Why Smart Buildings Must Have Smarter Entrance Control

Smarter Security

Benefits of Intelligence

The growth of "smart buildings" and the evolution of technology innovations within them has skyrocketed since the turn of the 21st century. From building automation to cybersecurity and beyond, the market for smart buildings only continues to grow and refine itself, promising continued developments that will radically transform what buildings and their occupants will require in the offices and campuses of tomorrow. It also presents a rare "win/win/win" situation for building owners, tenants and our environment.

A smart building has traditionally been viewed as any structure that uses automated processes to control various building operations such as HVAC, lighting, security, fire, and other systems. Most buildings, especially newer ones, have already incorporated some level of intelligence to their operations. This intelligence makes it possible to gain much more insight from a building's data, delivering positive outcomes that enhance:

- Profitability
- Security and life safety
- Sustainability

Entrance control systems play a more pivotal role than ever now that prominent brands such as A, B and C have invested significantly in "entrance intelligence" technology. These intelligent solutions address 3 core functions like never before — the need to deter, detect and detain security threats.

Previously, the only entrance control tactics available to secure a building were limited to mechanical turnstiles or revolving doors. That world is long gone as security threats have not only grown in number, but also have gotten more aggressive in approach. By leveraging the power of neural networks and other advanced technologies, Chief Security Officers and other security practitioners can now equip their buildings with systems that can extract insights and apply policies in real-time by quickly making sense of immense amounts of data. This enables them to drive more effective security decisions and leverage actionable intelligence. What was "just a turnstile" in the past is now an intelligent platform integrating multiple embedded, advanced security technologies.

In this white paper, we will explore a high-level overview of some of the most notable technology innovations that have driven smarter entrance control and how you can incorporate next-generation intelligence in your security products and policies.

Entrance Control 101

Entrance control systems serve as a building's primary enforcement system, executing the directions provided by the building's access control system. Entrance control hardware physically hardens and enforces the intelligent entrance of a smart building. While motes, or gates with sharp objects along the top served that deterrent and enforcement role for centuries, entrance control systems today typically consist of aesthetically pleasing steel and glass turnstiles, portals or revolving doors that deter, and in some cases even detain unauthorized people trying to enter.

Interestingly enough, the most popular form of entrance control in a lobby are turnstiles. In the case of turnstiles, once the building's chosen form of credential is presented, the system's most basic function is to either open barriers to allow a user to pass, or remain closed to block entry. If an intrusion is attempted, colored LED systems and audible alarms quickly aid security officers in determining the precise location of the potential breach.

Technology has played an integral part in advancing the turnstile from its humble beginnings into a multi-function security platform. Today, they can perform multiple tasks such as monitor population flow, ensure proper authorization of those who enter and exit the facility, provide elevator directions, detect forbidden materials, and enhance life safety practices.

To understand where we're going with the future of entrance control, it helps to also examine where we've been in terms of turnstile evolution.

The original purpose behind the creation of turnstiles can be traced back to the agriculture industry where the need existed to allow people to pass from field to field while also keeping livestock penned in. Fast forward to more modern times, where Clarence Saunders, the founder of Piggly Wiggly supermarkets, installed turnstiles for the first time to control the masses of crowds who were eager to visit the world's first supermarket.

From that point forward, turnstiles quickly gained popularity as a method to limit and control entry and exit for a variety of different facilities such as office lobbies, stadiums, amusement parks, transportation hubs, residence towers, fitness centers, libraries, cafeterias and casinos. Original turnstile models were tripod-style revolving turnstiles, used extensively in subways and sports stadiums. They were increasingly phased out of many office sites as they felt and sounded like a stadium rather than a place of business. Not to mention, tripod-style turnstiles didn't have sensors or safety features and often had challenges with properly allowing children or wheelchairs into the building.

Tripod mechanical turnstiles were often replaced by optical turnstiles, a more aesthetically pleasing barrier-free solution utilizing invisible infrared beams to monitor the passage of people. And, they provide audible and visual alerts upon an unauthorized entry such as a tailgater or a direction violation. While potentially less secure, barrier-free turnstiles grew popular due to their more open feel which allowed them to blend into the design of beautiful lobbies. Many architects preferred optical turnstiles for that reason, but with no physical barriers, buildings ultimately had to rely heavily upon security officers' ability to quickly respond to intrusions. In the late 1990's leading up to 9/11, optical turnstiles with barriers, such as swinging or dropping arms, began to grow in popularity.

