

# Historic Buildings and Heritage Risks and Solutions

Thomas Pedrett

# Typical risks in historical buildings and museums

## Passive & Natural Elements – High Probability

Structures are not fire resistant – wood and other traditional, combustible building materials



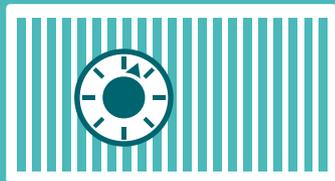
Obsolete electrical installations



High fire load – furniture, furnishings, books etc.



Heating equipment



Lightning



# Typical risks in historical buildings and museums

## Human made elements

Renovation works



Arson



Large numbers  
of visitors



Intrusion / Hold Up  
Vandalism & Sabotage



# Loss of unique, non-renewable historical values...



## Windsor Castle

7 classified buildings lost per month in UK because of fire (1992)

Restoration costs \$40 million



## La Fenice

Venice opera house, presents an example of fire victim falling several times.

(1836 / 1996 )



## Anna Amalia library

50 000 irreplaceable books and unique collections lost (2004)

Restoration costs €80 million



# Fire Safety & Security in historical buildings and museums

## The major tasks & challenge ...



### Keeping people safe and meeting legal obligations

Life safety and the rescue of people is the no. 1 concern



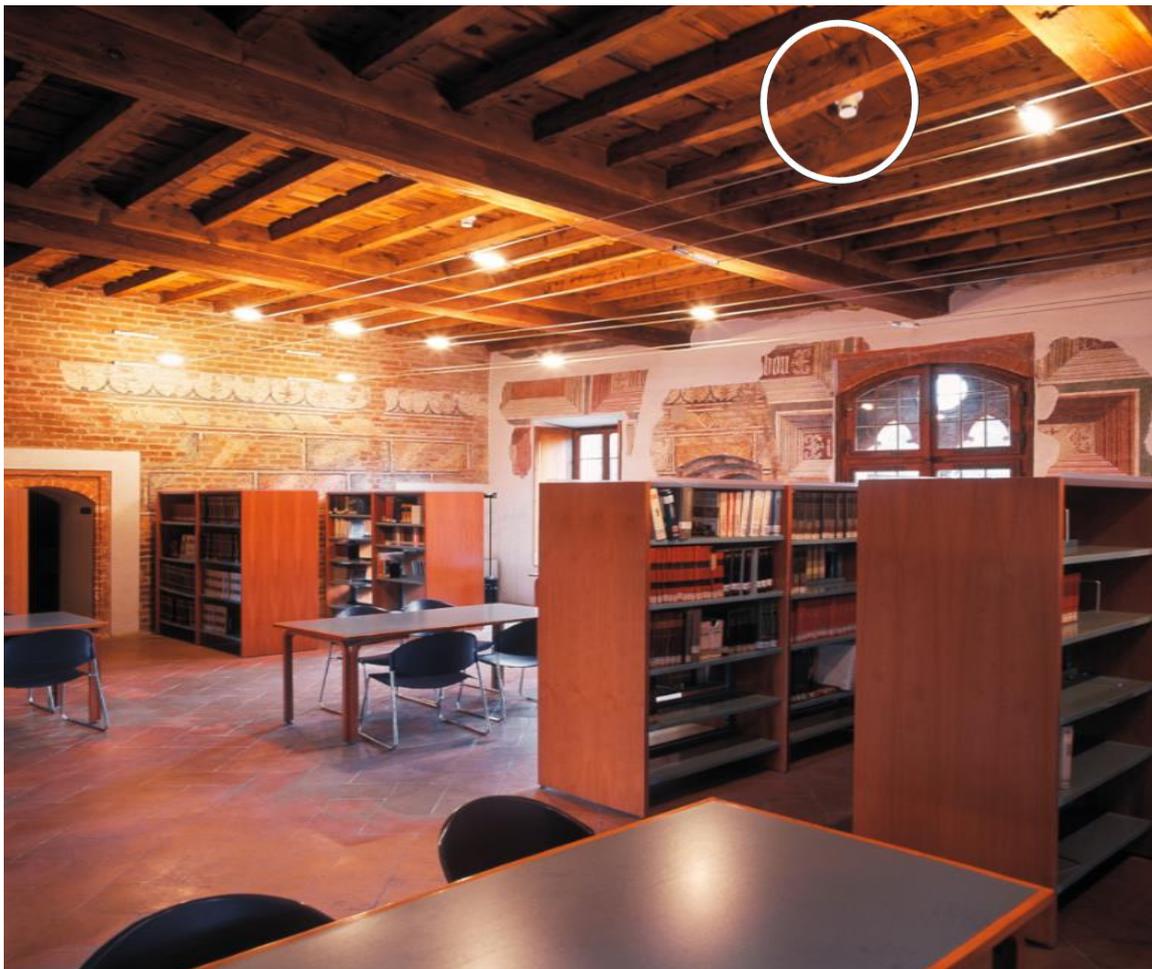
### Protecting buildings and historical assets ... to ensure maximum protection of

