Robots: Augmenting Physical Security

Abstract

Existing security tools do not produce the level of awareness and response that security executives need. Cobalt Robotics is helping address this problem with a fleet of robots and a team of remote Specialists. Cobalt provides complete security coverage to a wide range of facility types, such as office spaces, museums, warehouses, and manufacturing plants.

The robots, designed with people in mind, detect potential risks, augment the value of existing security, and allow remote Cobalt Specialists to be "on-site". The Specialists fill four important needs—security, pilot, concierge, and analyst. Together, Cobalt's robots and Specialists are able to secure workplaces and address problems as they arise.

There is also a Customer Success team to implement Cobalt's services. They help plan and carry out the communication and social functions that ensure positive acceptance and comfort among personnel. Once Cobalt is deployed, security teams receive reports on a daily, weekly, and quarterly basis to help identify vulnerabilities and reflect the current state of security at a company. Cobalt's services are a reliable and cost-effective solution to maintain a presence at all hours of the day.

COBALT

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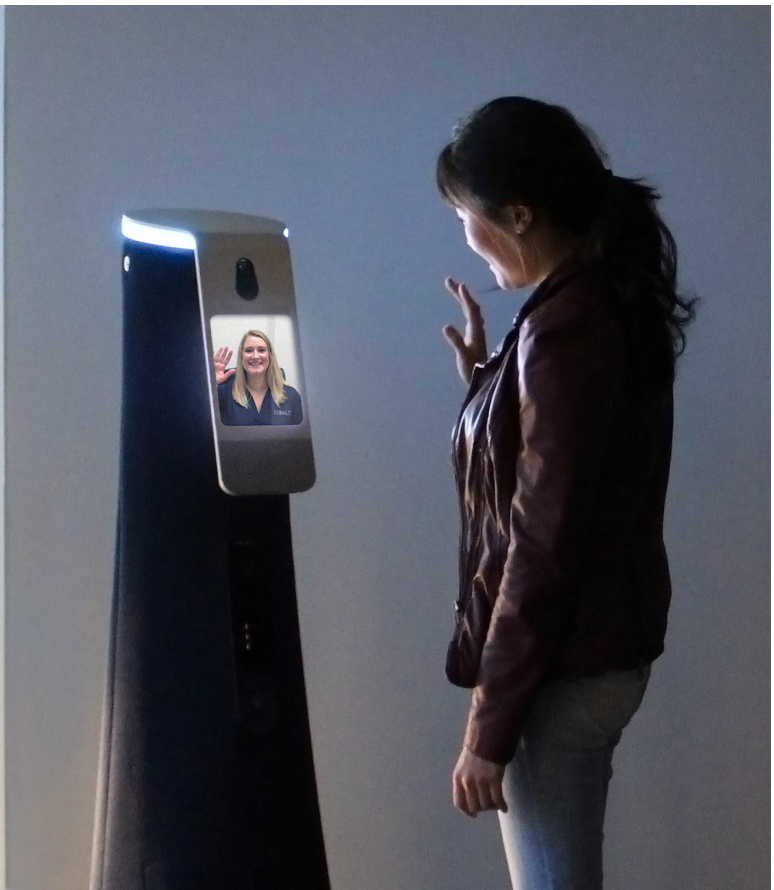


Introduction

Robotics is changing our world in profound and unimagined ways. Businesses are demanding automation to increase productivity and reduce cost so the quality and speed of services quickly improve. Accelerating these service enhancements will help companies remain competitive.

Security programs within business enterprises are not immune to this dynamic change. Their historical reliance on guards and cameras is no longer enough. Enterprise security is now expected to have total situational awareness, be proactive, and resolve security events immediately and effectively.

Robots have emerged as a proven way to improve security performance and minimize expense. This white paper explores the business and security use case for Cobalt's indoor "robots as a service", which fills a critical void within physical security solutions and also augments current technology and guard programs.

Old Challenges, New Demands

Physical security is necessary. It is paramount for employees, so they feel secure and comfortable, and it's also important for the corporate side to ensure the safety of their personnel and protection of their facilities. However, security faces challenges such as limited solutions, high turnover rates[1], and insufficient funding to deliver adequate security services.[2] Around-the-clock security coverage and real-time response is difficult to accomplish, which leaves a company's security program particularly at-risk after hours, such as on nights, weekends, and holidays.

