FiSAC

Fire Safety Asia Conference
Singapore 2014

Fire Safety & Emergency Management: The Way Forward

Simon Lay
Global Director, Fire & Life Safety Engineering

PRESSURIZATION SYSTEMS DON'T WORK & PRESENT A RISK TO LIFE SAFETY

A Common Solution

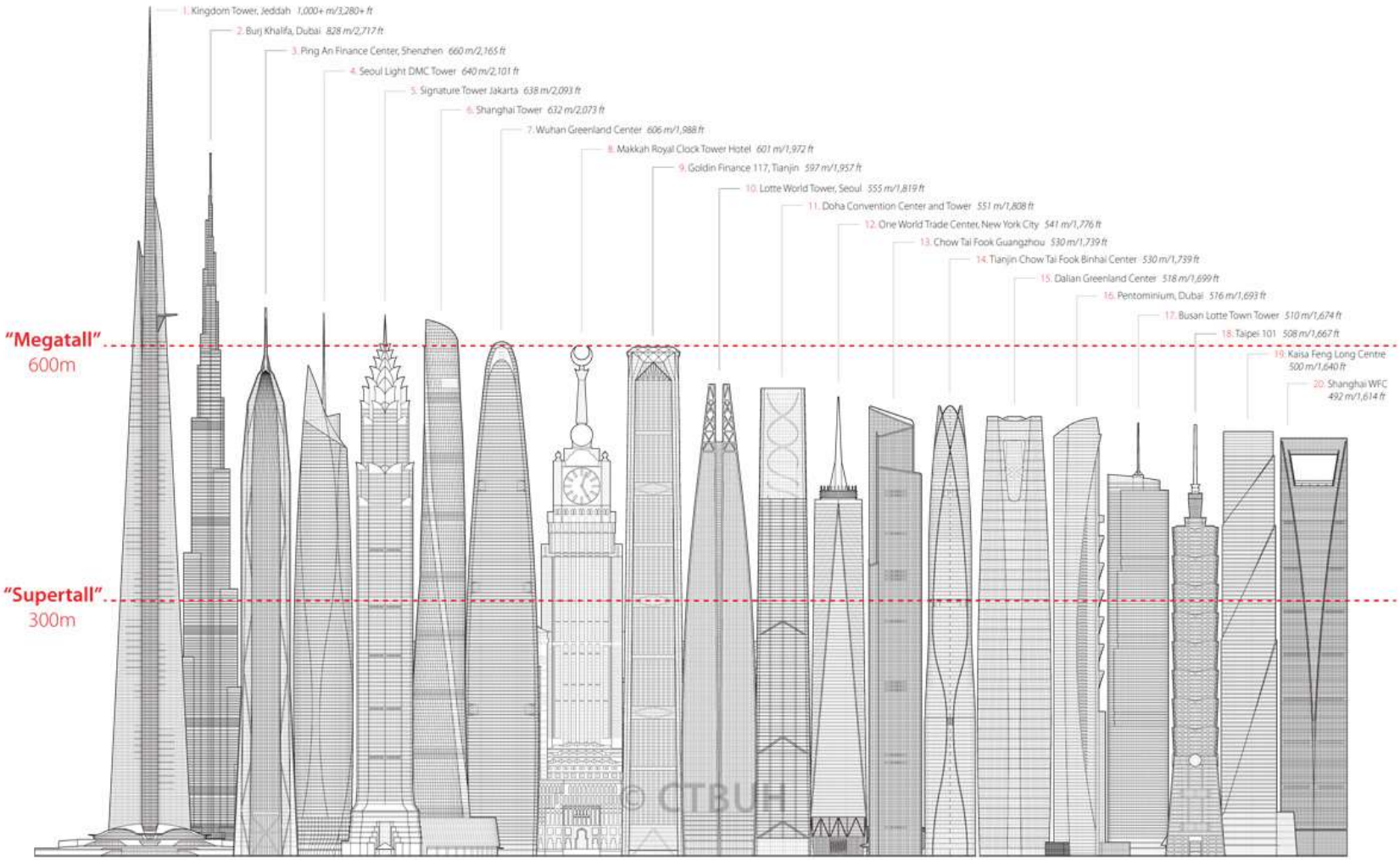
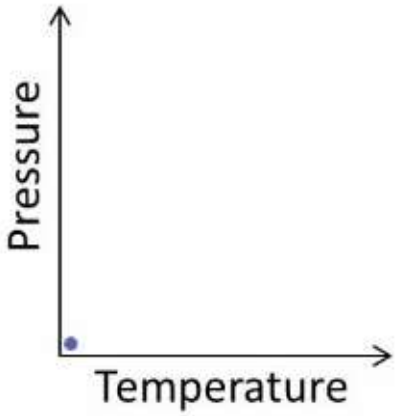
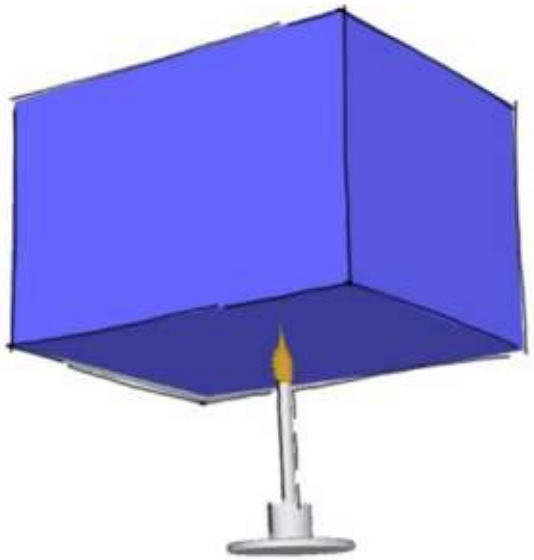


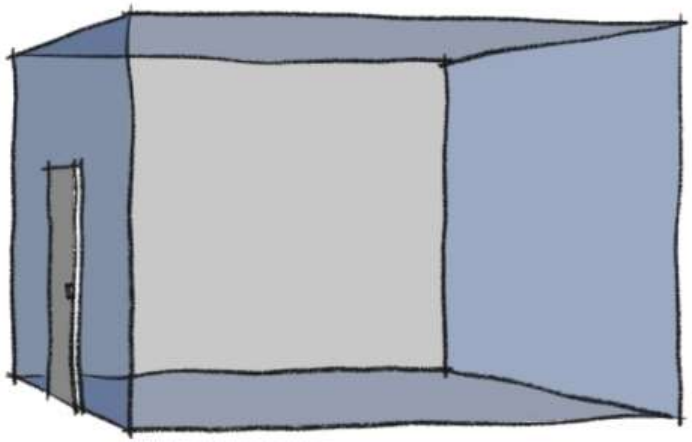
Diagram of the World's 20 Tallest in 2020 (estimated as of Dec 2011) © CTBUH

A Simple Idea?

