

Discussion topic

Tools, Techniques and Tactics (3T) in Combination for Firefighting

**2015 Open Conference – Brussels (Belgium)
International Fire Instructors Workshop**

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M.Eng Civil Engineering

Fire Officer – CERN Fire Brigade (Geneva, Switzerland)



So who is this guy?



- **M.Eng. Civil Engineering**
- **Fire Officer at CERN** (*European Organization for Nuclear Research*)
- **Responsible for Operational Response**





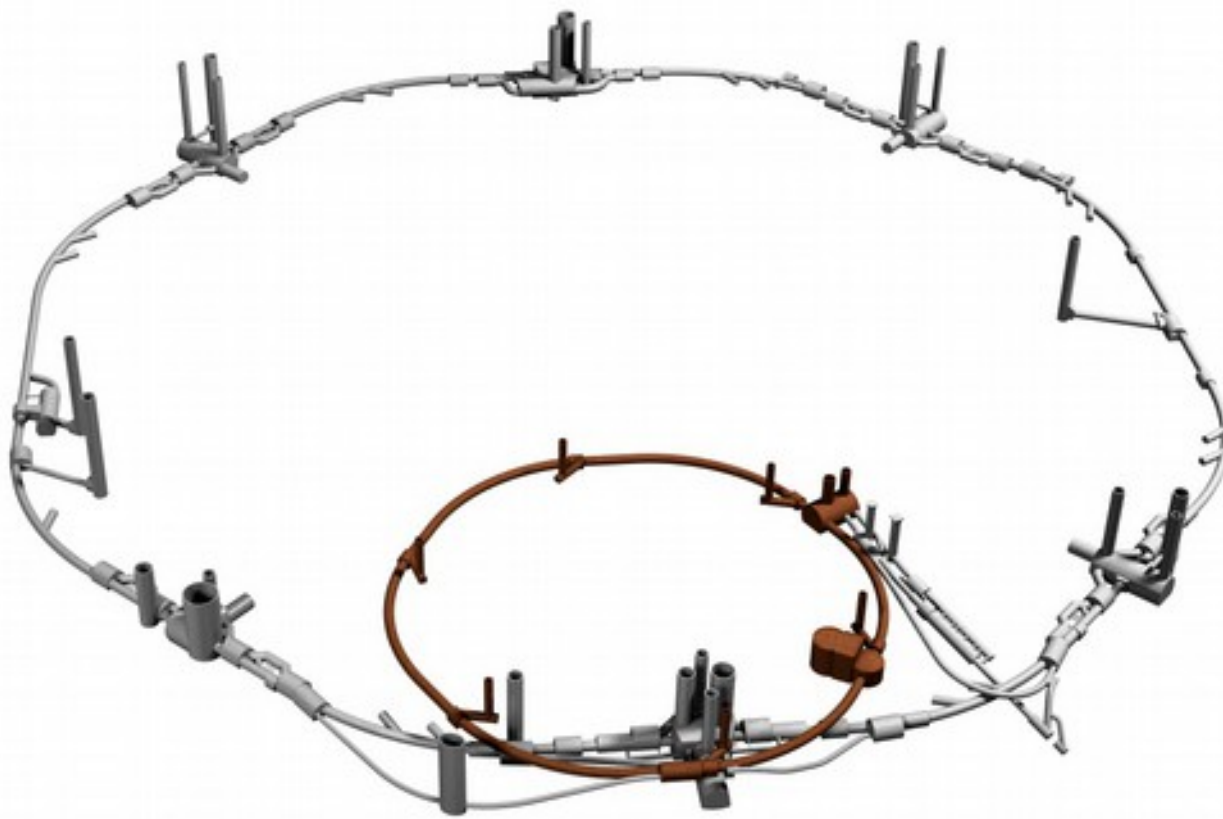
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- **Responsible for Operational Response**



- **Fire Officer at Guadalajara (Spain)**
- **Training Officer / Operational Response**



So who is this guy?

- Fire Tactics passionate

Strategy

Tactics

Skills



So who is this guy?

- Fire Tactics passionate





**Some good tactics everywhere
There is a whole lot of world out there!**



Tools, Techniques and Tactics (3T) in Combination for firefighting

- **What is 3T?**

3T is a concept emphasizing the need to be versatile in the fire ground in the use of different tools, techniques and tactics



Tools, Techniques and Tactics (3T) in Combination for firefighting

- What is 3T?

3T is a concept emphasizing the need to be versatile in the fire ground in the use of different tools, techniques and tactics



DISCLAIMER: If you thought 3T is all about swinging a blower and putting water from outside → You are **WRONG!**



Tools, Techniques and Tactics (3T) in Combination for firefighting

- What is 3T?
 - Discussion topic in 2014 IFIW (Olsztyn, Poland)





Tactical goals

- **Bring everyone to safety**
- **Stop the damage made by the fire**



Tactical goals

- **Bring everyone to safety**

- Search everywhere, rescue everyone from
- **Blow the smoke away**

- **Stop the damage made by the fire**

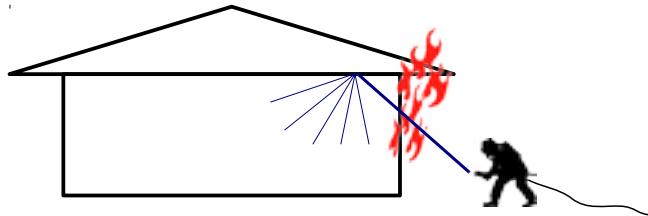
- Isolate the fire room
- **Water on the fire the fastest and easiest way (maybe from the outside)**



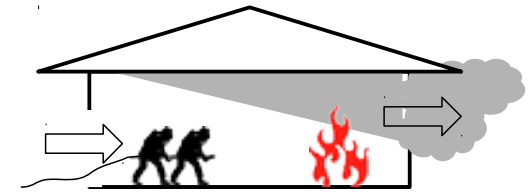
But which 3T do we use?



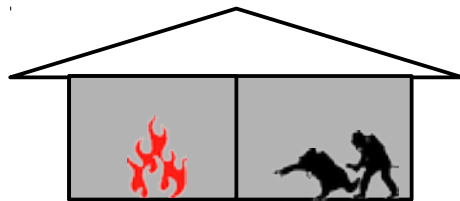
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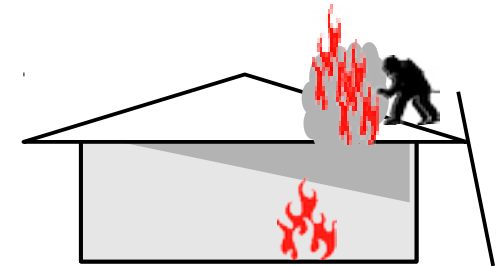
SOFTENING THE TARGET



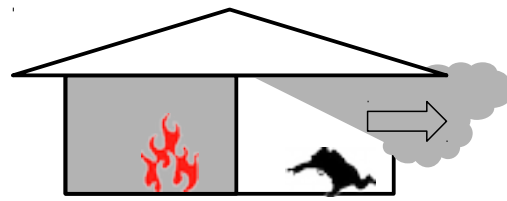
PPA FOR FIRE



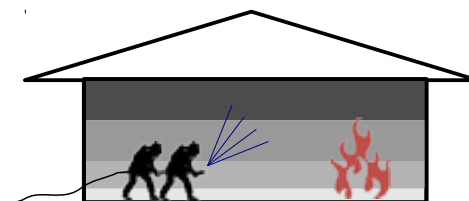
SMOKE DIVING RESCUE



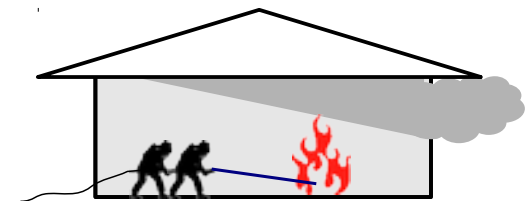
VERTICAL ROOF VENTILATION



PPA FOR LIFE



GAS COOLING



INTERIOR DIRECT ATTACK

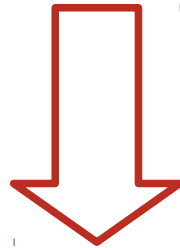
Questions...

- **Why do we always try to use the same 3T?**
- **Why do others use different 3T for the same exact problem?**



Questions...

- **Why do we always try to use the same 3T?**
- **Why do others use different 3T for the same exact problem?**



- **Couldn't we combine different 3T for better results?**
- **Couldn't we integrate new 3T with our traditional 3T?**



There is a time and place for each individual tool, technique and tactic.

*WOP = window of opportunity
range of use*



Why a single 3T?

- **Country's fire service tradition**
- **Fire Department's common practices**
- **Fire Training Division endorsed practices**



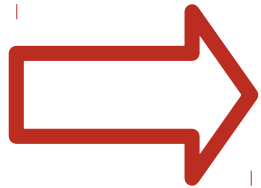


Classical one-way firefighting



Why a single 3T?

