FUJITSU

Security in the palm of your hands.

Is palm vein recognition the right biometric tool for your business?

Contents

Authenticating people – not passwords

Traditional authentication methods – passwords, ID cards, PINs – share a weakness. They can all be used fraudulently by another person.

Cards can be misplaced, PINs can be guessed or hacked, passwords can be shared unwisely. These methods are also easy to forget, preventing access for legitimate workers.

Biometric authentication technology solves this problem by allowing people to authenticate themselves with a unique physical trait that cannot be forgotten, and is much harder to copy or transfer. As cyber attacks become more common and more sophisticated, this will become an increasingly important defense.

A wide variety of biometric technologies have been developed. The one that works best for you will depend on your business, your needs and your budget.

In this paper, we will take a closer look at palm vein recognition. This contactless, accurate form of identification has value in a wide variety of public and private spaces. By comparing it to some of the other biometric technologies, we can start to see the situations in which it will be the most effective mode of authentication.

Biometric identifiers are physical or behavioral characteristics or traits, such as fingerprints, DNA, palm-vein pattern, hand geometry, iris or voice. They are unique, bound to individuals and impossible to forget. This makes them far more secure indicators of identity than tokens, passwords or cards – which are much easier to lose, steal or copy.

Biometric technology is used to measure, capture and match these physiological or behavioural characteristics to authenticate a person's identity.

There are many forms of biometric authentication, including retina scans, fingerprint sensors, face recognition cameras and palm vein pattern sensors. To choose the right one – or combination – you will need to assess their respective merits based on the circumstances in which you'll use them (sometimes called application requirements).

It can be useful to judge the technology you're considering by the following four criteria:

1 Comfort

How long does verification take?
How comfortable are individuals with the process?
Is the technology easy to use?

2 Accuracy

What are the error rates?
Is it sufficiently difficult to bypass the authentication technique?

3 Availability

Is the biometric universal?
What percentage, if any, cannot register?

4 Costs

What's the investment?
What about operating costs or maintenance?

Fingerprint sensors: biometrics in action

One of the most common – and probably best known – biometric technologies is fingerprint scanning. Many notebooks, tablets, smartphones, and even some desktop PCs now feature fingerprint sensors.

As an established method of verifying identity, it's useful to look at its strengths and any possible limitations:

Comfort

Fingerprint sensors are easy to use and verify someone's identity quickly. Authentication requires contact with the sensor, which could make some users feel uncomfortable, but fingerprint technology is now a mainstream method of gaining access to devices.
Even small devices, like smartphones, can accommodate sensors.

Availability

Fingerprints are an effective method of recognizing a large number of individuals. There are a small number of people, however, who do not produce prints that sensors can read. If someone works with their hands, it is also possible they could wear down their prints over time.

Accuracy

Accuracy is high, with very few errors. A fingerprint is a unique identifier that does not need to be remembered or written down. However, attempts can be made to 'lift' prints from sensors using tape. Fingerprints therefore work best as part of two- or multi-factor authentication – alongside a password, for example.

Costs

Fingerprint sensors are a cost-effective way of introducing an accurate biometric method of identification. Once installed, sensors require very little maintenance. And they can help prevent expensive breaches, or streamline authentication processes.

Palm vein pattern recognition:
the future of authentication?

Palm vein technology shares many of the qualities of fingerprint scanning. It is accurate, easy to use, and can be incorporated in a variety of hardware – including notebooks. However, it also offers some additional benefits across the four assessment criteria.

Comfort

Palm vein sensors are intuitive and very fast. They can be incorporated in multiple products including computers, copiers, and wall-mounted room-access systems.

A key feature of palm vein sensors is that they're contactless and non-invasive. This is hygienic, which opens the technology up to use in public places and sanitary areas such as hospitals. A contactless and non-invasive sensor also increases user acceptance – a critical part of the success of any biometric technology.

Accuracy

Palm vein pattern recognition is the most accurate biometric technology. Its False Acceptance Rate (FAR) is just ~ 0.00001%. This is thanks, in part, to the 5 million reference points available in a single palm vein pattern.

Palm veins are also hidden under the skin. To be read, veins must actively have blood flowing through them. This makes it extremely hard, if not impossible, to fraudulently gain access using another person's vein pattern.

Availability

Very few people will fail to register for a palm vein authentication process. With the biometric inside the body, it is protected from the erosion or changes that can affect some external physical characteristics.

