

# Tall Buildings



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*fire safety network*



# HORIZONSCAN

RISK - RESILIENCE - READINESS

## ‘New Realities of Tall Building Fires’

Tuesday 20<sup>th</sup> June 2017  
Tall Buildings Conference









# Key Messages

- Introduction
- New Realities
- Possible Solutions



# Tall Building Fire Safety Network -

- Over 700 members in 23 Countries
- Promote information sharing and best practice
- 3 International Conferences to date
- LinkedIn Group
- Calling for International action on ACP panels













# New Realities

- Urbanisation – More Tall Buildings, vertical villages
- BIM
- New Materials & New Techniques
- Cramming & Hoarding
- Wind Driven, Full Height, Facade Fires
- Evacuate via lifts/elevators and Disperse
- Terrorism
- Denial of Fire Service Response



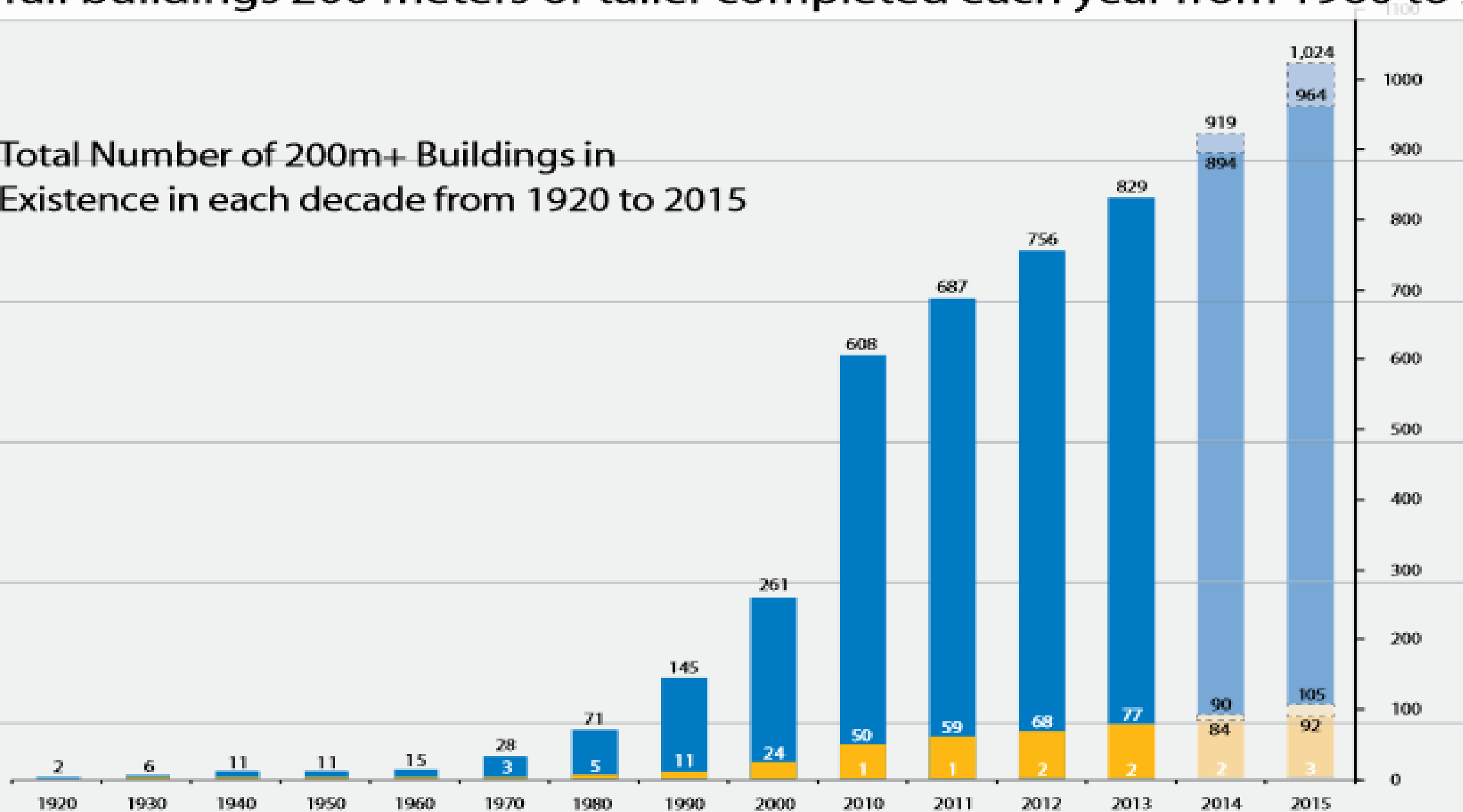


# Urbanisation

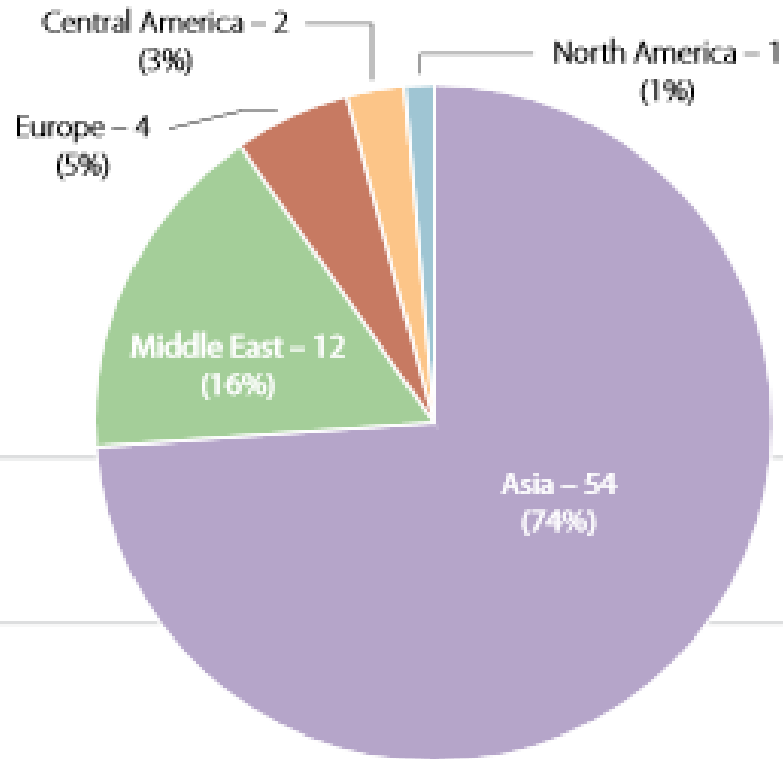
- **2007** was a significant year – tipping point for more people living in urban areas than rural – worldwide
- **13** World Cities with over 10 million residents (Shanghai – 27 million)
- Rate, size and complexity of Tall Building construction increasing rapidly

# Tall buildings 200 meters or taller completed each year from 1960 to 2015

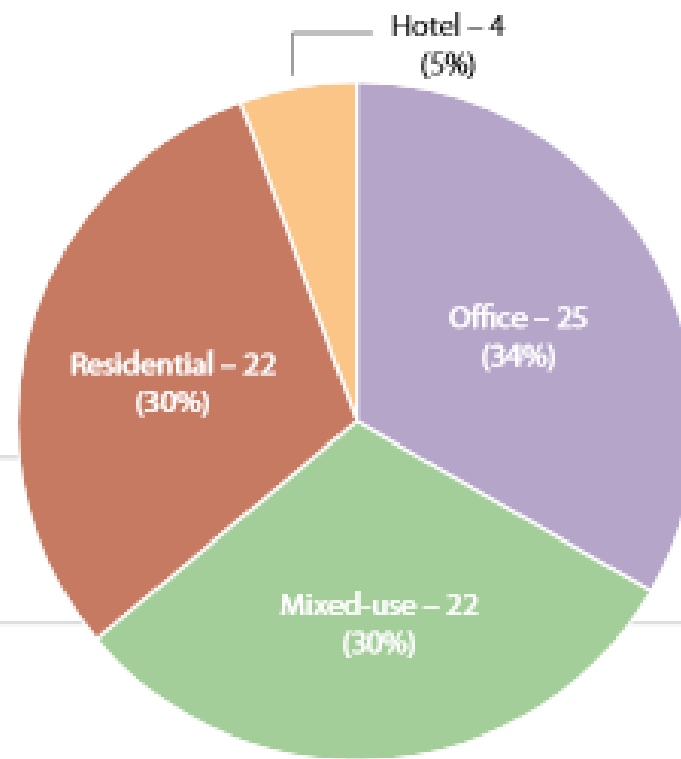
Total Number of 200m+ Buildings in Existence in each decade from 1920 to 2015