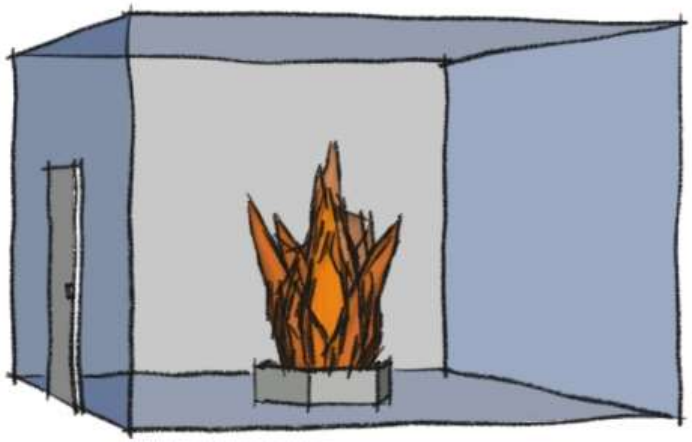




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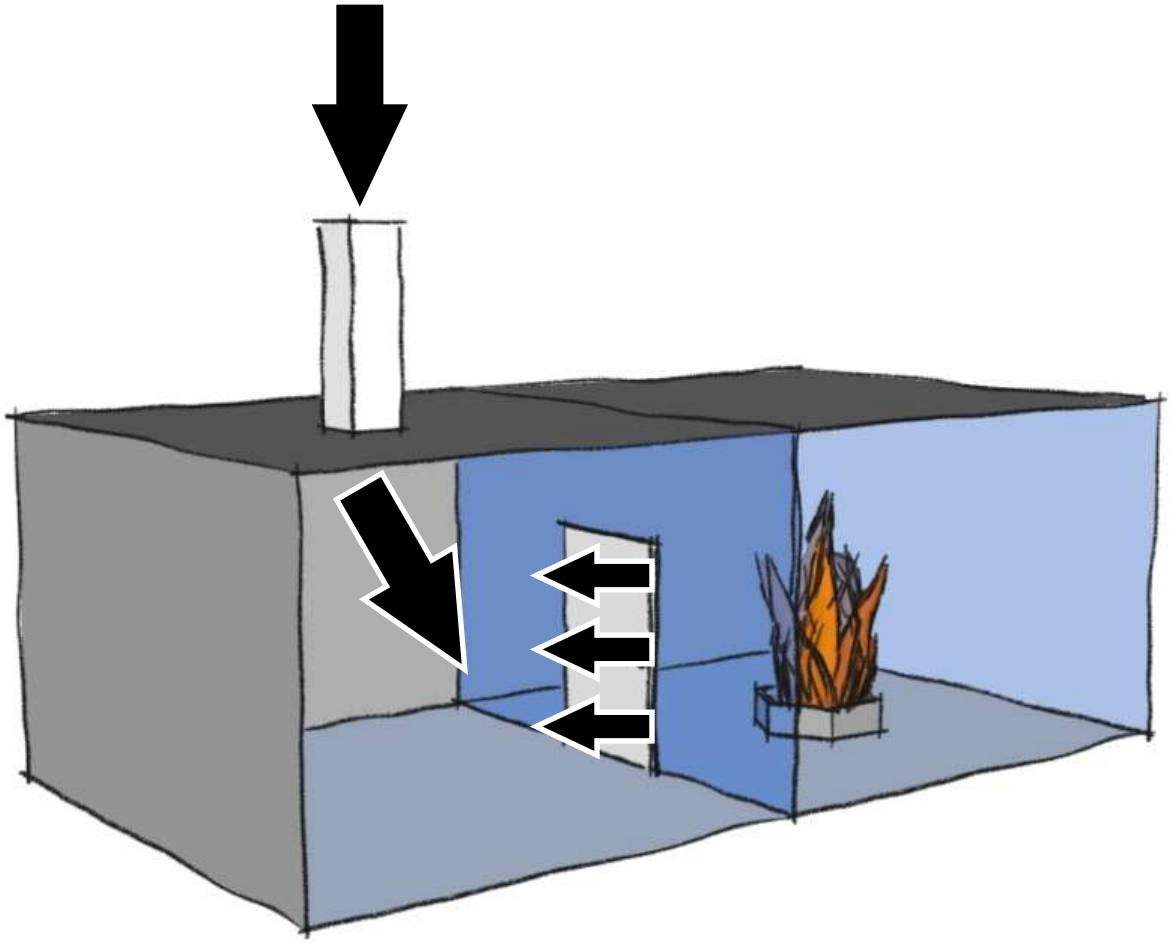
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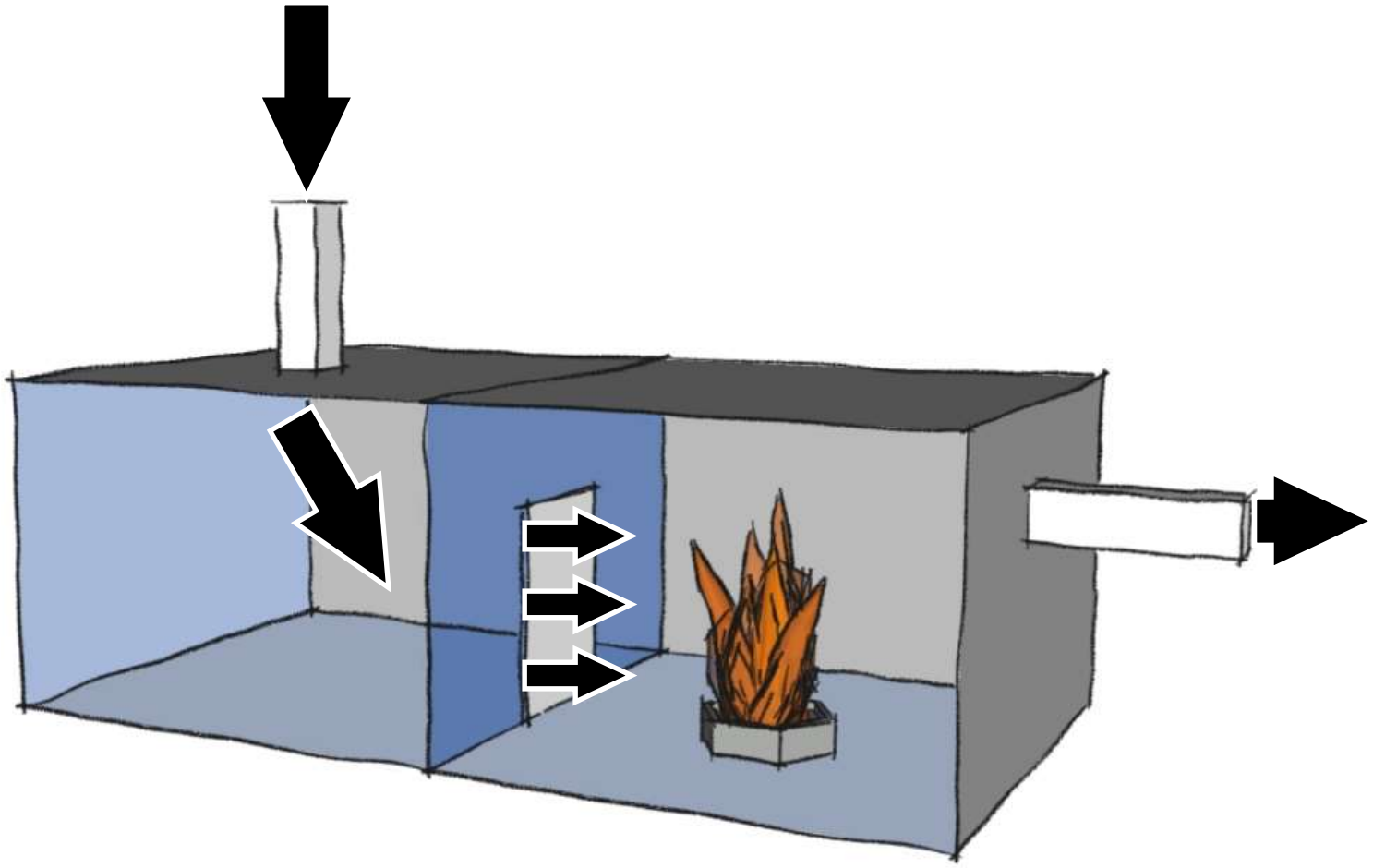
A Simple Idea?



A Simple Idea?



A Simple Idea?



A Critical System

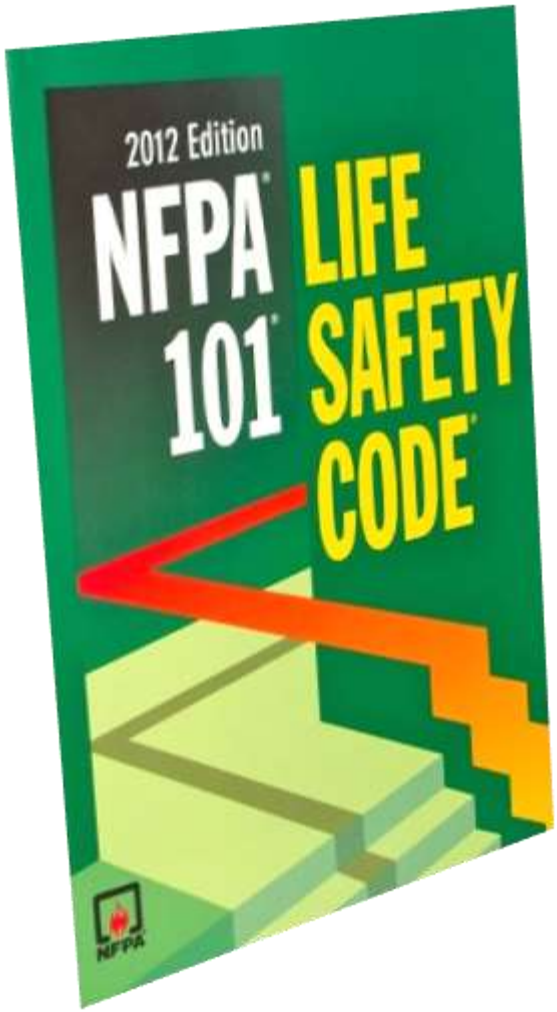






- Fire fighter access
- Occupant egress
- Accessible egress
- Phased evacuation
- Property damage