Existing Tools for Physical Security

Traditionally, companies only have a few tools at their disposal, each of which has its benefits and drawbacks:

- **Access Control:** Access control systems act as "smart doors" to control entry and egress. They're a necessary part of protecting a facility, but they are extremely limited gatekeepers; There's very little to prevent tailgating, and they give virtually no situational awareness about what's happening indoors.
- **Static Cameras:** Cameras capture critical recordings of indoor activity; they are an essential part of any modern security program. However, while inexpensive for a single, fixed model, they can quickly become expensive with the additional costs of installation, updates, and monitoring. They have limited visibility, and even with surveillance, cameras cannot communicate with intruders or building occupants, and their effectiveness as a deterrent is rapidly diminishing.[3] Cameras are often located just at entry and egress locations and are only valuable for after-the-fact investigative purposes.
- **Guards:** This could be a trained guard, a receptionist, or even an office manager who provides customer service interactions, immediate response, and "observe and report" situational awareness. They are a necessary part of the team and a core part of tactical security programs. However, there are a few drawbacks: high costs, staffing challenges, and severe underutilization during after-hours operations. Chief among these challenges is the guard industry turnover rate, which can be as high as 400%[4]—well above the national average (18.5%).[5] These dismal numbers are due to many factors, including recruiting, training, stress, a sense of isolation, repetitive tasks, and an overall absence of supervision and leadership.[1]

The Existing Tools Still Leave Security Gaps

Today's security executives have to compromise between cost and reaction time. The industry needs a new solution that can provide high situational awareness and immediate incident resolution without being cost-prohibitive. Security leaders are increasingly being tasked to adopt technology and improve operational efficiency, coverage, predictability, cost-effectiveness, and responsiveness. In addition, security management is being asked for measurable Key Performance Indicators, reporting, and accountability. And because much of a company's assets are fundamentally "physical", the right tool requires some physical presence that isn't afforded by software running in the cloud.

Solution

Cobalt Robotics is a new service that combines the reliability of machines and the flexibility of humans. Cobalt builds indoor security robots that work alongside our trained Robot Specialists to deliver security services. Cobalt's robots and Specialists provide complete situational awareness and real-time response for security teams at office buildings, warehouses, manufacturing sites, museums, and more.

The Cobalt Robot

The Cobalt robot is both a highly complex system of features and a practical, working solution for ongoing enterprise security pain-points. Its features and role comprise four facets:

- **Sensing and identifying:** The Cobalt robot has over 60 extremely capable sensors including day-night cameras, 360-degree cameras, thermal cameras, depth cameras, LIDAR, and badge reader. Using cutting-edge algorithms such as machine learning, semantic mapping, and novelty detection, the robot can independently identify and flag security-relevant anomalies like people, sounds, motion, doors and windows, missing assets, and other risks.
- **Augmenting the value of existing security:** The combination of its sensors and algorithms makes it such that a single robot is comparable to an extremely competent guard with super-human capabilities and omnipresent situational awareness across an entire organization. These robots are meant to keep offices secure by patrolling, uncovering intruders, and identifying safety concerns (such as fire hazards or leaks/spills) or anything out of the ordinary.

- **Human-in-the-loop:** One of the fundamental values of Cobalt is to enable person-to-machine interactions. Each robot has a tablet for communication between our remote Specialists and the people on-site. Employees can tap the tablet screen to call a Specialist for guidance and reassurance, while Specialists can call in to deter an intruder, check on an employee, or address hazards.
- **Human-centered design:** Cobalt collaborated with world-famous industrial designer, Yves Béhar, to develop a non-humanoid robot that blends in with office environments. The robot stands at 5'1", a standard cubicle height, allowing it to perform in a range of settings. Fabric was chosen to cover the robot's technology to help convey a soft and friendly appearance, encouraging person-robot interactions.

Cobalt's Robot Specialist

When the robot detects an anomaly, a highly trained, intelligent, and empathetic remote Robot Specialist is alerted. The Specialist provides human-level cognition for determining whether something is amiss and the appropriate action to take or, if nothing is wrong, uses the scenario to teach the robot.

