How to break the cycle of innovation and new fire risks

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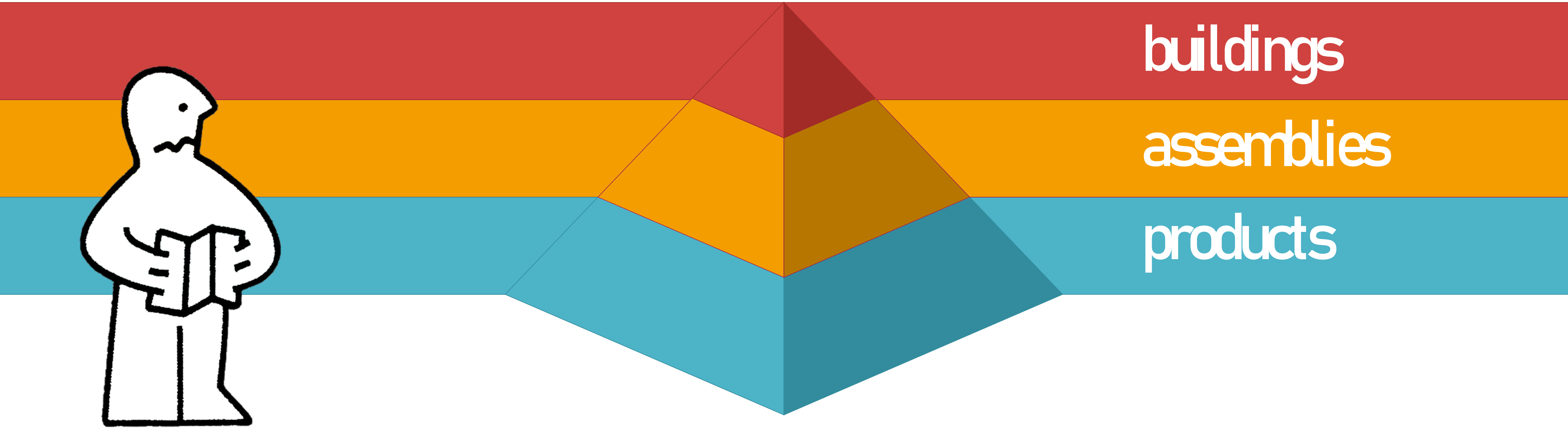
