

The background of the entire page is a high-angle, daytime photograph of a city, likely Copenhagen, featuring a prominent church with a green spire. Overlaid on this image are various digital and futuristic elements: a large, glowing blue and orange wireframe cylinder in the upper center; a transparent digital interface with charts and data points floating within the cylinder; streams of binary code (0s and 1s) falling from the top; and a person's hand in the foreground holding a tablet, with a finger touching the screen. The overall theme is the integration of digital technology into urban infrastructure.

SIEMENS

Modernization and digital transformation

For integrated fire safety
and security solutions

A study
produced by
independent
research firm
Verdantix

[siemens.com/firesafety](https://www.siemens.com/firesafety)

Modernization and digital transformation: fire safety and security solutions

Modernization in the latest fire safety and security technology enables access to deeper operational and business benefits

Recent advancements in fire safety and security software and hardware make it easier for firms to ensure the safety and security of building occupants. New digital solutions enable the connection and control of multiple stand-alone systems such as fire safety, security, access control and CCTV from one central location. The multiple benefits of new digital solutions, from mobile functionalities to granular monitoring and control of individual detectors has made technology modernization a priority for firms with ambitious and comprehensive digital strategies. This report explores how fire safety and security executives benefit from software and hardware advancements by looking at drivers such as facility operational needs, legacy solution failures, and organizational business objectives.

This study, produced by independent research firm Verdantix on behalf of Siemens Building Technologies, details the current state of fire safety and security technology modernization across sectors such as critical infrastructure, education, healthcare, hotels, industrial plants, museums, commercial offices, and theaters. It features insights from interviews with 21 operators of fire safety and security solutions from Austria, Belgium, Denmark, France, Germany, the Netherlands, Poland, Singapore, Switzerland, Taiwan, and the UK.



Ageing fire safety and security solutions can be costly

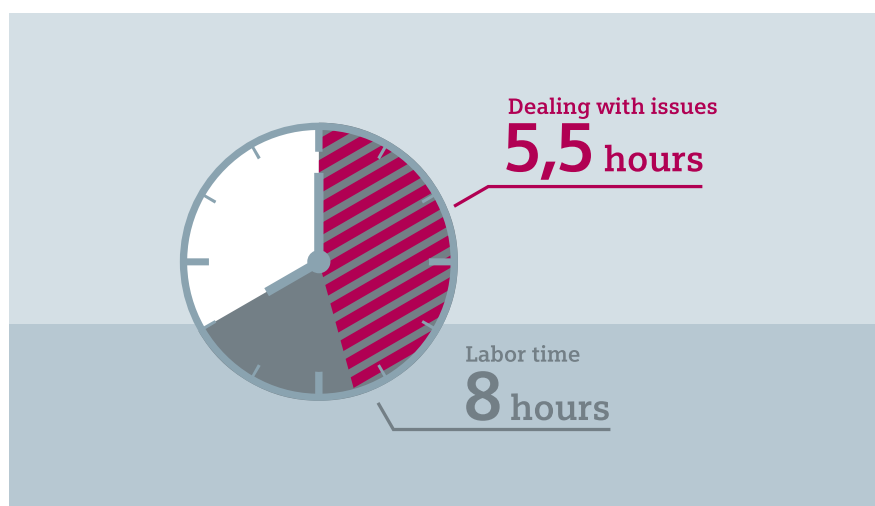
Ageing fire safety and security solutions drive up facility operational costs

Persisting with legacy fire safety and security solutions presents a whole series of operational challenges. Interviews with fire safety and security technology users showed that:

- **Facilities personnel spend up to 60% of their time validating alarms.**
Fire safety and security solutions with no or limited digital functionality requires manual verification and validation of alarms. Large facilities, such as casinos or museums, with limited CCTV camera use can put pressure on security teams to stay on top of required actions for items such as false fire alarms, unauthorized fire door access or proximity to restricted areas. Teams can find themselves spending a significant amount of time to respond to multiple alarms a day.

“At the moment between 60% to 70% of the time of security guards is being used to deal with legacy system issues.”

Casino – Security Manager





False fire alarms can be costly

- **Delays in recognizing false alarms trigger fines for companies**

In several countries, businesses are required to integrate fire safety solutions with the fire service. Once an alarm is triggered, unless the fire service is notified, it is a false alarm within a specified timeframe (depending on country and size of facility), they will be dispatched to the premises. Some fire services now levy fines on organizations with repeated false alarms. For example, in the UK, both the London Fire Service and the West Yorkshire Fire and Rescue Service now impose fines of £ 350 for each false call out. Applicable service fees depend on national legislation and can increase if a facility has several alarms per month.

