ATS
EVERY SECOND COUNTS

Body As Credential

Rapid advances in biometric identification technology will eliminate the need for paper and electronic credentials, to the benefit of corporate time and attendance, workforce management, and security efforts.

by Larry Dawson, Accu-Time Systems

In Conjunction With

RETAIL SOLUTIONS ONLINE

"The gears of innovation never cease their meshing turns and we are rapidly heading toward a time when the human body will be our only credential."

Futurists envision a day when scanners will read our DNA strands and identify us, unerringly, from afar. They imagine us walking into banks, stores, offices, factories, police stations, and government buildings and instantly being recognized. Clothing, masks, wigs, prosthetics, and other disguises intended to deceive will be rendered moot as remote detectors sample and compare our genetic fiber with massive databases and return not only our identity, but all of the information accumulated about us throughout our lives.

Modern hand vein reading technology would appear as witchcraft to someone living in 1780. Likewise, the not-too-distant future's identification science seems frightening and piercingly intrusive to us today. But the gears of innovation never cease their meshing turns and we are rapidly heading toward a time when the human body will be our only credential. Swipe and proximity cards, key fobs, barcodes, fingerprint readers, RFID tags, and other identification methods common today are eventual relics.

Engineers of tomorrow will be devising systems that will, in mere seconds, sample, deconstruct, compare, and match the ordering of each of our base pairs of adenine and thymine, guanine and cytosine, the amino acids from which our DNA is built. Individuals attempting to spoof these systems will be up against match probabilities that are currently accepted to be 1 in 5 million. In highly secure environments DNA match data will be combined with biomorphic identification, retinal scanning, and whole body blood path maps. Such a person-specific template will be impossible to fool.

The fields of workforce management, access control, security, and identification will appear unrecognizable through today's lens.

Biometric Technology: Here Now, Here To Stay

This musing may seem fanciful were it not for the advancements toward this state that have already occurred. There are several amazing technologies that have been deployed through the past twenty years. Some proved to be impractical and others were invented before society was ready. But some have actually been incorporated with success.

Iris scanning is a fine example of a leading edge biometric technology that is now being commercialized. Although the concept has existed for many years, powerful computers and cameras are now low cost enough to make imaging a human iris, selecting unique minutiae points, and creating an arithmetic template viable for wide usage. The pattern of the human iris remains constant throughout one's life. Iris scanning is used primarily in access control applica-

tions but is approaching a price point where it will become practical for use in time and attendance applications. The only other obstacle to overcome is the apprehension of having a picture of one's iris captured.

Vein pattern recognition is another technology that has found its place in multiple uses. The technology uses optics that "see" beneath about a millimeter of skin and use the light absorption of blood cells to create a vein pattern map. Unique points along that map are chosen and those collected points become a template against which other vein patterns are compared for identification purposes. Currently, veins and capillaries of the human hand or individual digits are imaged. When these vein maps are combined with templates of topical surfaces, like a fingerprint or palm print, the error rate drops dramatically and the ability to fool the system drops significantly.

Facial recognition technology costs are low enough that it is beginning to appear in both mobile and fixed time and attendance devices. This biometric technology is compelling, but it isn't quite ready for broad usage since the error and false acceptance rates are still too high to be acceptable. But, facial recognition is rapidly improving, and in five years it might be an acceptable alternative to the ubiquitous fingerprint readers that have been in usage for twenty years.

There are several other interesting technologies like body odor, human gait, voice analysis, body geometry, and thermal body scanning that are being experimented with and deployed in beta form. It is unlikely that all of these technologies will become viable; the invention freeway is sprinkled with promising but failed technologies. But, eventually, the most efficiently practical and cost-effective technologies will win in large-scale adoption. Although government agencies and defense departments get the coolest stuff, those technologies are often far too expensive to deploy, maintain, and operate for commercial acceptance. And that is what drives biometric adoption for mainstream applications.