The Specialist plays four important roles:

1. **Security:** Security is full of outlier events. In these complex situations, Specialists quickly evaluate and triage the incident, promptly inform the appropriate personnel (when required), and reliably report back to the security team. Because Specialists remotely monitor a fleet of Cobalt robots, a single person can be in multiple places across an organization. Integrated with company systems (e.g., access control), our Specialists log which employees, vendors, and janitorial staff are accessing a facility after-hours, providing accountability for what's happening inside a building.
2. **Pilot:** Most of the time, Cobalt's robots autonomously patrol while looking for anything out of the ordinary. Sometimes, however, a Specialist may want to take direct control of a robot—commanding it to move to a new location, performing new patrols, and even remotely driving a robot when needed. For example, if the robot detects a fire alarm, the Specialist can confirm the signal and pilot the robot to assist facility evacuation.
3. **Concierge:** When a person is detected, our friendly Specialist can use two-way video to greet employees, request badge credentials, and ensure guests check in. The Specialist is there to help at a moment's notice—just as though they were there in person. Their presence helps create a warm and approachable setting, so employees feel safe at all times.
4. **Analyst:** Specialists give essential feedback across all aspects of the system. Our highly trained team collaborates with engineers to prioritize new features, suggest improvements to software interfaces, modify post orders for each customer, update maps and patrols, and enhance client reporting capabilities. Specialists also serve a crucial role in helping the robots learn over time. Through repeated interactions, the robots build up unique machine learning models tuned for each customer, their site, and each location within their site.

Cobalt as a Service (CaaS): How it works

Having outlined the features and roles of robots and Specialists, it is important to understand how they and other departments come together to provide a valuable, working service.

Cobalt engages with the customer's security team to determine pain points, critical areas, and patrol route. Then, Customer Success begins the on-boarding process, which includes a visit with the robot to the customer site to build a model of what is "normal" within the space.

Before starting service, Cobalt's Customer Success team will host a staff meet-and-greet with the robot and Specialists, devise an internal communication plan, and assist with other activities to ensure cultural acceptance and comfort among employees.

After on-boarding is completed, the robot starts autonomously patrolling at the customer's requested date and time. It will continue to patrol during its shift unless it identifies an anomaly that requires human input. At that point, the robot notifies the Specialist, who addresses the situation based on the customer's instructions. Once resolved, the robot continues along its programmed route.

Here are a few examples of how Cobalt has solved problems for businesses:

INCIDENT 1:

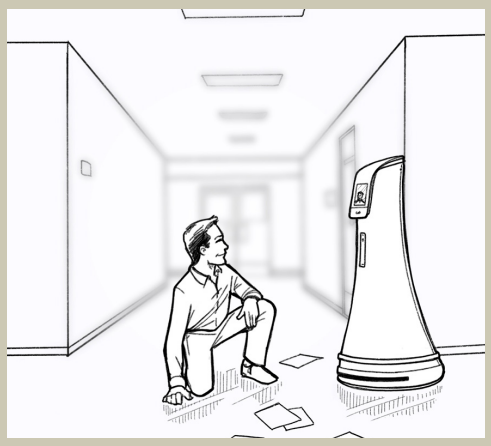
The robot spotted two individuals leaving the building with a large, metal object. A Cobalt Specialist was alerted and piloted the robot to greet them with a friendly hello. After asking a few questions, the Specialist learned they were employees who had accidentally burned food in a microwave; They were taking it outside to air.

This particular customer handles confidential financial data. An incident like this could have involved a server, rather than a microwave, which would be critical to resolve quickly. Cobalt significantly augments a customer's security measures and provides them peace of mind that their assets and data are secure.

INCIDENT 2:

Cobalt robots detected a fire alarm going off on two floors of a customer's office building. Following previously determined instructions, the Specialist called the fire department. As she piloted the robot around the affected floors to verify that no people were in the building, she called the security hotline to notify them of the situation. The robots completed their patrols, and eventually, the lights stopped flashing. A voice on the PA system announced that the alarm was addressed.

Cobalt remains on-site, even during high-risk situations, to resolve issues safely without exposing people to danger.



