



THE NEW BODY LANGUAGE

Scenarios of a generational shift

The future appears as a strange, distant vision but meets us as a familiar, comfortable present, each step along the way offering us fluency in the new languages our technologies enable.

Three scenarios take us into futures where body area networks teeter on the brink of familiarity, a generation from now. Heads of state and protesters on the street alike adopt this new technology. It's there for the most intimate moments of our lives and the most shocking turning points in history. The scenarios depict strikingly different uses of this new body language—drawing our attention to how intentions may be highly individual, but interact in dizzyingly complex ways.

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the **new body**
LANGUAGE

the future of wearables, wireless, and body area networks



INSTITUTE FOR THE FUTURE

TECHNOLOGY HORIZONS 2015



32°

39°



999

emt called
eta 16 sec.
emergency:
heat stroke

PAPERS, PLEASE

In this scenario, body area network technologies are commonplace and diverse, but with different rules and affordances in different parts of the world. As they start to encompass a role combining personal information system and personal identification system, some nations may begin to require their use by all citizens... and even all visitors.

When I finally got a chance to visit Scotland, everyone joked about the weather and the food. Nobody mentioned the passports.

That's not what the newly independent Republic of Scotland government calls them for citizens, of course—that's a bit too reminiscent of a 20th century dictatorship's "internal passports." But everyone in the RS, citizen or visitor, needs to carry one of these little widgets on their person. I'm told that locals prefer an earpiece or ring, but a tourist like me gets a simple wristband.

Like lots of things these days, it immediately wanted to partner with my mobile, only there was no "would you like to..." involved—it just did it. I guess it used some kind of government-only backdoor. My malware monitor app immediately traced where it connected, but it appeared only to be piggybacking on the GPS and crypto-identity functions, at least at first.

I will say that the passport made it much simpler to be a tourist in Scotland than I've ever experienced anywhere else. Doors opened automatically for me, both literally and figuratively. The passport pulsed on my wrist to give me directions, so I never got lost, and I could pay for things just by waving or nodding my acknowledgement of the purchase, so currency exchange wasn't a problem. It also gave me a haptic signal when I was putting myself at risk, and while that took me awhile to get used to, I did manage to avoid one of the anti-war marches that way.

Far and away the most useful—and worrisome—bit was when I was overcome by heatstroke. Edinburgh is still not fully adapted to regular 35°C

summers, and the lack of aircon (and my own failure to drink enough water) left me on the verge of passing out. Because I hadn't recognized that the passport had been buzzing warnings at me, it took action on my behalf. By the time I realized that I was feeling dizzy, medical responders had found me, my doctor back home had been updated, and my emergency contacts had been messaged, twice. I knew that the wristband included some basic biomonitor functions, but I was a bit startled to find that the RS tourist passport did that forced-connection thing to my healthware implants, too.

I've never really liked the "all in one" body network systems that assume you want everything to talk to everything else. I like being able to mix up the kinds of technology I have on me (and in me), and more importantly to be able to decide on my own what can connect to what. I intentionally keep my healthware isolated from my mobile, my clothing, and my homeware—there have been too many cases of hackers and viruses attacking implanted systems. I may be paranoid, but I grew up in the Age of Anonymous—I know that everything can be hacked.

After I got home, I checked the malware monitor's forensic records. Apparently, the passport only began to search for standard healthware devices when my body temperature and heart rate started to increase. I suppose I should be glad that it waited until there was some sort of need for that information before taking it without asking. But it does make me wonder what else the system might have decided on its own that it needed, and whether I'd ever be allowed to say no. ■

MEMORY

In this scenario, personal area network devices and accessories—PANDAs—are most widely used as health and biology monitors, keeping close watch over numerous physiological functions. Now, a new generation of device has made it possible to “write” as well as “read” biological responses.





My doctor wants me to get rid of it. My meditation group wants me to release it into the wild. And I swear to God that I've been repeatedly asked to sell it. But it's the last I have of her, and I'm going to keep it for as long as I can.

Isabella—Izzy—loved toys, romantic gestures, and travel. I suppose that's not altogether unusual, but it did mean that she was a very early adopter of the Heartwave mod for our PANDAs. She said it was so that she could feel my love for her when she was out of the country, but at the time I suspected it was also (more?) because it was a piece of tech that nobody else around here had. No matter now, but after the first time we tried it when she took a trip we knew we'd never want to get rid of it.

I'm still not even entirely sure how it works. It ties into the bioreaders everybody wears, and tracks the various body signals of emotion (heart rate, adrenalin, dopamine, and the like). It also can induce those same signals, at least in a limited way (using some kind of direct neuromagnetic stimulation, I think). It's kind of an odd sensation at first, familiar yet foreign, deeply intimate but clearly externally-generated. But the instant when you know with certainty that this sudden emotional wave you're feeling is coming from someone you love is mind-blowing.