Costs

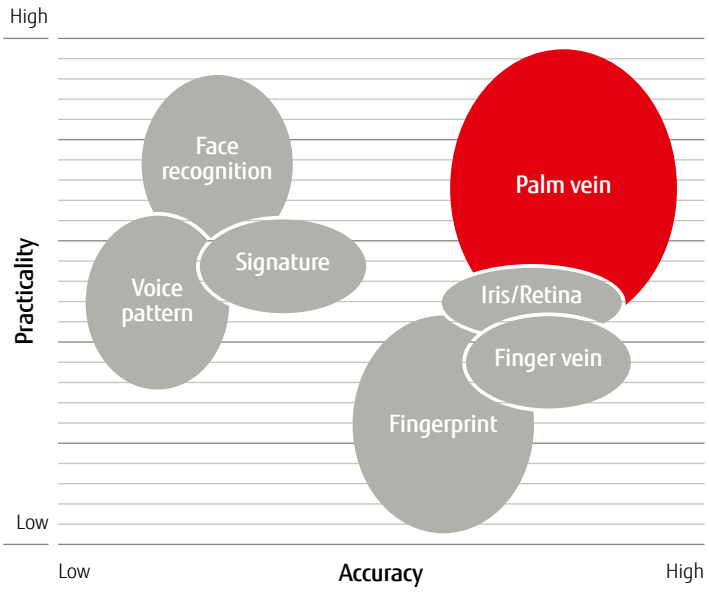
Like fingerprint sensors, palm vein sensors are a cost-effective way to enhance security with a biometric check. The sensors also require very little maintenance once they're installed.

Palm vein recognition – reliable and easy-to-use.

False Acceptance Rate (FAR) and False Rejection Rate (FRR)

Authentication Method	FAR (%)	FRR (%)
Face recognition	~ 1.3	~ 2.6
Voice pattern	~ 0.01	~ 0.3
Fingerprint	~ 0.001	~ 0.1
Finger vein	~ 0.0001	~ 0.01
Iris/Retina	~ 0.0001	~ 0.01
Fujitsu Palm vein	**~ 0.00001**	**~ 0.01**

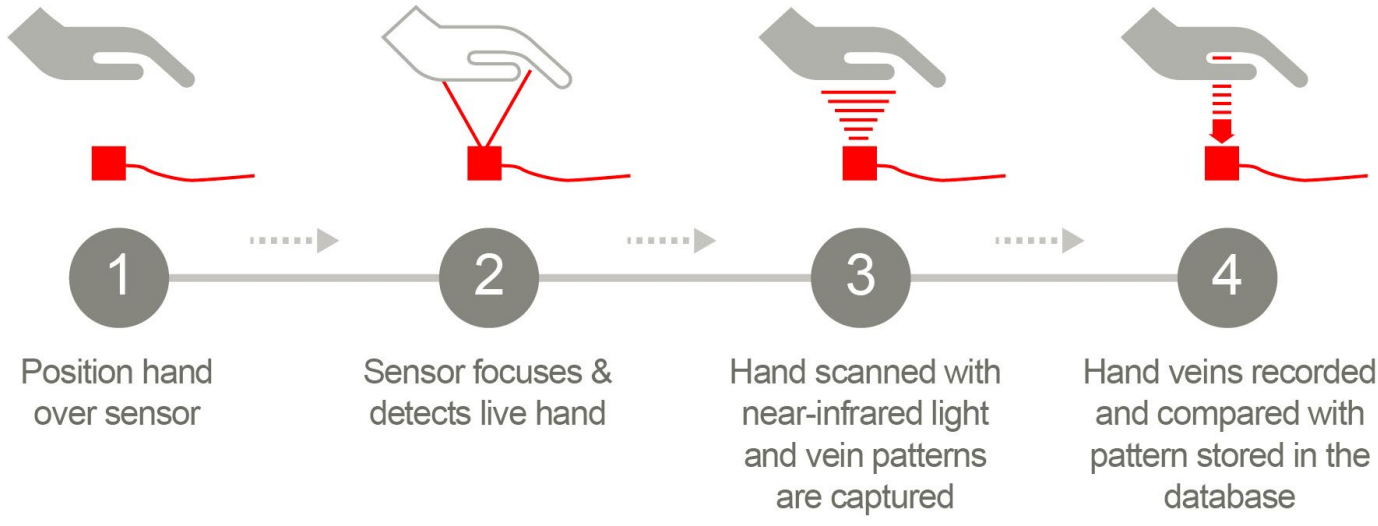
Biometric Comparison



How palm vein security works

How it works

Using near-infrared light, the sensor detects deoxygenated blood returning to the heart through the veins (so-called live hand detection).
This reveals a person's palm vein pattern. This pattern is matched against pre-registered patterns on a protected database, or against the pattern contained on a second item such as an ID card.



Palm vein success stories

Fraud-proof transactions for Banco Bradesco S.A.

The challenge:
Reduce fraud and increase the security of the processes and services offered by Brazil's second largest bank.

The solution:
Fujitsu PalmSecure sensors have been fitted to all Bradesco ATMs. The biometric sensor scans the vein pattern of a user's palm and matches it to a database where the account holder has pre-registered their data.

The results:
- Fast, secure authentication
- Exceptionally high level of user acceptance
- Simple implementation
- Biometric data only has to be submitted once in a lifetime

Bradesco

» Since the biometric system, fraud declined.«

Douglas Francisco
CTO, Banco Bradesco S.A.