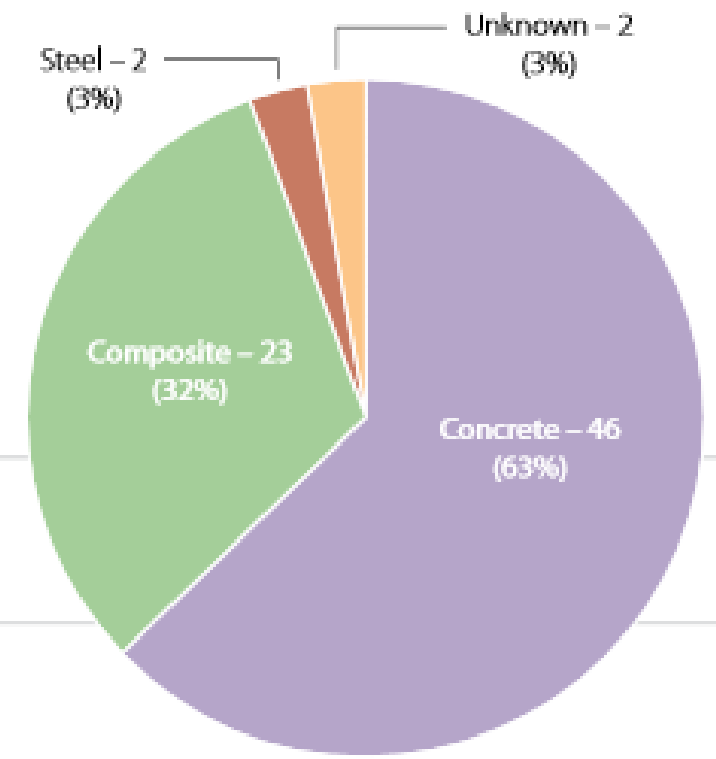
Tall Buildings 200 meters or Taller Completed in 2013: **by Region**



Tall Buildings 200 meters or Taller Completed in 2013: **by Function**



Tall Buildings 200 meters or Taller Completed in 2013: **by Structural Material**





