

**SAFE CARE**

*Integrated cyber-physical security for health services*

# SAFECARE Main Results: Research Point of View

Commercial Event

Milestone Systems

# Increasing physical threats targeted at critical infrastructures

NATIONAL / CRIME & LEGAL

Losing face: 6,000 surgical masks stolen from Kobe hospital

## Computer Theft Exposes Personal, Health Data of 654K Oregon Patients

*Diebstahl von Hygienematerial*  
*Coronavirus lässt Leverkusener hamstern*

<https://www.safecare-project.eu/?p=588>

England | Regions | Northampton

## Coronavirus: Visitors steal hand sanitiser gel from hospital

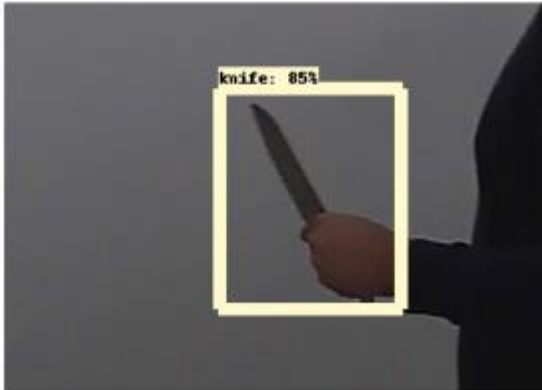
**SAFE CARE**

Integrated cyber-physical security for health services

**UNMASKED** Coronavirus – Spanish doctor caught trying to steal 300 masks from hospital to take to home village faces the sack

# Video-based intelligent threat monitoring

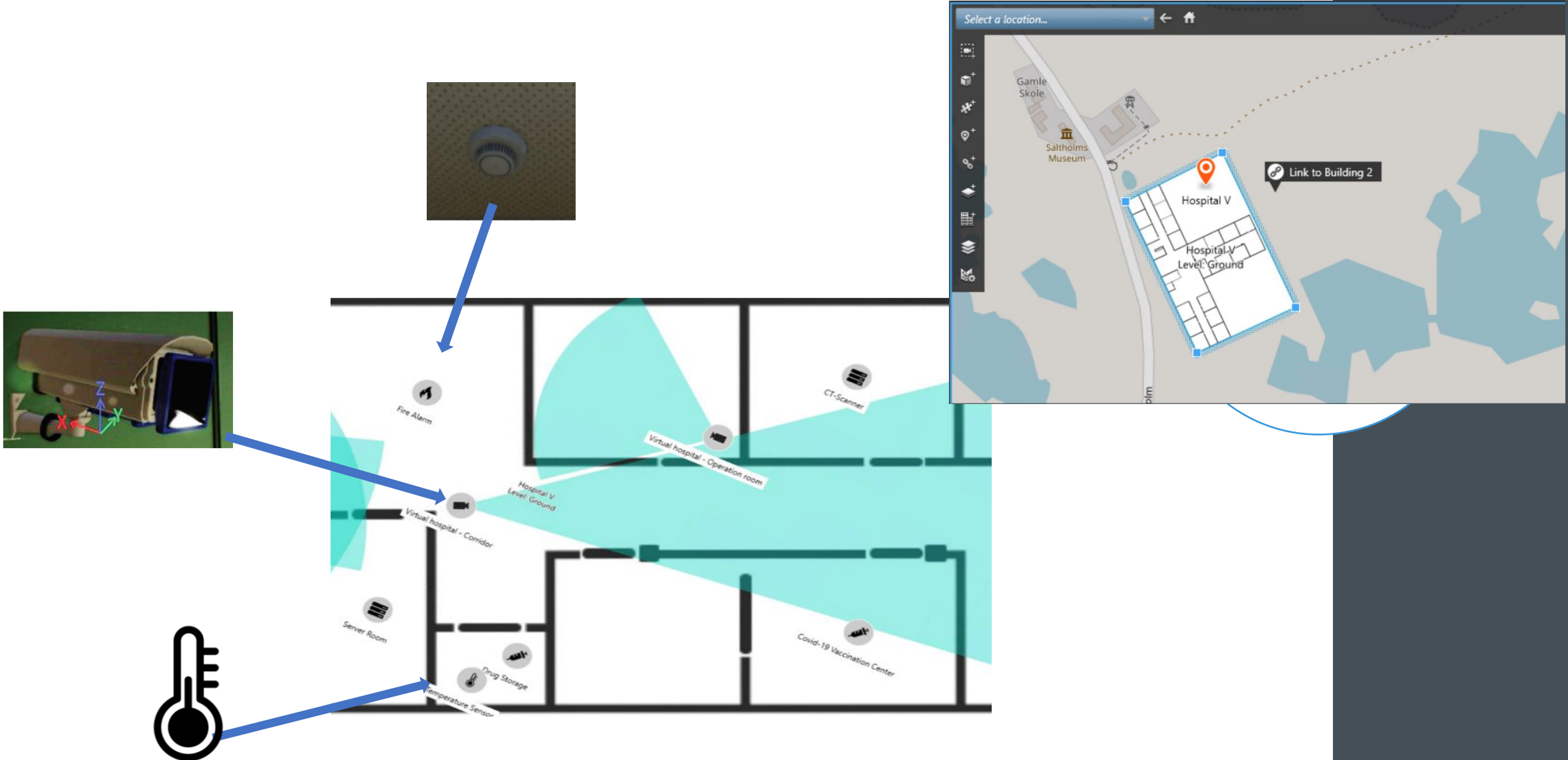
- Development of computer vision algorithms



