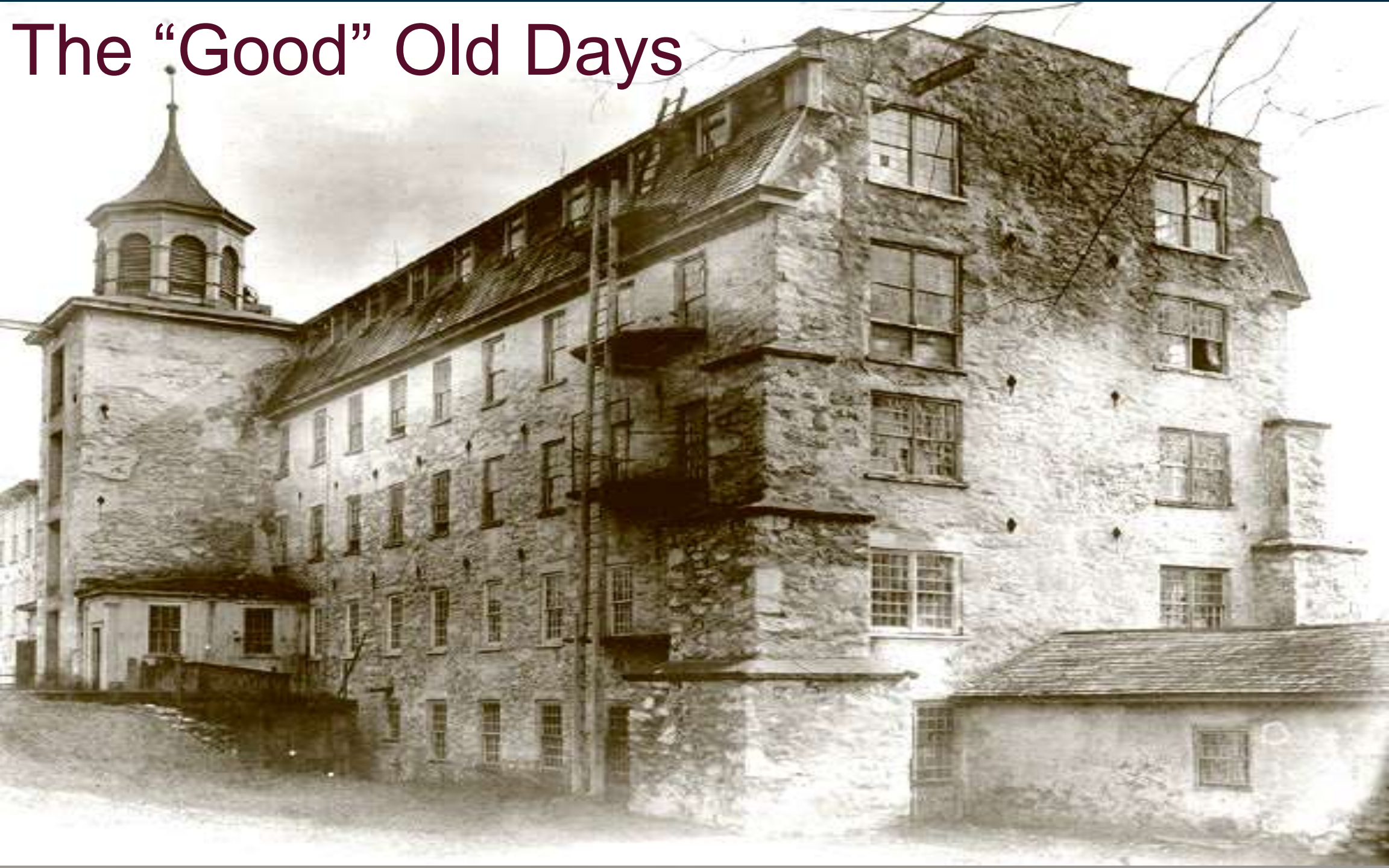




Maintaining Fire Safety with Changing Contents

Lou Gritzo, Ph.D.
VP, Research

The "Good" Old Days



FM Global: A Unique Company

Commercial and Industrial Property Insurance - A Specialty Company



“Majority of Loss is Preventable” - Through Research/Engineering

Mutual Ownership



FM Global Research Campus

Natural Hazards Lab

- 70,000 ft²
- EQ Lab

Multimedia Center