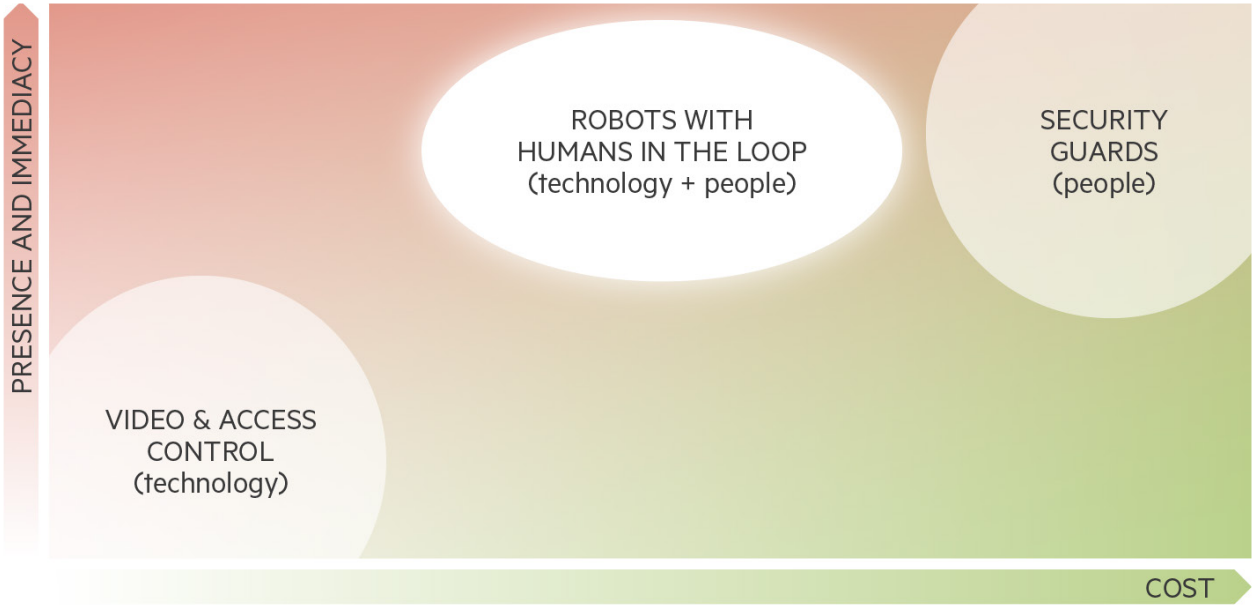
INCIDENT 3:

During a routine patrol, the Cobalt robot saw an employee slip and fall. After checking in with the employee, the Cobalt Specialist filed a ticket to inform the company that a fall had occurred at the facility. Luckily, the employee was not injured, but if they had been, the Specialist would have immediately alerted emergency personnel.

Cobalt has a friendly and efficient security presence, providing a safeguard for employees who would otherwise be alone during off-peak hours.

This information is highlighted in Cobalt's daily reports. After each shift, our Specialists send the security team a daily summary that includes a list of building occupants, full incident statements, and any other flags. Every week, Cobalt's customers receive a report including noteworthy events, patrol statistics, specific tasks completed (i.e., door checks, sensitive asset location verification, etc.), and much more. Quarterly updates contain valuable analysis with insights into trends and potential vulnerabilities.

Cobalt's service hours depend on the building type. In office spaces, Cobalt is typically active between 8 PM - 6 AM on weekdays, and 24 hours on weekends and holidays. For low traffic areas such as warehouses and manufacturing sites, Cobalt's services are available 24/7.



With Cobalt, security leaders no longer have to make a compromise between cost and response time. Instead, security groups can harness technology that is more advanced than video and access control, while also combining the presence and immediacy of security guards at a cost-effective price point. Employees will gain peace of mind to focus on their job at hand; Executives will rest easy knowing their teams and assets are more secure.

Conclusion

Traditional security solutions have their benefits, but also pose challenges for an industry that faces mounting pressure for greater awareness, more metrics, and higher accountability. Indoor security robots such as Cobalt are already operating in a variety of building types. Cobalt's autonomous patrolling robots and proactive Specialists detect, respond, and resolve incidents in real-time. Their combined efforts provide the findings and trends that are communicated through daily, weekly, and quarterly reports so security teams genuinely have complete situational awareness and peace of mind.

If you're ready to see how Cobalt can help create a safe and welcoming workplace, please visit www.cobaltrobotics.com to find out more.

Sources

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