The Accepted Norm



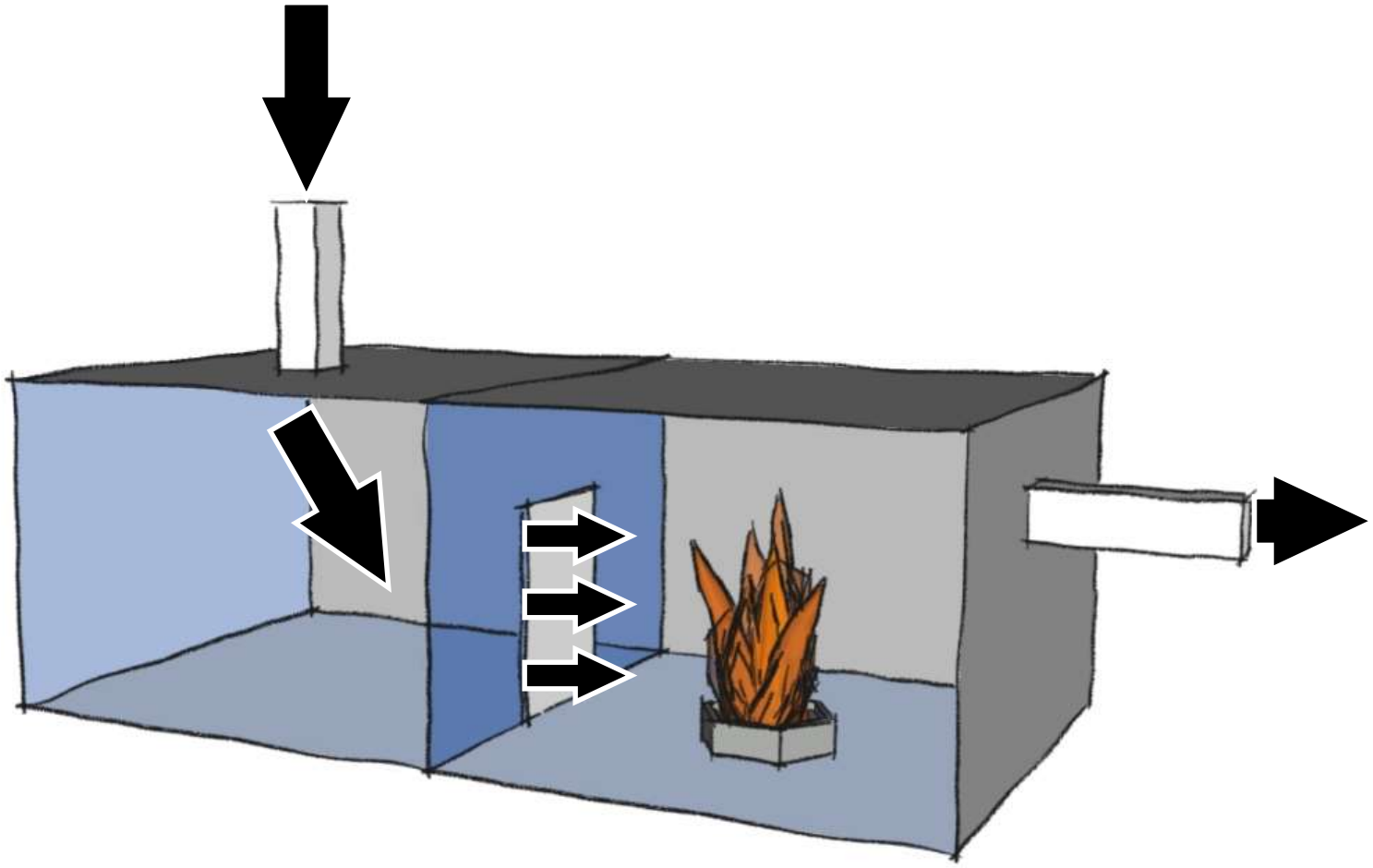




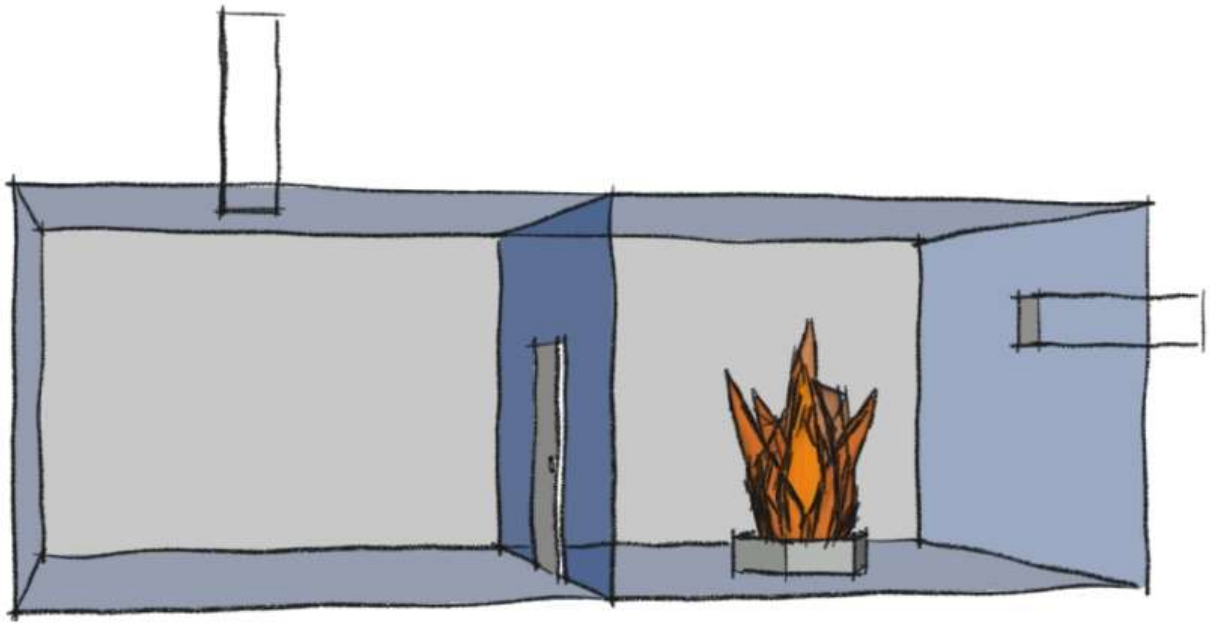




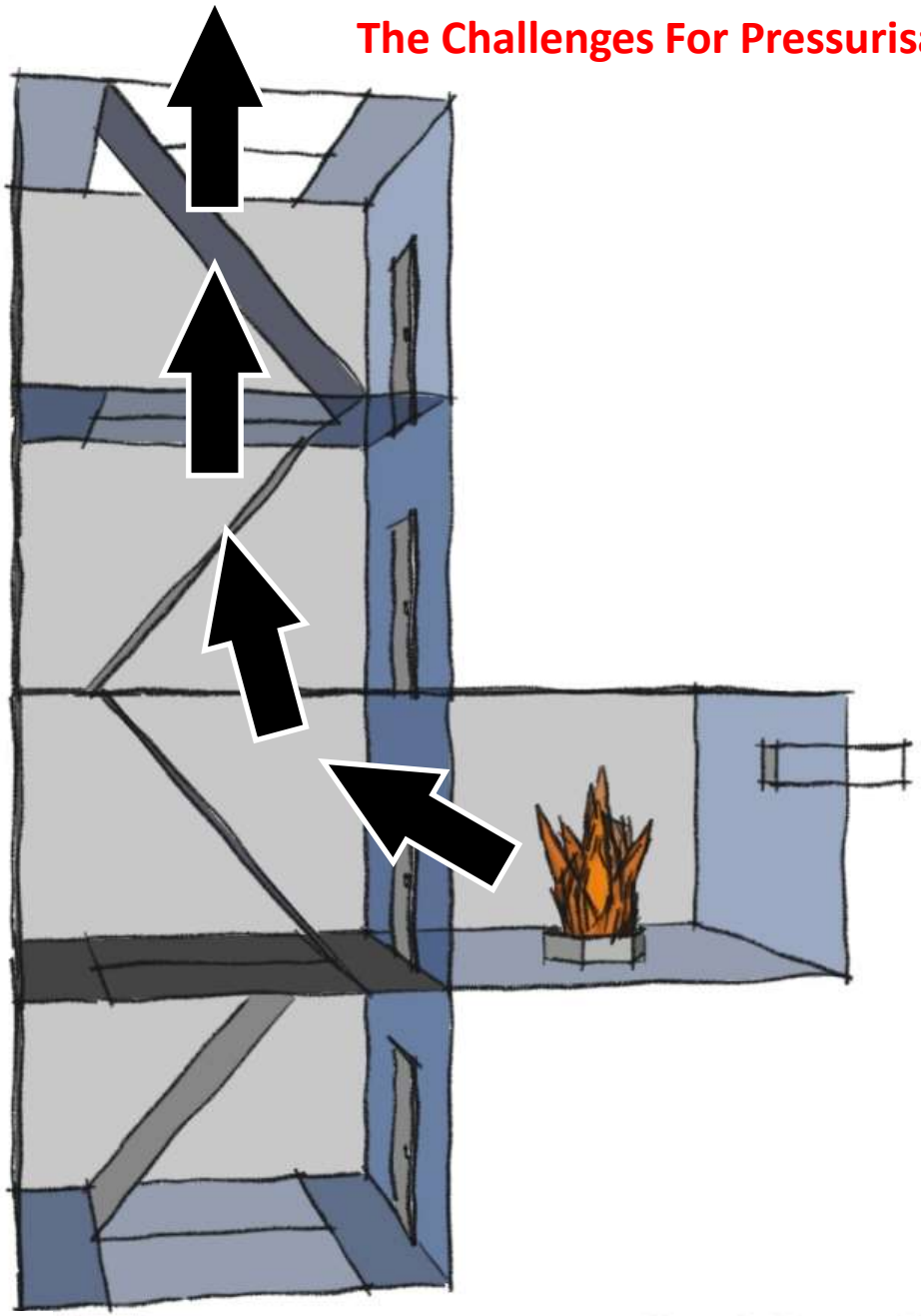
The Challenges For Pressurisation



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