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# Biometrics in the consumer sphere

The use of biometric technology in the consumer sphere has been increasing steadily year on year and while future prospects are good there are still certain challenges to be met

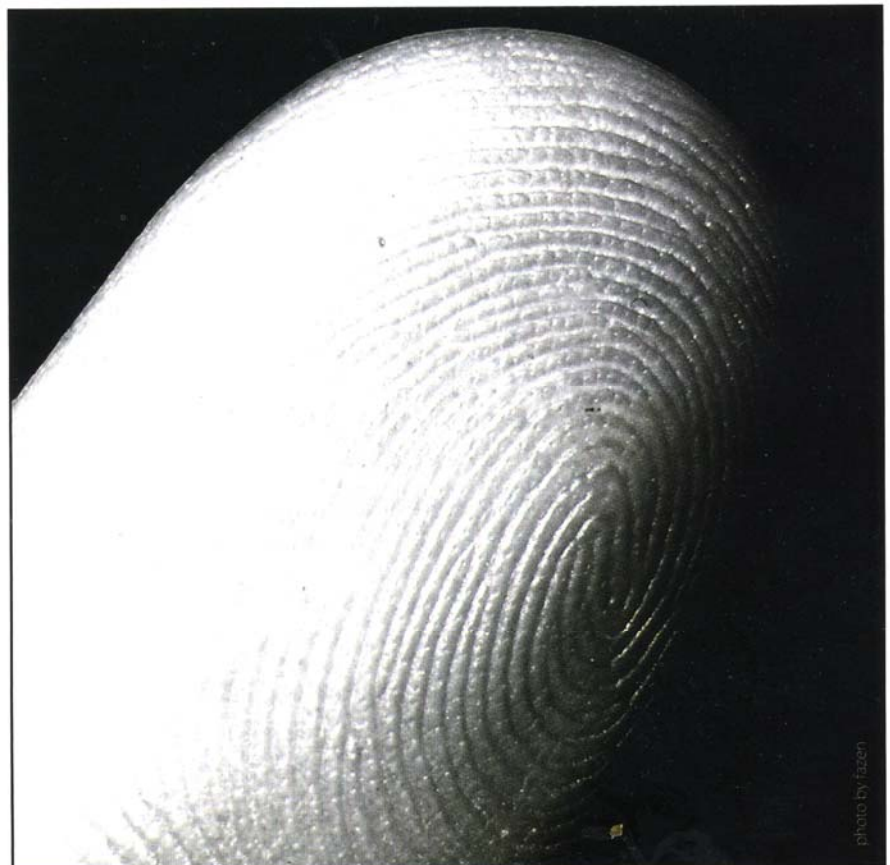
Historically biometrics technology such as fingerprints, iris, hand geometry, facial features, and voice patterns have been adopted across financial, healthcare, and government verticals, a trend that continues today. In addition to identifying individuals by their unique physiological and behavioral features, biometrics provides high security, convenience and time-efficient solutions.

In recent years, biometrics has also made great forays into the consumer sphere, with certain consumer devices, such as cell phones, laptops, PDAs and smart phones, witnessing a rising demand for use of the technology.

Use of biometrics, particularly Non-Automated Fingerprint Identification System fingerprint recognition, to replace passwords and PINs with a convenient and cost-effective solution has given the technology a significant advantage over others in the security space.

### Dominance of non-AFIS fingerprints

Non-AFIS fingerprint recognition is a mature and proven technology that has been in use for many years. A typical such biometric device consists of hardware, in the form of a reader or scanning device, and software, which translates information that is scanned into a digital format, and an algorithm that processes match points identified by the software. Furthermore, an algorithm converts biometric data into a value that can be compared with biometric data stored about the user on a centralized database or on a smart card.



There are different types of fingerprint sensors available on the market today such as swipe sensor and area sensor. Area sensors have a standard platen over which a finger is placed to capture the fingerprint, while swipe sensors require the user to swipe his/her finger over a linear array of sensors using a small area of the sensor. Silicon sensors most commonly use the swipe sensor mechanism. The sensor captures the data from the finger when the finger is swiped before a reconstruction algorithm then assembles the data to create a fingerprint image. The size of a swipe sensor is also considerably

smaller than an area sensor, ranging from being one-fifth to one-tenth of the size.

Within the consumer space, fingerprint technology has become dominant in recent years for automatic identification uses, and it is anticipated to continue to do so in the long term. Among silicon and optical sensors, the former is now being preferred over optical sensors thanks primarily to its compactness, low cost and low power consumption. On the other hand, optical sensors, because of their higher image resolution form factor, are predominantly used in high security

physical access control applications and integration in IT peripherals such as keyboards.

## Opportunities in the consumer space

Silicon sensors have found popularity by creating new opportunities in consumer and commercial applications for laptops, keyboards, cell phones, and PDAs. Some of the benefits of using silicon sensors in such applications include uniqueness, convenience, flexible form factor and high ESD resistance.

The shipment of biometric notebooks witnessed a significant growth rate in 2007. This growth is expected to continue and turn into an even higher growth rate in 2008 thanks to the increasing demand for notebooks in the Personal Computers market.