“There are currently no fire service intervention fees, but the legislation is about to be changed in many municipalities around the country.”

Theater – Fire Prevention Services Inspector

- **Legacy solutions provide limited situational awareness for troubleshooting alarms.**

When alarms are triggered in legacy fire and security solutions (typically solutions which are more than five years old), fire and/or security personnel are normally alerted to the general area of the alarm. Afterwards, identifying the specific area and sensors which have been tripped would need a manual investigation – a process which could take up to 15 minutes. Such a delay means firms may be forced to unnecessarily evacuate buildings (due to false alarms) or place the occupiers at elevated risk while the cause of the alarm is investigated.

“We have around 25 to 30 false intrusion alarms a year. For each alarm there is an intervention needed by a guard, but there is often nothing to see. Checking each instance can take up to 15 minutes.”

Industrial Plant – Security Manager

- **Lack of mobile functionality blocks efficiency opportunities.**

Mobile functionality is not available with legacy solutions. As a result, each time an alarm is triggered, someone must access a central or individual floor control panel to identify the source of the alarm. This requires facilities teams to have at least two fire safety or security personnel onsite always to deal with potential alarms – one person to monitor the central station and direct additional staff to the appropriate location for alarm verification.

“With the old system, we needed someone to monitor the central station 24/7.”

Hotel – Fire Safety Manager

- **High instances of legacy solution downtime forces facility closures.**

To comply with health and safety regulations, buildings will need to be evacuated if fire safety solutions malfunction or need to be switched off for maintenance issues. The high rates of legacy solution malfunctions and required repairs create significant disruption to business operations and can also impact revenues. For example, during a conversation with an operator of a large hotel, the user stated that the hotel will need to evacuate hosted conference and business meetings, a cinema, a restaurant as well as the hotel guests if their system malfunctioned. This will result in costs of more than a € 100,000 a day.

“We can’t afford any breakdown in the system. If the system breaks down then I have to close my hotel and that would cost us over € 100,000 a day.”

Hotel – Senior Facility Manager



Hospitality sectors to be evacuated in case of breakdown of legacy fire and security solution

- **Legacy solution maintenance costs keep rising as hardware becomes harder to source.**

As fire safety and security technology vendors develop new products, they begin to scale back the manufacture of parts for legacy solutions. For solutions over ten years old, parts are increasingly difficult and expensive to source.

“Older systems had a lot of part failures and after ten years, it was very difficult to find replacement parts which drove up maintenance costs.”

Hotel – Security Manager



Phased out legacy solutions will eventually no longer be supported

- **Vendor solution upgrades result in phase outs of legacy solution support services.**

Due to technological innovations, vendors upgrade legacy fire safety and security solutions. Solution upgrades result in the phase out of support services for legacy systems once a new solution has been launched and settled in the market – customers may get a notice that the system support will be ending within the next years. If the legacy solution owner doesn't modernize within this timeframe, they can find themselves with a failing solution that can not be repaired.

“We needed to upgrade as our older system was not going to be supported any longer.”

Museum – Security Manager

Facility executives struggle to secure budget for upgrading fire safety and security solutions

The modernization of fire safety and security solutions enables organizations to optimize the operational performance of their buildings. Despite this, many firms still wrestle with outdated systems. Seeking to understand the reasons for this, our interviews with fire safety and security operators found that:

- **Solution migration disruption creates concerns for safety and facility directors.**

A technology modernization project can be an expensive and time-consuming pursuit. Vendors that do not fully understand a client's safety and security processes, business objectives or technology requirements will not be able to select the most appropriate solution components. This will require additional project revisions to meet client expectations and result in cost overruns and business disruption from project delays. To prevent this, an interviewee elected to upgrade their fire safety and security solution with their existing provider. This resulted in a faster project implementation and cost savings.



Talking the same language and knowledge of existing / new processes and organization reduces costs

“If we extended our existing solution with a new company, it would have required 50% more planning and implementation time because the new company would need to understand our company and processes as well as understand how to best integrate with our existing equipment. Being able to speak the same language helps to make this process easier.”