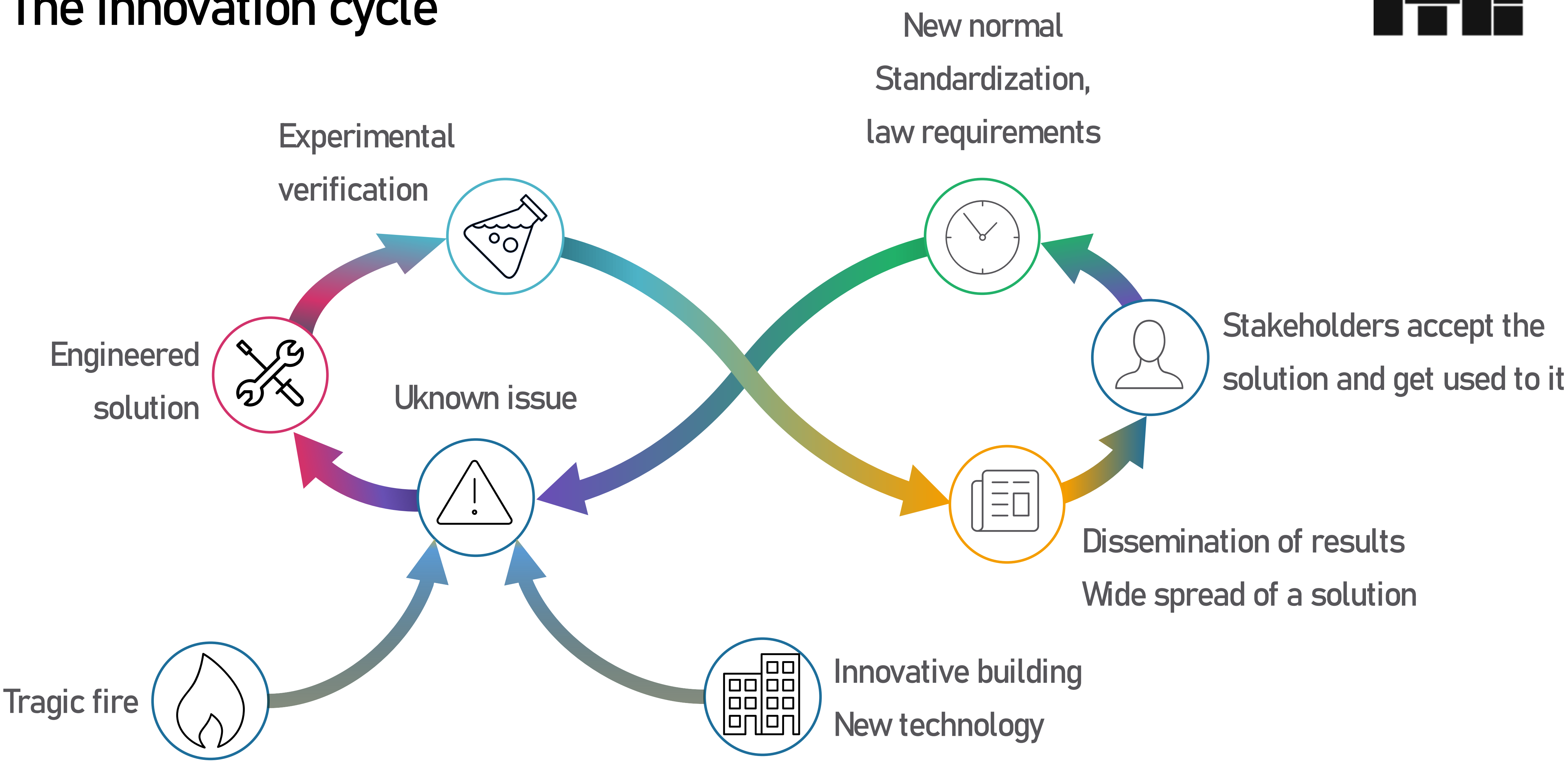
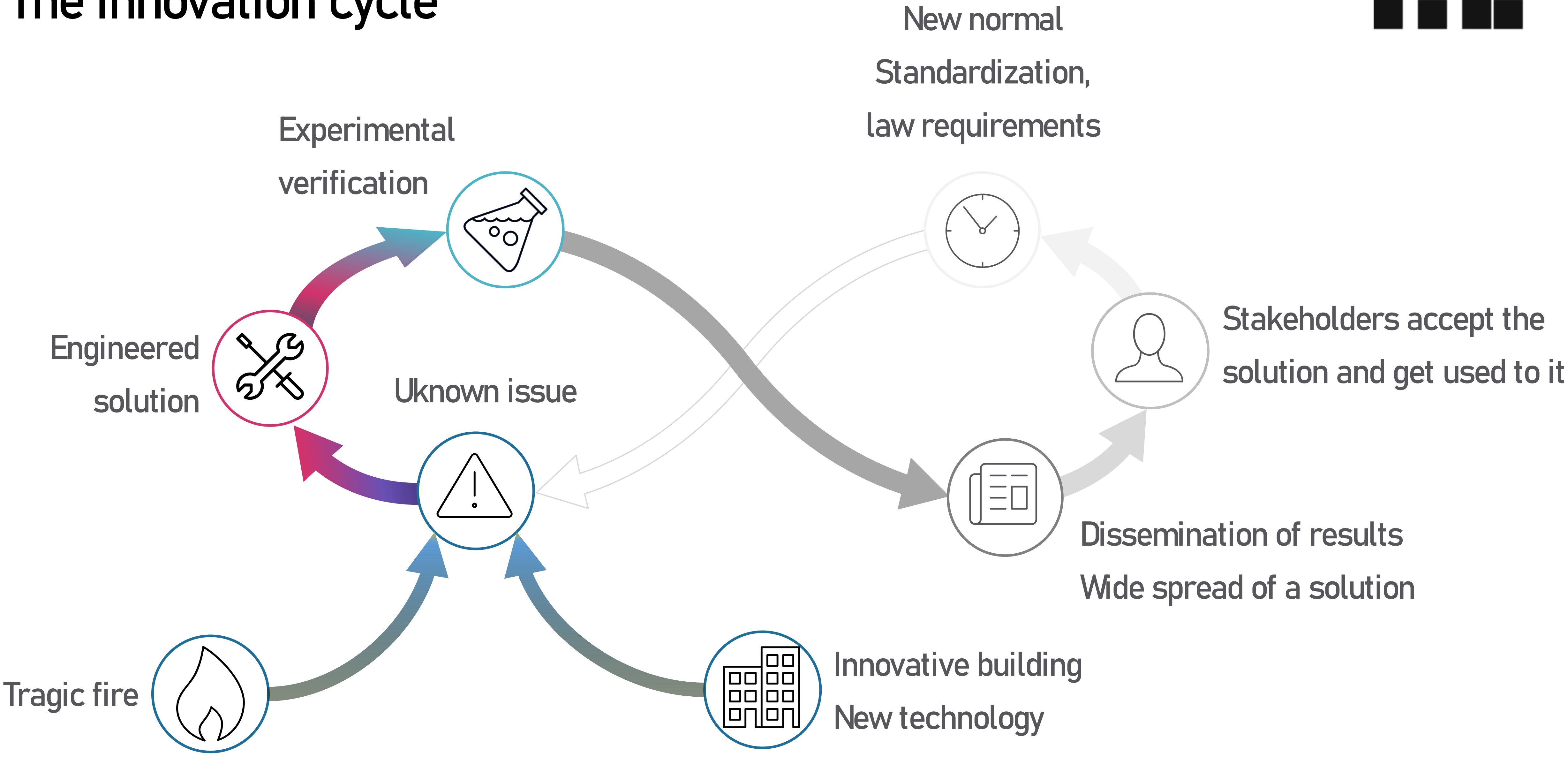
Different levels of complexity