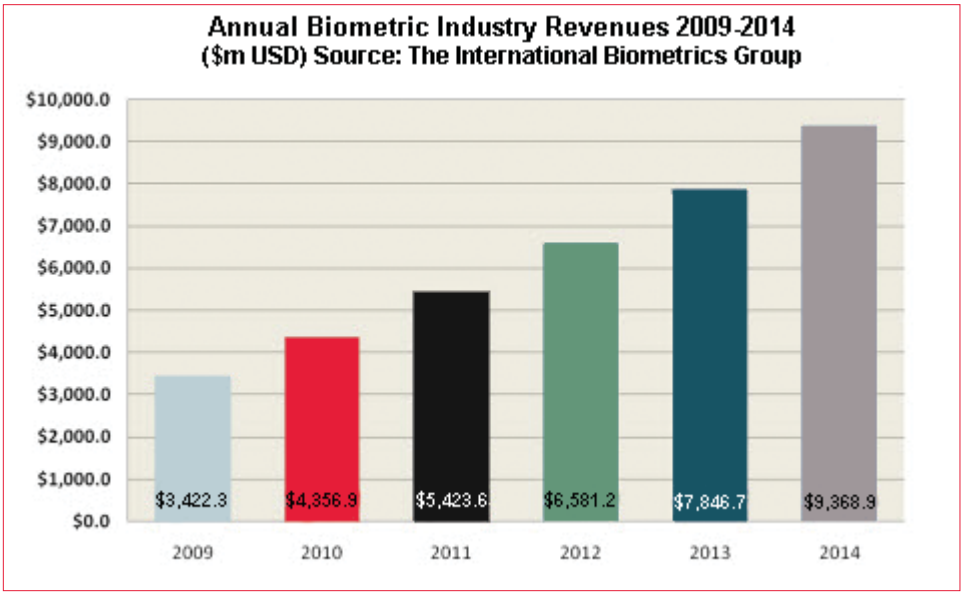
"The most efficiently practical and cost-effective technologies will win in large-scale adoption."

Government, Civic Biometric Projects Push Private Sector Adoption

Since the war on terror began one infamous day in 2001, governments worldwide have implemented sweeping border security reform, and biometric technologies have played a key role. Biometric passports and other biometric technologies have become central to the development of automated border control and airport security in China, the UK, Germany, and Spain. And in 2010, India's UIDAI

"The International Biometrics Group says we can expect to see more than $9.3 billion in biometric technology and applications spending across the public and private sectors by 2014."

(Unique Identification Authority of India) launched an aggressive unified identification project dubbed Aadhaar, which aims to gather the fingerprint and iris data of the country's more than 1.2 billion citizens for a wide range of security and authentication purposes.



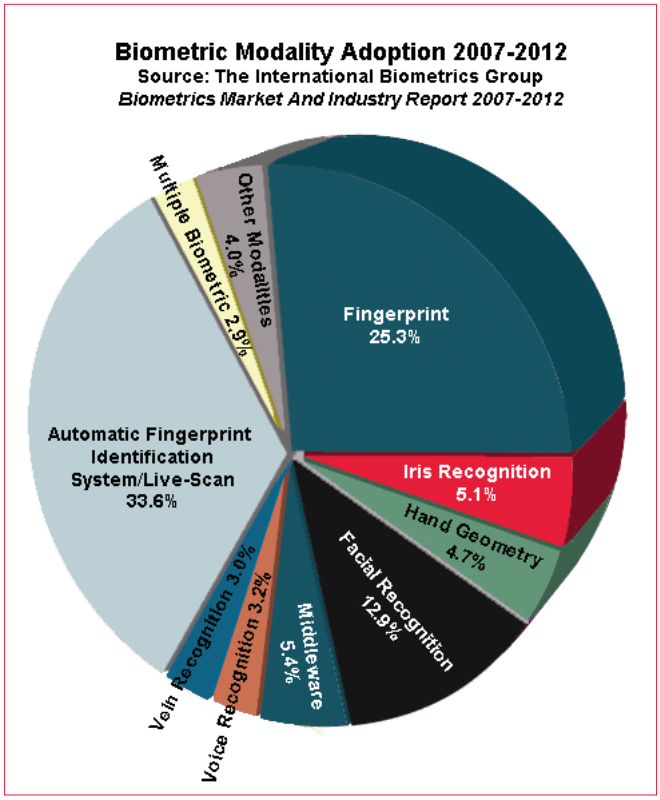
In the U.S., the National Science and Technology Council is coordinating the advance of biometric technologies among a host of government agencies including the DHS, DOD, FBI, ICE, and all branches of the military, primarily for international security and access control applications. It's major government-funded projects like this that led Frost & Sullivan to peg growth of the global civil and military biometrics market at 14% annually. As private enterprise rides the coattails of government and civic adoption, the International Biometrics Group says we can expect to see more than $9.3 billion in biometric technology and applications spending across the public and private sectors by 2014, while the research firm Markets & Markets says 2015 spending on the technology will hit $11.2 billion.