- Cultural heritage buildings and interior structures
- And unique historical objects ...

without affecting the aesthetical value and historical integrity of the building structure

# Fire Safety

# How to integrate modern fire and life safety requirements while preserving the authenticity and historical character of the building



## What if:

- Ceiling is untouchable
- Installation, wiring cables, not possible
- No ceiling is available (Free Space)

....without affecting the aesthetical value and historical integrity of the building structure

## Make detection invisible as ex. Aspirating Smoke Detectors



The image is split into two parts. On the left, a teal background features a technical diagram of an aspirating smoke detector. It shows a long, dark grey pipe with several small circular detectors spaced along its length. A red arrow points from the diagram down to the word "Alarm" in red text. Below the diagram is a yellow box with the word "Highlights" in bold black text, followed by a list of five bullet points. On the right, a photograph of a grand library with high ceilings and wooden bookshelves is shown. A red line traces the path of the detector pipe along the ceiling. Small red dots are placed at intervals along the pipe, indicating the location of the detectors. A globe is visible in the foreground of the library.

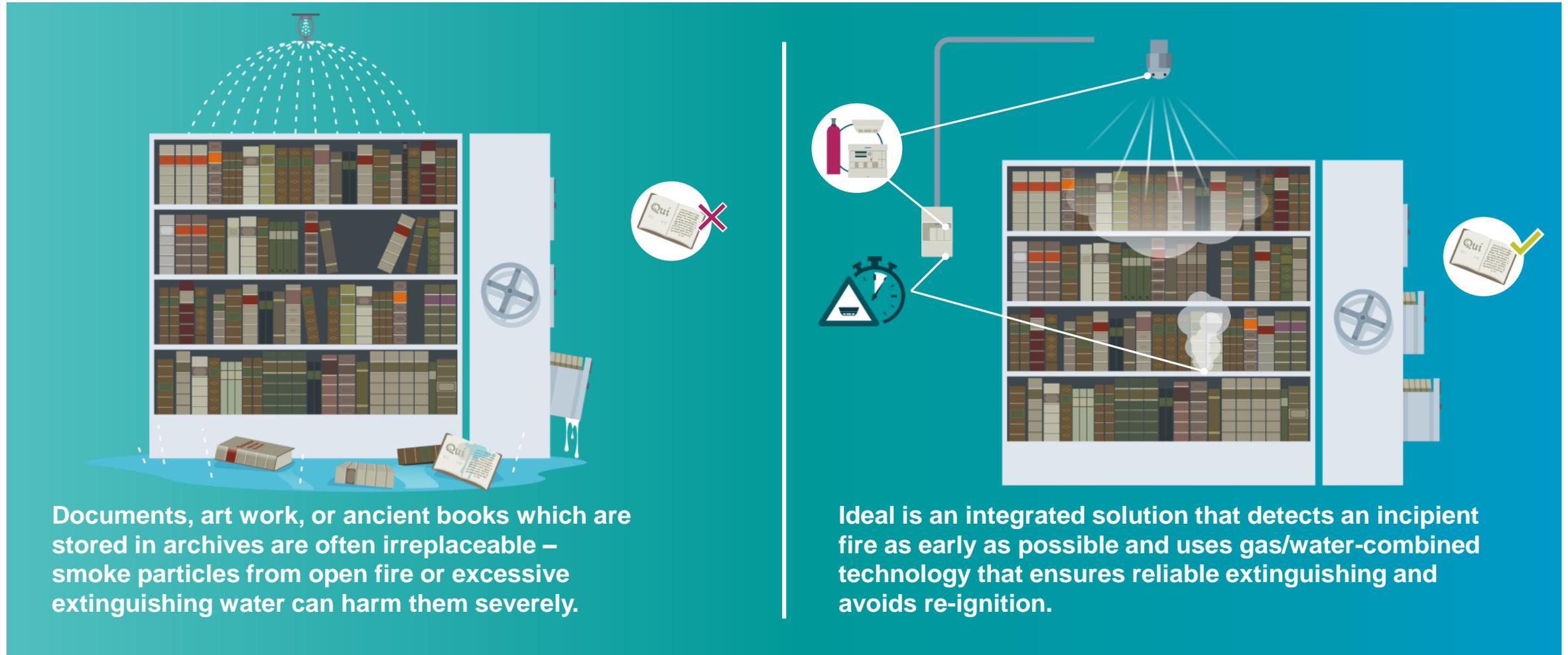
**Alarm**

**Highlights**

- Active Air sampling system
- Ideal choice for difficult environments
- Highest detection reliability
- Highest sensitivity
- Early warning

....without affecting the aesthetical value and historical integrity of the building structure  
**Extinguishing – Protecting the irreplaceable**

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Documents, art work, or ancient books which are stored in archives are often irreplaceable – smoke particles from open fire or excessive extinguishing water can harm them severely.

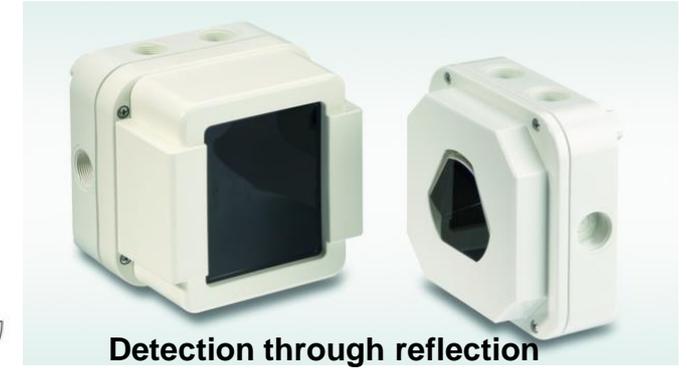
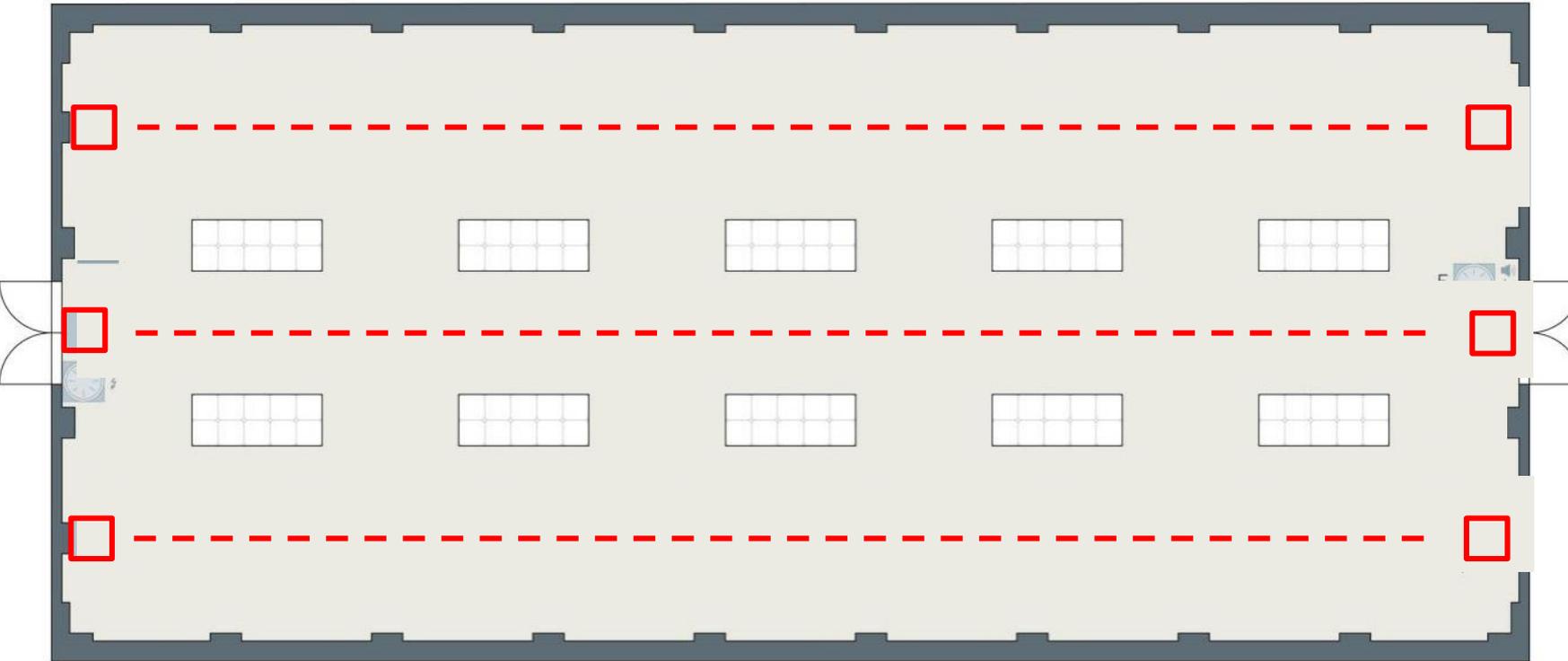
Ideal is an integrated solution that detects an incipient fire as early as possible and uses gas/water-combined technology that ensures reliable extinguishing and avoids re-ignition.