## References

- Zhang, Chen and Liu, 2009  
Castillo, Tabik, Pérez, Olmos and Herrera, 2018  
Sheu, Pardeshi, Chen and Yuan 2019

# Unified threat monitoring



# Milestone Systems



- Global leader in Video Management Software
- > 1000 employees
- Offices in > 25 countries

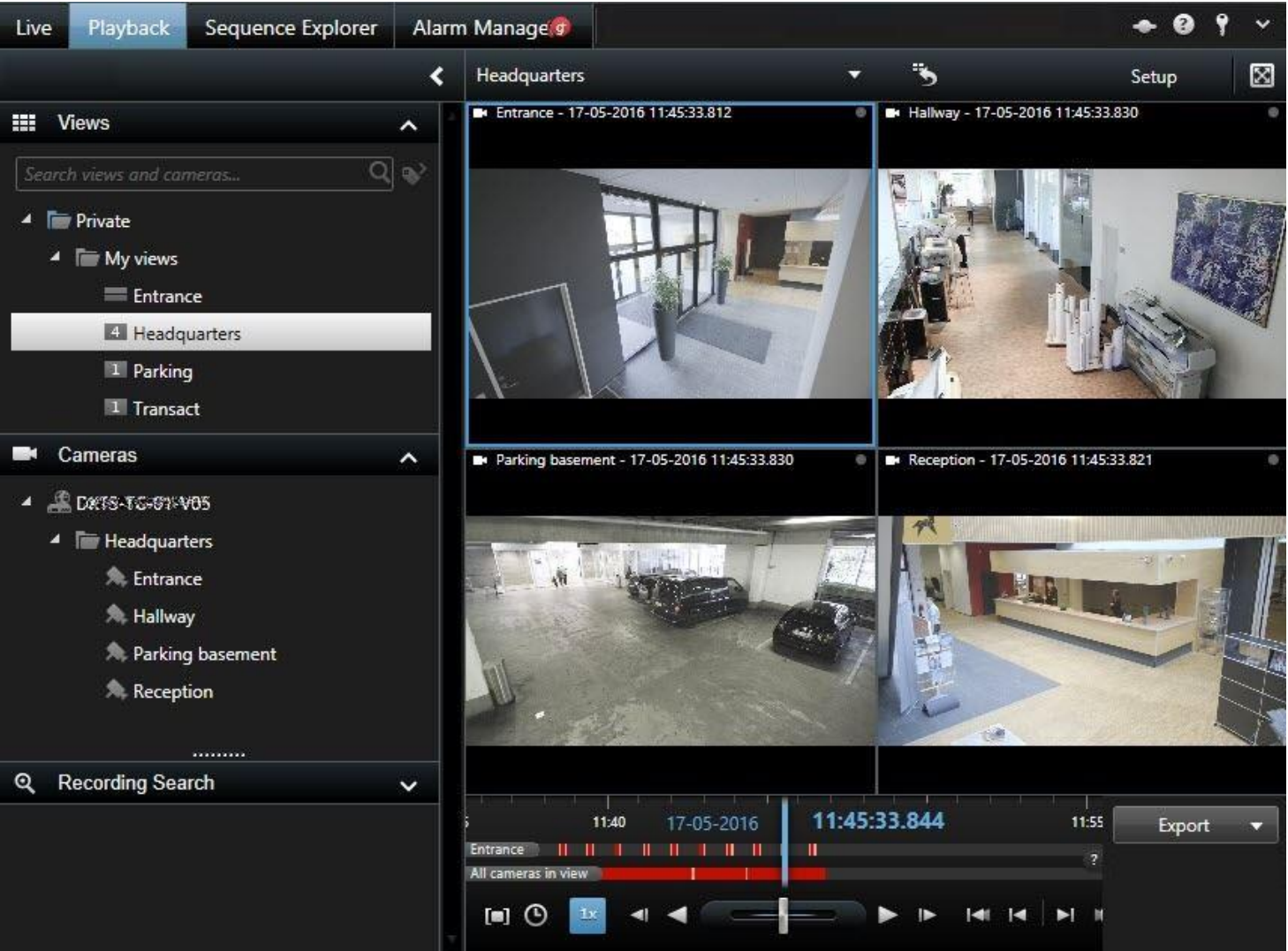


# Milestone Video Management System - XProtect

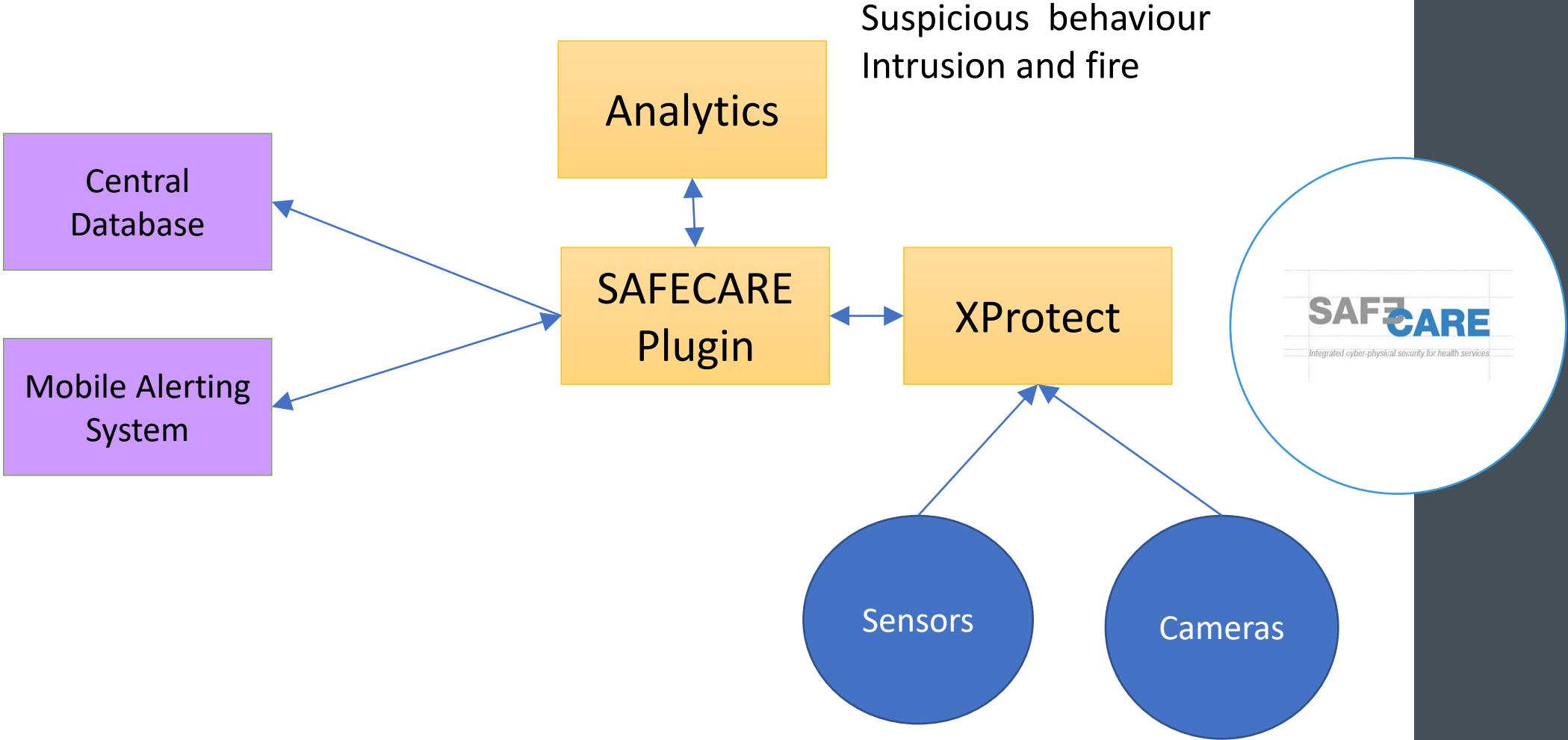
- > 10 000 camera and other devices
- > 500 000 installation in > 100 countries
- Open integration SDK



