Case Study:
Pay By Touch Leaves Its Fingerprints on SAML 2.0

Introduction
Supermarkets like Piggly Wiggly, Food Lion and Scotts let customers check out using fingerprints and biometric technology. In Midland, Texas, West Texas National Bank uses biometrics to speed up check cashing. Citibank Singapore now offers biometrics options as part of their platinum credit card product suite.

These are just of the many organizations that are deploying biometrics solutions developed by Pay By Touch, a technology and payments company headquartered in San Francisco.

But by far, the most exciting Pay By Touch application is around federation and how Pay By Touch is enabling individuals to authenticate themselves online and begin federating with SAML-enabled partners. Pay By Touch’s federation product is called TrueMe and it is poised to dramatically improve identity security on the Web.

How TrueMe Works
Biometrics refers to the automatic identification of a person based on his/her physiological or behavioral characteristics. This method of identification offers several advantages over traditional methods involving ID cards or passwords. A key advantage is the fact that with biometrics, the person to be identified is required to physically present their “biometric” identity (e.g., provide a fingerprint ID) at the point-of-identification.

TrueMe is the first on-demand biometric identity provider service. With TrueMe, a consumer can have all their biometrics information securely encrypted in a hardware device where it is never exposed to the consumer’s PC. In this framework, this identity information becomes the authentication mechanism into the identity provider. When the consumer wishes to authenticate his/her identity online, the consumer simply swipes his/her finger image across a TrueMe-certified biometric finger sensor that is either built into the computer or attached to it via a USB cable. Then via SAML 2.0, the identity provider is able to federate TrueMe accounts the consumer might need to access on the Internet.

With TrueMe, the need to remember, maintain and type in passwords is eliminated. And, because a finger is a truly unique identifier, it is more secure than other authenticators such as signatures, PINs, and even photos.

“The ability to separate out authentication and biometrics from the resources that you access on the Internet is very important to people today,” Thomas Hintz, the chief architect at Pay By Touch, “People may have 20 or 30 different passwords and a lot of times, they use the same password and if one password is breached it could be used to access their other accounts. It’s a house of cards and the only way to mitigate this is through standards.”

Focusing on SAML from day one was also an important element to the project. “We’ve looked at open ID. We’ve looked at Microsoft CardSpace and you know, on our roadmap, we do plan to adopt as many of them as are viable, but we chose SAML as the first one because of the maturity of the products in that space,” said Hintz.

The use of standards have been key to facilitating this maturity. Liberty’s Alliance’s standards like SAML 2.0—which are based on well-defined marketplace requirements—have strong marketplace momentum, as evidenced by the broad range of vendors who have committed to implementing the standards and the number of deployer RFPs that mandate them.

“50 years ago, credit cards were considered taboo. 30 years ago, nobody thought ATMs would catch on. 15 years ago, only researchers used the Internet. Biometrics’ time has arrived.”

Bill Townsend
executive vice president,
Pay By Touch
“The use of standards is a key step in fostering interoperability, facilitating industry growth and limiting proprietary implementations,” said Britta Glade, the chair of the Liberty Alliance identity theft special interest group and Liberty’s director of marketing. “Using standards is a way of making your bet ‘safe.’ PayByTouch is smart to recognize there are multiple specs out there, and to have long-term plan to support them but starting with what’s proven and mature helps insure deployment speed and adoption.”

TrueMe Pilot Takes Off

TrueMe was initially piloted by Pay By Touch’s sales team to access their Salesforce.com application via biometrics. Instead of logging in with their user names and passwords, they simply swipe their fingers.

In addition to the Salesforce.com interface, Pay By Touch has a “live” partnership with Oracle and WebEx. At WebEx, Pay By Touch is building an interface to biometrically logon to WebEx and WebEx-based supported applications. “We’re also having in-depth discussions with every major PC OEM provider because more and more they are enabling their laptops and desktops to have biometric readers. Obviously, they want to create value for those products which our federated model provides,” said Keith Towne, Pay By Touch’s vice president of business development. “But where we see the greatest potential for growth is in online access for things such as e-commerce, banking, e-mail, ISP login, and subscription services.”

Currently, Pay By Touch is in discussions with four U.S. banks and a major international bank to rollout TrueMe. Beginning with employees and cash management customers, then expanding to customers, the banks hope to counteract what Gartner research uncovered, which is that 57% of consumers who have lowered their online activity, and 43% of Internet banking customers, have done so because of increased security-related concerns (source: Gartner, August 2006).