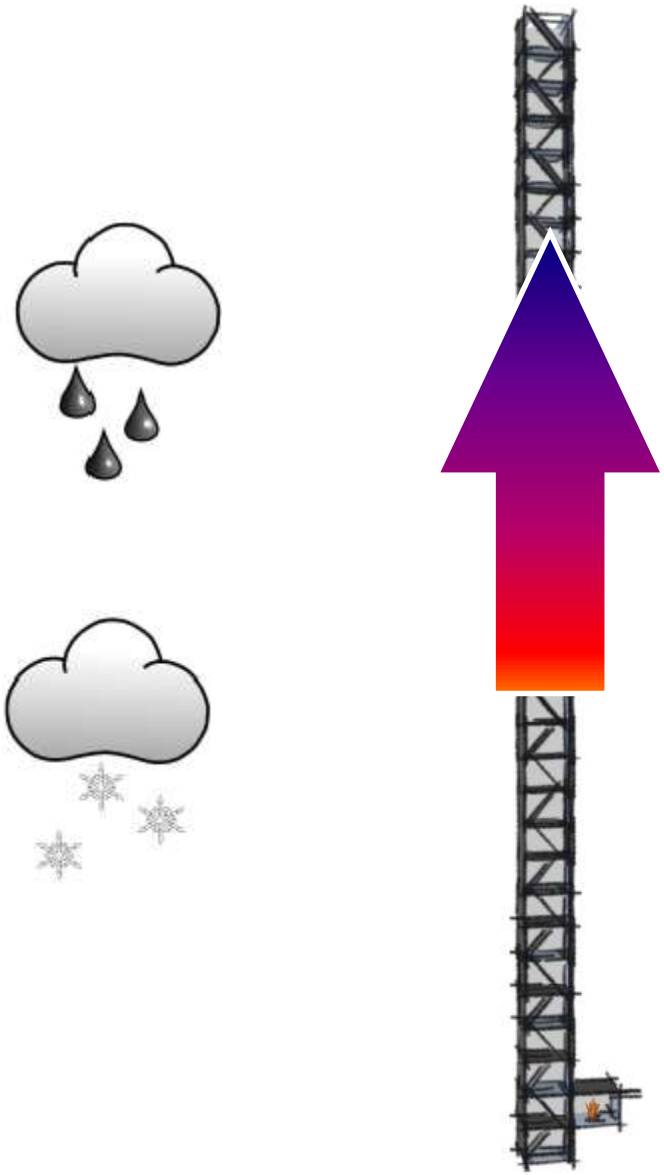
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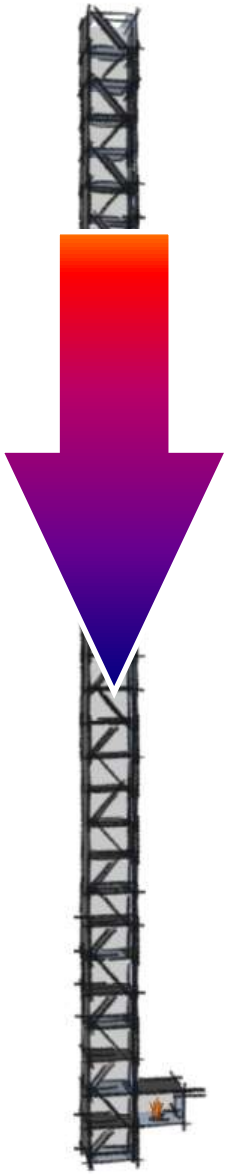


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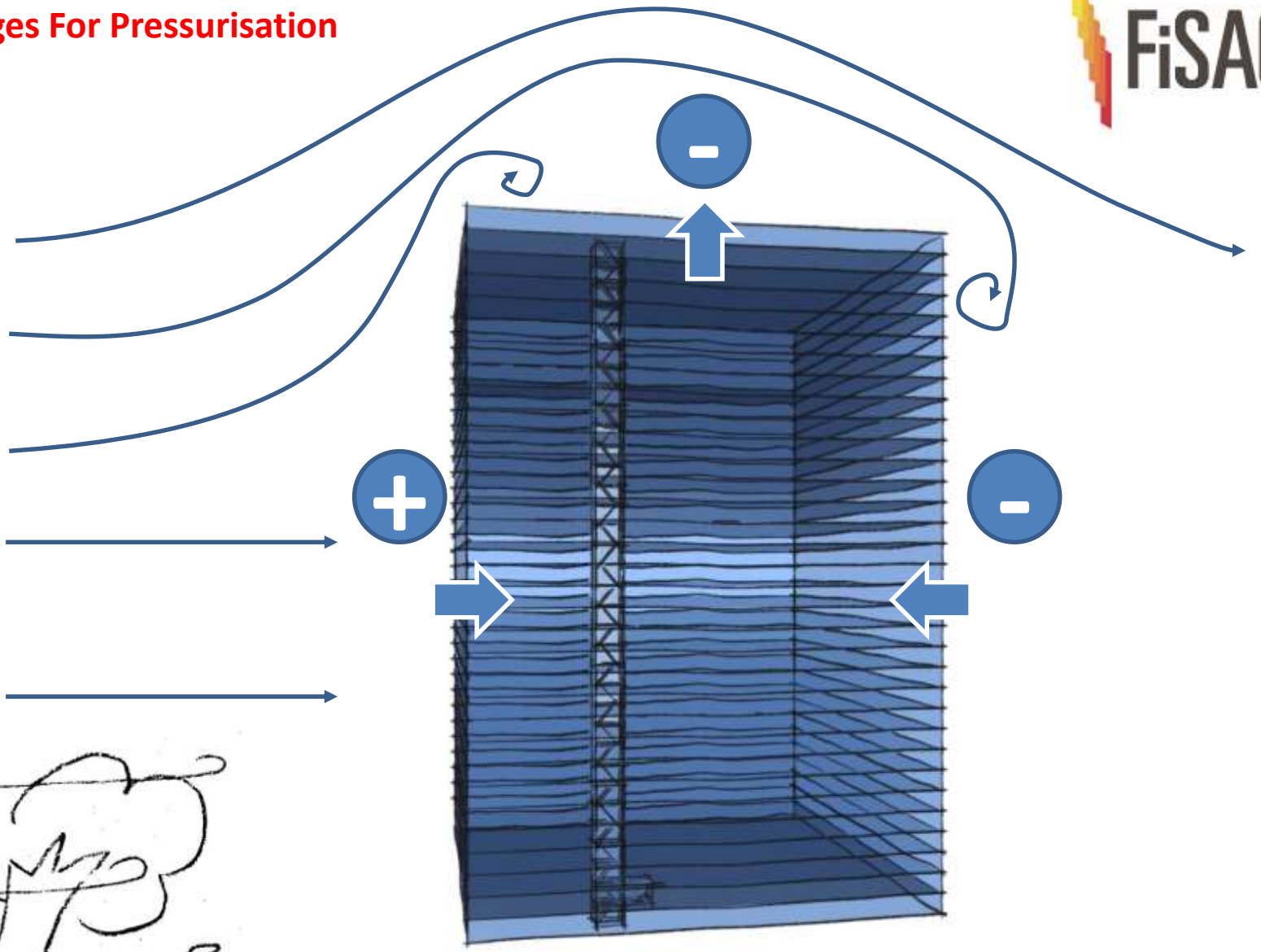