What if a ceiling is high and no technical equipment is accepted

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# Fire Detection in exhibition halls



Detection through reflection



Wireless Detectors

# The tailored offering from Siemens to protect unique, irreplaceable historical assets ...



## Buildings

Provide fire protection without changing the buildings' structure and character

- Siemens patent detection **ASA** technology is the basis for full building protection, early and reliable detection, structured phased evacuation and protection measures in fully integrated fire protection systems



## Structure

Preserve interior architectural details of high cultural and historical significance

- SWING wireless mesh technology for high operational availability and reliable detection
- Practically invisible ASD-systems provide very early and reliable detection
- Reuse of existing cables



## Historical objects

Avoid irrevocable damage caused by fire or inappropriate extinguishing agents

- Early response before fire becomes damaging
- Reliable detection eliminates false alarms
- Tailored and non-damaging extinguishing solutions

## Command & Control Security Room

### Integrated Management Security Platform:

- Fire detection with wireless devices;
- Intrusion alarm;
- Access control;
- Video surveillance;
- Maintenance Services & Technical Assistance

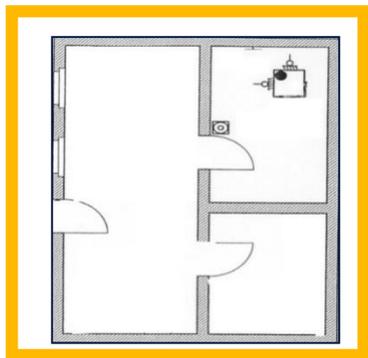


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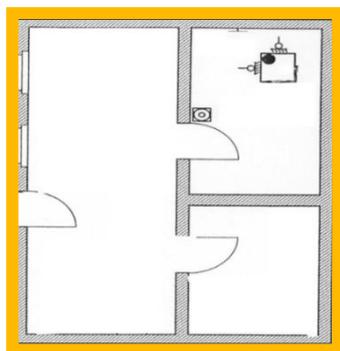
Security Elements