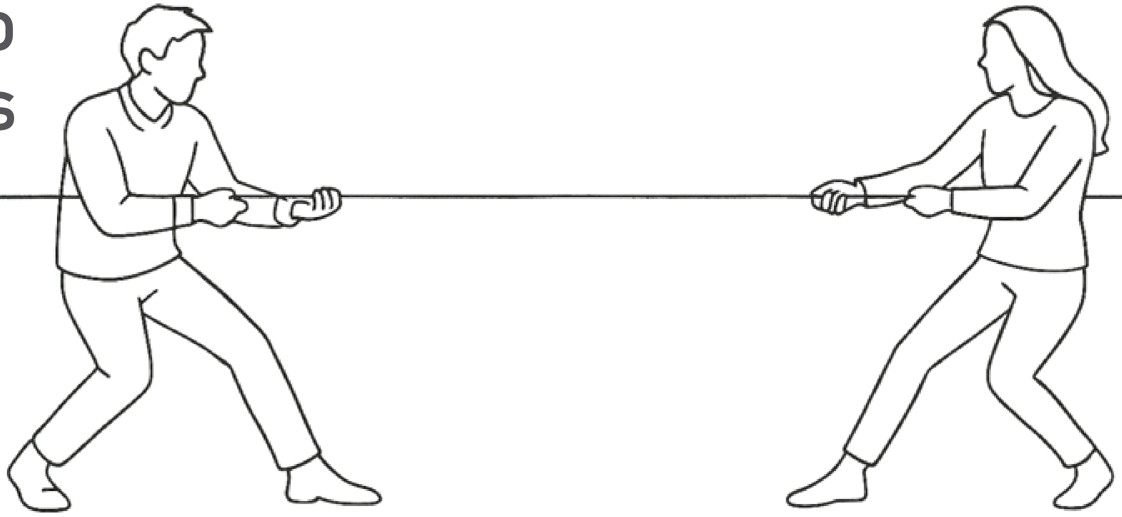
The innovation cycle



The innovation cycle



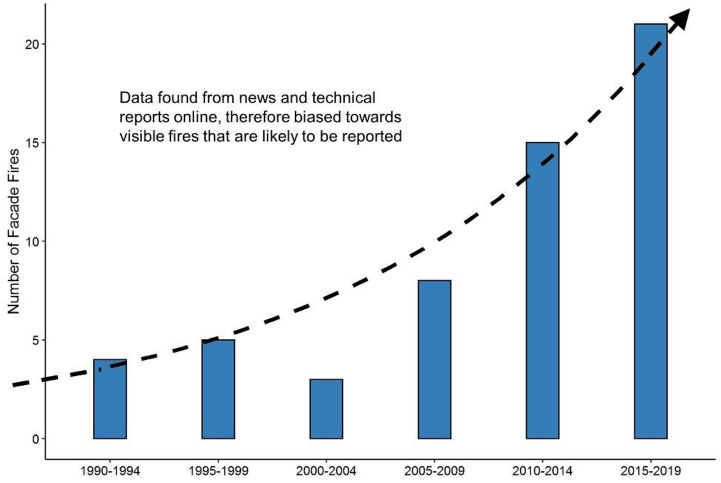
Innovation to answer other needs



Engineering fire safe solutions

Example of the innovation gap

Grenfell Tower in London



Increasing numer of facade fires [Bonner et al. 2020]

Perhaps the most striking example of an „innovation blind gap" and a failure of fire safety is Grenfell Tower Disaster.