- Country's fire service tradition
- Fire Department's common practices
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We use the 3T we like (know)

We train the 3T we feel comfortable with

We rarely look beyond our own door

We are afraid of change (lose what we have)





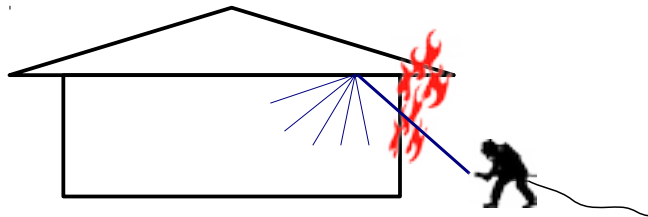
3T we DON'T USE and TRAIN

- No advantages
- Full of cons
- **Never** work

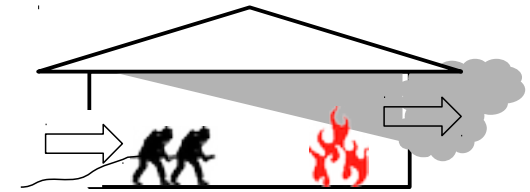
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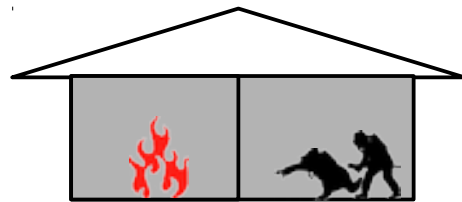




SOFTENING THE TARGET

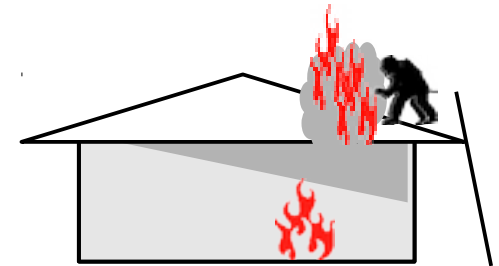


PPA FOR FIRE

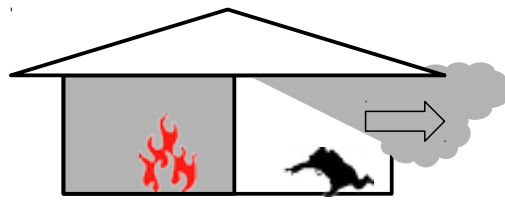


SMOKE DIVING RESCUE

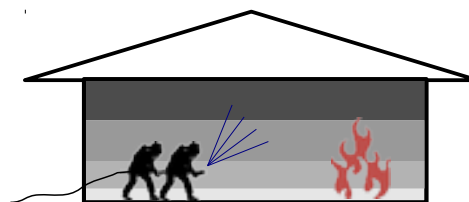
How about a 3T combination?



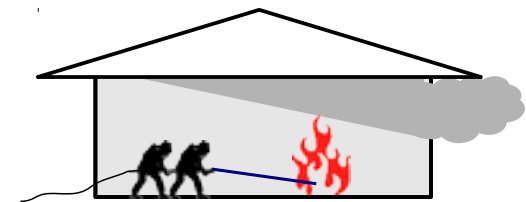
VERTICAL ROOF VENTILATION



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INTERIOR DIRECT ATTACK



A right 3T combination is:

- More efficient and more effective → safer
- Widens the range of use
- Adds pros and removes cons



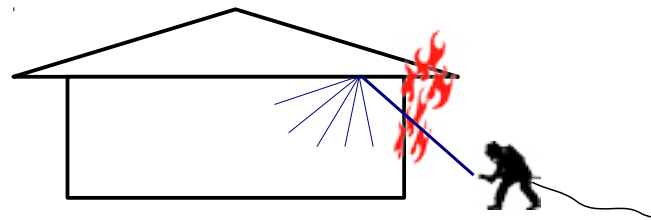
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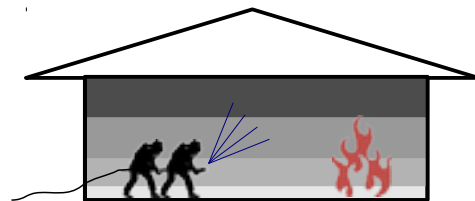
**It's all a matter of sizing-up,
coordination and flexibility**



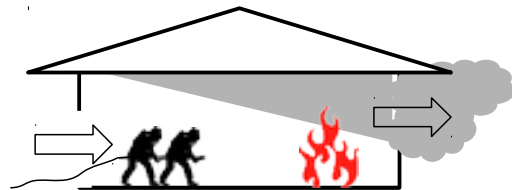
Just an example...