**BIM**





# BIM – Building Information Modelling

Is an industry game changer

Is not about 3D graphics

It is about DATA

It is about de-risking construction

It is therefore about efficiency

Faster cheaper better in every way

Clients want it

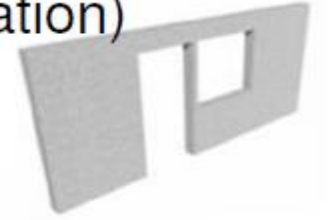
You need to engage with it



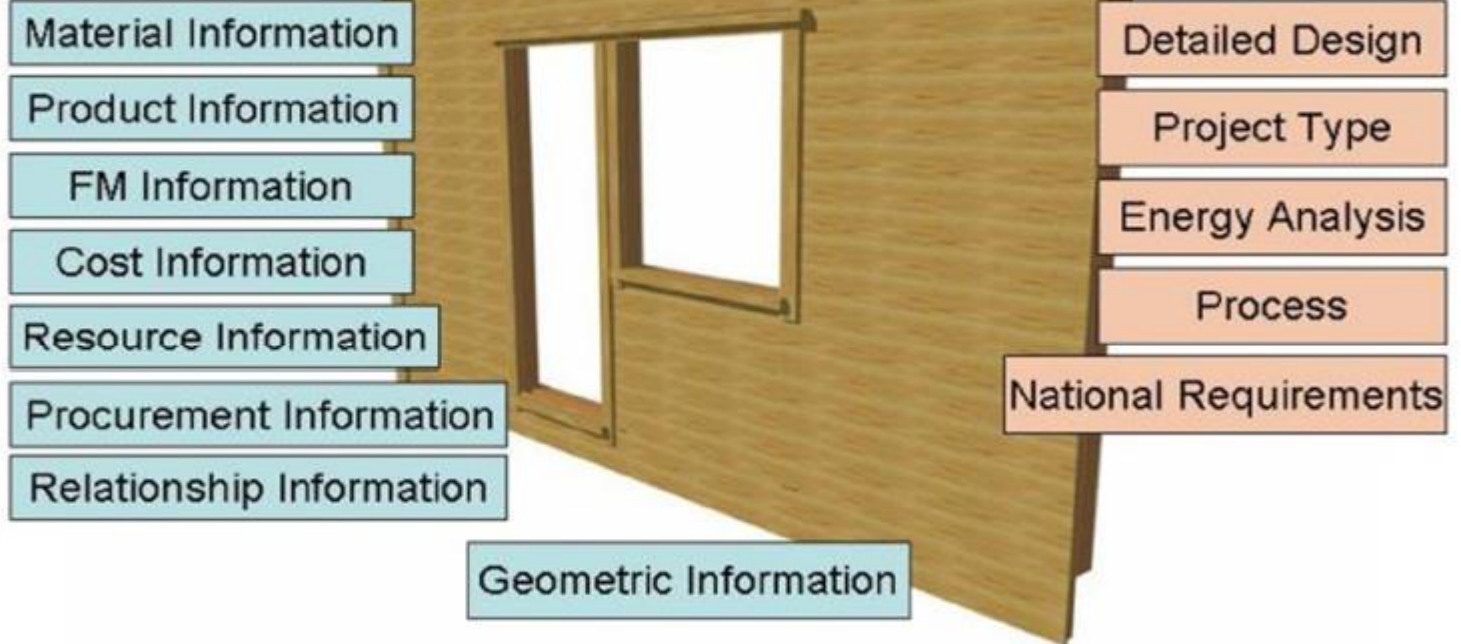
Drawing  
symbolic  
representation



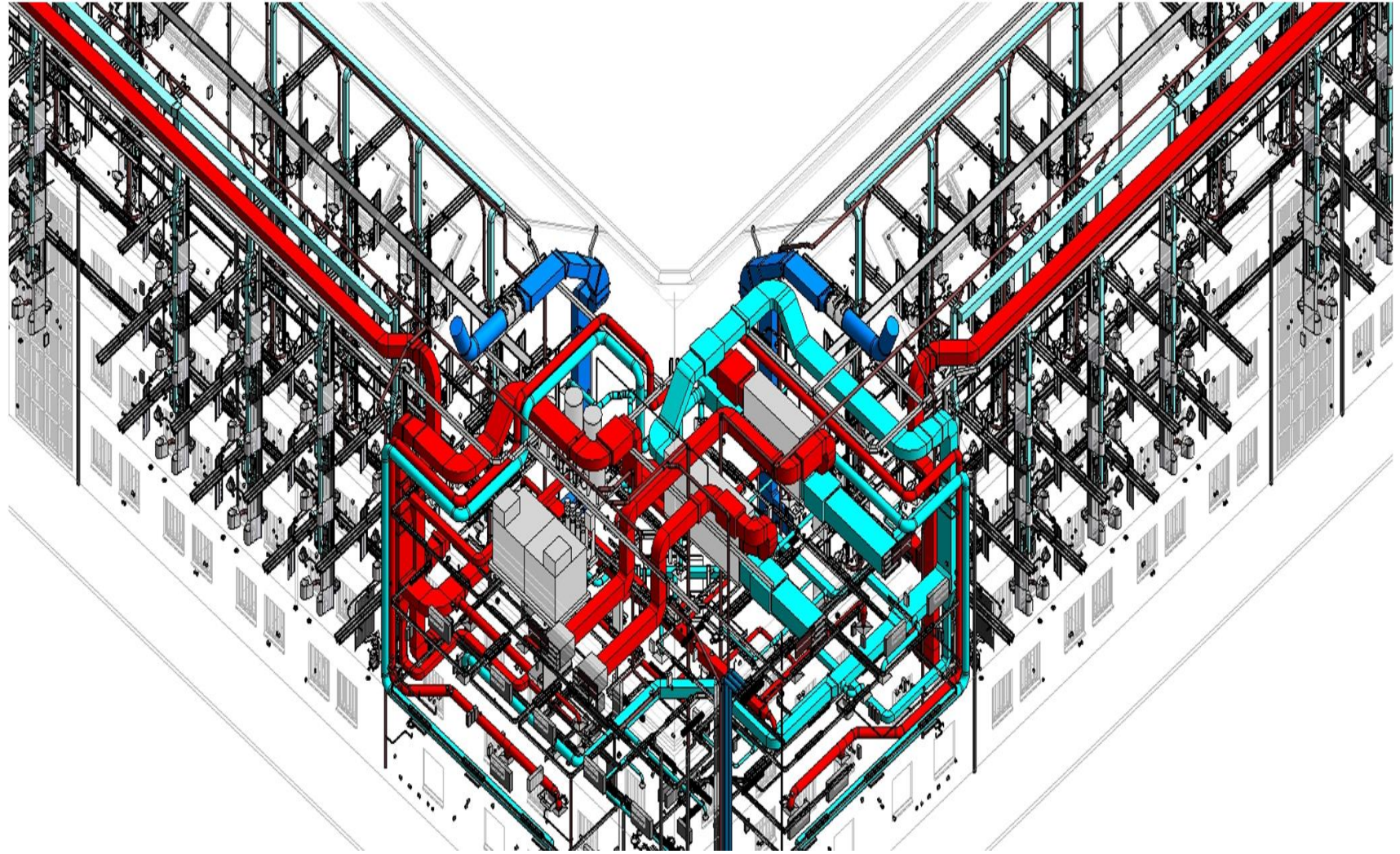
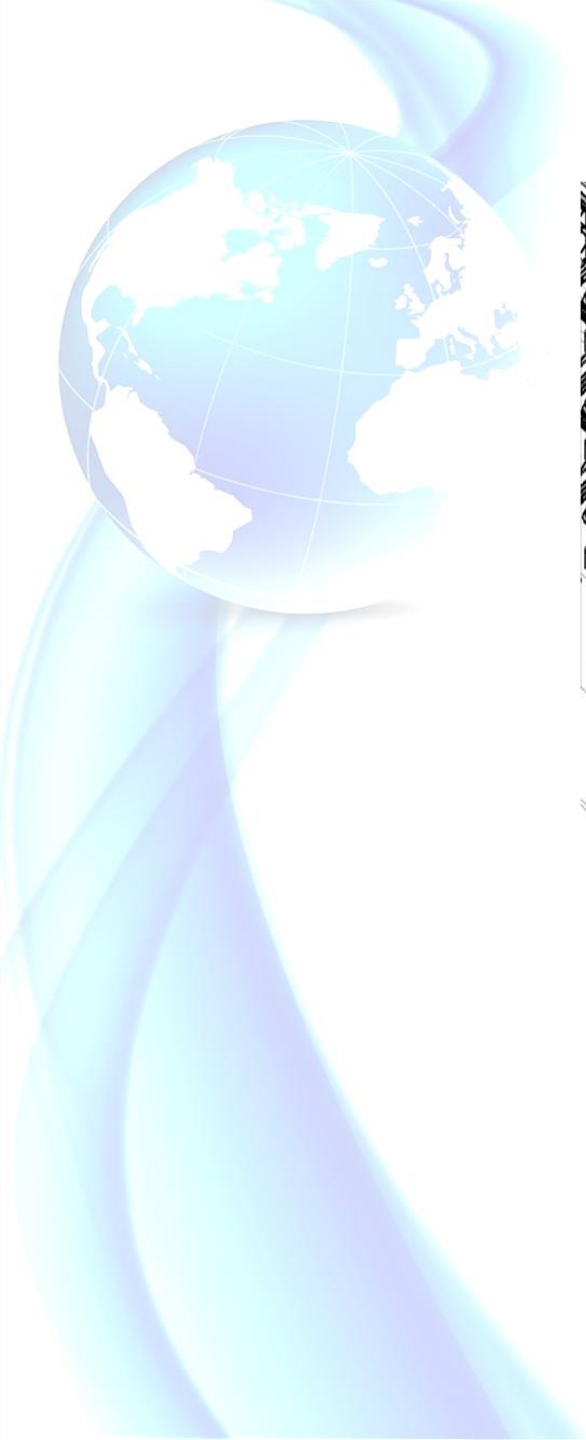
BM = Building Model  
(3D without information)