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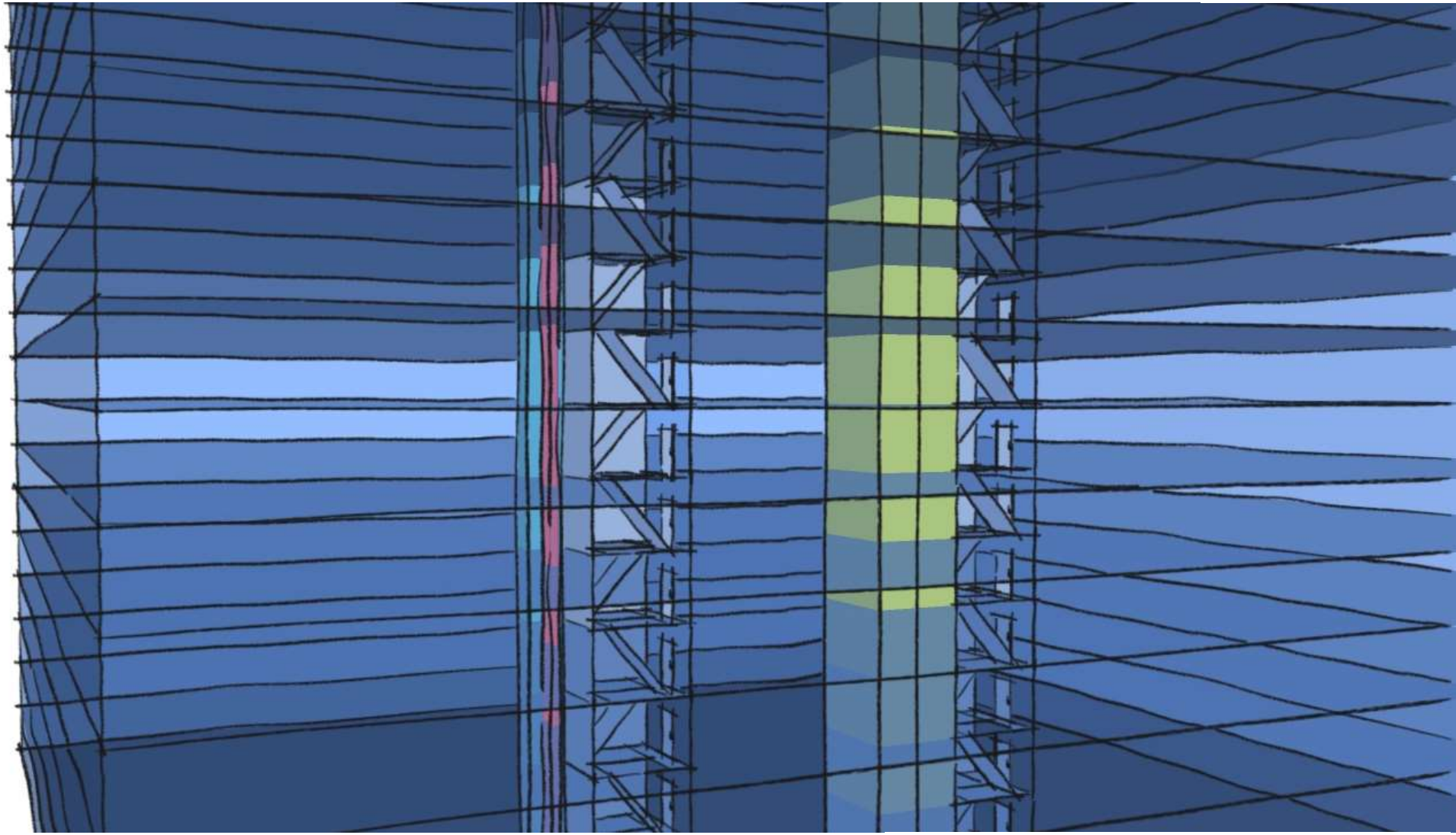


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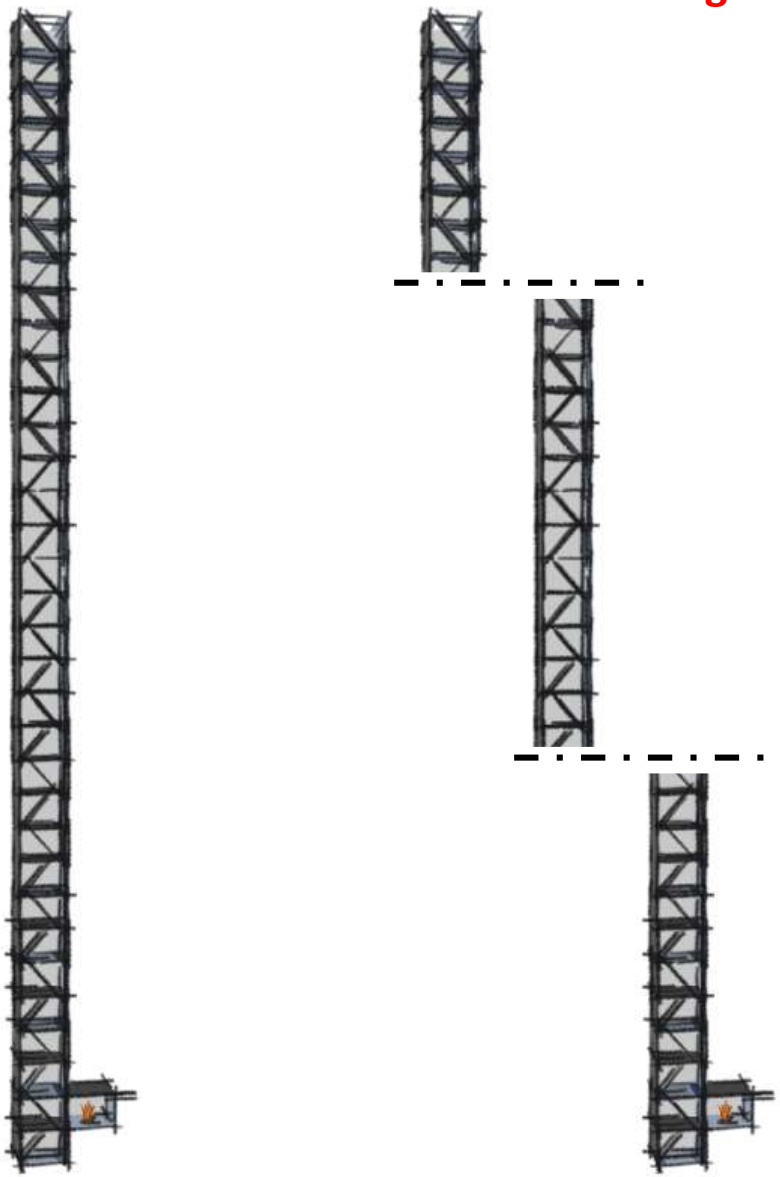
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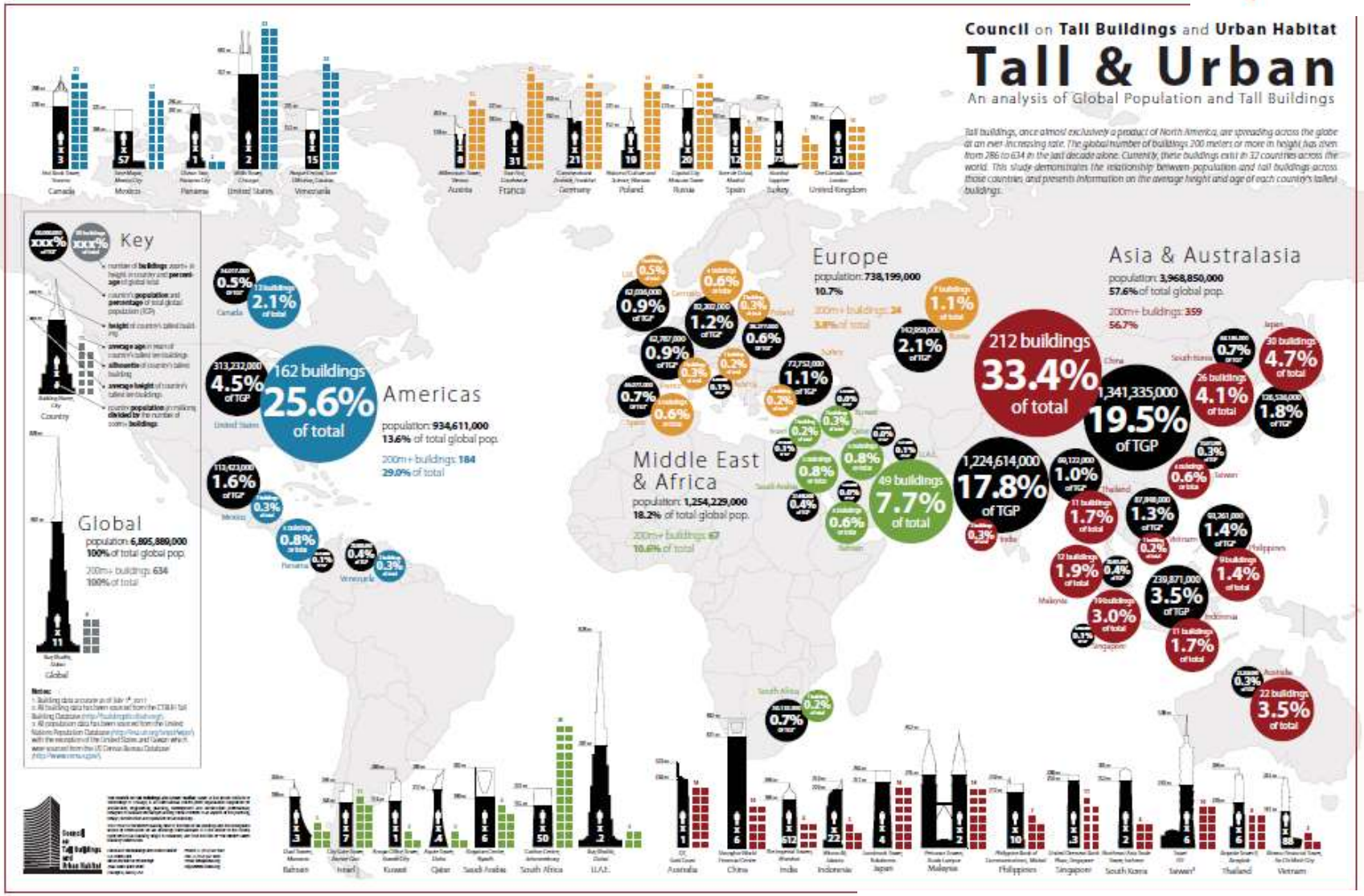