Hydraulics Lab 2012 Expansion

Fire Technology Lab

Research Product Certification Education

Electrical Lab

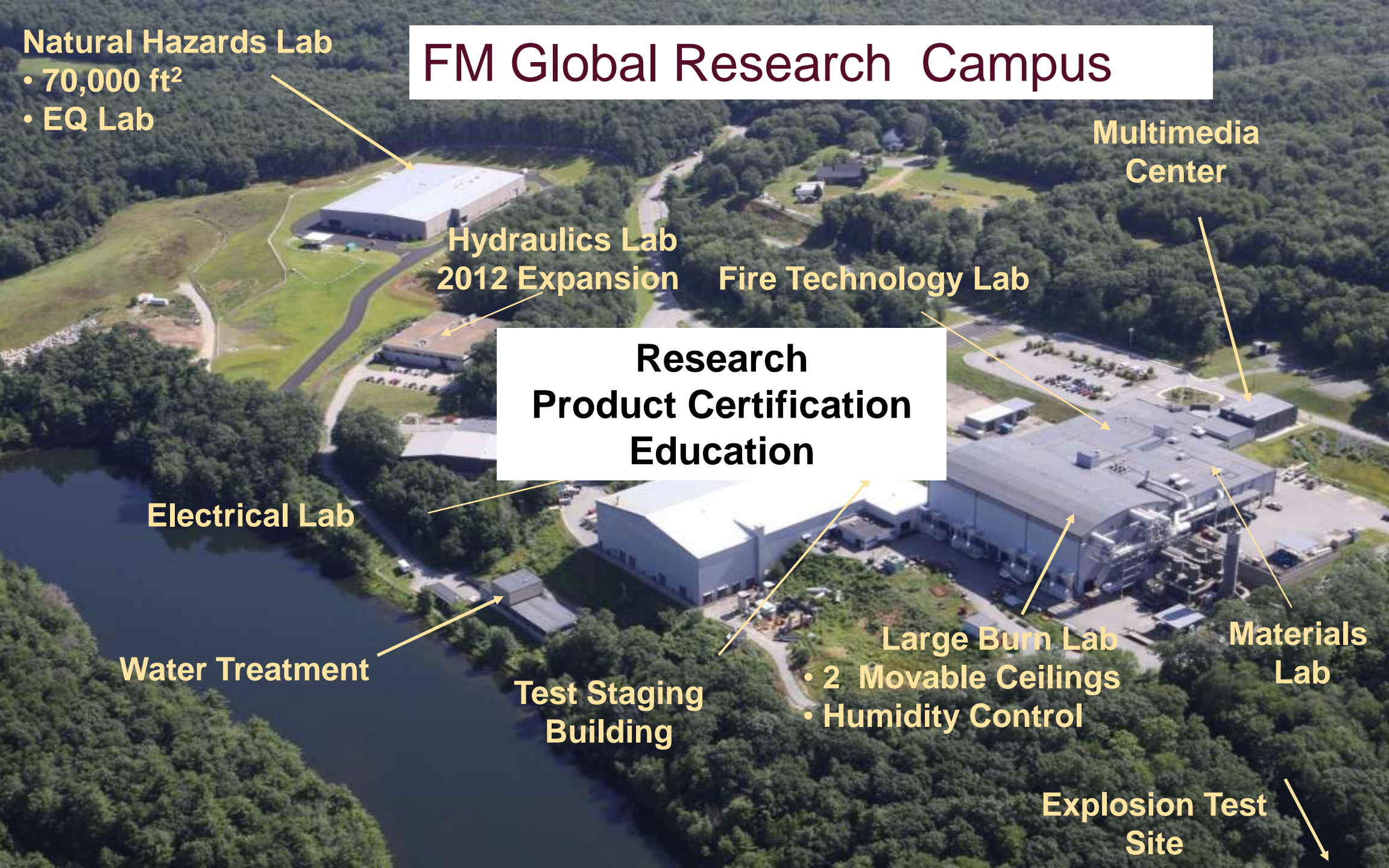
Water Treatment

Test Staging Building

- ## Large Burn Lab
- 2 Movable Ceilings
 - Humidity Control

Materials Lab

Explosion Test Site



Center for Property Risk Solutions – Norwood, MA



Forensics

- 14 Scientific Laboratories

Scientific Computing