# How to protect?

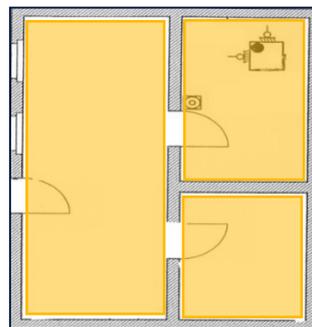
## The protection principles



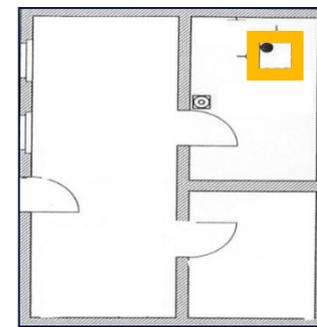
**Perimeter surveillance**



**Periphery surveillance**



**Room surveillance**



**Object surveillance**



Video surveillance



Security management



Video analytics



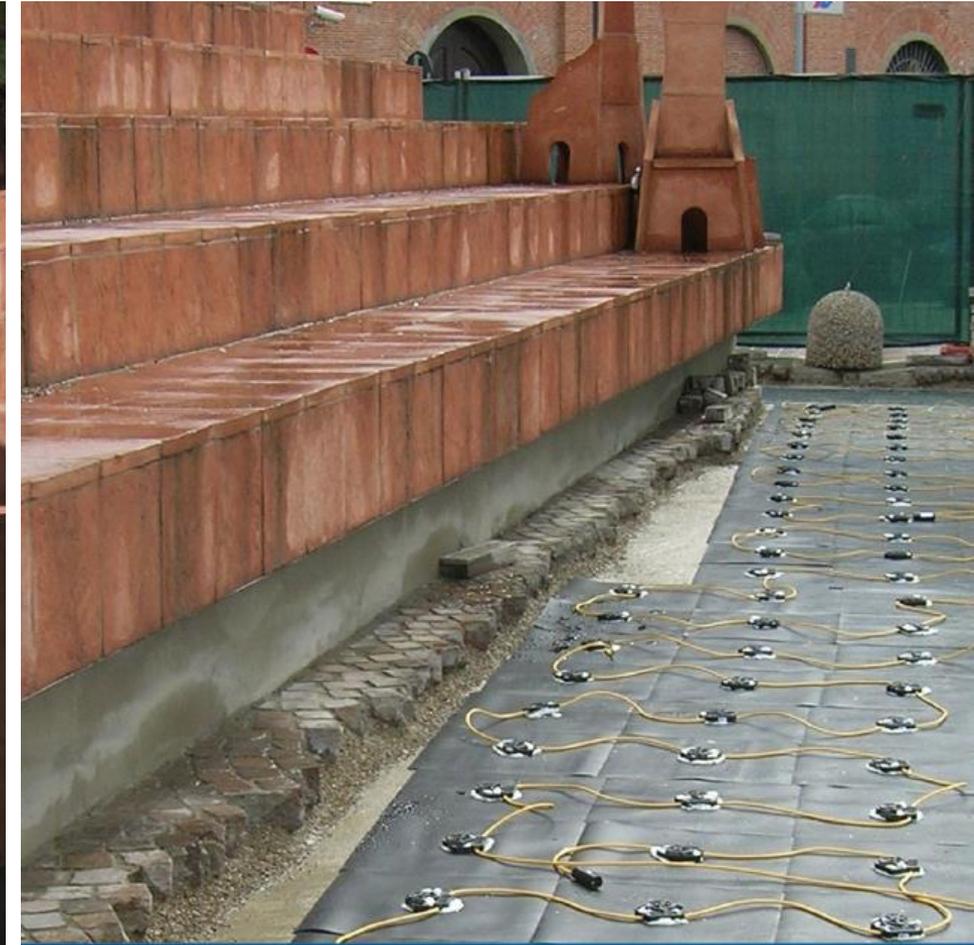
Access control



Intrusion detection

# How to protect Historical Buildings from the outside perimeter

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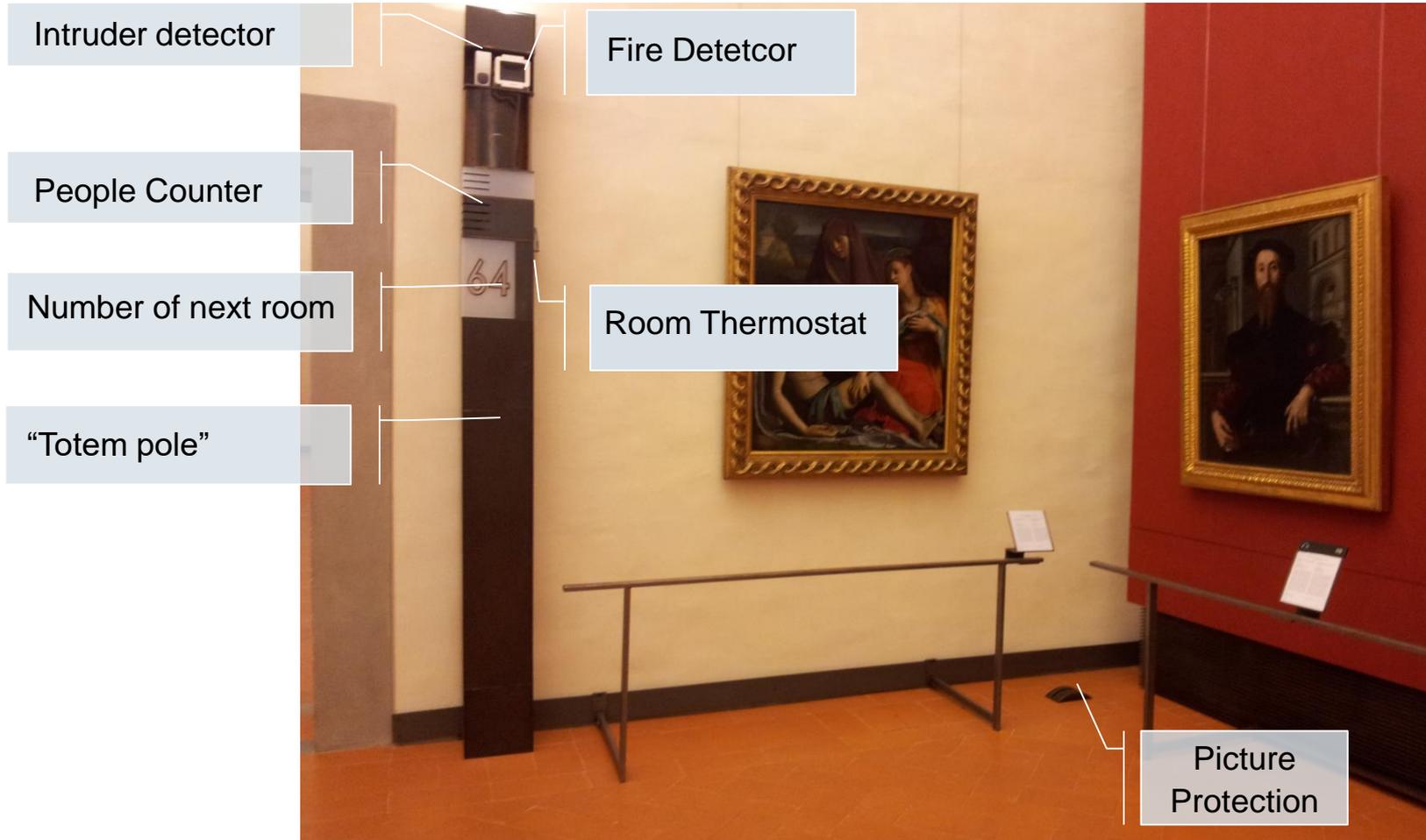
# How to protect a wall but invisible?

## Example: seismic protection system for outdoor application

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# What do you see?



# How to deal with changing exhibitions

## Example: Zurich Art Museum

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# Secure in 4 steps

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Palácio de Vila Viçosa

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## Fire Safety & Security Systems:

Fire detection;  
Intrusion alarm;  
Maintenance Services & Technical Assistance

# Elements of protection Maintained

To maintain a heritage,  
you need to maintain  
the way you protect it.