» I'm sure there will be more adopters of the technology across the industry.«

Steve Bigmore
IT Project Manager, Hiscox

Helping Hiscox handle less paper

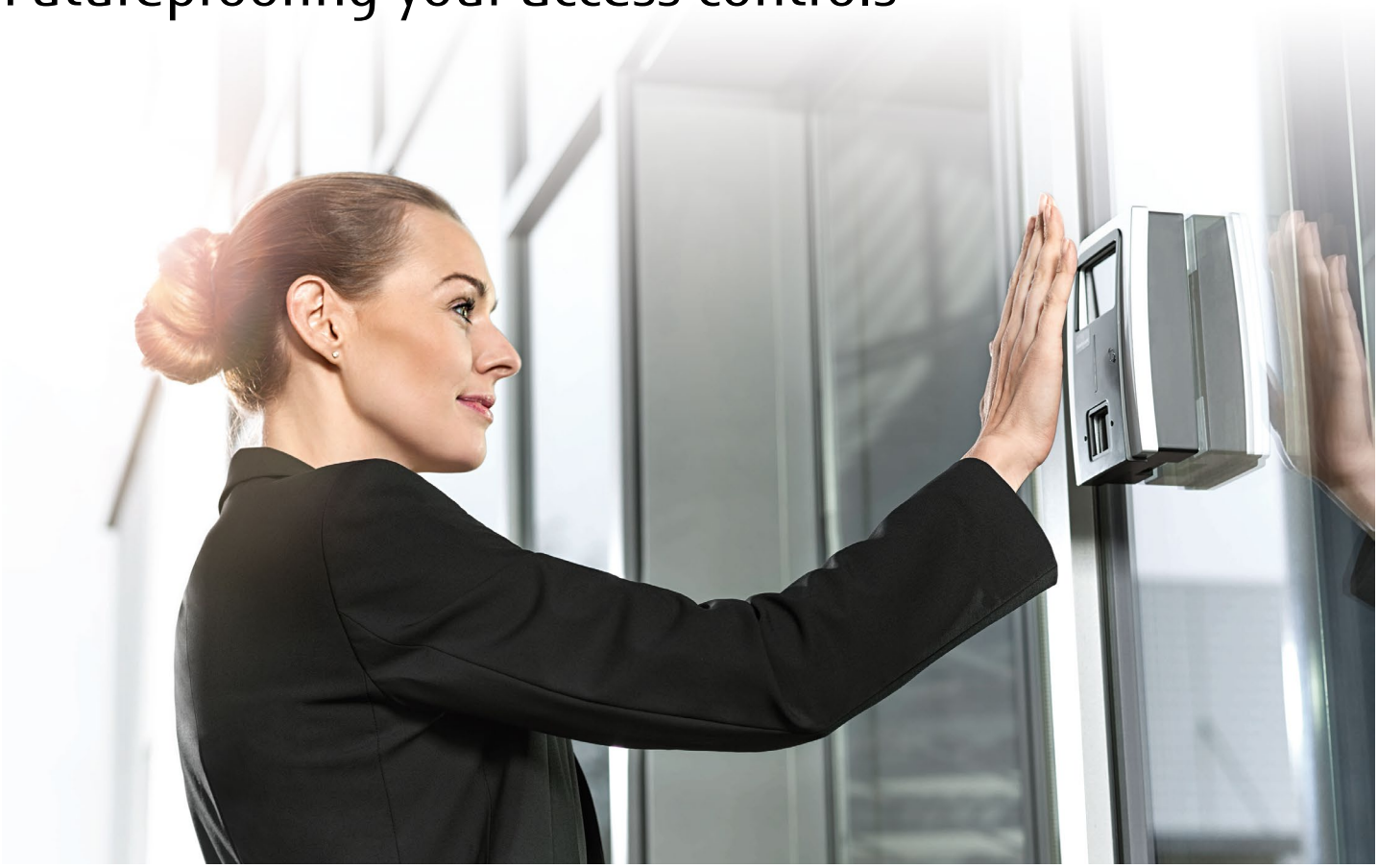
The challenge:
Insurance specialist, Hiscox, needed a secure scanning platform to create more efficient, virtually paperless processes.

The solution:
Fujitsu integrated the PalmSecure reader and Fujitsu fi-6800 scanner into Hiscox's existing IT infrastructure.

The results:
- Faster processes with fewer errors
- More secure document processing
- Happier, more productive staff
- Better for the environment

HISCOX

Futureproofing your access controls



In a world where security breaches cost companies millions of dollars, security tools that can be lost, guessed or stolen are a considerable risk. Biometrics offer a powerful, additional defensive layer. Unique to the individual and impossible to forget, they combine convenience and security.

Palm vein pattern technology scores very highly on both practicality and accuracy. It verifies identity quickly, simply, hygienically and accurately.

However, one technique is not the answer to all situations where authentication is needed. The environment, user priorities, budget and the existing infrastructure all have an impact.

In many cases it will be a combination of access controls that create a satisfactory level of protection. For example, a device containing Fujitsu's PalmSecure ID Match authenticates a palm vein scan and then matches the record against the one held on a SmartCard, Token or even a smartphone.

To select the right biometric technology for your business, you need to analyze your current and future requirements. Different methods will be right for different organizations. Fujitsu offers a variety of biometric sensors to cover a whole range of application scenarios. Talk to us about the options. We can help you find the most cost-effective way to incorporate biometric authentication in your access controls.

CONTACT US

choosepeopleoverpasswords.global.fujitsu.com