SOFTENING THE TARGET



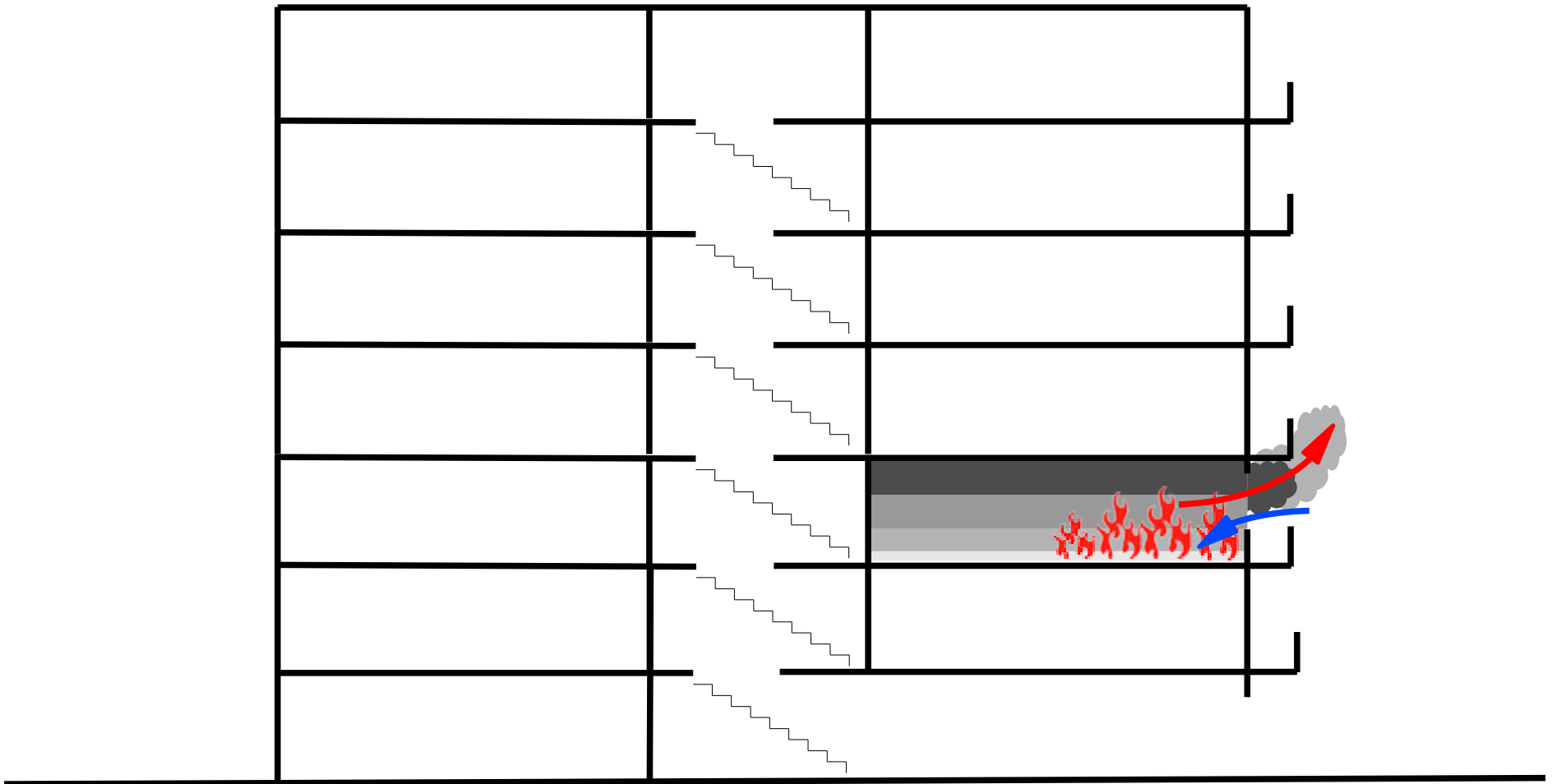
GAS COOLING



PPA FOR FIRE

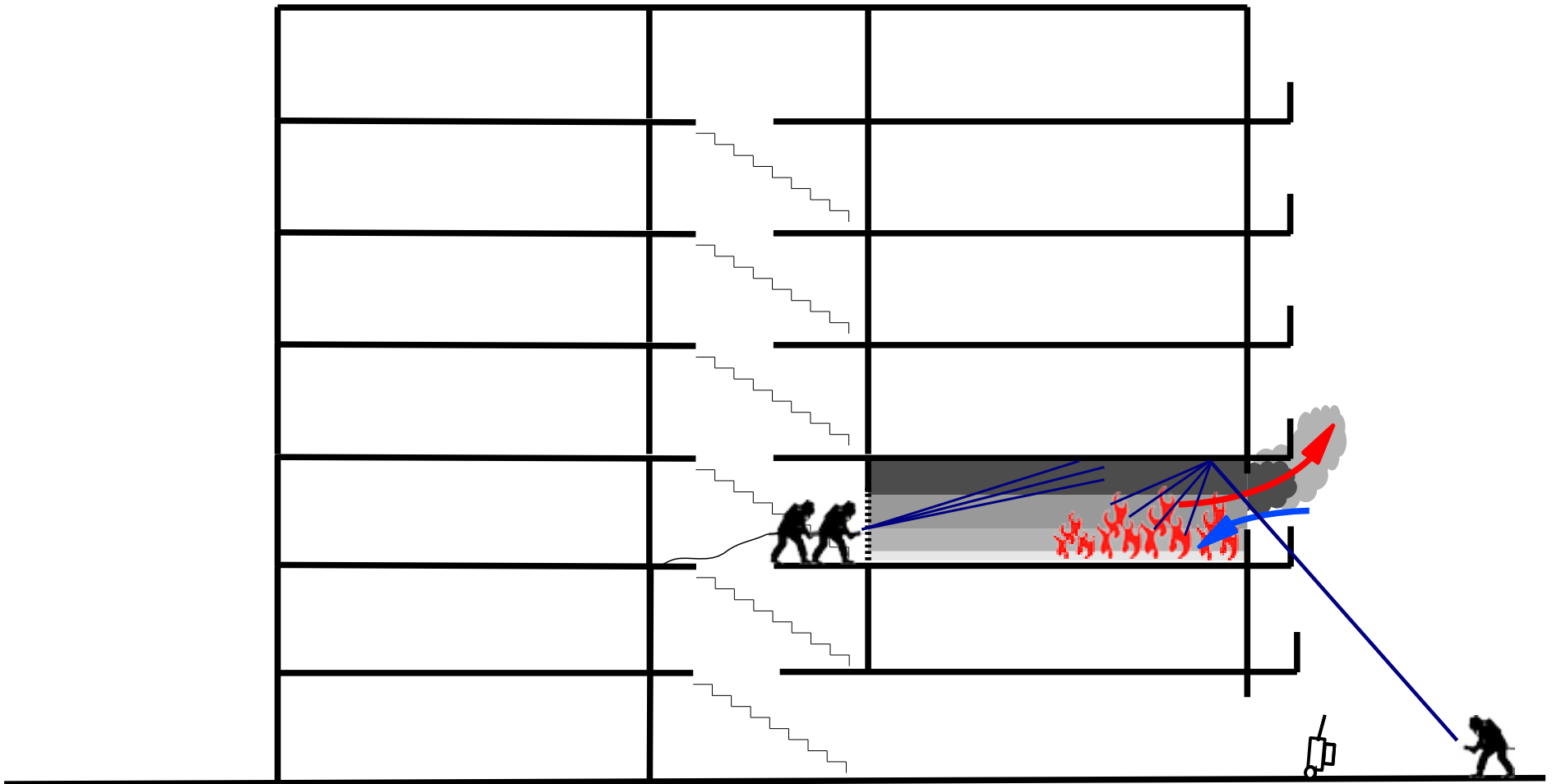


Easiest scenario: Fire in one apartment, stairwell is clear, bidirectional flow path through window

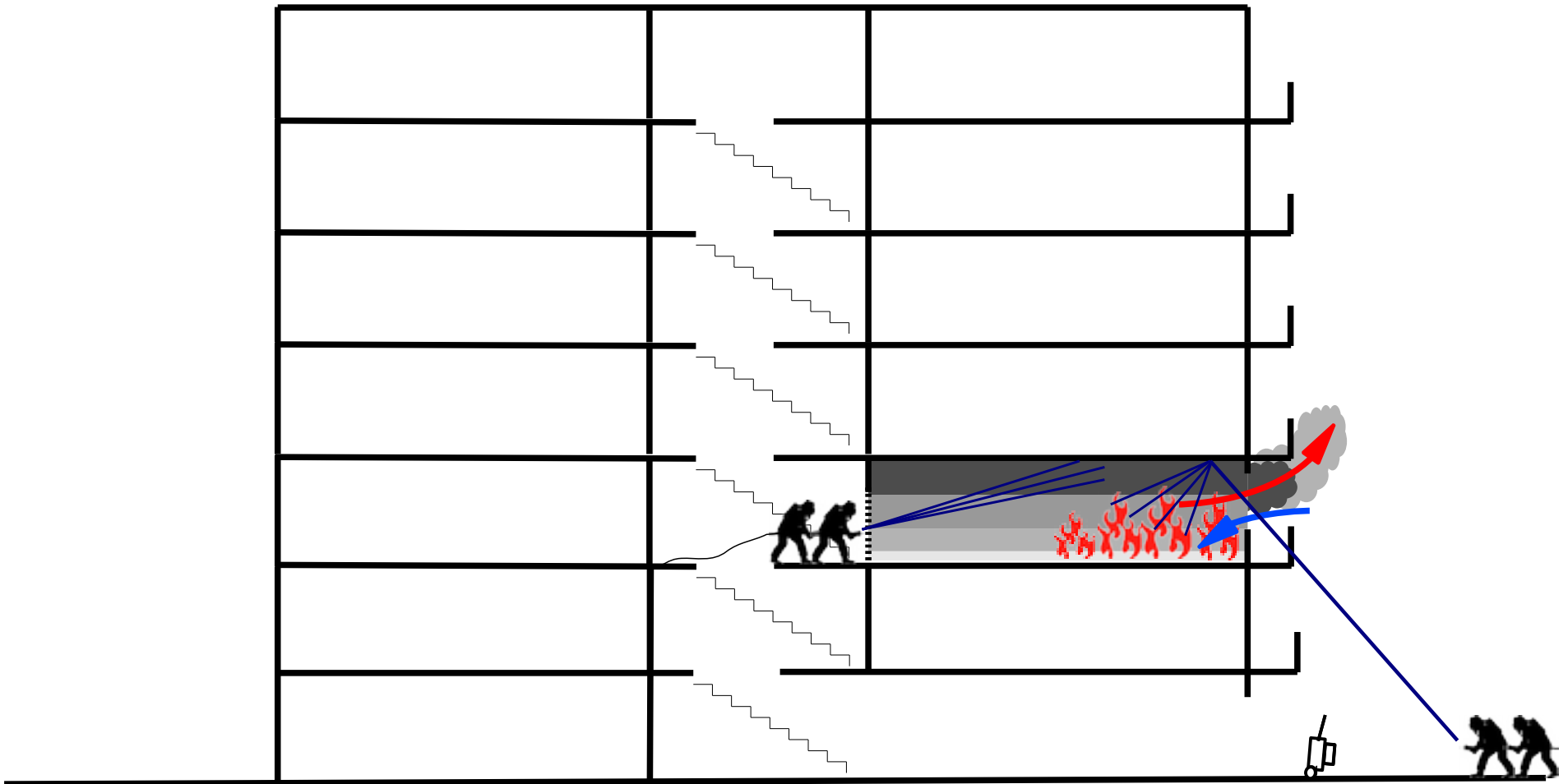


Transitional Attack **ASAP**

Water before entry. Why not?

