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Choosing the right **facial recognition solution for access control**

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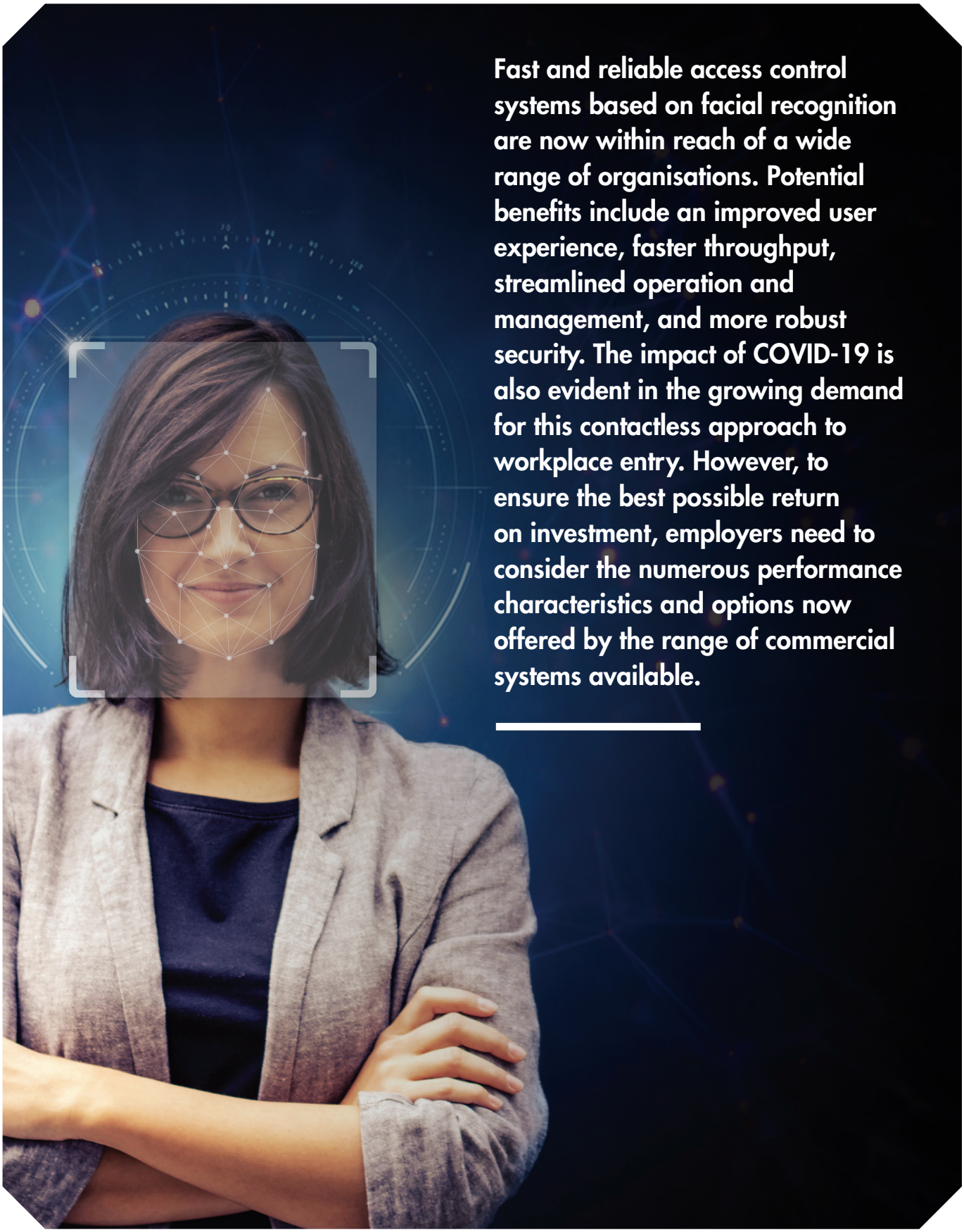

Fast and reliable access control systems based on facial recognition are now within reach of a wide range of organisations. Potential benefits include an improved user experience, faster throughput, streamlined operation and management, and more robust security. The impact of COVID-19 is also evident in the growing demand for this contactless approach to workplace entry. However, to ensure the best possible return on investment, employers need to consider the numerous performance characteristics and options now offered by the range of commercial systems available.