Trouble with Tailgating

- Most optical turnstiles originally utilized very simplistic, binary PLC technology using Boolean logic. With this simple "beam-break" detection, there is no detailed analysis which sets the stage for many more false alarms and greater ease of successful tailgating intrusions.

- These systems often require at least a six-inch gap before they can detect a tailgating attempt, so a tailgater four to five inches behind an authorized person could easily sneak into the facility.

- Some of these older technologies can only monitor one authorized user at a time, so people have to wait until the person before them has exited the lane.

- Old turnstile technologies also cannot monitor movement in two directions at once. So these systems fail to detect an intruder's entry if they enter while a person is exiting the lane, posing tremendous risk to an enterprise.

Unfortunately, some older technology turnstiles are still on the market in 2019, although their body styles have been modernized to make them appear more advanced. They don't have the intelligence to profile what is really transpiring in the lane, increasing the risk of barriers improperly closing on suitcases, carts, wheelchairs, children or baby strollers. These products can be easily identified in their specifications where they offer safety warnings about the use by children, or by very low user throughput capabilities, often less than 40 persons per minute.

After 9/11, speedgates and barrier-arm turnstiles became the predominant form of lobby entrance control. While the primary turnstile functionality is crowd control, today's turnstiles and speedgates have become much more intelligent and secure, largely due to the inclusion of intelligent algorithms that empower much more accurate analysis of what is happening in any part of the lane. The ability to embed other security technologies within them such as card readers, biometric readers, elevator dispatch systems and facial recognition software extends their functionality even farther for security applications. But what does this embedded intelligence mean for an entrance control strategy?

Let's explore some of the intelligent technology features that truly make entrance control "smart".

Types of Entrance Control Technology

Physical security components such as speedgates, revolving doors, and anti-tailgate devices that protect access-controlled doors have advanced significantly, even within the last five years. These advances most notably include more compact turnstile footprints, taller glass barrier options, design elements, technology integrations and beyond.

However, when considering the types of physical security that make sense for your building today and tomorrow, it's critical to understand the benefits and differences of each entry control security option.

TRIPODS

Tripod turnstiles are typically used in continuously-manned industrial, covered outdoor or interior areas where appearance and throughput speeds are less important. They come in many sizes and shapes and can be customized to become more aesthetically pleasing. Tripods can be manual, requiring the individual to push-through the turnstile, or motorized. They are more restrictive for larger people or people with bags and are typically not ADA compliant.

FULL-HEIGHT MECHANICAL TURNSTILES

While normally installed in or around external fenced perimeters, full-height mechanical turnstiles can be often found in unguarded areas of higher security sites. They are a good option for commercial and industrial facilities and are less appealing for most interior applications. Special ADA-compliant arrangements, such as passgates, must be made since full-height turnstiles are typically not ADA compliant.

OPTICAL TURNSTILES

One of the industry's most modern options, optical turnstiles have no physical barrier in the lane, but detect unauthorized entrants or tailgaters with infrared beams that run between the pedestals and set off an alarm upon unauthorized intrusion. Optical turnstiles are generally used in lobbies of buildings that have lower security concerns and come in an array of sizes, shapes and materials to complement almost any décor.

SPEEDGATES

Speedgates are typically used in entrances where security and convenience are equally important. Infrared beams across the lanes detect intruders, while barriers then impede or visually deter the intruder from entering, depending on the brand and style of barrier. Speedgates are generally used in high profile lobbies where medium to high security is desired.

There are three types of speedgates: swinging glass barrier, sliding glass barrier and drop-arm barrier. The swinging and sliding glass barriers are available in a variety of heights. ADA compliance is available in all three types, often minimizing the expense of separate manned passgates.

If you're not familiar with the differences that come with each type of speedgate, let's compare them and the impact they make to your security posture.

TYPES OF SPEEDGATES

Swinging Glass Barriers

Swinging glass barrier speedgates are the most popular models, coming in many shapes, sizes, glass heights and materials.	• Can incorporate tempered and laminated glass to lower risk and enhance life safety. • Extended shaft along the full length of the tall glass to further strengthen the glass.	• Some brands use plastic or polycarbonate barriers in lieu of glass , which can scuff easily and quickly show wear and tear in busy lobbies. • Others brands use short shafts even with full-height glass, which increases the chances of the glass breaking since it is unsupported.