# Milestone Video Management System - XProtect

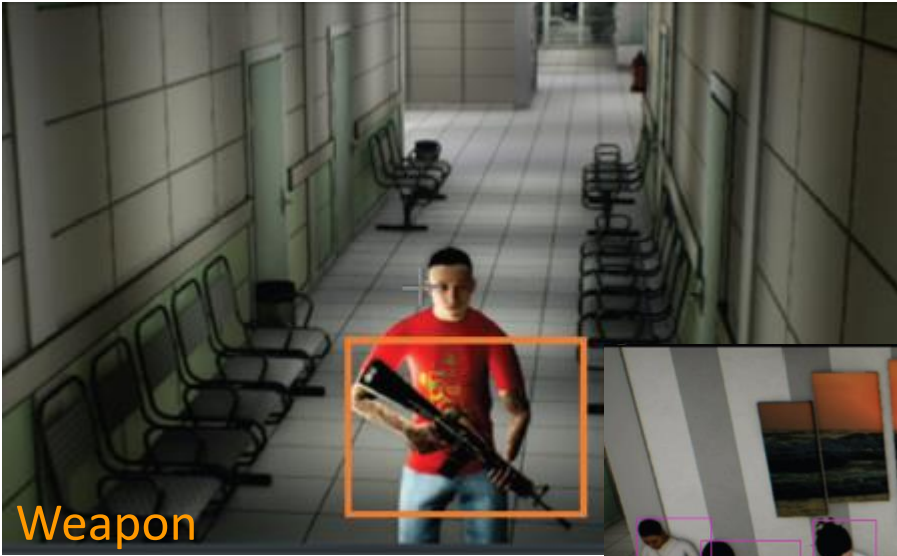


# Building Threat Monitoring System





# Threat examples



# Visual object based monitoring – example



Door closed



Door opened;  
1st person passes



Door opened;  
2nd person pass

Tailgating!