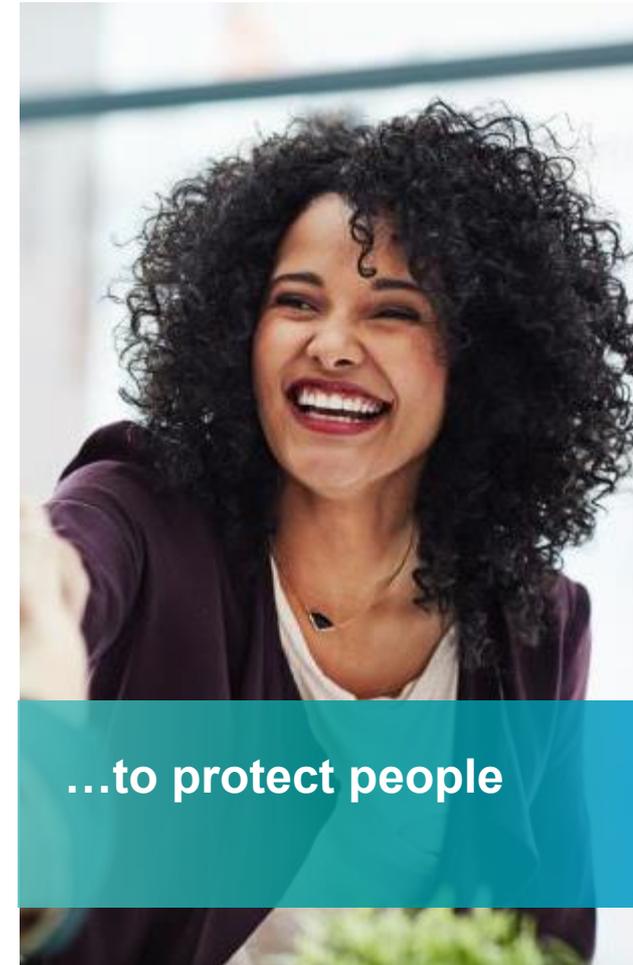
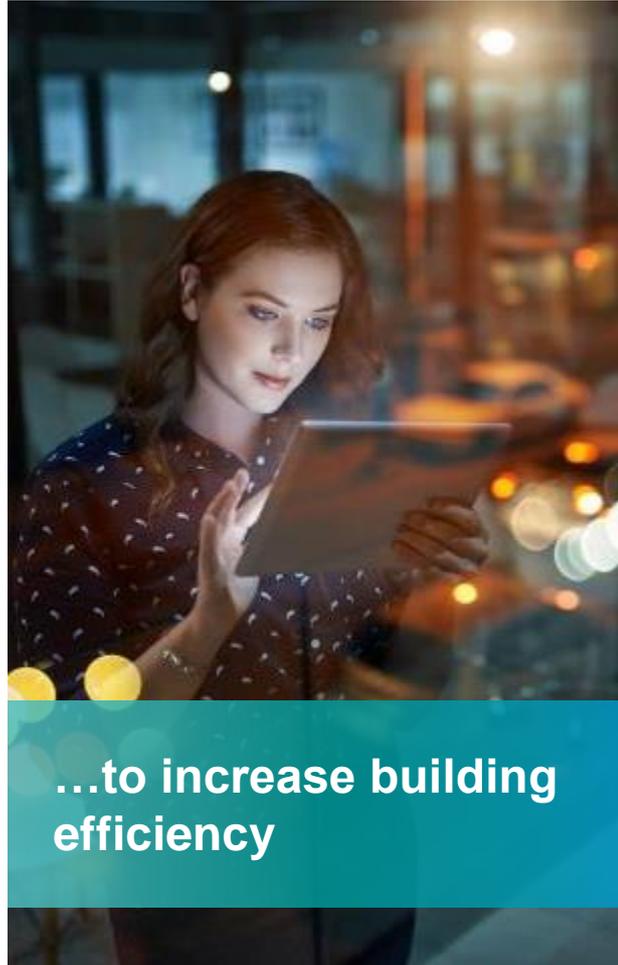
## Keys to protection

- Modernization and extensions
- Performance Service



# Your focus remains on creating perfect places

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# Contact



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