Izzy described it as half-waking up in the middle of the night and feeling your partner's toes touching yours in bed. Gentle contact, but unmistakable and present. We even played with the recording function, layering playback over the real-time emotions.

If you've ever tried a Heartwave, you know that it doesn't just send warm fuzzy feelings.

I've read that the number one reason people get rid of a Heartwave setup is that they can't stand feeling someone else's anxiety or passing moments of anger. With me and Izzy, it was different; rather her feeling my anxiety, sending anxiety in response, and each of us making the other feel worse, we seemed to read each other's complementary disquiet as a reminder that we'll always be here for each other. We'd calm each other down. It's not an unusual response with a Heartwave, but unfortunately it's not universal.

When the... thing... happened, Izzy was halfway around the world, riding back to her hotel, and I had just gotten up for the day. We could feel each other, that gentle contact, rewarding and calming. I could tell she was tired, somehow, and just beginning to doze off in her seat.

The fear spike was so strong it knocked me down. My own anxiety shot up both in response to and in alignment with hers. Then, just as fast as it rose, it came down, leaving us feeling a dizzying warmth and love. For five long minutes I could feel that love, holding on as tightly as she could, then finally fading. Well before the authorities contacted me, I knew what had happened.

I replay those last five minutes every morning, always starting with the fear spike. It's as much hers as the love. It's not because I can't let go. It's because I don't want to. ■

X-RAY VISION

In this scenario, body area networks (here known as “selfies”) are universally Internet-connected, uploading realtime information (health, location, environmental data) to the cloud. Although the information is private, it may still be accessible to governments or to the device manufacturers.

Hayward '26 wasn't the first time health monitor data could be used to analyze a big event, but it was the one that everyone noticed. Hayward Alpha hit at 4:40 in the afternoon, when most people were heading home from work or chores. Heart rates jumped when the 6.3 quake hit, staying high throughout the 90 seconds of shaking. Unsurprisingly, the pattern of racing hearts matched the propagation of seismic waves from the quake's center, racing north up the fault line, moving more slowly through the Oakland hills.

Interesting enough on its own, but it was the readings from Hayward Omega an hour later that really got people's attention. The 7.8 was terrifying in and of itself, but coming just as the initial panic from Alpha was settling down pushed residents to new levels of panic, triggering hundreds, possibly thousands, of fatal heart attacks. Omega knocked down pretty much every sizable building in the region that hadn't been brought up to the latest earthquake codes, trapping over forty-two thousand people when they collapsed. Looking at the heart rate data from immediately afterwards is gut-wrenching: spikes of panic, followed by ongoing waves of heartbeats dropping to zero.



Selfies were fairly primitive in the 2020s (I think they were still called “wearables” back then), but while today’s richer sensors and stronger analytic systems offer us much more information, we still (fortunately) haven’t duplicated the visceral shock of watching the heart rates after Hayward ’26.

The crackdown on the Climate Marches in Sao Paolo comes close, however. Although most of the post-industrial world has moved to new models of civic authority, Brazil is one of the countries that still holds onto its police-based law enforcement system, with all of its faults and legacies. The demonstrations in April of 2038 brought out the worst in people, both civilian and police. Nearly three dozen citizens died in custody, but (as intended) flying eye microdrones documented everything. Video archives of the events of that evening matched the police reports exactly (in retrospect, that alone should have raised suspicion). Family members claimed that the arrestees had been killed by the police, but there was literally no evidence to support those assertions.

Until somebody started looking at the selfie biodata, that is. While the Sao Paolo police hackers had done an outstanding job of altering the video, they couldn’t (or didn’t think to) alter the data collected by the selfie implants and digital ink

tattoos. Although the video recordings from multiple perspectives seemed complete, victim health data captured and stored by the sensors told a very different story.

Within three weeks, the Sao Paolo Police claims had completely fallen apart, as every impact, every electric shock, every choke-hold had been meticulously documented by the victims’ bodies themselves. Some of the victims had newer systems, able to track body posture, limb position, and motion, allowing investigators to construct painfully life-like simulations of the events of the night of April 13, 2038. Evidence of the deliberate alteration of the video material soon followed.

While the Sao Paolo violence didn’t approach the sheer scale of Hayward ’26, the complexity, the completeness, and ultimately the intimacy of the selfie data gave it nearly equivalent emotional weight. By the end of 2038, people around the world knew what had been done, the names of the accused, and the faces of the victims. Because their bodies could remember what happened, the world could remember, too. ■



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