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Executive summary: Facing up to the future of access control

The pandemic has encouraged many organisations to reassess their approach to access control. Even prior to the unwelcome arrival of COVID-19, a growing number were looking for alternatives to traditional ID card-based processes to improve the performance of workplace entry systems. Typically, these organisations are prioritizing solutions that can deliver a better user experience, more robust security, streamlined management and enhanced reporting capabilities. To this list, the pandemic has added an increasing demand for contactless systems, and capabilities that will help to support and enforce mask-wearing mandates.

These converging trends are now fuelling the deployment of access control systems based on facial recognition. Just a few years ago, this type of biometric technology was largely the preserve of science fiction novels and movies. Today, it is a mature, accurate and reliable methodology. Widespread use of facial recognition in smartphones has also ensured that a growing number of people are comfortable and familiar with this approach to proving their identity.

For employers, facial recognition-based access control offers an unobtrusive and contactless solution for ensuring that only authorised personnel can enter a building or site. In many working environments, it eliminates completely the need for users to carry physical credentials. Equally, facial recognition can still be used in conjunction with a photo ID card, to enable frictionless yet highly secure two-factor authentication.

Where facial recognition is employed exclusively, the on-going risks, inconvenience and additional workload generated by lost, forgotten, stolen or swapped ID cards become a thing of the past. Compared to entirely card-based systems, facial recognition also minimises the demands placed on reception and security staff.

In this white paper, we introduce and outline the key elements of implementing and operating a facial recognition access control system. The options available to meet the specific requirements of individual organisations are explored, along with the main benefits of investment in facial recognition technology.

Choosing the right **facial recognition solution for access control**

1. How does facial recognition access control work?

The basic principle of facial recognition access control could not be more straightforward. Authorised persons are free to enter a workplace using nothing more than their face as a means of identification.

This simplicity also underpins one of its most compelling benefits. With facial recognition access control, it is impossible for users to forget, misplace or lose their identify credentials. As a result, the inevitable hassle and inconvenience that is inherent in any system that relies on users always carrying an identity card or badge are eliminated. A major pain point for users and operators of traditional processes based on physical credentials can finally be confined to history.

2. Choosing the right system: Face-Only or Face+Card?

In specifying a facial recognition solution, operators have two main options to consider:

Face-Only

In a completely card-free 'Face-Only' solution, the access control system works on what is known as a 1:N or 1-to-Many basis. On entering a building or site, the subject's face is automatically and instantly compared with a database of photos of authorised persons. If a match is found, entry is granted.

Face+Card

In more secure and sensitive work environments, where an organisation wants to maintain or implement two-factor authentication, facial recognition can be used in conjunction with a photo ID card. In this case, the system operates on a 1:1 basis. The subject presents their photo ID card at a reader. The image on the card is then automatically compared with a live capture of the subject's face. If the two match, entry is granted.

3. Choosing the right solution: Which type of enrolment system?

The latest facial recognition access control systems offer operators a range of possibilities for safe and secure, one-step enrolment of authorised persons.

Webcam

The subject presents themselves in front of a webcam, which captures and stores their facial image. A member of staff enters any additional personal details necessary to accompany the image.

Card/document reader

A document reader automatically captures the photograph and necessary personal details from the ID card or badge presented by the subject; the facial recognition system compares the ID photo and live photo to confirm the subject is the authorized holder. If this check is positive, a member of staff can then confirm the enrolment.

Batch import

Where an organisation already holds a database containing photos of authorised persons, the relevant information can be batch imported directly into a new facial recognition access control system.

4. The user experience explained

With enrolment complete, the user experience continues to be characterised by speed and simplicity. The subject only has to present themselves in front of a camera. On-screen instructions help to ensure that that they are positioned correctly. Facial recognition technology then instantly compares their face to images of enrolled persons. If a match is found, the system immediately enables entry.

In a Face+Card solution, the subject places their ID card on a reader while standing in front of the camera. This activates the facial recognition process, which instantly compares the face of the subject with the image on the card. If the two match, the card holder is allowed entry to the secure building or area concerned.

