Automated Trust Machine 101

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Abstract
It is my thesis that Automated Teller Machines (ATMs) represent potentially strategic sites for the development of products, services and models addressing social needs.

This paper acknowledges the ATMs status as a networked entity. It describes potentials within an ATM environment expanded through digital networks. New configurations and functionalities illustrate latent possibilities for the imminent future. These can be understood as design fictions or as embryonic, applicable design proposals. It is hoped that others will respond to the presentation of this hybrid environment in kind.

ATMs are public-facing. Could they serve the public(s) better? In the wake of the 2008 financial crisis, in what circumstances might banks collaborate with communities to address social issues?

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ACM Classification Keywords
Design

Introduction
An Automated Teller Machine (ATM) is more than a cash-dispenser. It is a computer. Many if not most run Windows XP. There are 2.2 million of them installed in city walls, lobbies and shops worldwide [1]. According to Retail Banking Research this number is growing and there will be more than 3 Million by 2016 [2].

The ATM is networked. It has limited processing power and memory, but can now borrow functionality and capacity from other networked devices. Smartphones

have already been co-opted as facilitators of cash withdrawals via QR-code reading apps developed by ATM manufacturers NCR and Diebold. The customer sets up a transaction in-app before arriving at the ATM. The phone is then used to scan an on-screen QR code. The information is sent from the phone, via the web, to the ATM. When the ATM receives confirmation of the symbol cash is dispensed.

Convergence

This application demonstrates one possible convergence of app, smartphone and ATM, delivering one possible service. As Apps proliferate possibilities are multiplying. In October Apple announced that there were one million apps in the AppStore. According to the AppBrain website, there are currently more than 1,330,000 Apps available to Android users [3]. Typical in-built smartphone features such as the touchscreen, Global Positioning System (GPS), or ambient light sensors, could also offer the ATM Central Processing Unit (CPU) new types of input.

As the basis for speculative design fictions, this environment in which the public-space-facing ATM delegates or is delegated by other networked devices provides a rich seam of opportunities for numerous new services and behaviours.

One possible configuration sees the smartphone's native Global Positioning System (GPS) or Bluetooth capabilities enabled to confirm the proximity of a customer's phone to an ATM. Unlike the QR-code security application, the smartphone could remain hidden from potential thieves. In this scenario transaction-approval requires an extra, discrete layer of security pre-selected by the customer through online banking. It is less likely a thief will have both phone and card.

The combination of an app that tracks friends with the networked ATM and online banking can ensure access to holiday savings only when all joint account partners are present, avoiding one party dipping into the account early.

Another configuration combines an iPhone's three-axis gyro and accelerometer movement sensors with an ATM to enable customers to enact complex dance moves rather than press keypad buttons when checking balances or shifting money between accounts.

Such adaptations have consequences for ATM-crime. Movement-based pin input would dramatically change the parameters for thieves attempting to video pin numbers. Although it is easier – and less remarkable - to film people dancing for the ATM, interpreting digits would be difficult. Criminals wishing to illegally access accounts might need to practice moves together discretely, sharing feedback and encouragement. The system is more secure if customers set up personalised dance routines at home. Extra moves can be added to confuse onlookers, much as customers are now advised to cover their pins by police and ATM deployers.

These example configurations focus on new inputs that retain traditional outcomes. Despite the suggestion of increased fun, they also remain within a security context. Alternative outputs using the ATMs existing capabilities might include audio speakers playing a bespoke signature tune on completion of a transaction, or printing coupon-codes for local shops onto receipts.

Banks or Urban Planners might worry about encouraging people to linger at the ATM, potentially annoying other users, adding friction to transactional environment. Digital outputs can avoid this. Paperless coupons sent to a customer's phone on completion of a transaction could include directions to the shop or service.

Coherence

Increasingly coherent scenarios emerge when inputs, outputs and extended remote interaction time are considered. Customers could choose to reward themselves for shopping locally by signing up to a charity such as the UK's Making A Difference Locally. We can envisage a scenario in which the charity incentivises local shopping through a digital coupon scheme. This is part-funded by local government relaxing rates as they do (in the UK) for property owners who allow 'pop-up', 'meanwhile' uses of unoccupied shops. The customer knows that they will be scored – and rewarded with discounts and other benefits for – use of local, independent shops and services. The ATM acts as a community node, as do local independent shops. A virtuous cycle incorporating these nodes, as well as the customer, reinforces a local payments ecosystem. The bank, the charity and the ATM all play roles in facilitating the consumer choosing to support local shops and services. The bank benefits from being seen to support the local community. In addition it becomes possible for banks to use customers data to target advertising to them both online and at the ATM, by linking online data with information about personal expenditure. It sells super-targeted advertising space on its ATM to businesses at rates tiered in favour of the local and the independent.

With one in every five people worldwide owning a smartphone and at least half of all Western Europeans [4], and both figures predicted to rise steeply, phones seem a logical choice for exploring what the extended reach of an ATM might be for the near future. Yet there are many more networked devices potentially available to the ATM. Nearby, in branches, there are networked computer input and output devices such as keyboards and cctv cameras that might also extend the range of influence of the ATM. If customers could select online to only withdraw money from lobby-based ATMs, then they are effectively co-opting the banks CCTV cameras to watch every time their card is used.

There are countless configurations possible. The number is growing exponentially. It is highly probable that amongst this vast array there are some that could be beneficial to banks, their customers, other users of public spaces. From a Critical Design perspective, the presentation of these scenarios works as a tool for understanding retail banking in terms of social engagement in an increasingly technologically convergent world.

The Automated Trust Machine

Banks sell trustworthiness. They must convince customers they are safe places to deposit money. No doubt this will condition what is or is not palatable to them in terms of developing their ATM offer. But given the extents of the possibilities available, it is perhaps worth it to the banks to explore this new ecosystem – for profit, for profile or for people's trust. As that is what customers give their banks in exchange for the use of their own money.

Not every possible configuration is desirable for ATM-users or other users of public space. Perhaps it is worth considering what you might demand before parting with your next €20 worth of trust.

Further possible networked input devices include: image scanner, webcam, joystick, Wiimote, digital camera, fingerprint scanner, laser range finder, medical ultrasonography, light gun, balance board, fishing rod, sega toylet, microphone, guitar, turntable, camera flash, kinect sensor, ambient light sensor, mouse, nightmode camera.

Further possible networked output devices include: LCD projector, 3D printer, Braille embosser, plotter, light field display, holographic display, tickertape, 'idiot' lights, roll sign, tactile electronic display, cooker, fridge, domestic lights.

And so on.

References

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