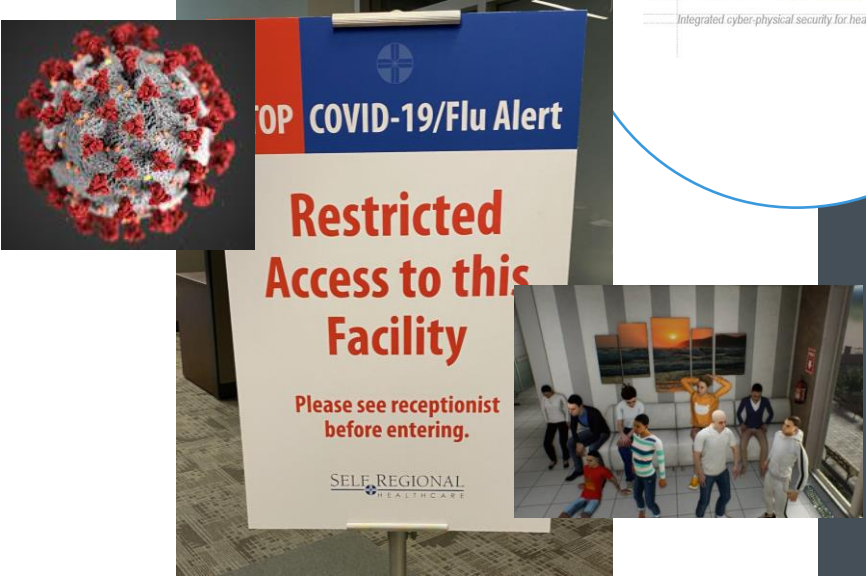
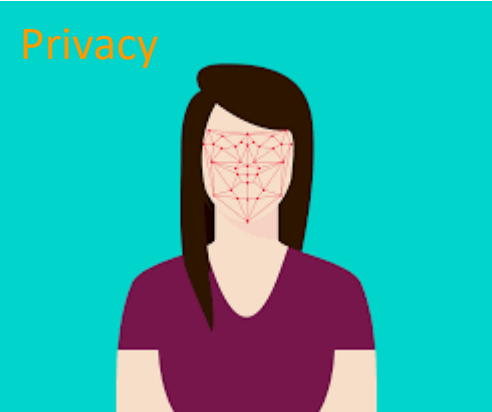
# Data challenges