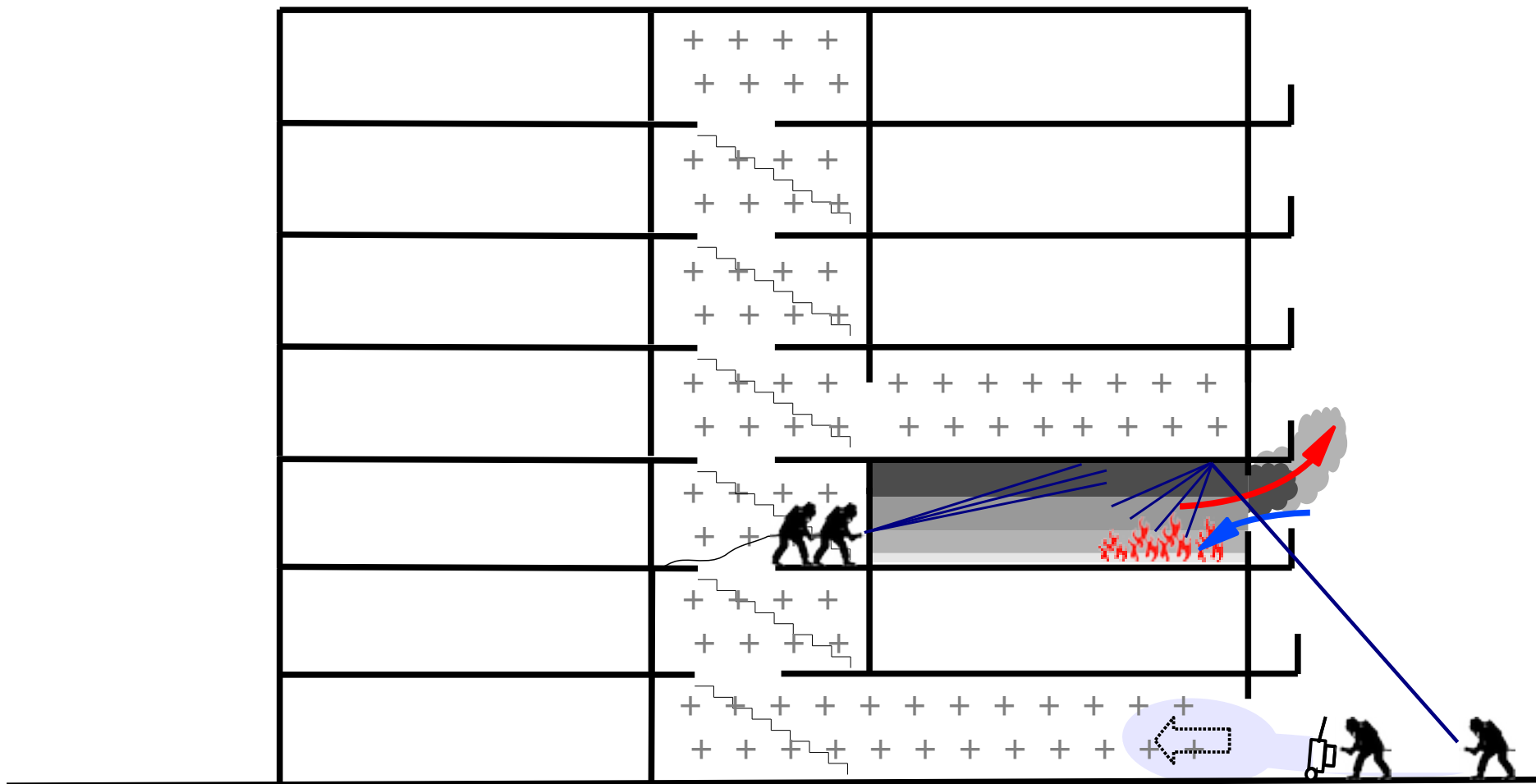


Transitional Attack **ASAP** **DEEP** Indirect Attack

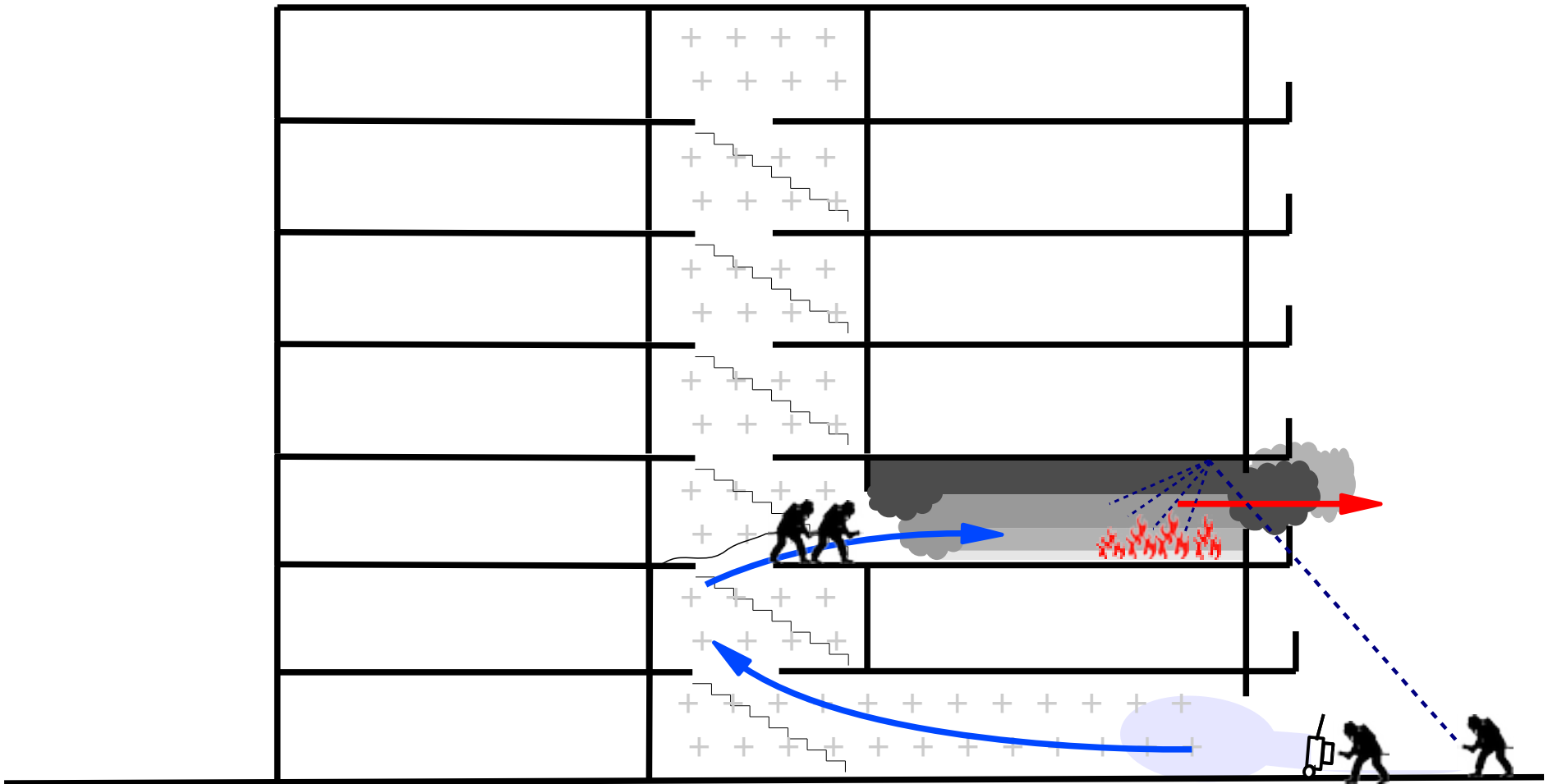


WATER APPLICATION BASED ON CONDITIONS

PPV fan ensures pressure in stairwell and potential extension areas