**BIM**











MANY BUILT EXAMPLES OF BIM METHODOLOGY SURROUNDS US.

THIS IS THE 'CHEESECRATER'

IT USED BIM TO-

- CUT THE COST
- CUT THE TIME TO BUILD
- RESEQUENCE THE BUILD
- CONTROL MATERIALS TO SITE
- BRIEF ON SITE TEAMS DAILY
- CONTROL HEALTH AND SAFETY
- AND MANY MORE .....



BIM enabled technology-  
Emulation  
Virtual Reality  
Augmented Reality





# New Materials & Techniques



# New Materials & New Techniques

- New methods of construction
- Tall Timber
- New composite materials
- Green Walls & Roofs



# Sky City

838 meters tall

202 floors

Mixed use

30,000 residents

7 month build time







Lacrosse Building, Melbourne

November 25, 2014

23 storey tower

13 floors in 11 minutes



Non-combustible core







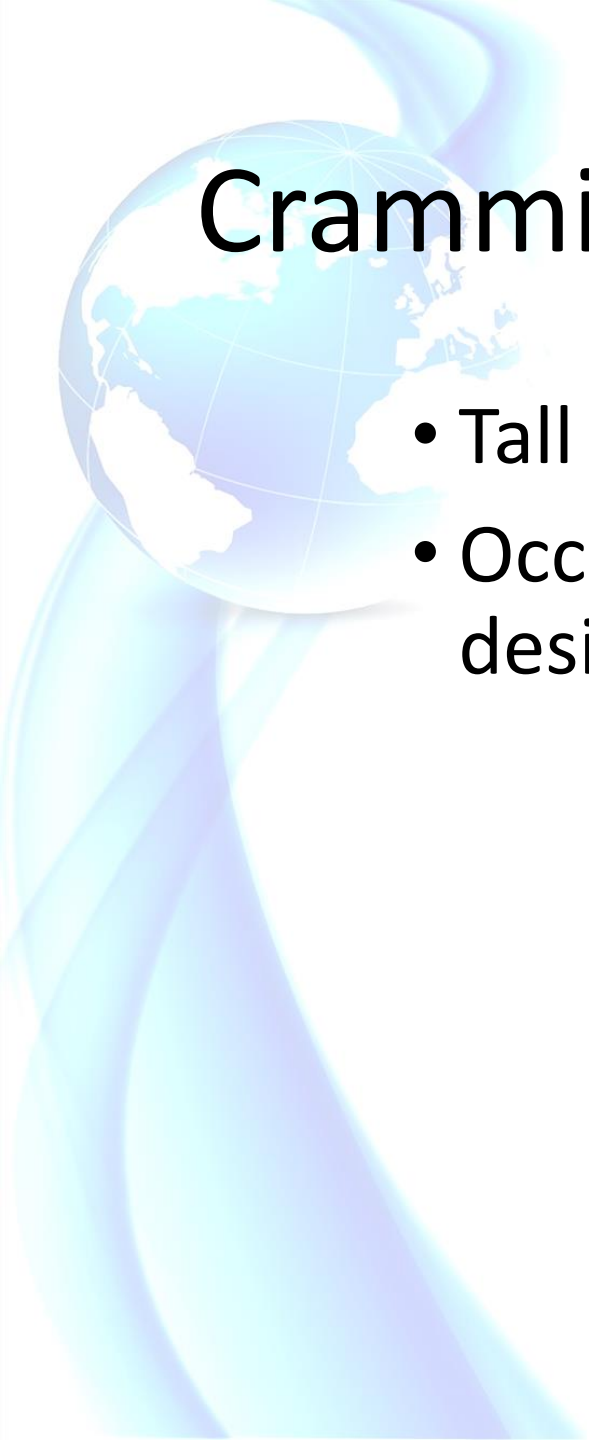








# Cramming & Hoarding



# Cramming & Hoarding

- Tall Buildings occupied beyond their designed capacity
- Occupants storing materials (fire load) beyond the designed fire resistance of the compartment











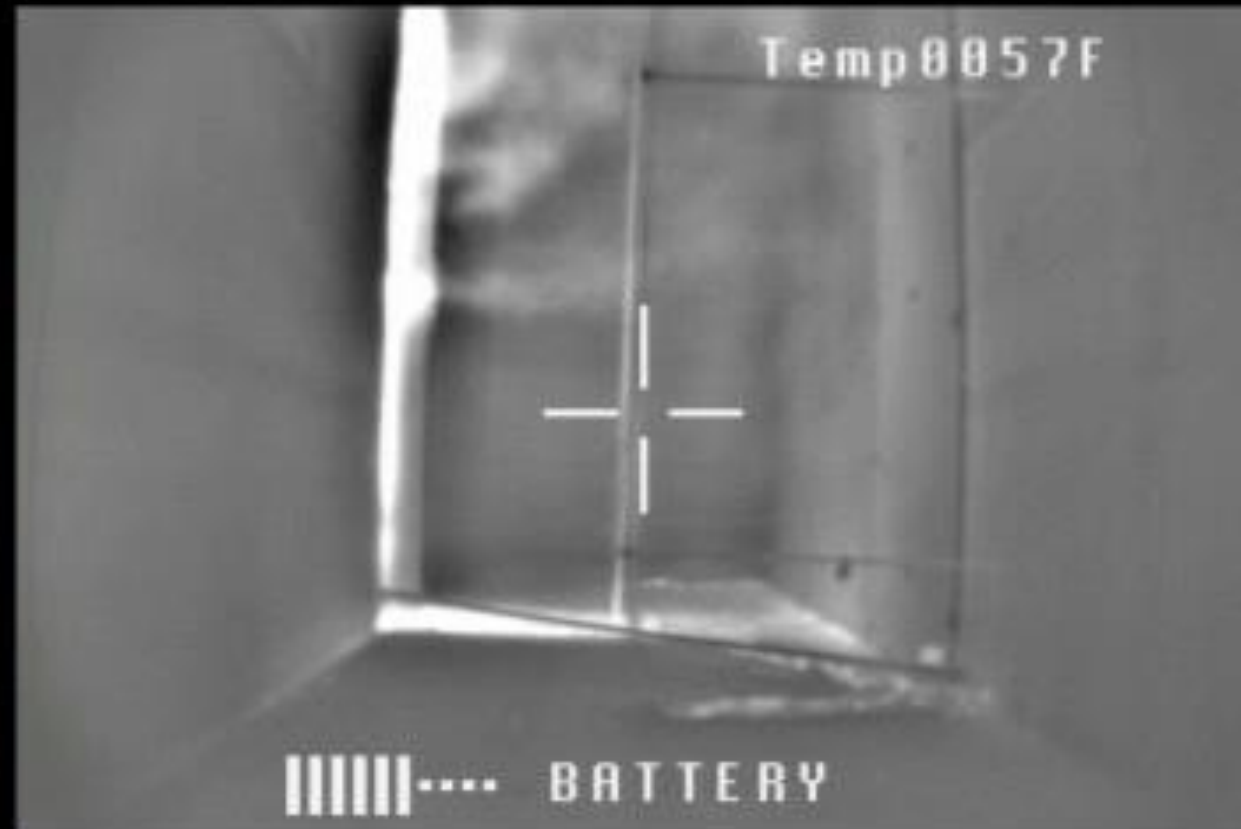


# Wind Driven Fires



30 minute fire door – 3 minutes







# Full Height & Façade Fires















REPORTED ON  
**Live Leak**









[www.bcptesting.com](http://www.bcptesting.com)