5. The benefits of facial recognition access control

Growing investment in facial recognition access control reflects the broad range of benefits that can now be realised. These include:

Enhancing the user experience

As has already been outlined, facial recognition offers users the benefits of completely frictionless entry to their place of work. In Face-Only uses cases, the need to carry a physical ID card is eliminated. So are the headaches caused by lost or stolen credentials. By eliminating manual card inspection by a member of staff, the entire process is also significantly quicker.

Strengthening security

With facial recognition access control, enhanced user convenience and greater efficiency are not achieved at the expense of security. Indeed, facial recognition offers far more robust protection against the risk of unauthorised access to secure areas.

Card swapping, card theft and tailgating by employees are common problems for operators of traditional access control systems. Furthermore, it is notoriously difficult for even well-trained employees to visually match the image on an ID card to the holder's face. Reliability and accuracy rates are further undermined when staff are asked to perform this task for an extended period.

In contrast, the leading facial recognition systems can now achieve remarkably high levels of accuracy and reliability. For example, in the internationally recognized NIST (National Institute of Standards and Technology) Face Recognition Vendor Test, the Thales Cogent face recognition algorithm demonstrated, from one million persons, just one incorrect recognition (false positive), and one failure to recognize in every 277 persons. As a result, the inconvenience caused by false rejections is negligible.

Advanced anti-spoofing and liveness detection features are also a standard feature of leading systems. Any attempt to deceive the system using either still or video images (on a smartphone, for example) is detected immediately by a built-in 3D camera.

Increasing throughput

Facial recognition is instant and automated, enabling faster throughput than a traditional card-based approach.

Streamlining system management

With facial recognition, employers are no longer obliged to commit staff to the mundane task of checking the physical credentials of all visitors and staff. Lost, misplaced and stolen ID cards also generate additional workload for the staff responsible for operating and managing the system. With facial recognition, the overheads and administration associated with access control can therefore be substantially reduced.

Bringing contactless to access

In the wake of the pandemic, far greater emphasis is being placed on implementing contactless systems. Just as COVID-19 has accelerated the popularity of contactless payments, so it is powering adoption of facial recognition systems that eliminate the need for employees and visitors to share pin pads or card swipes, or hand their physical credentials to a member of staff for checking. By facilitating completely contactless access control, facial recognition minimises the risk of virus transmission, and inspires greater confidence in users as they return to offices and other workplaces.

Supporting mask-wearing mandates and policies

In addition to its contactless attributes, the leading facial recognition systems can also help to support mask-wearing mandates, policies and guidance. If the camera detects that the subject is not wearing a mask, the system can be set to automatically deny access. Alternatively, messages encouraging or advising the subject to wear a mask can be displayed.

Boosting management reporting

Facial recognition access control systems offer opportunities for rich report generation. Information typically available includes comprehensive records of entry and exit times, duration of visits, and building usage. As employees increasingly shift to hybrid working models, the trends and insight highlighted in these figures are likely to be increasingly valuable to employers.

Simplifying GDPR compliance

Respect for personal privacy and compliance with regulations such as GDPR are high priorities for any access control system. The leading facial recognition-based solutions enable automatic clean-up of any personal information and images captured, on a daily basis or as specified by the operator, as well as full encryption of data stored or transmitted over the network.

Ensuring resilience

Employers cannot risk a situation where staff and visitors are unable to access workplaces. To address this, systems such as the Thales FRP Face Pod can perform facial recognition internally. Even if the network is down, the access control system will continue to function correctly.

Easing integration

Systems are available that operate over TCP/IP, and therefore require no changes to existing wiring or IT infrastructure.

Conclusion

The new normal instigated by COVID-19 has had far-reaching implications. These include a dramatic uptick in the popularity of contactless technologies. The access control market is no exception, with employers increasingly turning to facial recognition to create a touch-free user experience. However, migration away from traditional card-based systems was already underway. Uniquely, facial recognition can combine an array of valuable user and operator benefits that extend well beyond contactless entry.

For organisations keen to adopt facial recognition access control, the good news is that leading systems offer a high degree of flexibility to meet individual requirements. With the right system in place, impressive standards of reliability, accuracy and redundancy are also assured. Finally, while the technology may still retain something of the feel of science fiction about it, implementation can and should be straightforward. Systems are available that avoid the need for changes to existing wiring or IT infrastructures. As a result, the door to far wider and faster deployment of facial recognition access control is now well and truly open.