Practical Business Applications For Biometric Technology

Accu-Time Systems is in the human capital information systems business. The company manufactures hardware and software used in time and attendance, workforce management, and employee self-service. Providers in these markets care about four things: who, when, where, and what. The questions that need answering are; who is the employee using the device, at what time, in which location, performing what function?

The most critical of these questions is who? Employees fraudulently posing as other employees cost enterprises millions of lost dollars per

year. Otherwise known as "buddy punching," when one employee punches in or out for another employee so that employee can be paid for time not worked is theft, which manifests itself in the form of companies paying employees for unproductive time. The practice of buddy punching can be even more deleterious when secure or sensitive locations are involved. An employee being made to appear as though they are present for work at a biological laboratory or nuclear power plant causes a serious lack of control over security.



Companies like Accu-Time Systems are continuously looking for technologies that make their data collection tools more secure. Although fingerprint readers are popular, the collection of employee fingerprints by employers is illegal in some states and countries. Though incredibly difficult to accomplish, there is a concern that employee fingerprint mathematical templates collected at a time clock or door opener can be converted back into actual fingerprint images. Unions and labor relations groups fear that those reverse-engineered fingerprints could then be compared to law enforcement databases. For locations or institutions

"Today's most viable alternative to standard fingerprint readers for workforce management applications is the finger vein reader."

dealing with this issue, alternate biometric reading technologies must be provided. The two most prevalent non-fingerprint technologies available today for workforce management and access control applications are hand geometry and vein reading.

Hand geometry has been popular for many years in time and attendance and access control applications. Essentially, minutiae points on a "shadow" or outline of a hand placed in a reader are used to create a mathematical template unique to each enrollee. This technology is simple to use and the digital template takes up a relatively small amount of computer memory. But, like nearly every technological evolution, compromises are made. Hand geometry is very easy to fool with fake hand outlines. It also requires you to place your whole hand on a surface that has seen hundreds of other hands. Hygiene becomes a concern for most people when they realize that they need to lay their hand on top of an unclean platen.

Today's most viable alternative to standard fingerprint readers for workforce management applications is the finger vein reader. Accu-Time Systems provides a finger scanner that creates a hybrid template of certain topical nodes or surface minu-

"Accu-Time Systems provides a finger scanner that creates a hybrid template of certain topical nodes or surface minutiae combined with data points along the capillary structure below the skin."

tiae combined with data points along the capillary structure below the skin. This optical reading technology "sees" through grime, grease, and dirt on the finger surface and uses light absorption and reflectivity to image the vein pattern and combine it with whatever is visible of the print on the finger surface.

The company is also working on incorporating technologies that use data from vein structures in other parts of the body as well as non-vein biometric geometry technologies. This kind of effort is a never-ending quest by the company's engineers to deliver identification and verification technologies that translate to lowered workforce management costs and increased security for employers.

Low cost, rapid, accurate DNA sampling as a workforce or access control identification methodology is many years away. But it is certainly possible. All indicators point to the body being our most reliable, portable, and foolproof credential. Today's science fiction will, in all probability, be tomorrow's standard identification protocol. In the future, companies like Accu-Time Systems, in their continuing quest to compete and deliver valuable technology, will undoubtedly be asking customers if they want a DNA analyzer workforce management system and how many employees will be using it.

www.accu-time.com

Accu-Time Systems (ATS) designs and manufactures workforce management tools. Companies around the world work with ATS when they need to solve time & attendance, human capital management, and labor and productivity challenges. ATS is headquartered in the United States with offices and channel partners in North America, Latin America, Europe, Africa and the Middle East.

Biometric and non-biometric workforce management terminals are offered by ATS for seamless integration to ERP and HCM systems, including PeopleSoft Enterprise and PeopleSoft HCM and Time & Labor modules. ATS provides solutions for nearly every industry with a product line that extends from simple entry level time clocks to state-of-the-art programmable and customized employee self-service kiosk systems with advanced biometrics.

ATS terminals offer a state-of-the-art biometric technology that increases accuracy and reduces failures. This multispectral imaging sensor takes all of the challenges of traditional biometrics like demographics, ethnicity, skin damage and environmental concerns (dirty, dry, extreme and wet conditions) out of the equation by reading the capillary patterns beneath the skin surface.

Please visit them at www.accu-time.com

Corporate Headquarters:
420 Somers Road
Ellington, CT 06029

Phone: 860-870-5000
Toll Free: 1-800-355-4648
Fax: 860-872-1511