



# Improving the Safety of Buildings with Fiber Optic Monitoring Solutions

## The Challenge

Many factors contribute to building safety and integrity over time. As recent, very unfortunate examples have shown, asset and building owners need modern monitoring tools that can help assess the integrity of the structural elements of buildings and provide early warnings of potentially catastrophic failure.

By using the latest in structural health monitoring technology, municipalities and asset owners have access to cost-effective and rapidly deployable monitoring tools for unstable structures.

Similar monitoring systems are deployed around the world to make certain the structures we depend on are safe to utilize and inhabit.

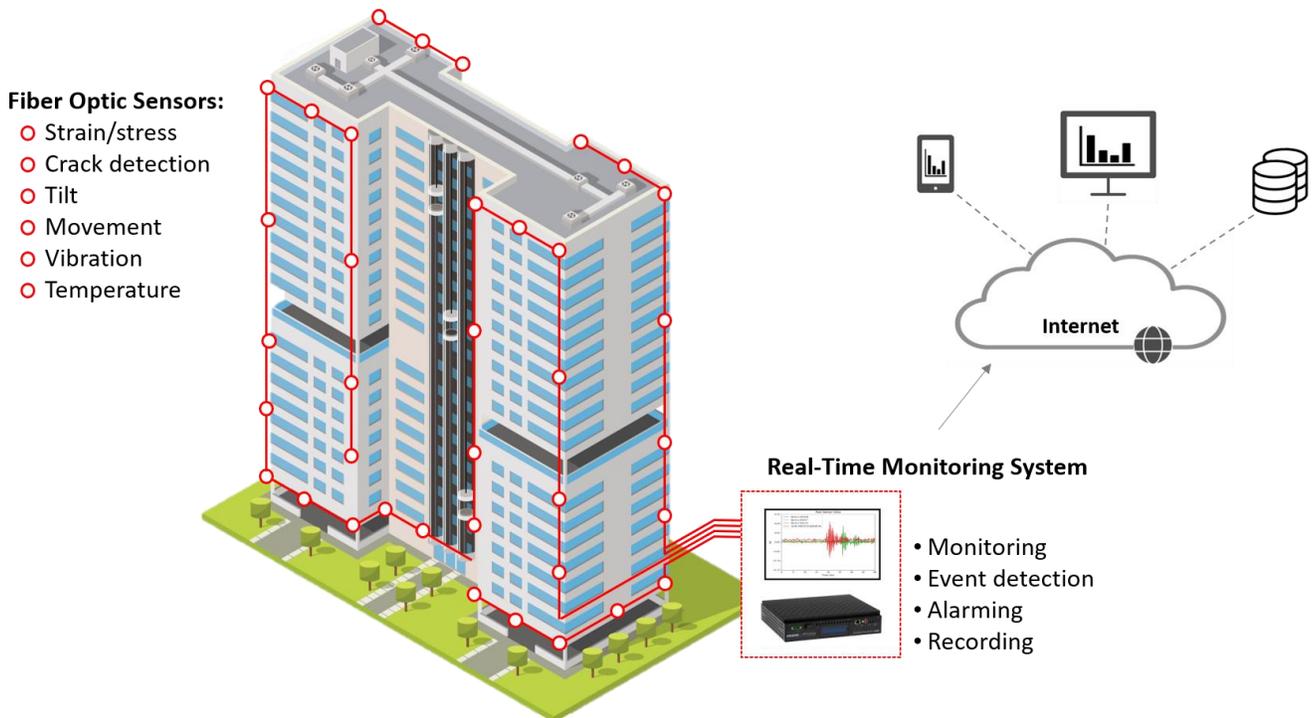
## Solution

Through continuous monitoring of stress, strain, cracks, displacement, tilt and vibration, fiber optic sensing systems can provide advanced warning of growing structural problems and reduce the risk of failure.

By leveraging the accuracy and low cost of fiber optic sensing technology, these systems can remotely monitor critical structures affordably and reliably, delivering actionable information immediately to decision makers.

## Benefits

- Real time monitoring
- Highly flexible monitoring systems
- Lowest total cost of ownership



Architecture of real-time monitoring system based on fiber optic sensors measuring critical structural parameters.



Residential  
Commercial



Fiber  
Optics



Multi-  
Parameter



Protection



Software

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## Process

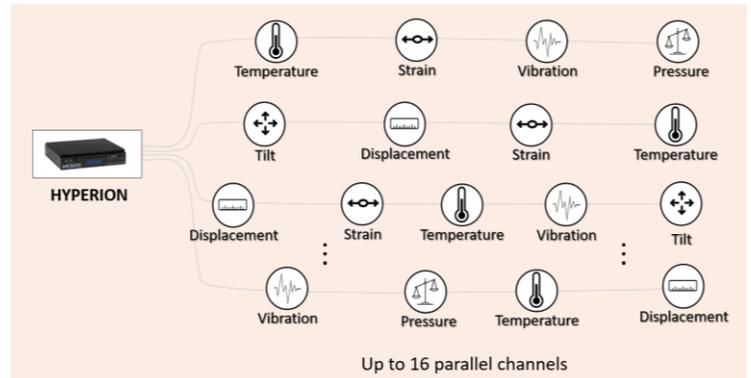
- Assess critical or problematic areas and identify instrumentation locations
- Determine and design sensor layout based on the inspectors' determinations
- Sensors are installed by a Luna Innovations Systems Integrator
- Users trained on the operation of the system
- Continuous 24/7 monitoring alerts for unexpected movement, structural fatigue, vibration, etc.



Example software interface showing multiple points of strain, temperature, and acceleration sensors all indicating "green" status



Identify small problems before they become big problems



Highly customizable for every environment

## Results

- 100x longer life over conventional solutions
- Simple, easy to implement systems can be deployed rapidly with actionable information available as soon as sensors are installed



Aging government facility monitored with over 300 fiber optic sensors

Residential Commercial    Fiber Optics    Multi-Parameter    Protection    Software