshell design idea, but felt it may not look cool playing maracas in public. A foot-walking action would work well, in your 'squeeze charging a battery' concept, in a shoe. There are, I am sure, already developing power-generating shoes available.

Patrick: The value of the portable hardware is generally high, which leads me back to the potential for robbery, sometimes even attack. That's why the Design Council are currently running the Designing-out-crime initiative.

Many of these 'smartifacts' are now getting so small that they are controlled using only a thumbwheel – i.e. with no keypad. This

probably makes them less visible to thieves... but I'd like to see something done to disguise the ear buds and cords which are still so prominent.

An obvious existing solution is to incorporate the speakers into sunglasses, but an even better idea might be to build them into the hood of a hoodie. Or one could disguise the device as something which most people see as having little value, like a paperback book.

Mark: To avoid being robbed of my GAD, all the electronics would be encapsulated in a back tooth, with links to the eardrum and vocal cord (for two-way audible communications). I would also change my hologram to 'Rambo', or turn it off completely. The latter, because you look mad talking to yourself and mad people are avoided and rarely mugged.

If you want to be seen, and not taken for that mad person, then ear buds are quite acceptable. Disguising high-value mobile devices in, or as, something else to stop them being stolen is fine, but sunglasses break easily, paperback books get borrowed and lost, and I certainly wouldn't want to encourage more 'hoodies' (unless very cold or they reverted to mugging each other). A hat is probably the better proposition.

Patrick: Anyway... you can currently buy a cameraphone with a screen which will redo the autofocus based on whatever point in the image you have just touched. I'd like to upgrade that, so that pressing a particular location on the screen determines your identity (via fingerprint) before allowing you to use the functionality of any other buttons.

In fact, I'd like to see a panic button which would, when the owner detected some threat, allow them to instantly a) take a snap of the assailant b) send all their stored data to a remote server and c) call the police (ideally with location information derived from the active cell's identity).

Mark: A touch screen with fingerprint reader abilities to gain *entrée* is great. As is the panic button idea, although I would suggest that you used a pressed twice panic button. The first press to activate 'a' and 'b' and the second 'c'. If in immediate danger, simply press twice, but press once if you just want to gain data in case it becomes a problem.

Patrick: I do have a particular problem with people shouting down the phone at me... so I'd like to see another software function built in which allows the earpiece volume setting to be adjusted, according to the incoming number.

Mark: A better option is to put the phone down on them, or pay your bills on time…

Patrick: Well, passing right along, as they say... mobile devices will soon, we are told, be used as a new form of credit card.

People using their mobile phones as payment devices could, before clicking 'buy,' be shown a photograph on-screen portraying the exact amount of money in their account before and after the transaction (in £5 notes and coins). This might ease the consumer credit disaster and encourage more frugality.

How about a dedicated module to closely monitor one's expenses? Each time some electronic outlay occurred, the system would ask "To whom is this chargeable?" and provide a list of possible tickboxes.

Given the parlous state of UK politicians, maybe we could scrap them altogether and equip the electorate with a referenda service via which they could respond to policy questions on their handheld device.

Mark: My GAD system would be programmed to sort all this out for me, advising on the purchase and only paying with my verbal agreement.

Unfortunately, we need politicians, but honest ones. Maybe, rather than scraping them altogether, we could incorporate a lie detector operation when purchasing so-called expenses?

Patrick: Nice one... but I reckon the lie-indicating LEDs would melt.

I particularly like the idea of mobile games and crowd participation. People who have bought a ticket for a football match, for example, using their mobile could, during a game, text the shirt numbers of their favourite players in order of preference to a telephone number set aside for the purpose. These would appear on a screen within the ground so that everyone could vote based on how everyone had just voted. These data would change over time – influencing substitutions and even, over the course of a season perhaps, transfer fees.

Say, you watch a movie on the handheld system and it monitors your pulse rate (I just spotted this type of detector actually on sale); this information is gathered and used to work out how many bits were exciting and thus automatically rate the production. This figure could be collected for lots of films (and viewers) and the statistics used to crowdsource reviews.

We might also consider some social networking applications...can you currently get a proximity detector which beeps when members of my LinkedIn groups are in the vicinity?

What about a celebrity detecting application? Spot some C-list micro personality, call in their location, plus a photo, to a central server and watch the autograph hunters descend like locusts.

Mark: I suppose you could play games like 'I spy' and 'tag' (also known as 'stuck-in-the-mud') with your GAD, or get it to teach you how to dance, hit a cricket or golf ball. All very empowering stuff, in the right hands.

Patrick: Hmm. Not sure how the required level of control might be achieved.

It's generally true that interfaces drive people mad... so how about a mobile phone which allows the user to 'play' it at different levels? Choosing 'beginner' would present only the basic functions – the kind of stuff my mother would want. After a while, an option to upgrade to the next interface level would be offered (and probably declined).

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A search carried out by the British Library Research Service (www.bl.uk/research) on 'roll-up plastic screens', revealed four patents US2009073127-A1, US2008247126- A1, JP2007286094-A and US2007211036-A1 which can be viewed on Espacenet. Readers can send their thoughts to engtechmag@theiet.org.

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