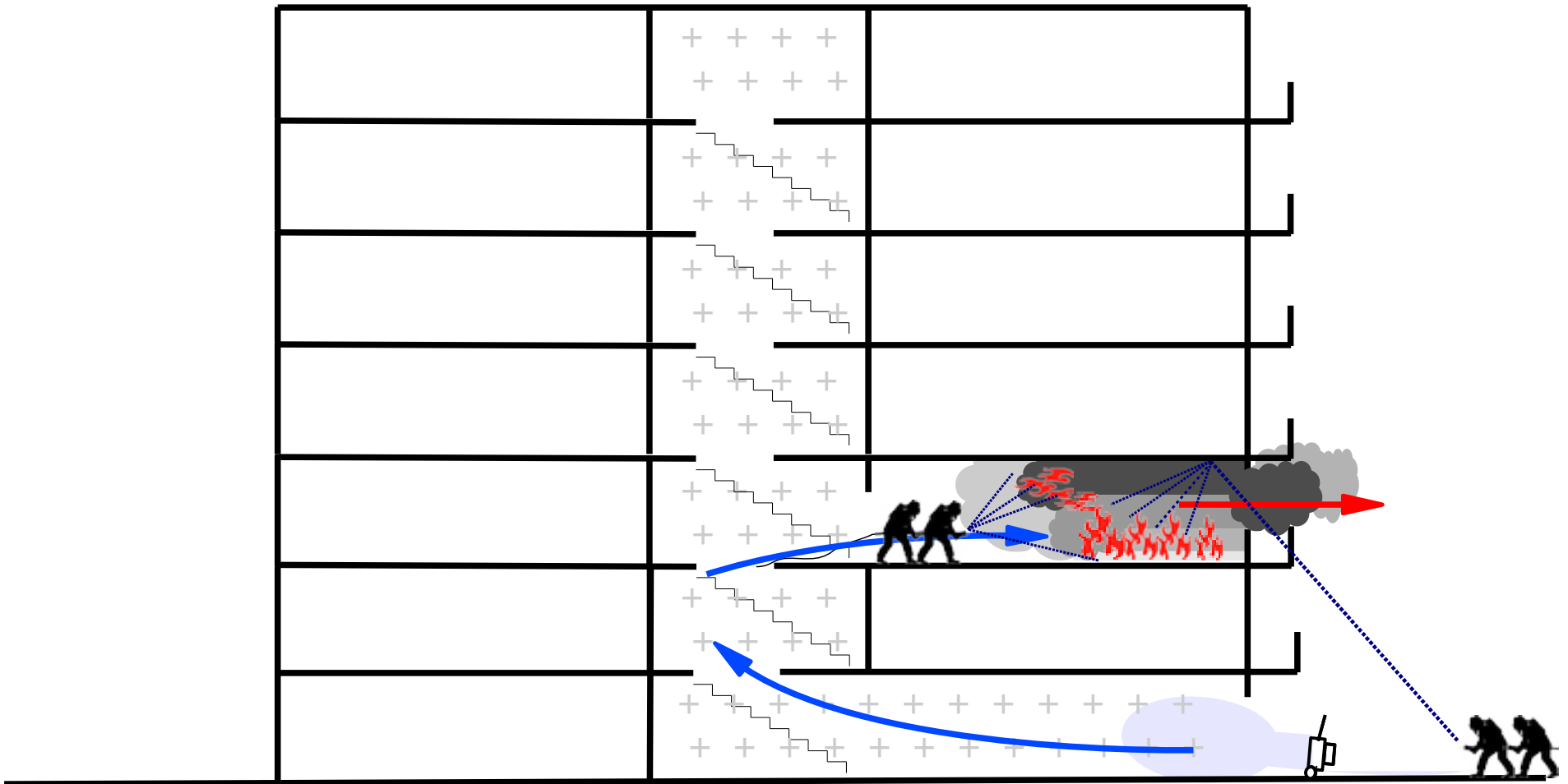


Interior attack starts with the assistance of a PPV fan

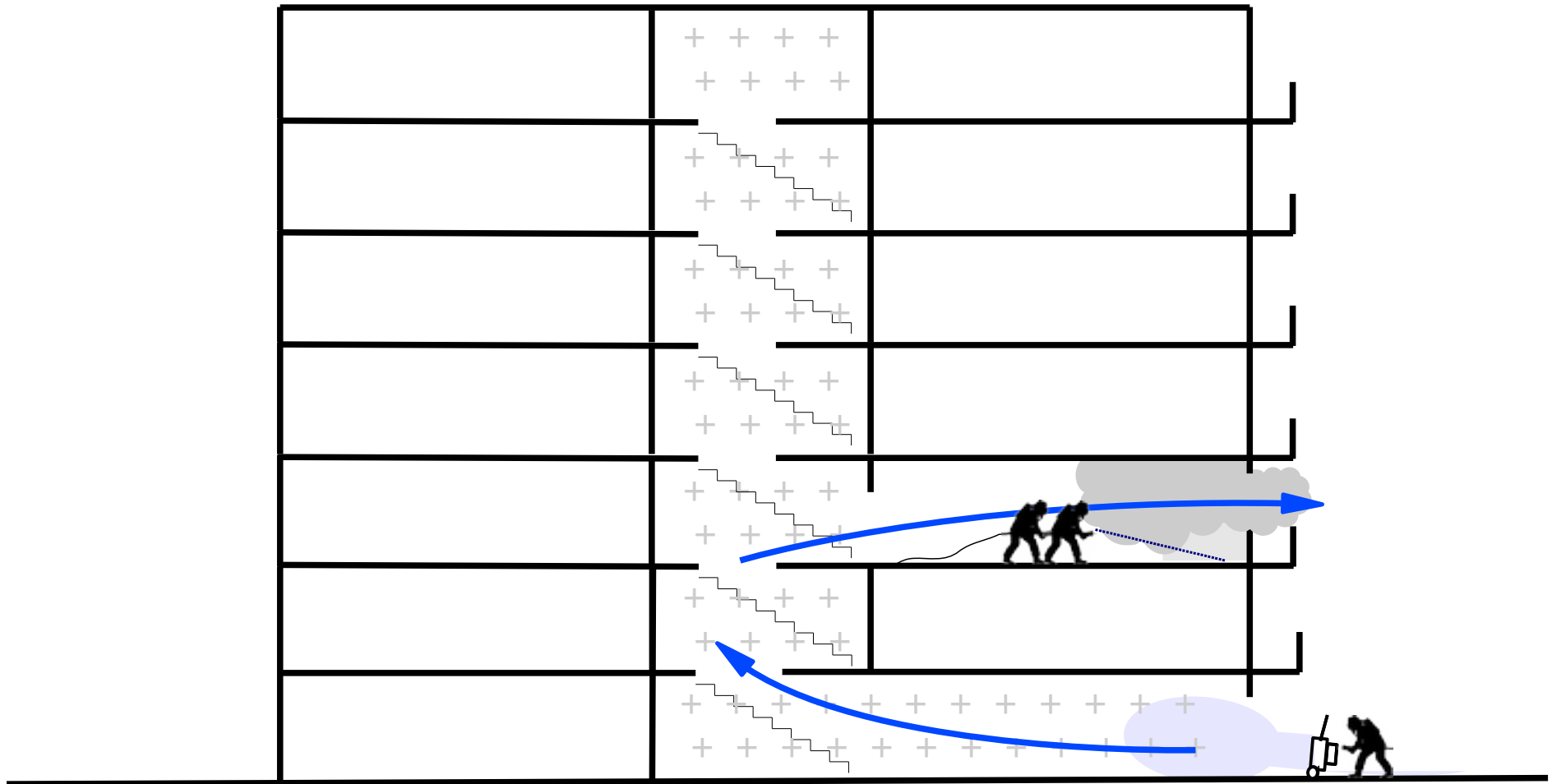


Gas Cooling on hot gas layer

PPV provides improved interior conditions



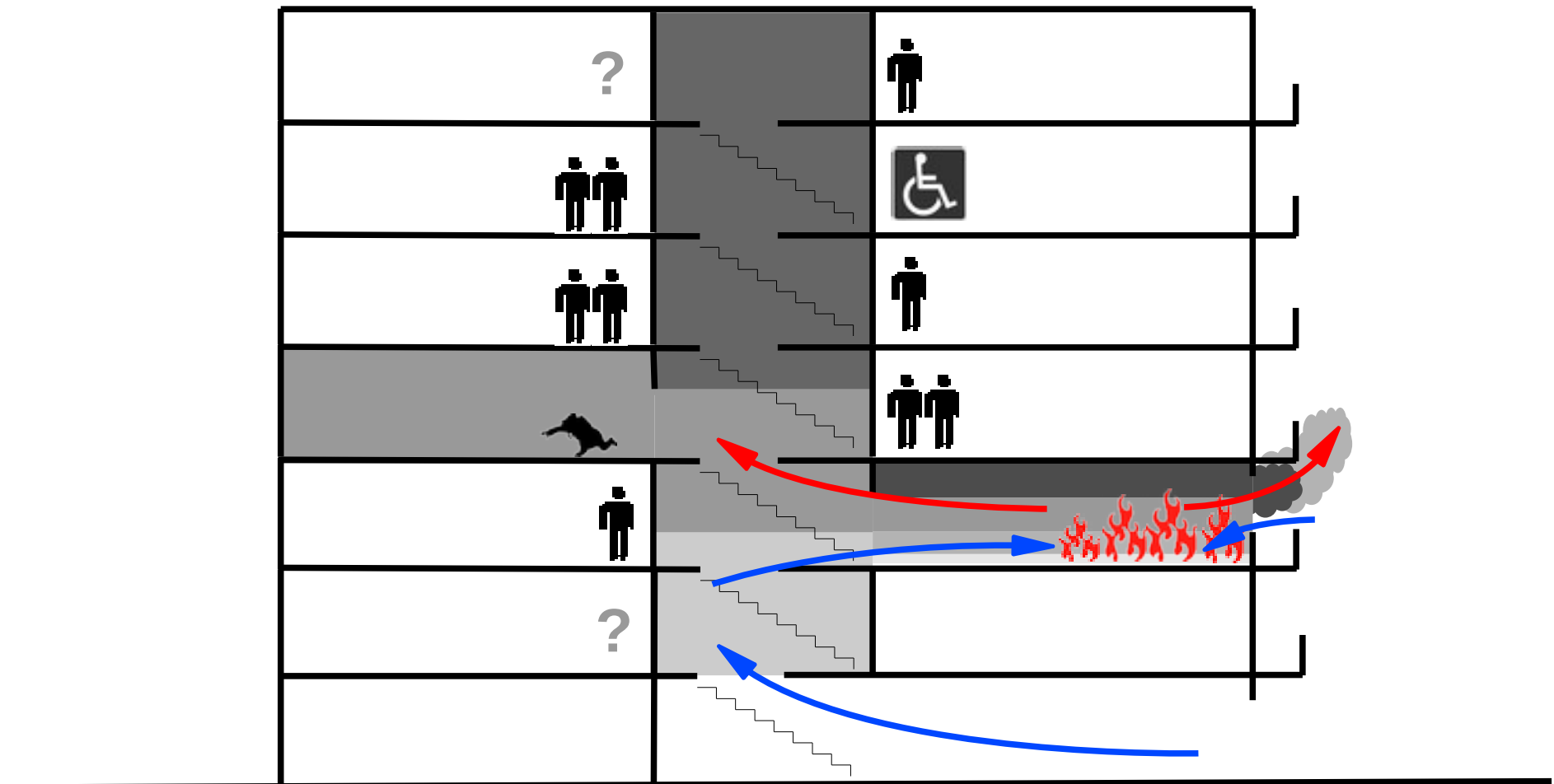
Direct Attack on fuels