During 2008 and 2009, more than 80 models of notebooks using the Intel Centrino 2 processor are likely to be shipped with an AuthenTec fingerprint sensor. Recently, UPEK launched the TCS5 TouchStrip Fingerprint Sensor, a new module designed to be integrated into 2009 notebook PC models. UPEK's module is designed to deliver durability, size and price in the non-AFIS fingerprint silicon sensors market. Some of the other vendors who have started playing a key role in this market are Atrua, Inc., Validity Sensors, Inc., and Fujitsu Microelectronics.

Mobile commerce applications hold a huge potential for the use of non-AFIS fingerprint technology in consumer applications. The diverse applications of cell phones being used as a mode of payment for public transport tickets, purchases at stores and restaurant bills has opened up revenue generating opportunities for the biometric vendors.

## Future outlook

According to a Frost & Sullivan study on non-AFIS fingerprint use in the notebook PCs and wireless devices market, the market size in terms of revenues was valued at \$148.5 million in 2007 and is expected

to reach \$1588 million by 2014. There has been a steady improvement in the performance levels of silicon sensors. However, there are key industry challenges that need to be addressed.

First, there are concerns about how the performance of silicon sensors has been impacting the adoption rate. Though silicon sensors are cheaper than optical sensors, product evaluation tests have proved that the optical sensors have more favorable failure to enroll and false reject rates.

Second, there is a need to educate the end-user about the success rates of silicon sensors, especially when integrated in notebooks or mobile phones. Lack of uncertainty due to fingerprints being associated with criminal investigations still persists among many end-users. People still believe that biometric information is not very safe.

Third, the function of silicon sensors is to enhance security and prevent unauthorized users from gaining access to valuable information. However, the consumers are not yet convinced about the benefits of using biometrically enabled products.

Fourth, there is still an uncertainty regarding the return on investment that the consumer will get when buying any biometrically enabled products. This is because, there is as yet no hard and widely published evidence to prove the increased

safety of notebooks and cell phones using a fingerprint sensor over a key or access code.

The vendors face the challenge of meeting the manufacturer's demand because of the declining cost of notebooks and cell phones. The manufacturers target on lower price products and as a result, they are reluctant to add features such as fingerprint sensors. In order to increase sales volumes, the sensors that are now available in high-end cell phones and notebooks should be integrated in mid-range phones.

Non-AFIS fingerprint silicon sensors for consumer applications have witnessed high growth rates and are expected to continue to do so, particularly if these challenges are met.

Currently, though the market is exclusively concentrated in Asia, especially in countries like Japan and South Korea. However, the North American market has started growing and is expected to increase its market share in future. The shrinking form factor, increasing performance, reducing size, and lowering cost are expected to enable the market experience high growth in the short and long terms.

by Neelima Sagar,  
Frost & Sullivan

*Non-AFIS fingerprint recognition technology is now being included in various Japanese handset models*



## AuthenTec

### Sensor technologies that give end-users 'The Power of Touch'



With more than 35 million sensors in use worldwide, AuthenTec is the world's leading provider of fingerprint authentication sensors and solutions to the high-volume PC, wireless device, and access control markets. AuthenTec's award-winning sensors take full advantage of "The Power of Touch" by utilizing the company's patented TruePrint technology to deliver the most convenient, reliable and cost-effective means available for enabling touch-powered features that extend beyond user authentication.

acquiring everyone's fingerprint under virtually any condition.

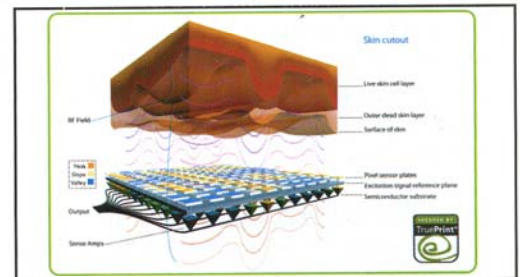
AuthenTec's award-winning touch and slide sensors take full advantage of "The Power of Touch" by utilizing the company's patented TruePrint and TrueMatch technologies to deliver the most convenient, reliable and cost-effective means available for enabling touch-powered features that extend beyond user authentication.

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AuthenTec's patented TruePrint and TrueMatch technologies allow fingerprints to be read below the surface of the skin to the live layer - or true fingerprint. As such, TruePrint is not affected by common skin surface conditions including dry, worn, calloused, dirty or oily skin that can affect other sensors' ability to acquire accurate fingerprint images for user authentication purposes. TruePrint and TrueMatch are the only fingerprint sensor technologies capable of



## Cross Match Technologies

### Comprehensive range of high-quality interoperable biometric identity applications and solutions to protect and secure people, property and privacy



Cross Match Technologies is a leading global provider of high-quality multimodal biometric identity management systems, applications and services. Company offerings include a wide range of biometric solutions and service options, which are used to capture and process the unique physiological characteristics of individuals to establish and verify their identities. Customers use Cross Match's biometric solutions in a variety of security and surveillance programs to protect and secure people, property and privacy. Offerings include multiple biometric technologies capable of wireless, mobile or stationary use that encompass fingerprint, palm and full-hand scanners, facial recognition systems, iris scanning technology, document readers, biometric software, and related services.

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Cross Match Technologies is headquartered in the USA and has an additional location for development, production and sales in Germany.



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