TrueMe is also part of Oracle’s Extended Identity Management Ecosystem and Reference Architecture, a program that makes it easier for organizations to unify siloed security technologies into a comprehensive, standards-based identity management framework. With TrueMe, users can access Oracle database applications and suite of Oracle products via biometrics. This interface is up and running today and is an available product.

TrueMe ID: How it Works

1. The user navigates to a Web site that accepts TrueMe.
2. The Web site presents an i-frame that sends a signed SAML AuthnRequest to Pay By Touch
3. A secure tunnel is established between the user’s biometric sensor and Pay By Touch
4. The user’s template is extracted and encrypted on the biometric device and securely transmitted to Pay By Touch.
5. Pay By Touch verifies the device key and the user’s template, providing minimum two-factor identification
6. The user’s acceptance is redirected to the website with a signed SAML AuthnResponse
7. The Web site verifies the AuthnResponse and logs the user in, never having to reveal the customer’s username or password to Pay By Touch or through the browser
Benefits to Service Providers

The Service provider benefits are considerable. TrueMe is dealing with government and private organizations that need to verify age online – for purchase of age restricted items or services. It can help online communities like social networks block criminals and predators from joining.

On the e-commerce side, payments are faster via a secure “one-swipe” checkout feature. Pay By Touch is currently working to match their biometrically accessed electronic wallet, which can contain checking and credit account information, health insurance accounts, and loyalty accounts, used at more than 2,800 retail locations with the TrueMe service, thereby allowing online retailers to process payments over the lower cost automated clearing house network as opposed to high interchange rates charged by the credit card associations.

Based on Pay By Touch’s retail experience over the past few years, fraud and identity theft is virtually non-existent when biometrics are deployed, because, quite simply, crooks don’t want to give their fingerprints during the commission of a crime.

“66 percent of consumers worldwide also favored biometrics as the ideal method to combat fraud and identity theft as compared to other methods such as smart cards and tokens”

Unisys Study, April 26, 2006

“Technology also can substantially improve the authentication process by, for example, the use of biometrics to authenticate the consumer’s identity, making it less likely that a criminal can gain access to another’s account.”

President’s ID Theft Task Force, Interim Recommendations, September 19th, 2006

“Given the foregoing analysis, Endpoint predicts that fingerprint readers will proliferate widely, and shipments of embedded readers in notebooks and desktops, which are expected to hit 15 million in 2006, will reach 228 million in 2011.”


A study of U.S. online adults found that biometrics was the most popular strong authentication method, she said. When asked which method they would prefer if they had to choose something besides a password, 30.7% of respondents selected biometrics, while 18.1% chose a keyfob that plugs into a computer’s USB port and 18% chose a smart card and reader.

Gartner Survey, August 2006
The Perfect Storm for Biometrics

The time is right for biometrics. There’s consumer demand for faster and more secure payment and identity. Worry over identity theft is at an all time high. Technology like TrueMe exists to make what was once totally futuristic now entirely possible. And, what’s more the standards are in place—to enable widespread adoption.

About Pay By Touch

San Francisco-based, Pay By Touch (www.paybytouch.com) develops biometric authentication, personalized marketing and payment solutions. To date, patented Pay By Touch™ biometric services enable over 4 million shoppers in the U.S., Asia and Europe to quickly and securely use a finger scan to access personalized offers, make purchases, and cash checks at more than 2,600 locations nationwide. The company also provides robust payment processing solutions for ACH (electronic checking), card-present and card-not-present debit and credit transactions. Over 60 issued and 175+ pending patents worldwide covering biometrically authenticated financial, membership or loyalty transactions and/or age verification.

About Liberty Alliance

Liberty Alliance is the only global identity organization with a membership base that includes technology vendors, consumer service providers and educational and government organizations working together to build a more trusted Internet by addressing the technology, business and privacy aspects of digital identity management. The Liberty Alliance Management Board consists of representatives from AOL, Ericsson, Fidelity Investments, France Telecom, HP, Intel, Novell, NTT, Oracle, and Sun Microsystems. Liberty Alliance works with identity organizations worldwide to ensure all voices are included in the global identity discussion and regularly holds and participates in public events designed to advance the harmonization and interoperability of CardSpace, Liberty Federation (SAML 2.0), Liberty Web Services, OpenID and WS-* specifications.