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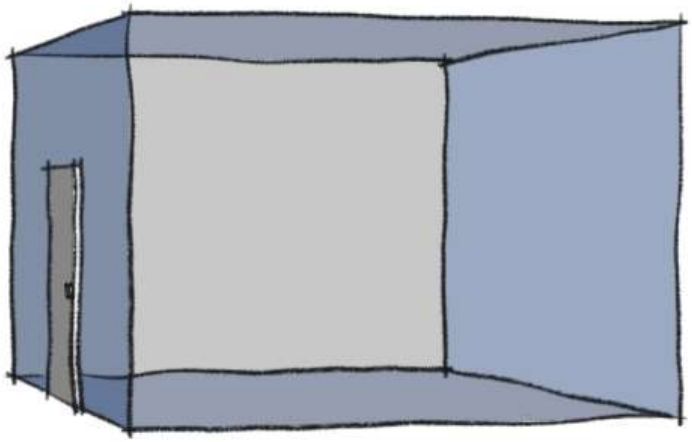


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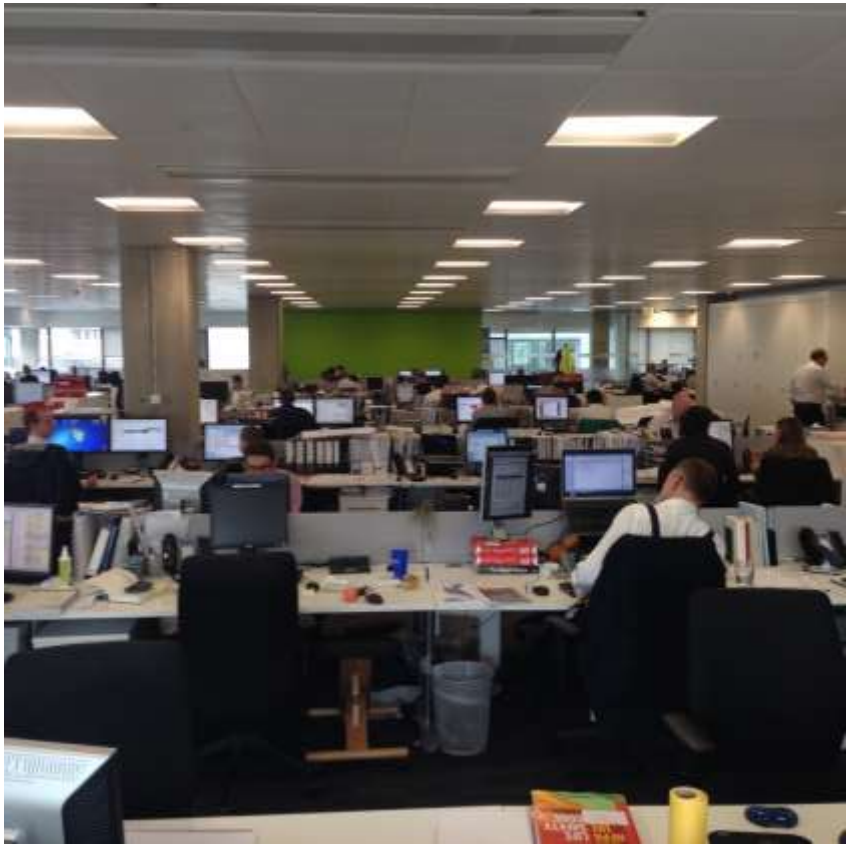



Council on Tall Buildings and Urban Habitat
Tall & Urban
An analysis of Global Population and Tall Buildings
Tall buildings, once almost exclusively a product of North America, are spreading across the globe at an ever increasing rate. The global number of buildings 200 meters or more in height has risen from 286 to 634 in the last decade alone. Currently, these buildings exist in 37 countries across the world. This study demonstrates the relationship between population and tall buildings across those countries and presents information on the average height and age of each country's tallest buildings.
Key
Global
population: 6,805,880,000
100% of total global pop.
200m+ buildings: 634
100% of total
Americas
population: 934,611,000
13.6% of total global pop.
200m+ buildings: 184
29.0% of total
162 buildings
25.6% of total
Europe
population: 738,199,000
10.7%
200m+ buildings: 24
3.8% of total
Middle East & Africa
population: 1,254,229,000
18.2% of total global pop.
200m+ buildings: 67
10.6% of total
49 buildings
7.7% of total
Asia & Australasia
population: 3,968,850,000
57.6% of total global pop.
200m+ buildings: 359
56.7%
212 buildings
33.4% of total
1,341,335,000
19.5% of TGP
1,224,614,000
17.8% of TGP
239,871,000
3.5% of TGP
22 buildings
3.5% of total

