Security & Safety Things

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# AI cameras in commercial buildings for smarter, sophisticated security

Guide for Security Camera Users and Integrators

# Introduction

The Internet of Things (IoT) has reached many areas of our economy and life and is developing fast. Through advances in technology, a wide range of devices and systems can be connected to form smart ecosystems. These include security cameras, which are already used in almost every commercial property today.

There is massive potential for owners and system integrators to create significant added value for their customers. In this white paper we want to give you an idea of the technical possibilities and show you areas where smart security cameras make commercial buildings not only safer, but also help optimize operations. This benefits you and your customers.

## Smart surveillance is key

Powerful security cameras in buildings provide video data, smart apps on the cameras analyze data and trigger appropriate actions. Surveillance that required complex computer systems in the past are now executed directly on the devices. Handling is simple and user-friendly and the benefits are enormous.

> “Smart Surveillance in commercial buildings helps make operations more secure and more efficient.”

**DANIEL GUERRA**
SECURITY IOT SPECIALIST

# The potential of IoT in commercial buildings

## 1. Improve Security

Threats in commercial buildings can come from humans as well as from objects. Smart security cameras can help monitor both in real-time to minimize risk. This ensures occupants confidence and helps reduce risk-related costs for insurance or even damage repair.

### Use smart technology to detect fire

Fire is one of the most primeval dangers in history. Therefore, the prevention or early detection of flames and smoke in buildings plays a very important role.

Source: www.aitech.vision

Example: Fire and smoke detection using AI Tech

A.I. Tech designs and develops video analytics solutions, combining current technologies concerning computer vision, artificial intelligence, and deep learning. Video analysis applications help to detect the emergence of fire or smoke in buildings or outdoor areas at an early stage and trigger alarms faster and more reliably than humans can.

Side effect: decreasing insurance risk and premiums

The costs of property insurance for commercial property correlate with risks in a building caused by fire or water. Commercial property insurance typically covers both water and fire risks, as well as a variety of other risks that are not usually considered "force majeure".

The fire risk is primarily determined by internal factors, such as the number and activities of persons in the building, the number of electrical and gas appliances used, etc. The better an

owner is able to prevent fires, the better the chances of minimizing property insurance costs.

> “Smart cameras with powerful processors and intelligent apps can play an important role in fire detection and prevention.”

## Use smart technology to detect suspicious and violent behaviour

The larger and more complex a building is, the more space it offers for human behaviour that endangers people and objects. Security personnel sitting in front of a wall of video monitors often hardly manage to keep a reliable eye on every area of the building at all times.

This is where smart video surveillance can help to detect dangers at an early stage. Security cameras equipped with specialized apps offer two important functions: the detection and analysis of human (critical) behaviour and the detection of (critical) objects such as weapons.

Example: Detecting fights using Vi Dimensions

Machine analytics helps identify patterns and highlight anomalies. Vi Dimensions’ AI solution is able to learn normal activity patterns and trigger off an alert if any behaviour such as fighting, a person falling or lying on the floor, occurs, where this clearly deviates away from normal activities.


Source: www.vidimensions.com

This figure shows the video of a critical scene in which two men fight. The application detects the deviation from normative behaviour (to see on the right side) and alerts if a certain value is exceeded, so that a threat must be assumed.

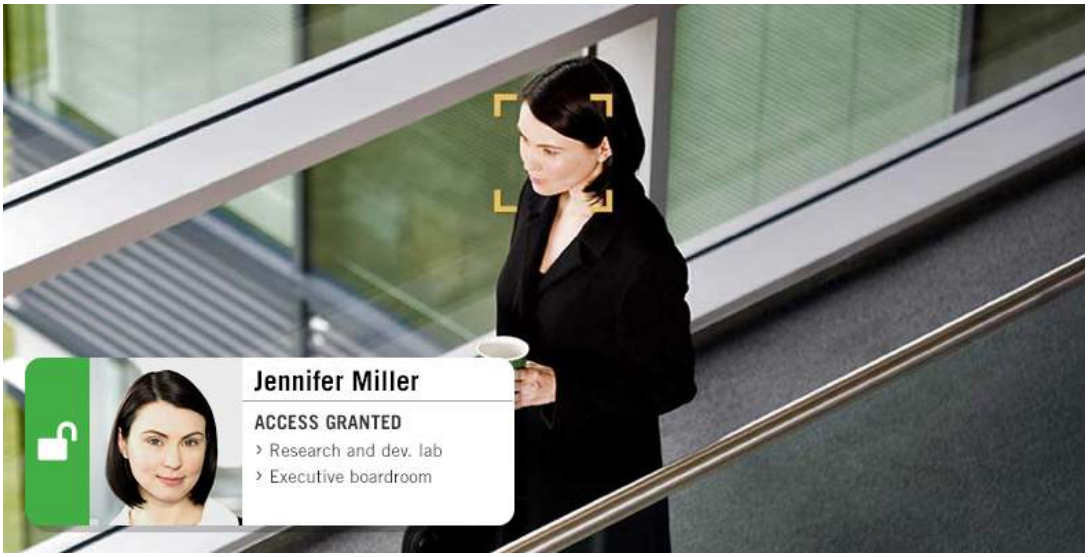
## 2. Improve user experience

A major challenge in the management of commercial buildings is to assign clear structures for public, semi-public and closed areas and to regulate access for certain groups of people accordingly. ID cards are usually used to control access and authorizations of individuals.