- 10 Teraflop (10^{12}) Capacity



The Big Changes in Industry Today

More

- Taller
- Fuller
- Hazard Volumes



The Big Changes in Industry Today

Less

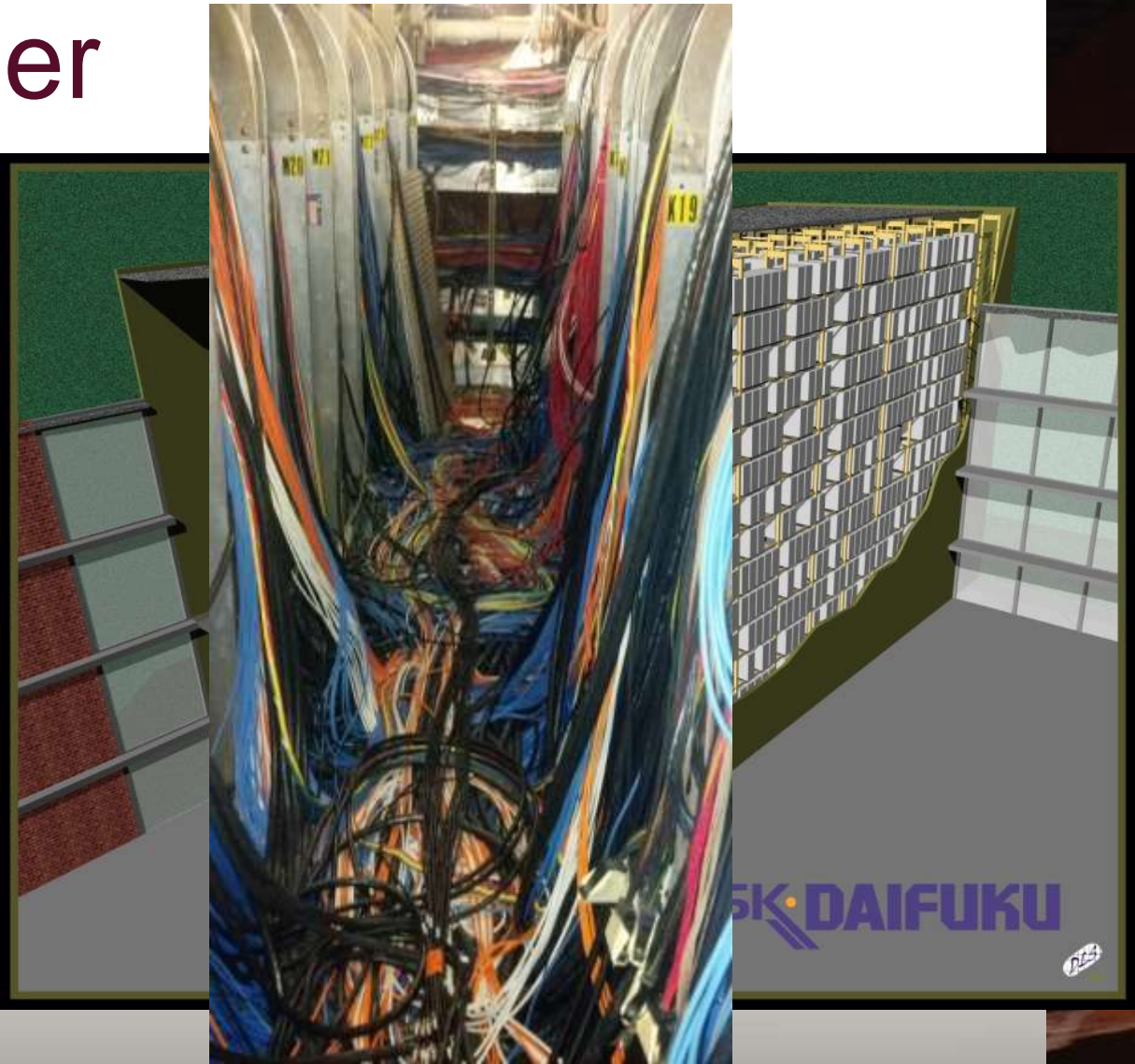
- People
- Water



Taller



Fuller



Fewer People



Increased Hazard Volumes

- Hydrogen
- Silane



Addressing the Challenges

- Taller
- Fuller
- Greater Hazard Vol.
- Fewer People
- Less Water



Smarter Use of Technology

How we:

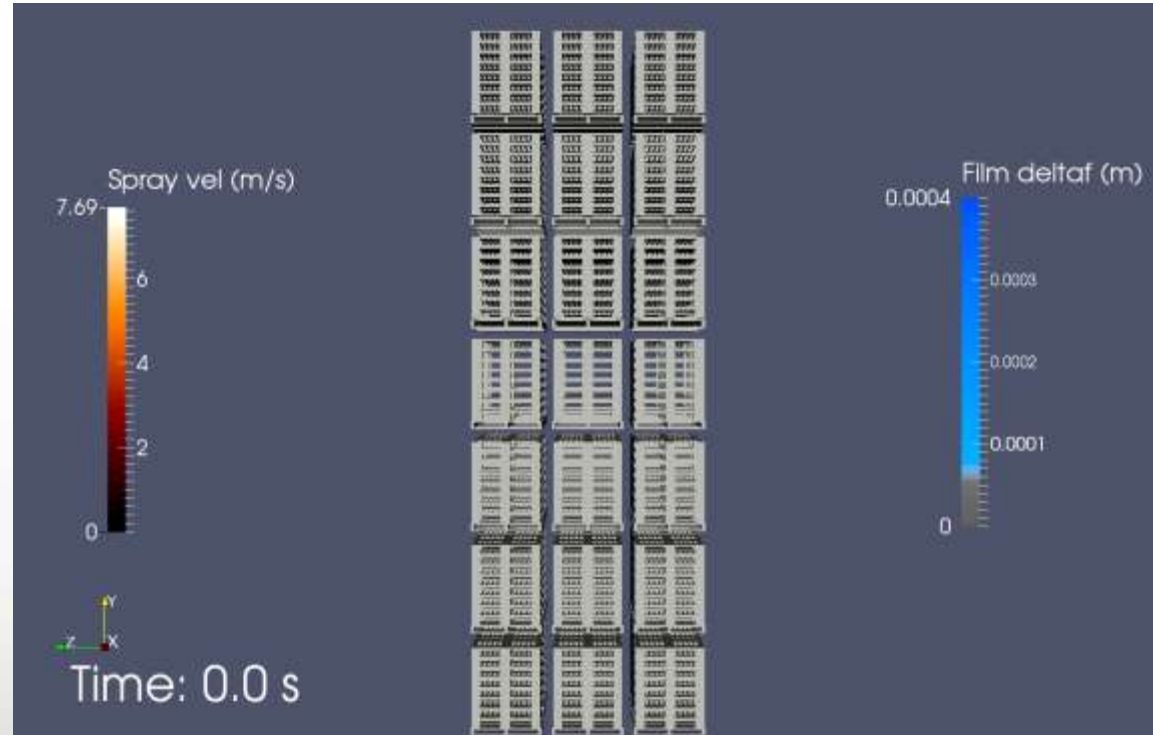
- Develop Solutions
- Protect Well Being
- Maintain Systems



Developing Solutions

- Model-Informed Protection
 - Design better tests
 - Generalize results

- www.fmglobal.com/modeling



Developing Solutions

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Protect Well Being

- Optimized Protection
 - Early detection and activation
 - Directed delivery



Approval Standard for Water Mist Systems



lodies In a So
lized, Shelf, and
W

Quick	
K11.2 (K160)	K14 (K20)
20 @ 7 (0.5)	12 50 (3)
20 @ 7 (0.5)	12 50 (3)
20 @ 7 (0.5)	12 50 (3)
15 @ 20 (1.4)	12 75 (5)

						24 @ 15 (1.0)			25 @ 30 (2.1)'	24 @ 15 (1.0)'

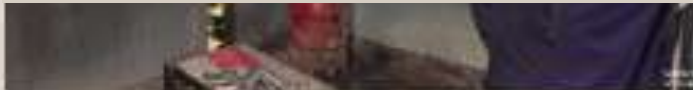
FM Global Property Loss Prevention Data Sheets

Monitor and Maintain Systems

- Ensure System Reliability
 - Digital Monitoring
 - Integrated Systems



A communicating sprinkler valve that reliably detects, logs and reports sprinkler valve states and state-changes.



