TECHbrief

What's the C.A.S.E.? – Determining the Best Biometric Reader for an Application

Biometric physical access control is the most secure means for allowing access due to the unique physical characteristics of every individual. Biometric physical access control solutions provide stronger authentication methods than a PIN, access card or physical keys, which can be lost or stolen and facilitate an unauthorized entry. Biometrics is the only credential that positively authenticates the person before he or she accesses a secure area.

There are multiple ways of using an individual's unique characteristics as a means of access. These could include a fingerprint, finger vein scan, iris recognition, touchless fingerprint, 3D facial recognition, hand geometry or video facial recognition. Before deciding on which technology fits your application, there are four things you should consider: convenience, acceptability, speed and environment. An easy way to remember these criteria is to ask, what is the C.A.S.E. for this biometric reader?

C – Convenience (Ease of Use) How easy is it for the user to approach the reader and present their biometric credential?

A – Acceptability (User Acceptance and Security) How well do the users accept interfacing with the technology and how well does it meet the level of security for the risk? What is the false reject rate (FRR) and the false accept rate (FAR)?

S – Speed & Accuracy (Throughput) How quickly can the user get through the presentation process and how accurate is the technology when the credential or biometric is presented (false reject)?

E – Environment (Application) Where is the reader being used - indoor, outdoor, lighting, vandal prone, dirty conditions, hands-free or other unique requirements?

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The chart below provides a quick and easy guide to making your C.A.S.E.

Technology	Convenience	Acceptability	Speed	Environment
Fingerprint Recognition	Most widely used biometric; intuitive and easy to use; finger placed on sensor; lit with red light	There is still some resistance to enrolling a fingerprint biometric; FAR is extremely low; FRR affects a small number of users; high quality readers reduce false rejects	Throughput is high, reads biometric in less than 1 second	Indoor, outdoor and ruggedized models
Fingeprint and Vein	Reader aligns finger for correct fingerprint and vein scanning	Combines two biometrics into one template (dual modal) to create a high-security biometric reader	Reads are slower - read time is 1.5 seconds	Applications where security requirements are higher and throughput is not a major concern
Iris Recognition	Hands-free camera sensor is adjustable for varied heights; correct distance is required to read biometrics; the unique pattern in the human iris is formed by 10 months of age and remains unchanged throughout one's lifetime	User acceptance to the technology is high once they understand it is iris and not retina; this is a very high-security biometric technology – the chance of two irises being identical is 1 in 10^{78}	It takes about two seconds to align your eyes with the reader and have it authenticate the user	Excellent choice for hands-free environments; indoor use
Touchless Fingerprint	Very easy to use - waving hand across the sensor reads the biometric	Being touchless, the resistance to using a wave reader is low; security is adjustable; since the reader captures biometric data from one to four fingers, the security can be adjusted for lower and higher security applications	Very fast read; users do not even need to stop walking motion to use reader	Indoor environments, high-traffic entrances, high-security entrances
3D Facial Recognition	Hands free - correct stance in front of the sensor is required; monitor shows placement; lower height installation is required to accommodate all users	Some resistance to presenting facial biometrics; 3D technology compares 40,000 data points for very low FAR	FRR and slow reads can occur for facial changes, glasses and incorrect positioning at the reader	Indoor applications; best results without backlighting issues; hands free/ touchless for clean room environments
Hand Geometry	The reader is intuitive on how to place your hand	Well accepted as it is not taking any usable biometric data; less secure than other biometrics	1:1 verification; a pin code must be used to retrieve the biometric template for verification	Indoor or outdoor with specialized enclosure; good for users with dirty/ worn hands; often used for time and attendance applications
Video Facial Recognition	Looking at the camera captures the biometric template	FRR and FAR are is higher than other biometric technologies	Best applications include uses as dual authentication	Indoor or outdoor; consistent lighting is required for the camera

The right biometric system is an effective method to identify and authenticate personnel, but it is important to remember to take into account the customer's needs and requirements. It is not a one-biometric-technology-fits-all world, so develop your C.A.S.E. and understand the need for convenience, acceptability, speed and the environment where the system will be deployed to ensure that the customer's expectations are met.

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