Museum – Security Manager

- **Existing safety processes make it difficult to argue the business benefits of upgrading.**

Fire safety and security efficiencies achieved through modernization can provide executives with cost benefits from improved employee productivity. However, executives may not fully appreciate these benefits if they are unable to see beyond existing processes. Executives that visit a similar facility that has recently undergone modernization will be better equipped to fully understand how modernization will benefit their facility.

“Our visit to an existing customer reference site where they were using the new solution, was very helpful and provided us with the best information for own decision.”

Premium Office – Security Manager

- **Limited budgets restrict the size and scope of modernization projects.**

Executives are forced to fit modernization projects within existing budgets. This forces them to extend modernization projects over several years. Conversations with fire safety and security operators found that many do not expect increases in budgets for modernization projects within existing facilities. Executives find it easier to secure budget for a modernization project when planning new facilities.

“We have 20 buildings and will upgrade them over the next few years because it is impossible to do it all at the same time.”

Education – Safety and Security Manager

Upgrading and integrating fire safety and security solutions unlocks operational efficiencies

Fire safety and security teams frequently find it difficult to secure budget for technology modernization projects because of the complexity of projects and the size of existing budgets. However, where such system upgrades do receive the green light, firms stand to achieve a range of operational benefits. In the interviews for this study, it was found that:



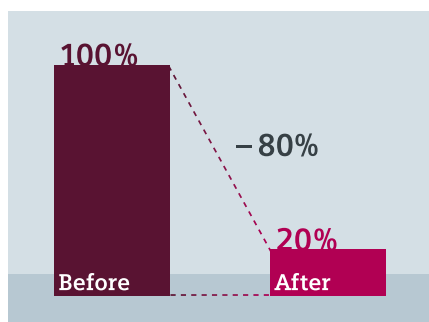
Visualization of modern fire safety and security solutions can save you money

- **Enhanced facility visualization reduces annual personnel costs by €300,000.**

Digital fire safety and security solutions provide operators with a visual representation of detectors, communication devices and other fire safety and security equipment. This enables teams to improve situational awareness and to understand the condition of each piece of equipment. Better situational awareness enables teams to understand the cause of alarms and determine the appropriate response faster. For example, connecting CCTV to the security system means, a guard does not have to physically check each time a fire exit door is inappropriately used.

“Even though we have 30% more space now, our 12-person security & safety team is able to do the work of 18 people. This saves us approximately €300,000 per year.”

Museum – Security Manager



False alarms incidents before / after fire and security solution migration

- **False alarm incidents fall by 80% following solution migration.**

Fire safety and security solution modernization saved one hotel operator more than €40,000 a year in lost worker hours. Savings were achieved due to a radical reduction in the number of false alarms (each of which had to be investigated manually) associated with the new system.

“We have been able to reduce our false alarms by 70% to 80% with the new fire safety and security system.”

Critical Infrastructure – Security Manager

- **Optimized incident response processes result in 50% reduction in security man hours.**

Fire safety and security solution modernization provides executives with the opportunity to optimize how facility resources are used. Conversations with hotel operators found that savings of between €20,000 and €30,000 a year have been achieved from improving the efficiency of staff processes during evacuation procedures.

“With our new system, we have been able to improve our processes for incident management so that our six-person team is able to do the work of three additional people.”

Critical Infrastructure – Security Manager

- **More granular command and control results in improved building management.**

Historically, if construction work occurred within a facility, an entire line of fire detectors had to be disabled to prevent the triggering of alarms from increased levels of dust. New, digitally controlled detectors provide operators with the capability to programme individual detectors to conform to specific environmental requirements. For example, smoke sensor detectors can be adjusted or temporarily deactivated to prevent false alarms from short-term circumstances, such as construction work or theatrical smoke. Detector heat sensors would remain active.

“New systems have more possibilities for individual control of detectors so that you can switch them on and off as needed. For example, if we are doing construction work in the area, we can switch off the smoke detector part and just leave the heat detector operating.”

Education – Safety and Security Manager



Security guards can spend 60% to 70% of their time investigating false alarms

Replacing legacy solutions also generates wider business benefits

Interviewees detailed an array of operational benefits from upgrading ageing fire safety and security solutions. Beyond these quantifiable benefits, system modernization can also deliver broader organizational gains. Our interviews found that:

- **Safety and security teams can better focus on the safety of building occupants.**

Security guards can spend 60% to 70% of their time investigating false alarms when using older and less reliable security systems. While significant reductions in false alarms have been observed with newer digital systems, this has a further benefit of freeing up the time of security personnel to focus on maintaining the safety and security of building occupants.