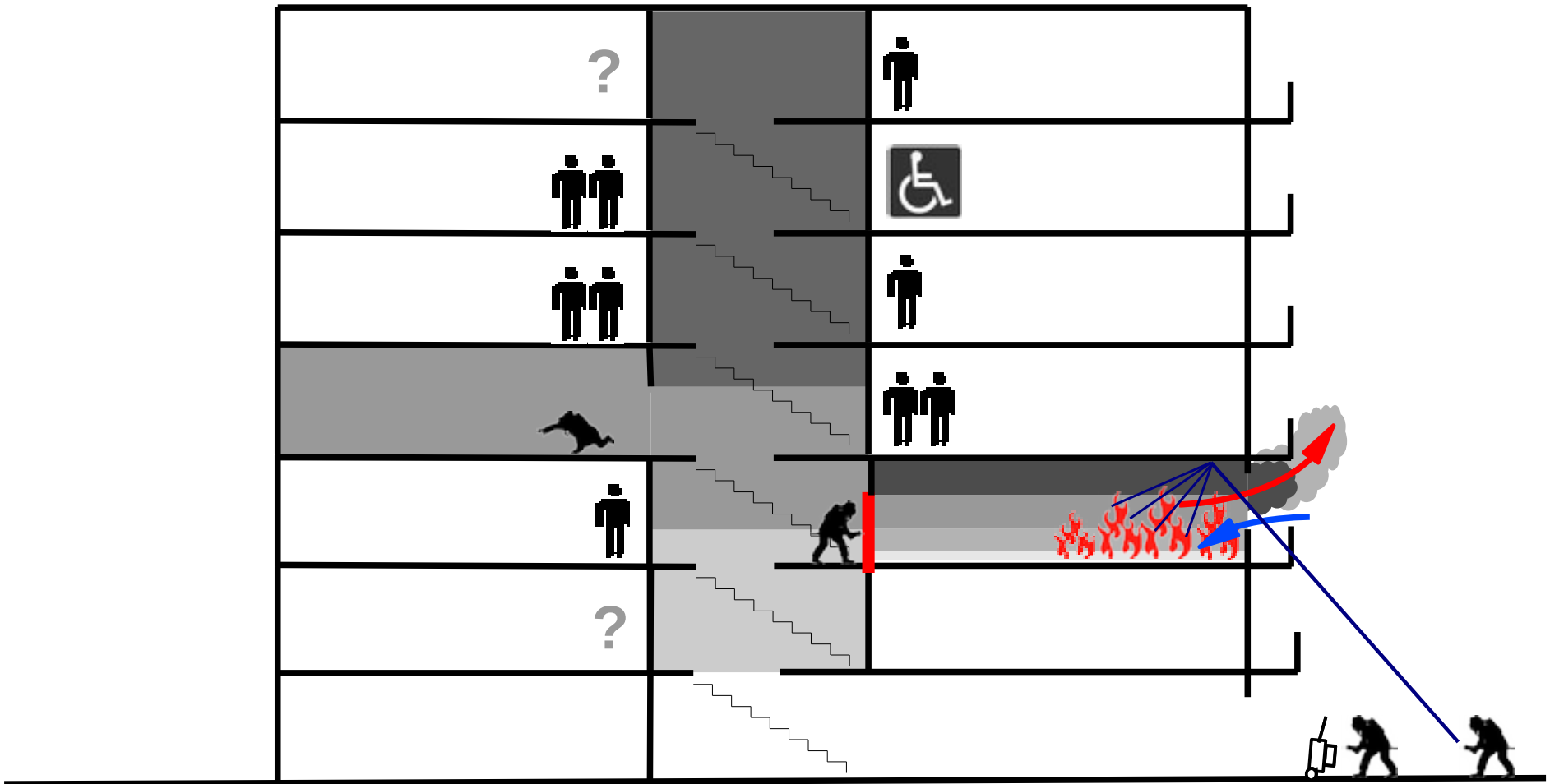
**Sometimes it is not that easy,
and we need to perform a
search and rescue operation**



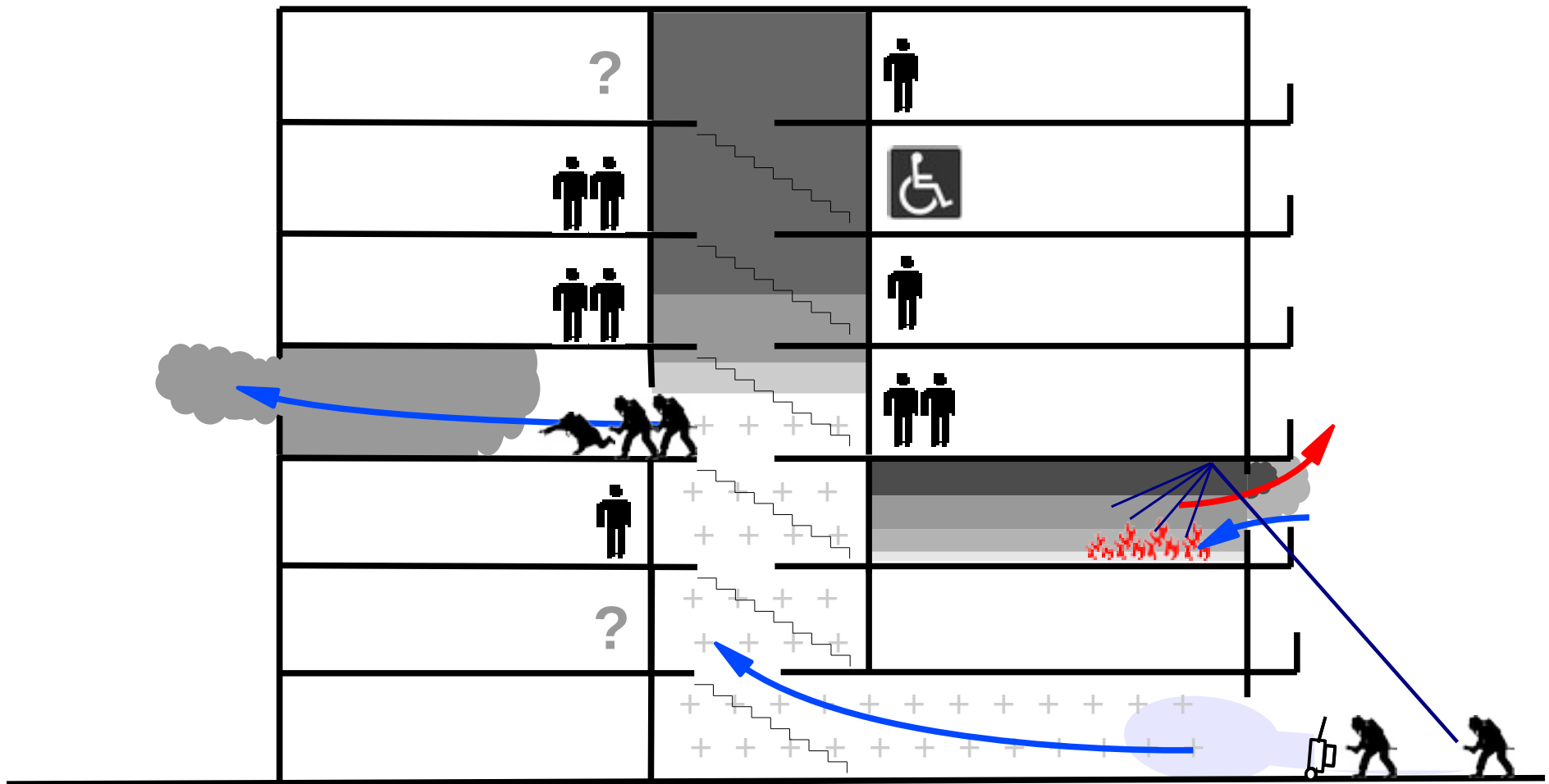
Common scenario: Fire in one apartment stairwell + 1 apartment filled with smoke