Repeatable / complex scenes



Hazardous scenes

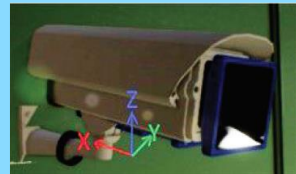

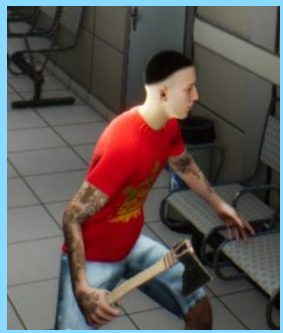


# Virtual building for threat monitoring study



**UNREAL ENGINE**

**Animations**



RestAPI

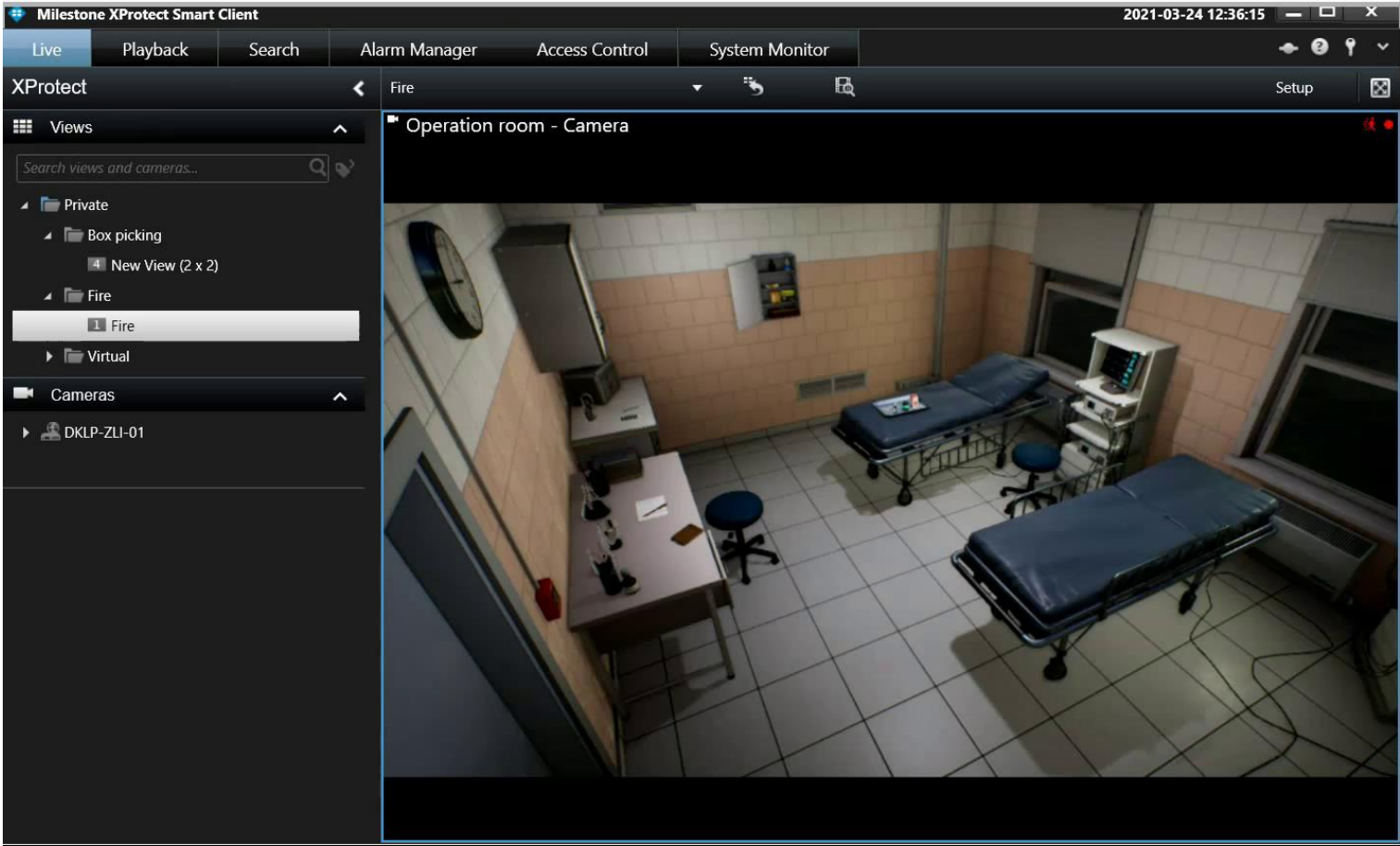


Device driver

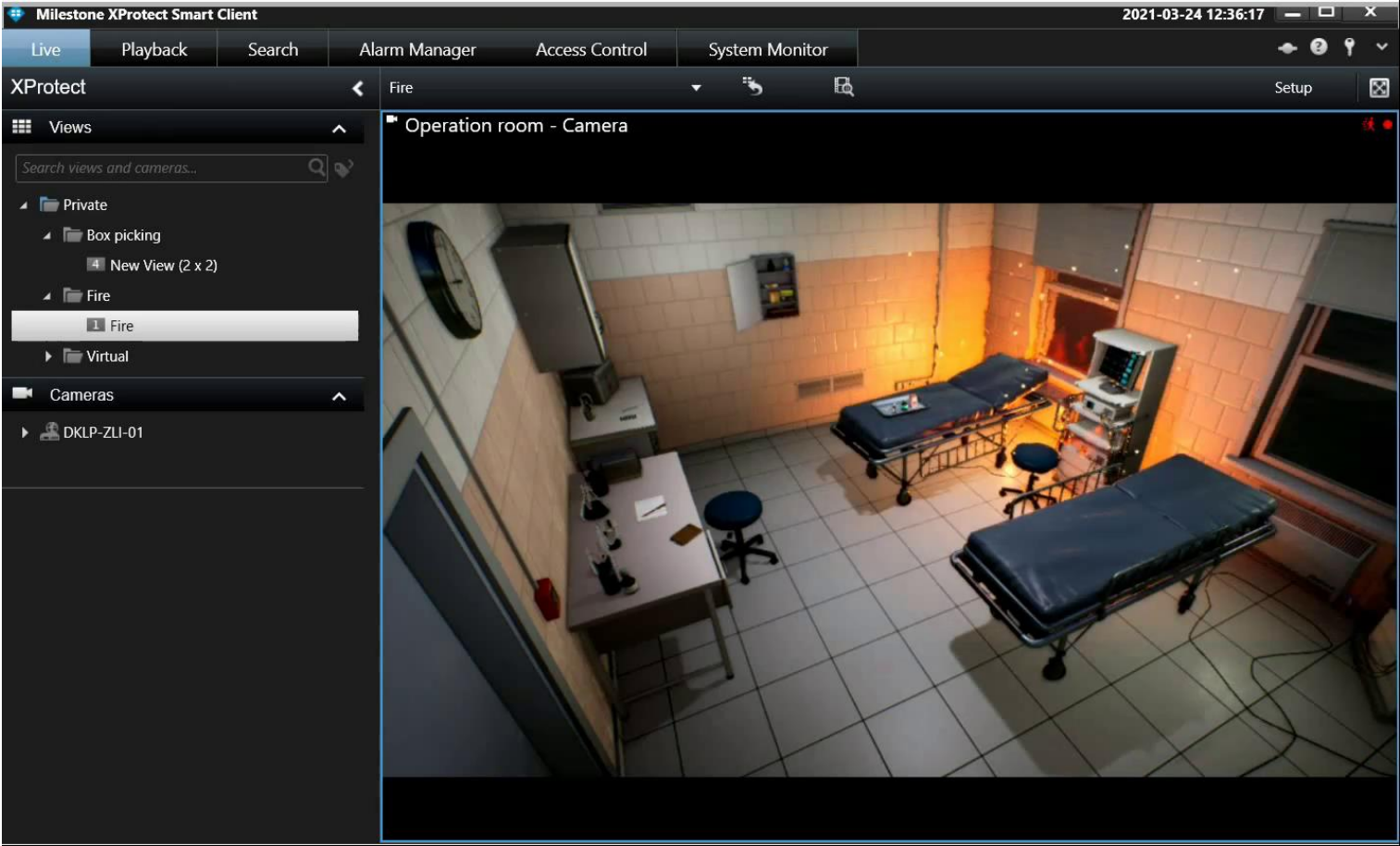


milestone

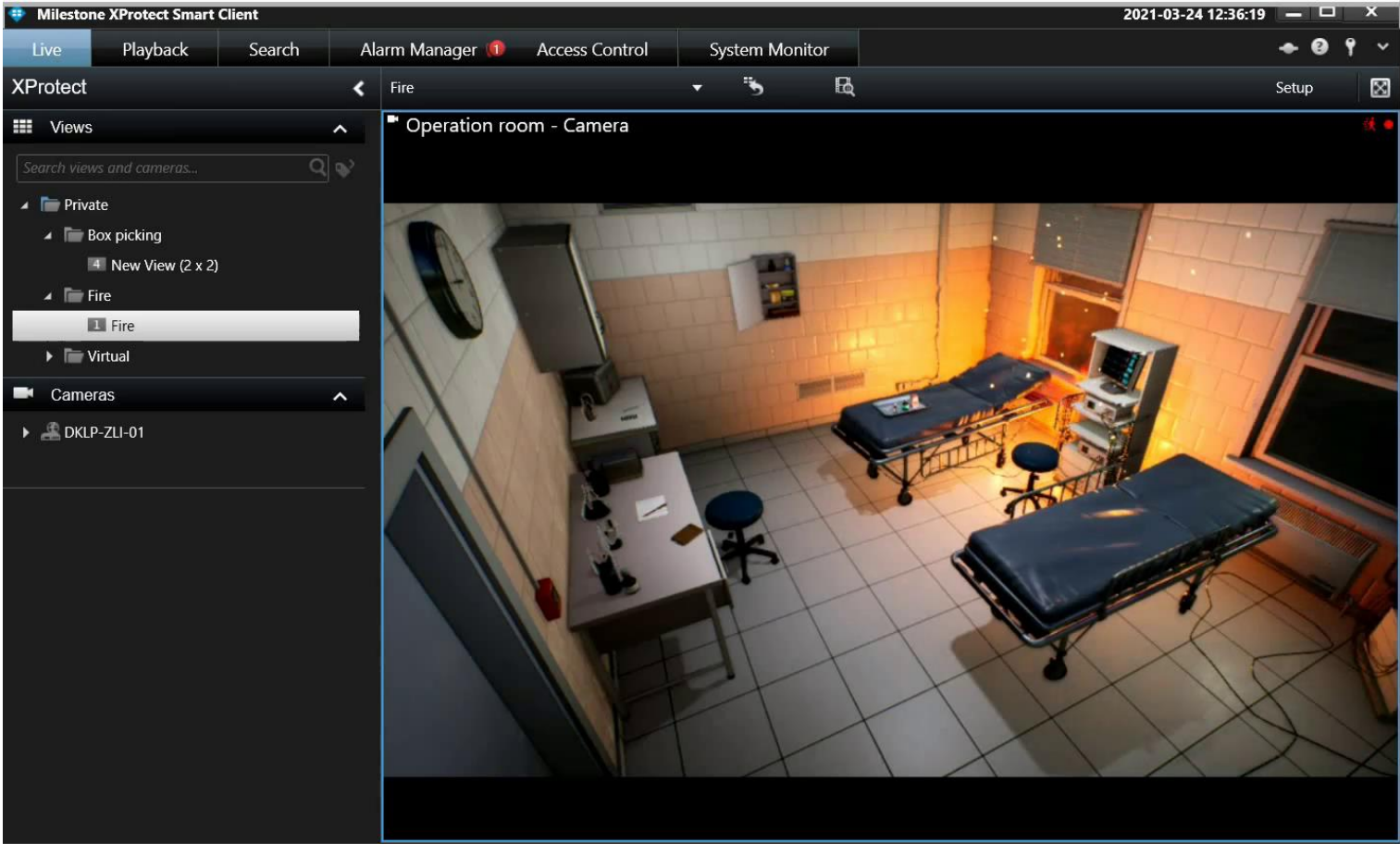
# Alarm example – Operation room



# Alarm example – fire started



# Alarm example – fire detected



# Alarm example – alarm handling

The screenshot shows the Milestone XProtect Smart Client interface. The top navigation bar includes 'Live', 'Playback', 'Search', 'Alarm Manager' (with a red notification badge), 'Access Control', and 'System Monitor'. The main area is split into a map view on the left (displaying 'No map has been selected') and a video camera view on the right (labeled 'Operation room - Camera - 2021-03-24 12:36:18.048'). Below the video is a table of active alarms.

Time	Priority Level	State Level	State Name	Message	Source	Owner	ID
12:36:16 2021-03-24	1	1	New	Input Activated	VirtualAlarmDriver Hardwar		2020

On the left side, there are 'Quick Filters' for alarm states: New (1), In progress (0), On hold (0), and Closed (19). Below that, 'Servers' are listed, including 'DKLP-ZLI-01'.



This inset screenshot provides a closer look at the alarm table and filters. The 'Quick Filters' section shows 'New (1)' selected. The alarm table contains one entry: 'Input Activated' at '12:36:16 2021-03-24' with a priority level of '1' and state level of '1'.

Time	Priority Level	State Level	State Name	Message
12:36:16 2021-03-24	1	1	New	Input Activated