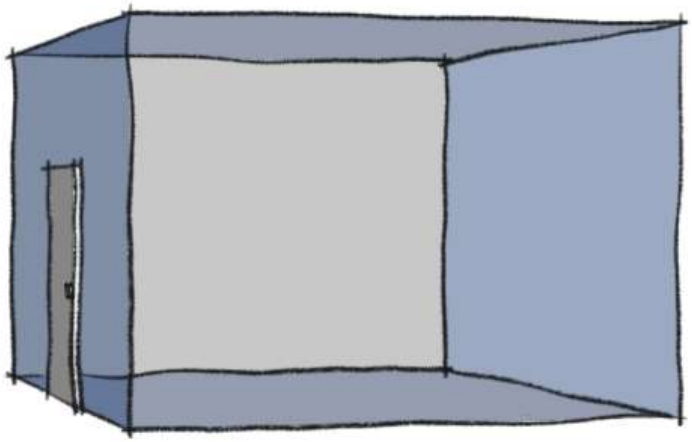
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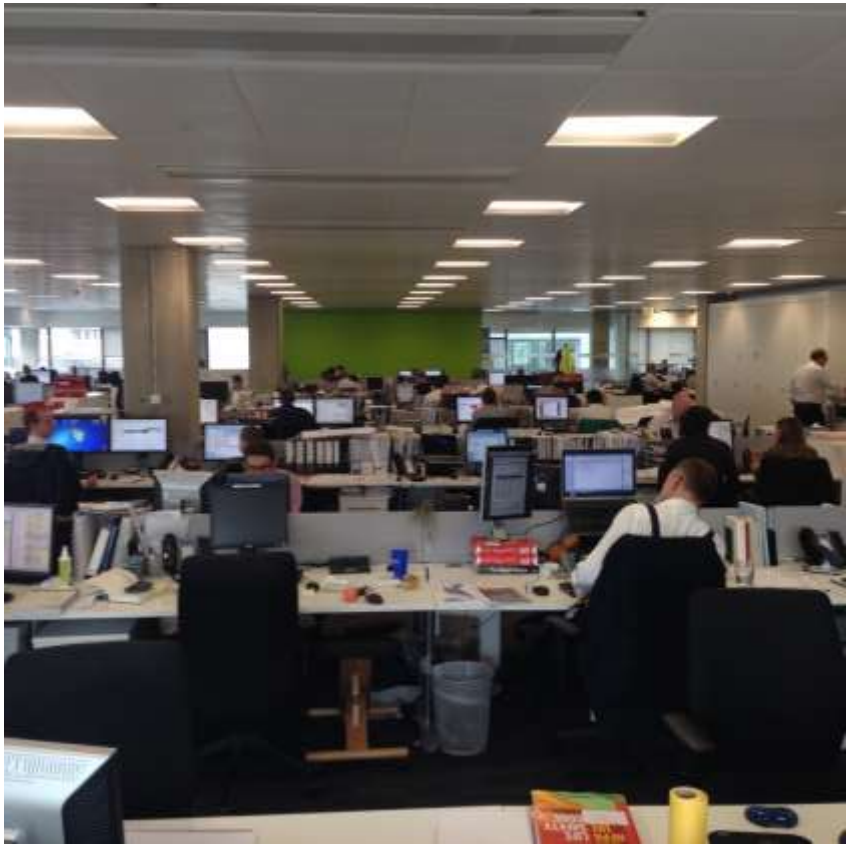
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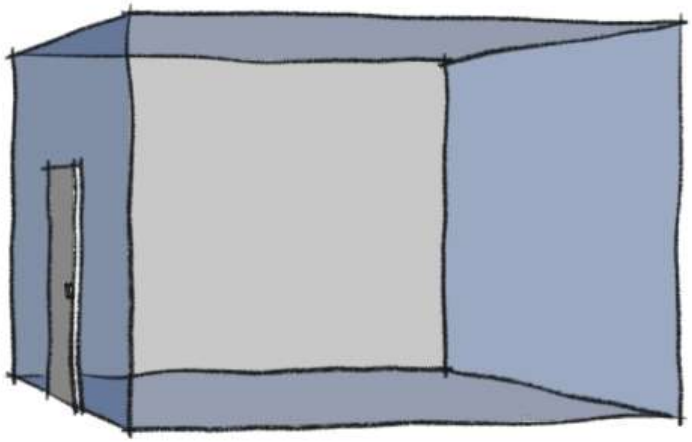
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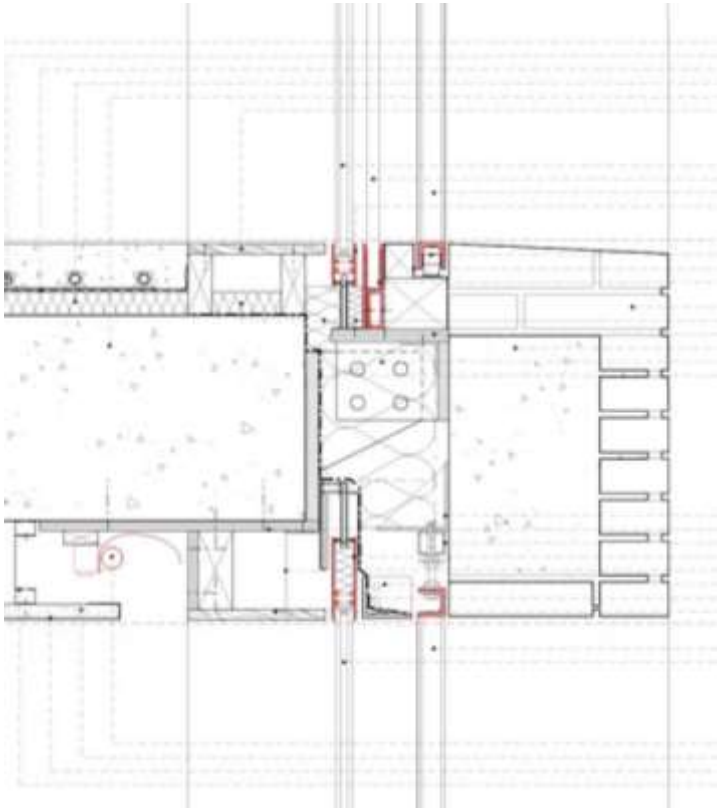
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The Challenges For Pressurisation



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Tall building design has moved towards a proactive approach



NIST



Early 1990's

2001

2005

2012

2013

Asks "why?"

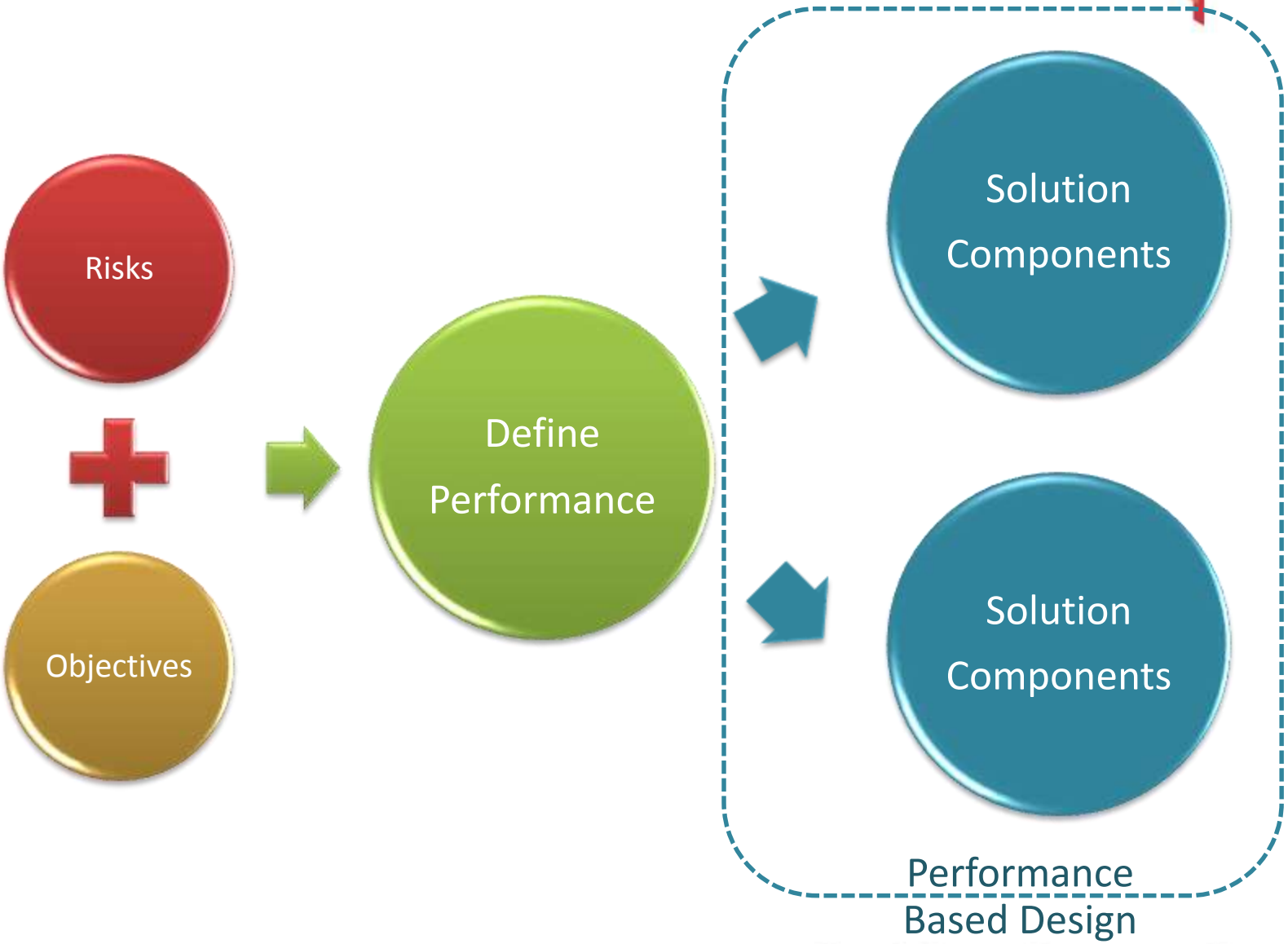
Asks "what if?"