The Next Five Years - Takeaways

Challenges

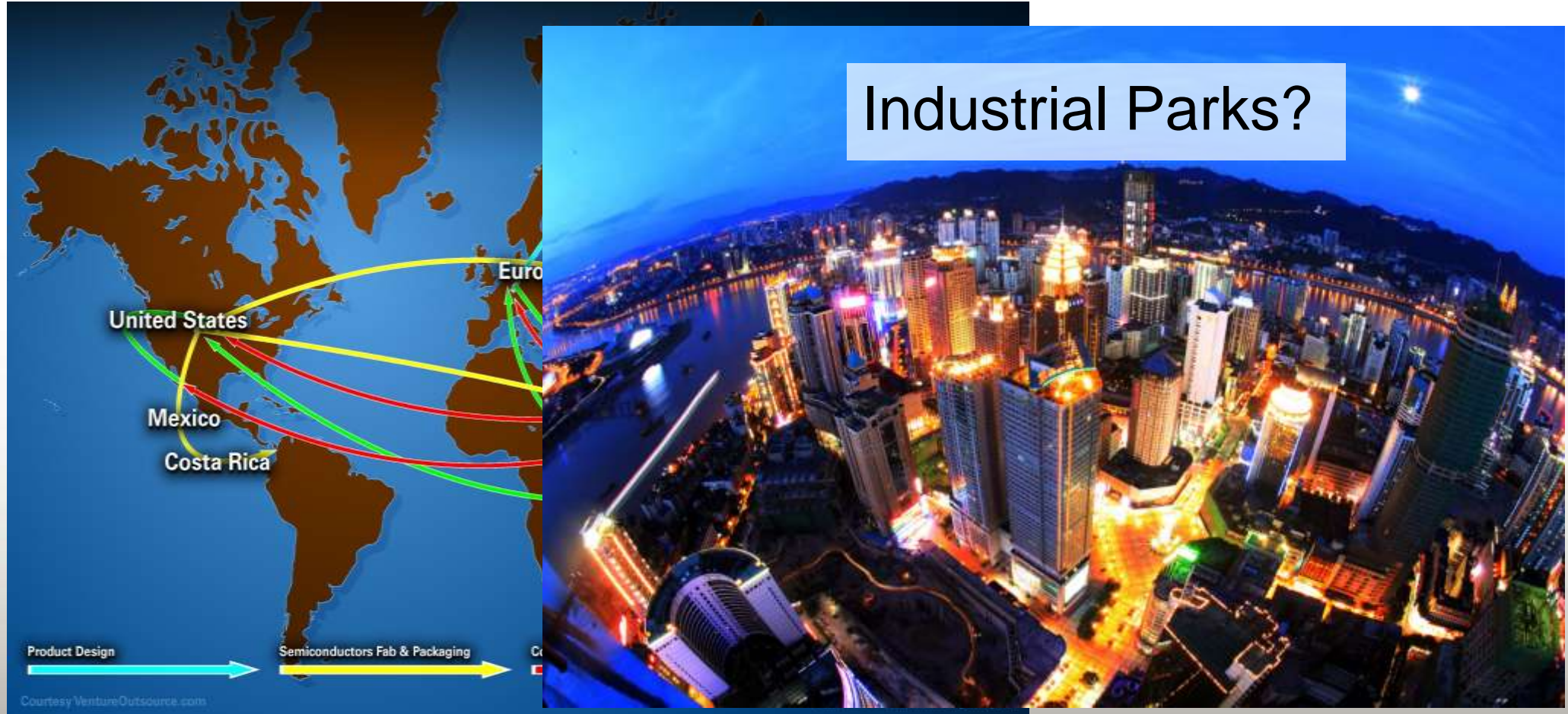
- Taller
- Fuller
- Greater Hazard Vol.
- Fewer People
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Smarter Use of Technology

- ✓ Develop Solutions
- ✓ Protect Well Being
- ✓ Maintain Systems

- 1. More Coordination*
- 2. Innovative Manufacturers*
- 3. Progressive Standards*

Beyond the Next Five Years



Industrial Parks?

Product Design
Semiconductors Fab & Packaging



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