“Because the [new] system is more reliable, we spend far less time trying to sort tactical issues such as faulty door alarms and focus on more strategic security concerns.”

Museum – Security Manager

- **Earlier incident detection improves response processes and safeguards brand image.**

Fire safety and security teams faced with frequent false alarms or lengthy alarm verification processes may find the reputation of their facilities begin to decline. Too many false alarms lead to reduced confidence in these alarms and a reluctance of the occupants to respond appropriately. Interviewees said the latest fire safety and security solutions provide additional visualizations and mobile tools that enable faster diagnosis and resolution of alarms, thus reducing the impact on occupants.

“Newer fire alarm systems help us to provide a better experience for guests. Imagine, having to go door to door in a 300-room hotel to figure out which room the smoke was coming from – you don’t want to go knocking on guest rooms in the middle of the night.”

Hotel – Fire Safety Manager

Six steps to ease the modernization of fire safety and security solutions

Upgrading ageing fire safety and security solutions delivers both operational as well as broader organizational benefits. Despite these benefits, securing internal sign off on a new solution as well as running a successful implementation program brings with it a series of challenges. Executives within fire safety, security or broader facilities roles should adopt the following six steps to facilitate a successful deployment of a new solution:



1. Establish the vision for fire safety and security within your organization.

The upgrading of fire safety and security solutions to better support daily business and new challenges is a significant undertaking. If this is the favored approach from fire safety and security directors, it is critical the business requirement for such an upgrade is made clear and that a vision for the new solution is established which fits with the wider facility and operational goals of the organization. In developing a vision, executives should consider the role of a new solution in providing a safe and operationally resilient space for building occupants and how such an upgrade integrates with the organization's wider digital transformation agenda. As part of creating this vision, it is mandatory to identify new opportunities and applications which can provide additional insight into some of the benefits enabled by the latest solutions. The new solution has to support daily business and future demands.



2. Explore opportunities enabled through wider system integration.

Digital fire safety and security solutions can be integrated into a range of other organizational technology systems, but connecting them to a building management system (BMS) is one of the most promising opportunities to consider. For example, occupancy sensors can notify central stations if areas are secure before closing or door detectors can monitor door performance to indicate when a detector failure is imminent. Deeper solution integration can identify unanticipated efficiency or cost saving benefits while improving the overall experience of facilities. Speaking with your existing vendor to understand the broader opportunities that may exist with upgrading to the latest solution is a valuable step in the process.



3. Calculate the business case for solution modernization.

Without a convincing business case for upgrading legacy solutions, fire safety and security executives will find competing investment opportunities take priority. In building a business case, executives should consider far more than just annual solution costs. They should consider how the new solutions can lower employee costs through optimizing staffing levels, reduce productivity losses and fire service call out charges through fewer false alarm evacuations and shrink operation costs through greater solution reliability. Executives should also consider how new technologies such as mobile visualization will support new processes and deliver value.



4. Connect with the value drivers of relevant influencers and decision-makers.

To secure the necessary internal support for a new solution, fire safety and security teams need to make sure they address the concerns of all the key decision makers. The strength of the business case will likely be the primary drivers for a financial director, but expect others to influence the process. For example, an operations director will be more motivated to understand the impact on overall business productivity whereas a chief technology officer will be concerned with solution and data security and ease of integration with other building systems. Understanding and responding to the specific motivations of each individual decision maker will help secure support for the investment.



**5. Select the most suitable solution migration partner.**

Having gained approval and the budget for migrating to a new fire safety and security solution, selecting the most valuable vendor becomes the most critical item. To ensure this is achieved, firms should focus their selection criteria on identifying vendors with the best mix of people, technology and services to support with the implementation. Another key element for customers to consider is the financing options and the pricing models available from different vendors. For example, firms may prefer a solution where migration costs can be phased over a number of years or a pricing model based on either square footage or number of data points. Customers are encouraged to consider this range of factors as part of their partner selection process.

**6. Invest in training and change management.**

The latest fire safety and security solutions will deliver new tools such as enhanced data visualization and mobile solution access. To properly leverage these new tools and maximize the operational benefits they offer, firms will need to review and refresh their processes as well as ensure adequate training is provided to employees on how to use the new application. Firms which fail to invest sufficient budget into the change management component of this technology upgrade will fail to realize its benefits.

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