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**Evacuate by Lift &  
Evacuate and Disperse**





得利救生 **XHZLC40**  
DELIJIUSHENG

救生得力  
JIUSHENGDELI



消防过滤式自救呼吸器

XHZLC 40 FIRE ESCAPE MASK

江山得利  
JIANGSHAN DELI

环保型专利技术

专利号: ZL201120156193.1

本公司承诺: 该环保型面具, 绝对  
不采用对使用者产生  
毒害的《溴化锂干燥剂

产品标准号: GB209-1999  
本产品荣获《浙江省2002年度省级新产品》称号  
荣获《浙江省高新技术产品》称号  
PICC 中国人民保险公司质量承保



本企业通过ISO9001:2008质量体系认证

宇安(香港)控股有限公司  
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XHZLC40

## XHZLC 40 FIRE FILTERING SELF-SAVING RESPIRATOR OPERATING INSTRUCTIONS

### I. Applications

This kind of respirator is an essential personal poison-gas-protecting respiratory apparatus when fire happens in hotels, schools, office buildings, department stores, banks, post offices, power industries, hospitals, subway, ships, stations, quay, public entertainment places and dwelling house, etc.

### II. Main Technical Specification (Comply with the Ministry of Public Security standard GA209-1999)

1. Protective time:  $\geq 40$  min, poison gas and smoke protecting, fireproof, heat radiation protecting; good sealing property, suitable for all kinds of adult faces.
2. Object of protection: Carbon monoxide (CO), Hydrocyanic acid (HCN), poison smoke and fog, etc. This respirator contains special drug composition which suitable for comprehensive poison protection.
3. Oil mist permeability coefficient  $< 5\%$
4. Inhalation resistance  $< 800$  Pa; Exhalation resistance  $< 300$  Pa.

### III. Operation:

1. Open the cover; take out the vacuum package bag;
2. Tearing vacuum packaging bag;
3. Wear hood on head and fasten it with its string;
4. Choose right way then escape decisively and quickly.