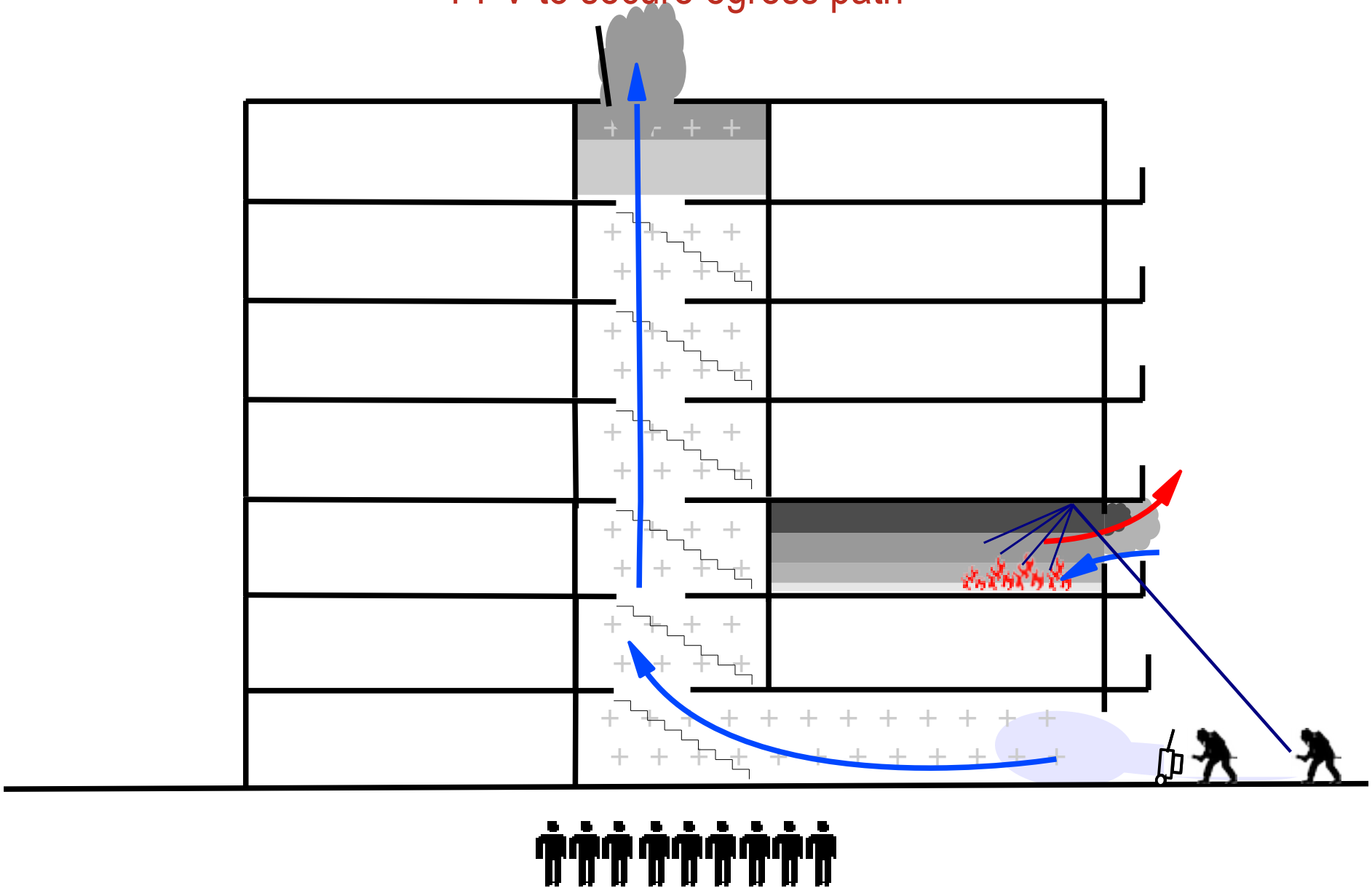
Transitional Attack ASAP Fire Isolation



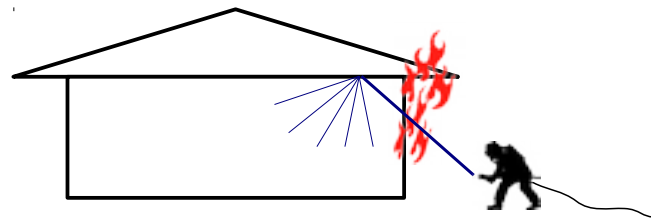
PPV to allow search and rescue



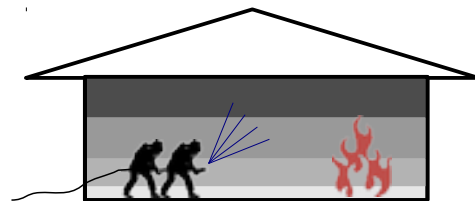
PPV to secure egress path



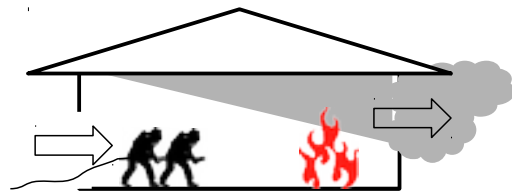
Timed and coordinated use of..



SOFTENING THE TARGET



GAS COOLING



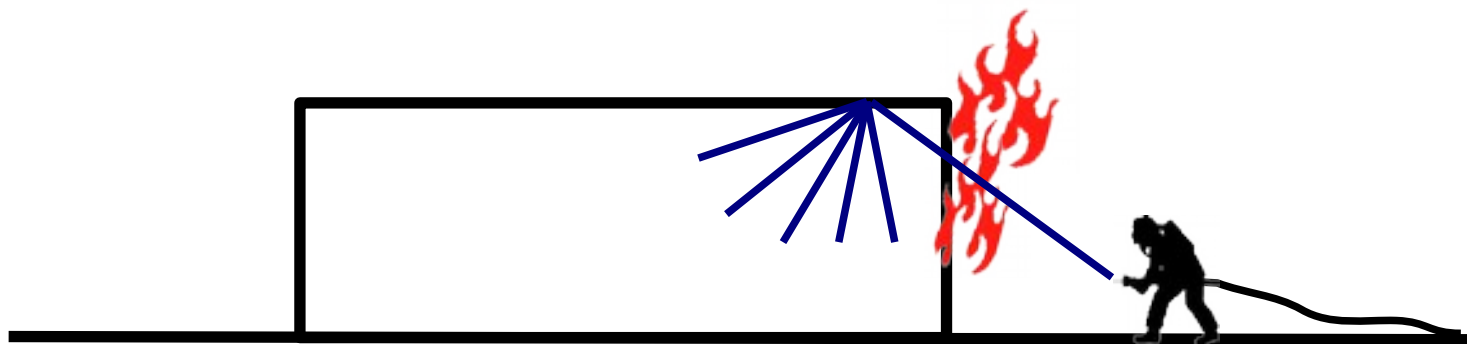
PPA FOR FIRE



Transitional Attack



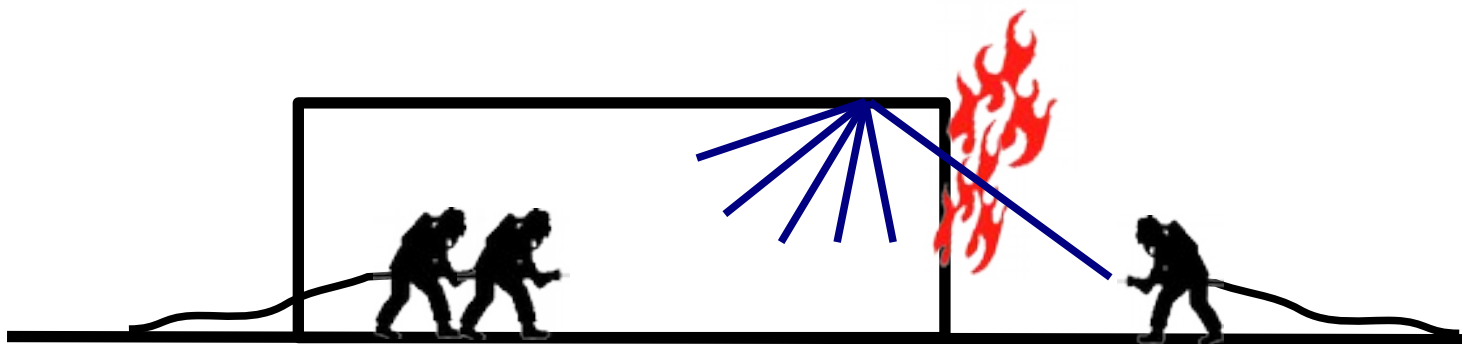
- Drastic temperature reduction throughout the structure
- Increases victim tenability
- “Resets” fire rapidly



Transitional Attack



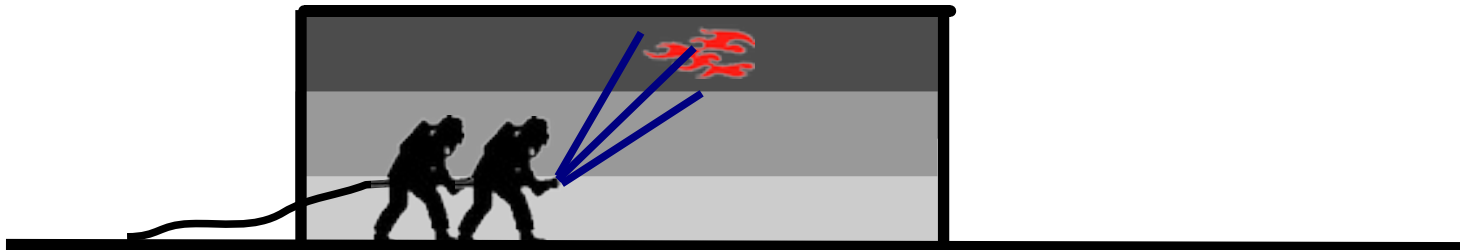
- Issues on its use as interior crews make progression
- May block exhaust and create an undesired flowpath
- Inappropriate water flowrate → excess of steam



Gas cooling



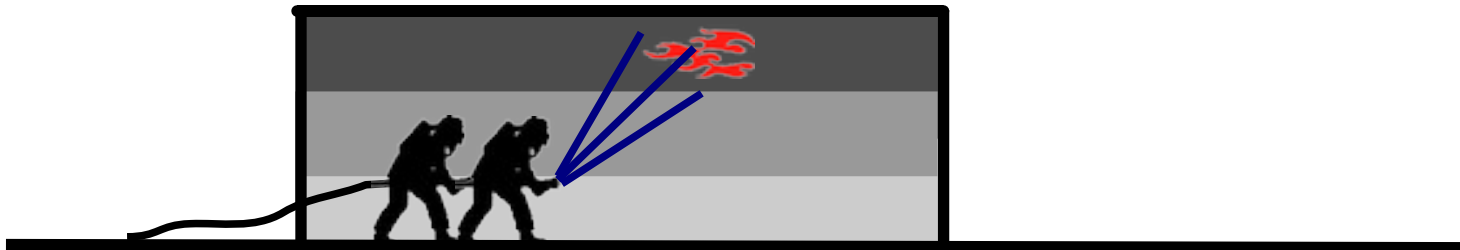
- **Gas cooling + Direct Attack**
- **Predictable, reliable**
- **Well known and trained**