Managing hundreds of IDs in frequently changing or growing environments can be very complex and error-prone. In addition, individuals often lose and forget their cards. Particularly in complex systems with a large number of users, it can be easier to use video analytics to identify and authenticate people.

Smart security cameras today are able to recognize people's faces and automatically trigger appropriate actions, such as opening doors. This creates above-average user experiences, reduces administrative effort and simplifies processes in buildings.

Example: Protect access to sensitive areas with Facefirst




Source: www.facefirst.com

To control access to sensitive or non-public areas in buildings, companies like Facefirst offer smart applications for security cameras. Face recognition ensures that only authorized persons get access, while far less personal information is required than with other forms of identification.

In many cases, face recognition provides an additional layer of security beyond keys and ID cards. It is worth keeping an eye on technological developments in this area.

## Other areas in which smart cameras can improve user experience

- Adapting air conditioning to room occupancy: Smart cameras can detect how many people are in one location over a certain period of time and accordingly help control ventilation or heating according to demand.

- Improve ergonomics at the workplace: Many workplaces are not ergonomic because they do not adapt to the requirements of the users. This is especially true for places that are used alternately by different people. Smart security cameras could detect the size and stature of people and, for example, adjust the height of desks to suit individual needs. The cameras communicate with other things on the Internet. In this case with height-adjustable desks.

- Optimizing lighting in buildings: This is another important aspect in the field of ergonomics, which has a major impact on the well-being and performance of people in buildings. Smart cameras can analyse the lighting conditions caused by weather and structural characteristics and adjust the lighting in the building accordingly.

## 3. Improve buildings operations

The Internet of Things is about intelligently connecting devices and processing data. Smart security cameras equipped with specialized apps can analyze video data in real-time and trigger appropriate actions such as opening doors, adjusting air conditioning or lighting.

This covers both people and vehicles, e.g. in underground garages or external parking lots. Since smart security cameras can detect both humans and objects, these devices can play an important role in controlling and surveilling traffic. You can already find this in retail or in the parking management of stadiums or in public spaces. What has proven itself here also works in commercial buildings such as offices, where thousands of people come and go every day.

Example: Smart Access control

Where many people come together at certain times, there is a danger of traffic jams and long waiting times, which must be
avoided if you want to offer an excellent user experience in buildings. User experience usually starts at the entrance of a building, where smart video systems can help make processes as smooth as possible. Similar to controlling access inside buildings, facial recognition can speed up the processing of people compared to traditional card systems.

Extra: However, landlords and managers of commercial buildings can do even more with the data provided by the

Source: www.intelli-vision.com

devices, for example control and organize traffic.

## The future of IoT in buildings

What is technically possible and helps to manage buildings more easily and efficiently will soon become established. Much of what smart video analytics can do is already used to make public buildings such as airports, stations and shopping malls safer and smarter. It's only a matter of time till this is also popular in commercial buildings.

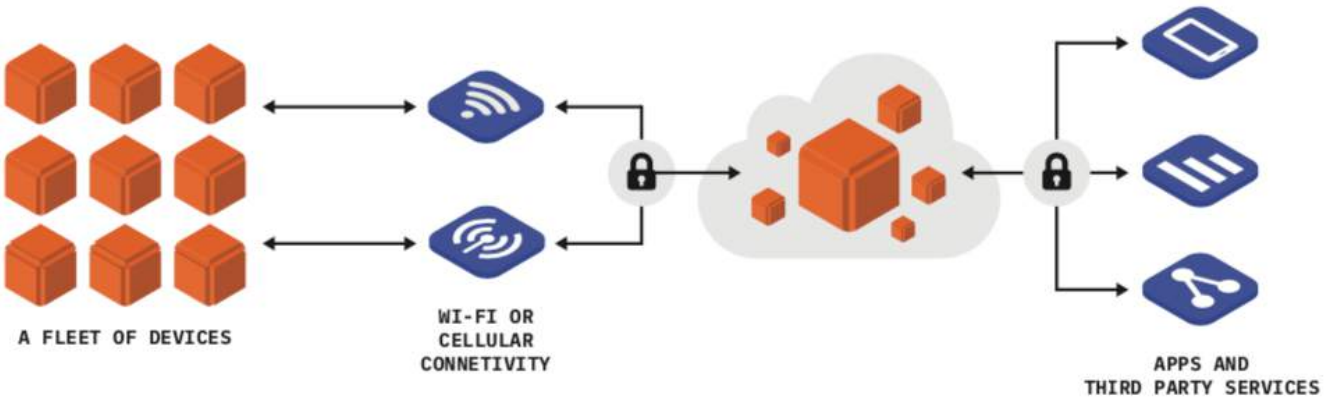
That is why now is the best time for landlords and operators of commercial buildings to deal with the latest technological developments in IoT.