Proactive to respond to new typologies

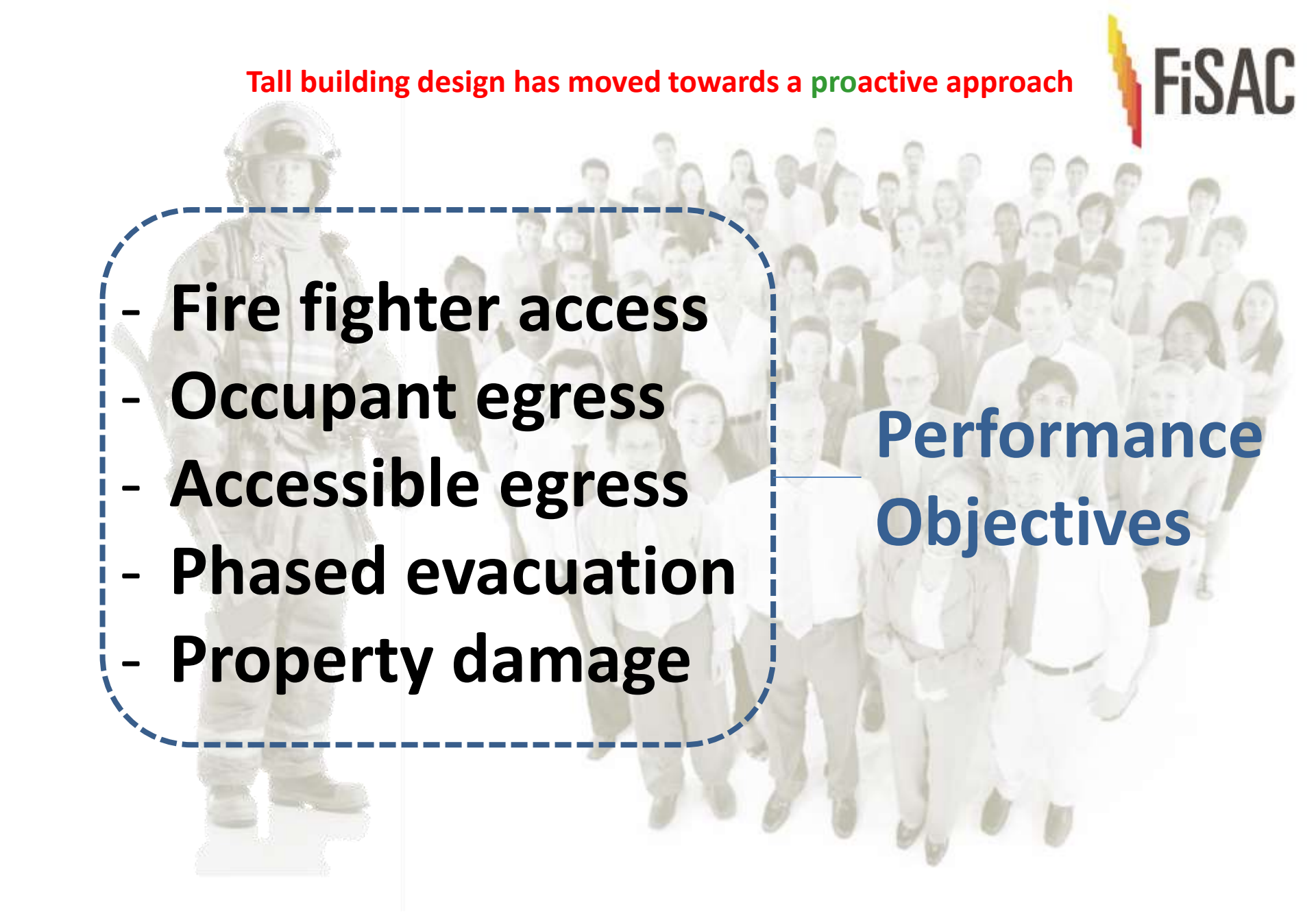




A proactive approach to fire safety



Tall building design has moved towards a proactive approach



- Fire fighter access
- Occupant egress
- Accessible egress
- Phased evacuation
- Property damage

Performance Objectives

Tall building design has moved towards a proactive approach

- Fire fighter access
- Occupant egress
- Accessible egress
- Phased evacuation
- Property damage

Performance Objectives → **Solution Options**

- Pressurization
- Lobbies
- Alternative solutions

Tall building design has moved towards a proactive approach



NIST



Early 1990's

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Asks "why?"

Asks "what if?"

Proactive to respond to new typologies







Alternative Solution

FiSAC

Fire Safety & Emergency Management:
The Way Forward

Alternative Solution



In the event of a fire in an apartment (1), smoke will enter the common corridor activating the system.

With system activation a damper opens into the outlet shaft (2) and a damper opens from the inlet shaft (3) so that the fire floor only is connected to the system.

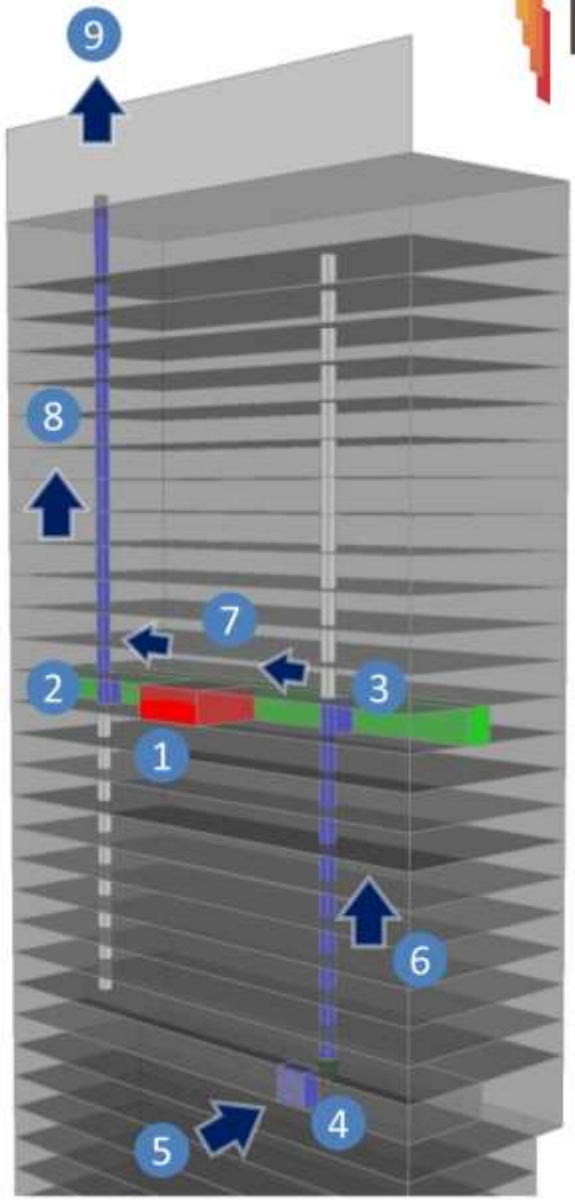
Fans in the plant room (4) start up and draw fresh air from outside (5) into the inlet shaft.

On the fire floor, the air is forced into the common corridor (3) and then flows along this corridor (7) to the outlet shaft (2), collecting smoke from the fire along the way.

The diluted smoke passes into the outlet shaft (2) and flow upwards (8) to the outlet vent (9).

The natural stack effect in the building is such that with the fans (4) shut down, there is still a flow through the system, even with cool smoke from a suppressed fire.

Under fire service control, subsequent floors can be connected to the system by manually activating the inlet and outlet dampers on other floors.



Simon Lay

Global Director, Fire & Life Safety Engineering

PRESSURIZATION SYSTEMS DON'T WORK & PRESENT A RISK TO LIFE SAFETY

FiSAC, Singapore 2014