Gas cooling



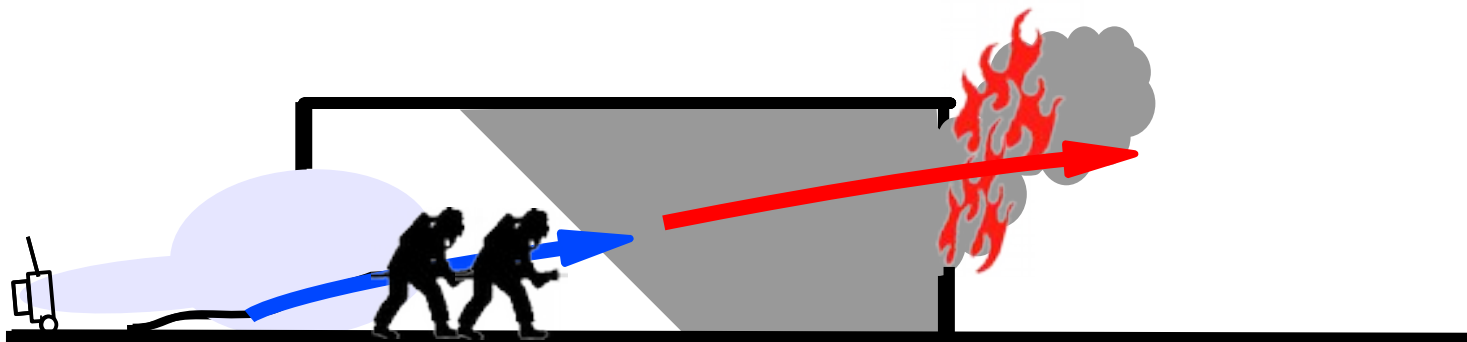
- Breathing parameters hardly improved
- Little improvement in visibility
- Slow operations in complex structures or heavy fire



PPA



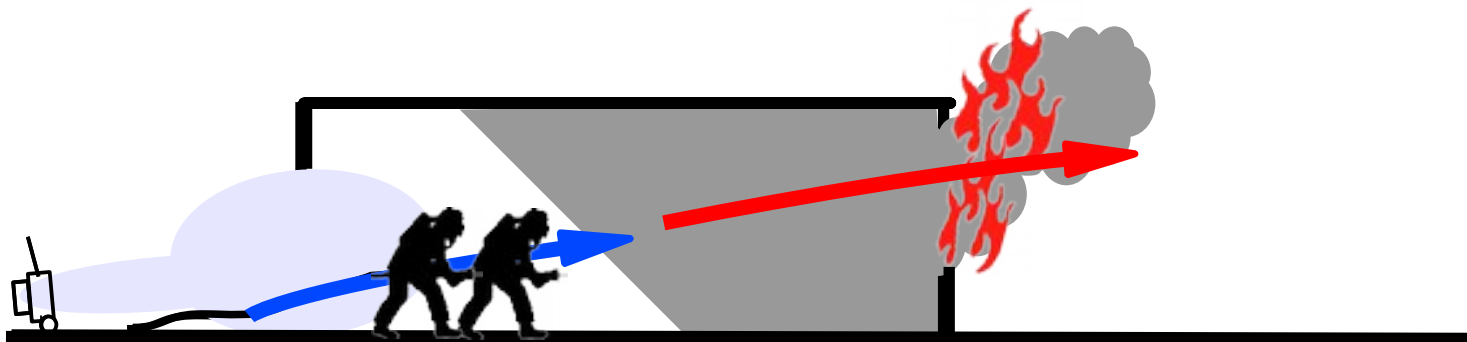
- Better interior conditions
- Improves visibility and victim tenability
- Faster operations



PPA

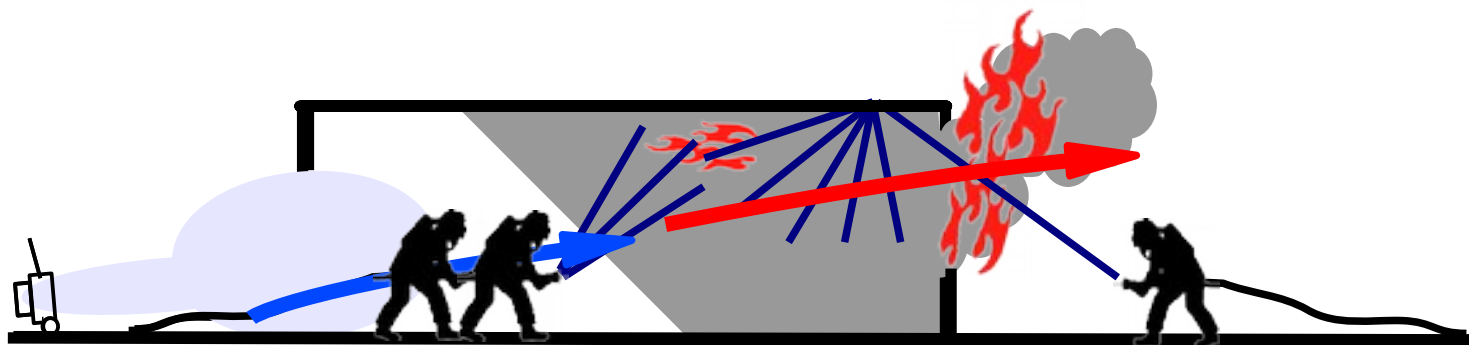


- HRR boost + delay in water → Ventilation Induced Flashover
- Stirring of the mix
- Unpredictable in complex structures

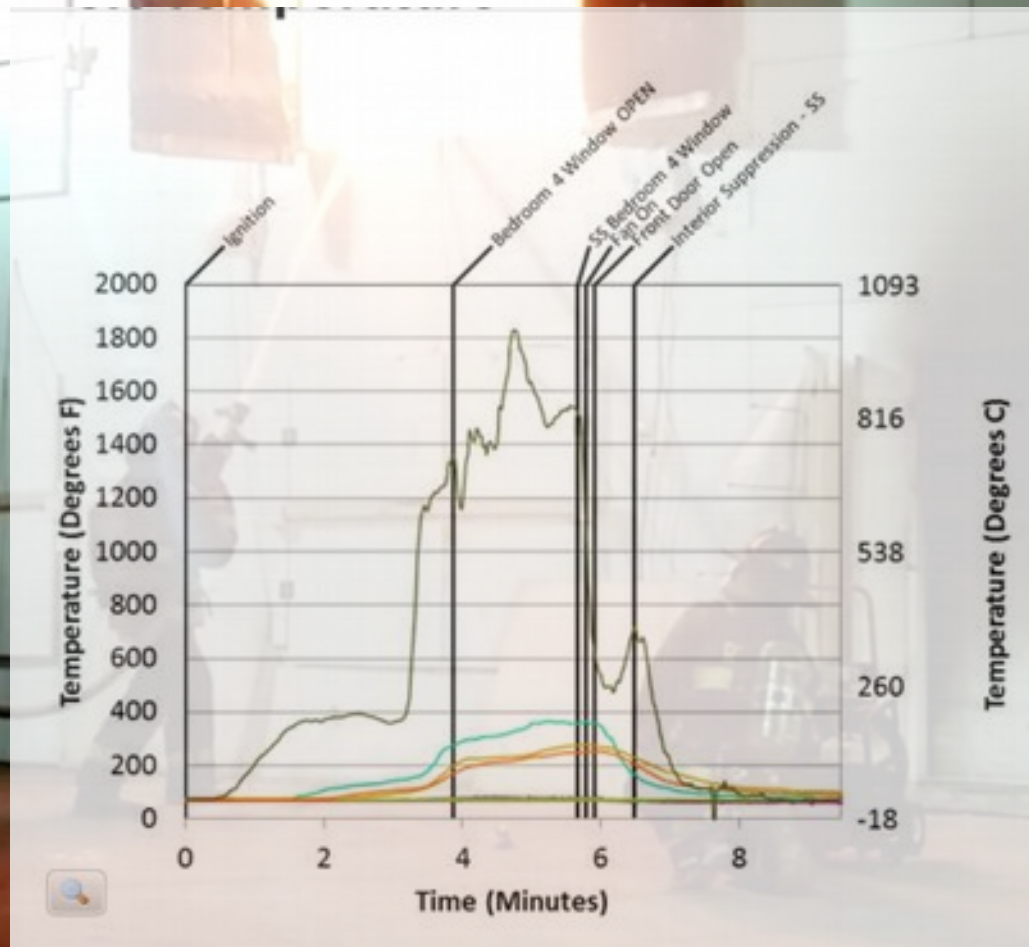



PPA + Gas cooling + Transitional Attack

- PPV ensures the desired flowpath
- Steam excess is removed / higher water flowrates
- Harder to block exhaust
- Safer interior progress because of gas cooling









**If your only tool is a hammer,
everything looks like a nail.**

Abraham Maslow

