

The World Beyond Passwords

Metacog Patent Research

Issue: 2

At a Glance

With the advent of more sophisticated technologies, the passwords might soon be relegated to being a relic. The organic evolution of passwords from a string of alphanumeric characters, to CAPTCHAs, and to two-factor authentication has led to the adoption of schemes such as facial recognition, speech pattern detection, keystroke dynamics, and the like. Now smartphones are being considered as the new key to help secure the information security portal. In this edition we take a look at the password-less canvas of the digital world. The prime focus is how smartphones are poised to revolutionize the information security constellation.

Figure 1: Dilbert by Scott Adams



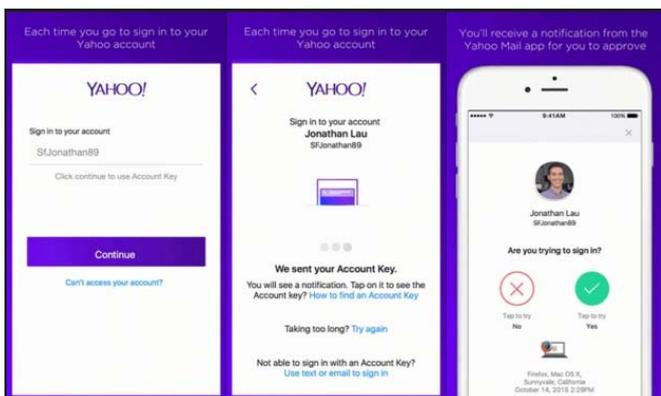
Key Smartphone based Schemes

Here is a rundown of a few interesting smartphone related technologies in the quest of improving user authentication practices:

1) Mobile based approvals

Smartphones are linked to email accounts to provide a more stringent layer of security. Two-factor authentication has been around for a while, wherein two distinct data points of a user were pieced together to confirm identity. For example, a password and an OTP received on a phone. The concept of entering password is now been succeeded by a singular mobile based approval scheme. Yahoo's Account Key is a representative example. When a user attempts to access Yahoo Mail, he/she is no longer expected to enter a password. The Account Key pushes a notification to the mobile phone linked to the user's Yahoo Mail, and allows access when the user indicates a "Yes" selection on the interface.

Figure 2: Yahoo Account Key (The Associated Press)



Another company active in the “sign in with your phone” scheme is Google. Further, the company plans to implement a trust score for each application. A trust score takes into account location, facial recognition, and typing patterns. More critical apps would require a higher trust score for authentication.

2) Fingerprint detection

Apple iPhone’s built-in TouchID fingerprint reader is a popular scheme to unlock the phone. The company is now enabling developers to create apps that lets users log-in via fingerprint authentication. For example, J.P. Morgan Chase & Co. has incorporated Apple Inc.’s Touch ID authentication for its mobile app.

According to a research done by SourceDNA for The Wall Street Journal, of the top 2,000 free iPhone apps in the U.S., 7.5% use Touch ID.

Figure 3: Anatomy of smartphone security schemes



3) Speech and facial detection

Companies, particularly banks, are now experimenting with facial and speech recognition in mobile apps. Wells Fargo has developed a biometric tech with the help of SpeechPro, wherein first a user’s face is detected and then the user is expected to recite a few phrases or numbers to correlate the speech patterns.

Mastercard is also launching a pilot program called “Selfie Pay” that uses facial recognition technology to verify the identity of a smartphone user. Similarly, HSBC and USAA have also rolled out a feature allowing users to identify themselves with a selfie.

Extending the smartphone based verification scheme, Citigroup is testing cardless and screenless ATMs controlled by smartphones, called the “Irving ATMs”. A user can access the ATM via NFC based smartphones after scanning a QR code printed on the Irving ATM. Further, the user can be verified using fingerprint, facial recognition or iris scanning.

4) Doodling

A free-form drawing scheme, called doodles, is arguably a safer technique for protecting smartphone data. Researchers from Rutgers University have claimed that a free-form gesture (such as a geometrical shape or pattern) is faster and harder to guess.