使用示意图  
Directions



使用示意图  
Directions



浙江宇安  
ZHEJIANGYUAN

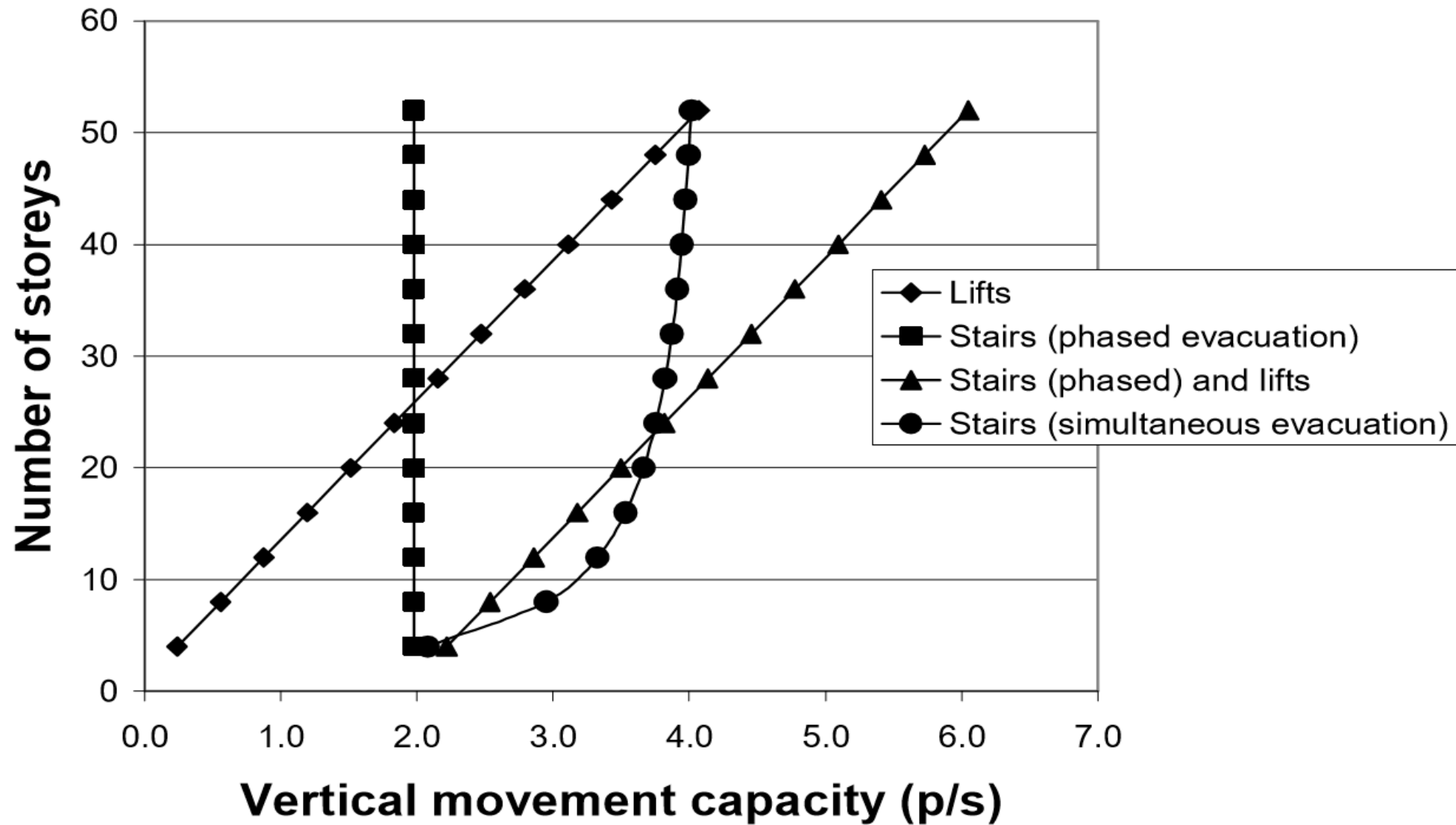




# Evacuate by Lift/Elevator & Disperse

- Tall Buildings occupied beyond their designed capacity
- Occupants storing materials (fire load) beyond the designed fire resistance of the compartment





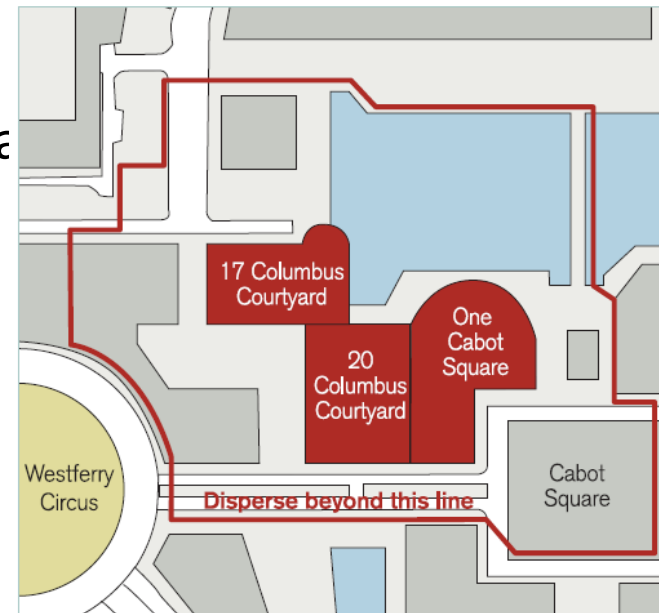
**Figure 1** Number of storeys against vertical movement capacity (for an office building)





# Evacuate and disperse process

- Fire detection, suppression and alarm – no change
- Fire evacuation
  - Phased exit – no change
  - Evacuation text and email
    - Standardised scripts
    - Building floor numbers being evacuated
    - “Stay 50m away”
    - Repeat
  - Follow on text and email
    - Invoke Disaster Recovery plans
    - Re-enter the building (phased)





# Terrorism

- Invacuation
- Active shooters & Fire Alarm





# Denial of Fire Service Response

- Extreme weather
- Congestion
- Industrial action







# Possible Solutions

- Sky Bridges
- Sky Lobbies or Refuge Floors
- Water Mist & flow rates, not pressure
- Remain in Place?
- Improved building control
- Competent Tall Building Fire Safety Manager
- Better Firefighter Training









ATHLETICO PHYSICAL THERAPY

PIZZERIA



# WMFS High Rise Training Building











# Dates of next - 'Tall Building Fire Safety Management Courses'

- 4 – 8<sup>th</sup> Sept, London
- 9-13<sup>th</sup> October, Sydney, Australia
- 16 – 20<sup>th</sup> October, Melbourne, Australia
- 11 – 15<sup>th</sup> December, London
- 15-19<sup>th</sup> Jan 2018, Birmingham
- 19 – 23<sup>rd</sup> Feb, London
- 19 – 23<sup>rd</sup> March, Manchester
- 21-25<sup>th</sup> May, London
- 5<sup>th</sup> International Tall Building Fire Safety Conference, at FIREX, Excel London  
19 – 21<sup>st</sup> June