# IoT Excellence in commercial buildings

IoT is about organizing devices, software and data intelligently so that a measurable business benefit for owners and operators of commercial buildings is created as fast and sustainably as possible. The technological platform, which brings all three areas together, plays an important role in this.

At Security and Safety Things, we have developed a platform that is open to products from a wide range of manufacturers and developers. On this platform, new applications for compatible camera systems can be quickly and easily tested and implemented.

## Simplified structure of an IoT platform like Security and Safety Things




## Requirements for IoT technology

Explaining all of the criteria necessary to make the IoT a success in your business would exceed the scope of this white paper. We therefore intend to focus on the area of technology, and in particular networked security cameras, and to provide a number of suggestions for planning and implementing your own systems. The following checklist should help you to consider important aspects in your conception.

## Checklist: Components & Requirements

### DEVICES (IOT CAMERAS)

- Processing power: Powerful microprocessors enable complex video analysis applications to be operated in the camera itself.
- Functionality: Software applications can be installed and updated without the camera having to be replaced.
- Data protection: Data is analyzed and interpreted in real-time, which means that anonymized analytical results can be processed exclusively, instead of video data

### APPLICATIONS (APPS)

- Standards: Quality standards for app development and a standard operating system in the app store ensure high quality and compatibility for the apps.
- Installation & updates: Installing and updating via an app store simplifies the testing process for applications while minimizing risk.
- Parallel operation: Multiple apps can be used in parallel on a single security camera

### SECURITY

- Data protection: Data is analyzed and interpreted within the cameras immediately, which means that anonymized analytical results can be processed exclusively, instead of video data.
- Data transfer: The flow of data within the IoT platform should have end-to-end security against outside access and manipulation.

**PLATFORM**

- Data analysis: The platform provides analytical tools and AI applications in order to extract the greatest benefit from IoT data.
- Edge functions: These are an important component of decentralized data processing, enabling networked devices to analyze data on-site.
- Data exchange: Data can be exchanged with other systems via standard interfaces.
- Development environment for apps: The platform provides development tools and standards for prototyping, reporting and access management.
- Marketplace for IoT applications: Apps for a wide range of functions are very straightforward to install and test on networked devices.
- Device management: Functions and software on IoT devices from different manufacturers can be centrally managed and maintained using a standard operating system.
- Connectivity: Various protocols and data formats are merged in a common software interface to enable the flow of data between the networked devices.

## New industry standards emerge

Manufacturers, developers and integrators are already joining forces to accelerate technological developments and provide applications for the use of video analytics in commercial buildings. One such initiative is the Open Security & Safety Alliance (OSSA), which aims to create standards for IoT ecosystems. For more information, please visit the official website at www.opensecurityandsafetyalliance.org.

# The first steps toward IoT Excellence

Many IoT projects fail because owners or managers of commercial buildings aim to achieve too much all at once. Integrators should support their customers by planning and implementing their projects in small, predictable steps - especially when IoT is new to security cameras. Start with projects that deliver the highest possible business value quickly and at low risk. With this approach you can gain initial experience and further develop your IoT.

The technology strategy for IoT should consider and document all business, technical and operational requirements and constraints. In addition, it should consider not only current but also future business needs and accordingly be able to adapt to business and technological changes.

The following overview describes the phases, tasks and activities of implementing IoT.

| | | | |
|---|---|---|---|
| 1 PREPARE | Define business objectives<br>Assess skill gaps and build team<br>Define success criteria | Setup IoT CoE<br>Engage IoT archtiects<br>Define reference architecture | |
| 2 DEFINE | Define delivery approach<br>Define security solution<br>Develop prototype | Evaluate prototype<br>Refine architecture<br>Assess risks and mitigation approach | |
| 3 DEVELOP | Device specification, fabrication<br>Provider evaluation, engagement | Platform integration<br>Testing | |
| 4 DEPLOY | Provision devices<br>Integrate data, applications | Deploy management solution<br>Measure | |
| 5 OPERATE | Maintenance<br>Automation<br>Monitoring | Measure achievements<br>Fine tune solution, architecture, processes<br>Scale up | |

## Conclusion

Smart video analytics offers the potential to increase security, efficiency and the user experience in commercial buildings.

The Internet of Things is growing day by day and connected devices are becoming smarter and more versatile. Modern security cameras are capable of delivering more than just video data. More powerful processors, faster data processing and artificial intelligence have given them the ability to draw more from data: Smart video analytics not only add security to the user experience, but also help you to optimize processes and operation in facilities.

The devices and software applications required are already out there. We at Security and Safety Things want to ensure that the implementation of new innovative solutions in your buildings or those of your customers is as simple, cost-effective and flexible as possible.

Stay up to date about current developments in the Internet of Things with our insights:
https://www.securityandsafetythings.com/insights

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