Sliding Glass Barriers

Sliding barrier speedgates feature varying heights of glass, plastic or polycarbonate barriers.	• Barriers recede into pedestals	• These pedestals must be wider to internally accommodate barriers, especially in the case of ADA lanes.

Drop-Arm Barriers

"Normally closed" is the most commonly used mode of operation for drop-arm barrier turnstiles.	• Barriers are closed when the person approaches the turnstile and they open once authorization is granted. • Many turnstile models also provide breakaway functionality, which is designed to minimize the potential for injury.	• Some drop-arm brands are fast enough and intelligent enough to actually raise the barriers in front of tailgaters, which allows security officers to respond. • If using drop-arm barriers, it is important to make sure that the product has adequate safety beams designed to prevent the barriers from making contact with pedestrians.

PASSGATES

Passgates are generally used in manned reception areas for the passage of delivery carts, gurneys or wheelchairs. The glass gates generally open in either direction, are either motorized or manual glass, plastic or polycarbonate, and can typically be activated by security personnel. For higher security, some smart turnstiles also offer gates with infrared beams to ensure only one person passes per authorization. Without this added intelligence, passgates are more susceptible to tailgating and must be closely watched.

SECURITY BOOTHS

Typical applications for security booths include high security sites such as data centers. Upon entering the booth, the door closes behind the person and the system checks that there is one person in the booth before opening the next door into the secured area. Security booths may also deploy additional detection such as weight or weapon sensors.

REVOLVING DOORS

Revolving security doors, when integrated with the access control system of a building, are set to revolve once per valid authorization. The doors are used in medium to high security settings but should be guarded to ensure only one person is entering the compartment of the door at one time. Separate ADA compliant entryways are normally required.

DOORWAY TAILGATE DETECTION

Tailgate detection devices are like mini-optical turnstiles mounted on a door frame, with microprocessor intelligence that can analyze breaks in the infrared beams. They are typically deployed on more critical doors such as IT rooms, laboratories, financial areas and executive suites, where an intruder could do more than a few thousand dollars in damage. They are also often used on secondary building entrances and employee smoking areas. This added layer of security helps users better fulfill the access control system's purpose by sealing off interior vulnerabilities. In addition to detecting tailgaters, these devices also detect direction violations. A common scenario is for people exiting a secure room, and someone sneaks in as the door is closing. These devices help ensure that only one person passes for each authentication, and they pass in the approved direction. They typically have an output to activate other security measures upon alarm.

Regardless of which entrance security control works best for your particular building and need, understanding how different security applications can protect your building is the first line of defense in creating a robust access control strategy and protecting the assets of a business as well as the people on its property.

Conclusion

The impact that technology has had on creating safer and more secure facilities is nothing short of significant. Security protocols that first began as surveillance cameras monitored by security personnel, evolved to incorporate access cards, and then ultimately what is now a seemingly endless array of self-service security technology integrations such as facial recognition software, biometric access readers, and destination dispatch technology to optimize traffic flows in high-occupancy buildings.

With the availability of so many technological integrations that can be configured in endless possibilities, building lobbies are more connected than ever before across every element of the facility security spectrum. However, it is critical to ensure that the technological capabilities you select are integrated into one central operating system for true efficiency and a holistic security overview that is available in real-time.

Entrance control security solutions like turnstiles can be a significant investment, both in terms of financial commitment and time to evaluate essential functionality components like design, safety and other technical considerations. The security of an organization's database, private client data, equipment, and particularly the well-being of employees depend on thorough and thoughtful planning and upkeep of security protocol.

Creating a lobby with premium security products that come with real intelligence can become a reality with Smarter Security.

Whether you are in the building planning process or making upgrades to your existing facility, make it smarter and more secure with the technologies available to you today. Download the Smarter Security product brochure to see the spectrum of turnstile products and security integrations that uniquely fit your entrance control security needs.

About Smarter Security

Smarter Security is North America's preeminent security company for Entrance and Access Control. Unlike other solutions, our Fastlane® turnstiles, Door Detective®, SmarterLobby, and ReconaSense® all harness the power of advanced neural network technology to provide unrivaled intelligence to pedestrian access control. We provide seamless security for some of the world's most iconic buildings, including over 50% of the Fortune 100 and thousands of commercial, campus, and government lobbies. With Smarter Security, organizations achieve a layered security strategy with a lower total cost of ownership. Learn more at **www.smartersecurity.com**.

Smarter Security
More intelligent. More secure.