Figure 4: Why Doodling Trumps Text Passwords; Photo: Cameron Bowman



Noteworthy Patents

Let us take a sneak peek at some patents related to smartphone based authentication schemes:

1) User authentication in a communication system utilizing biometric information: Patent# 6104922, filed by Motorola in March 1998

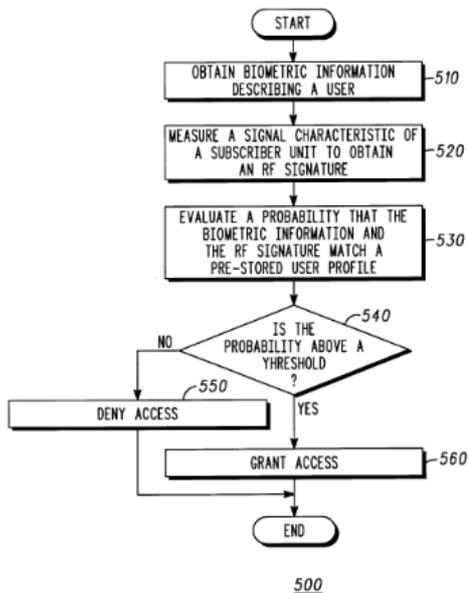


FIG. 5

2) Secure communications smartphone system: Patent# 8838071, filed by Oto Technologies LLC in April 2014

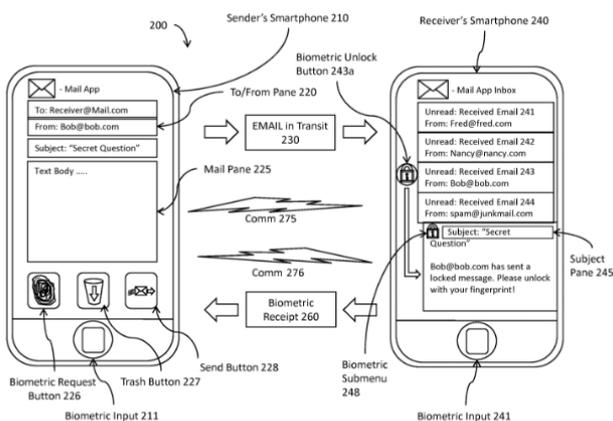
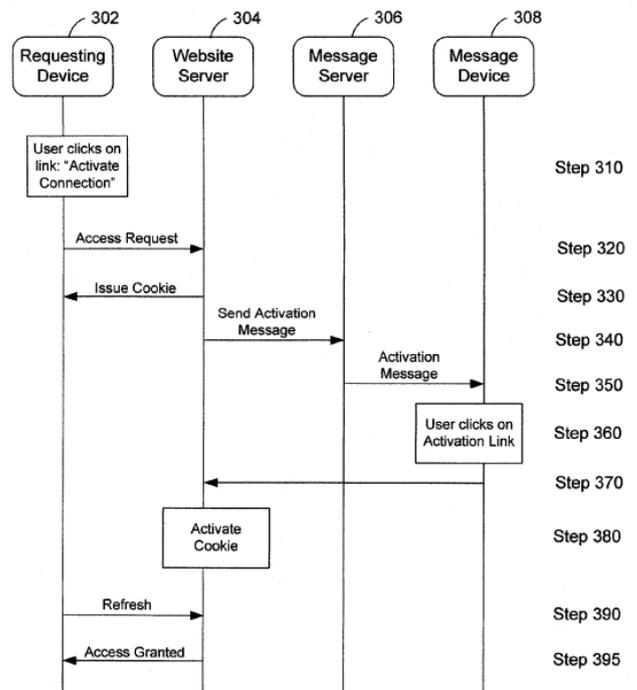
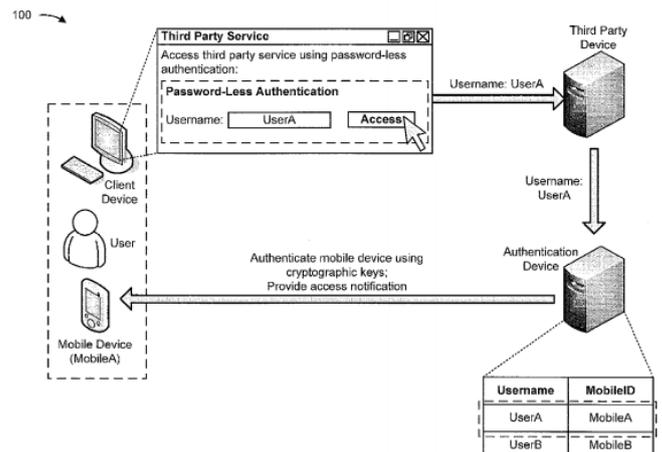


FIGURE 2

3) Method for authenticating a device connection for a website access without using a website password: Patent# 9325684, filed by Qualcomm in August 2013



4) Password-less authentication service: Publication# 20150249540, filed by Verizon in March 2014



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