But Grenfell is not the only facade fire we have seen – the number is growing exponentially, and they become a larger problem.

A problem that we have somehow missed.

Facades. Role of the gap

ITB experiments with Imperial College London and ARUP

Cement bard | **Cavity** | Glass Wool

Cement bard | **Cavity** | Phen. Foam

ACP PE | **Cavity** | Glass Wool


HPL (C) | **Cavity** | Phen. Foam


HPL (B) | **Cavity** | Glass Wool


HPL (B) | **Cavity** | Phen. Foam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HPL (B) | **Cavity** | Phen. Foam


ACP PE | Glass Wool


HPL (C) | Glass Wool


HPL (C) | Phen. Foam


HPL (B) | **Cavity** | Glass Wool


Cement board | **Cavity** | Phen. Foam


HPL (C) | Phen. Foam | **Cavity**


HPL (C) | Glass Wool | **Cavity**


HPL (B) | Phen. Foam

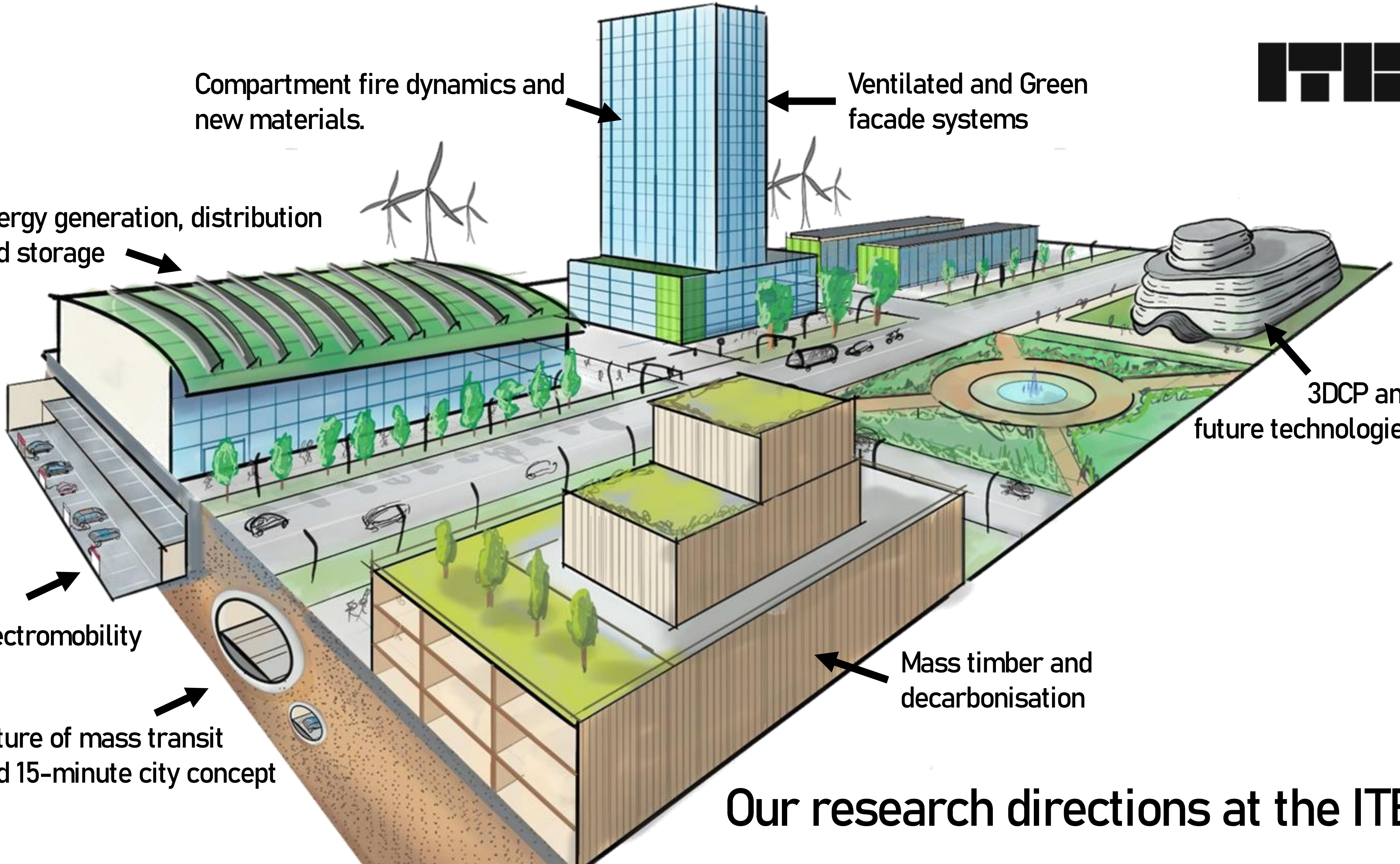

HPL (C) | Phen. Foam


HPL (B) | Glass Wool


ACP FR | **Cavity** | Glass Wool

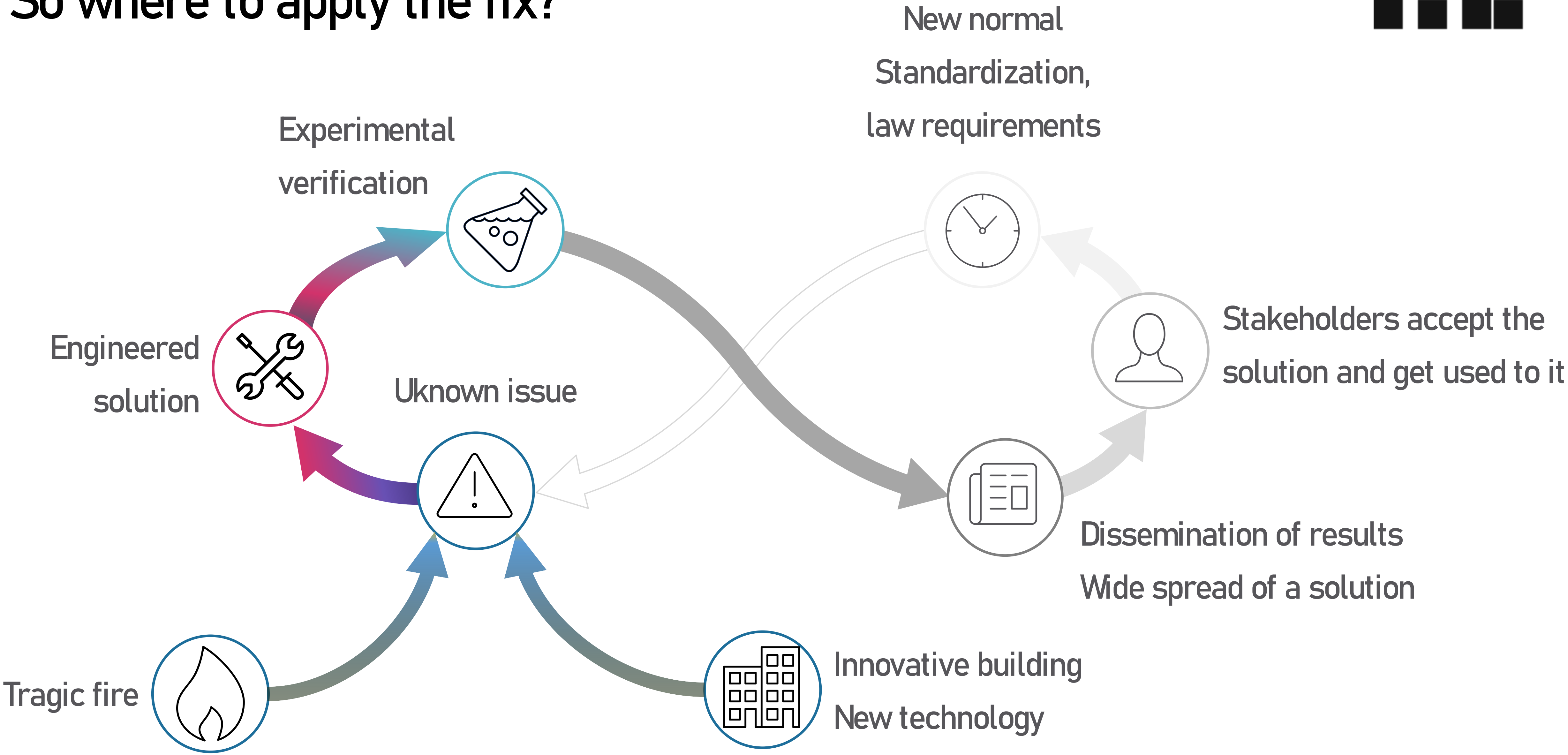

ACP FR | Glass Wool

While we study, industry innovates further.

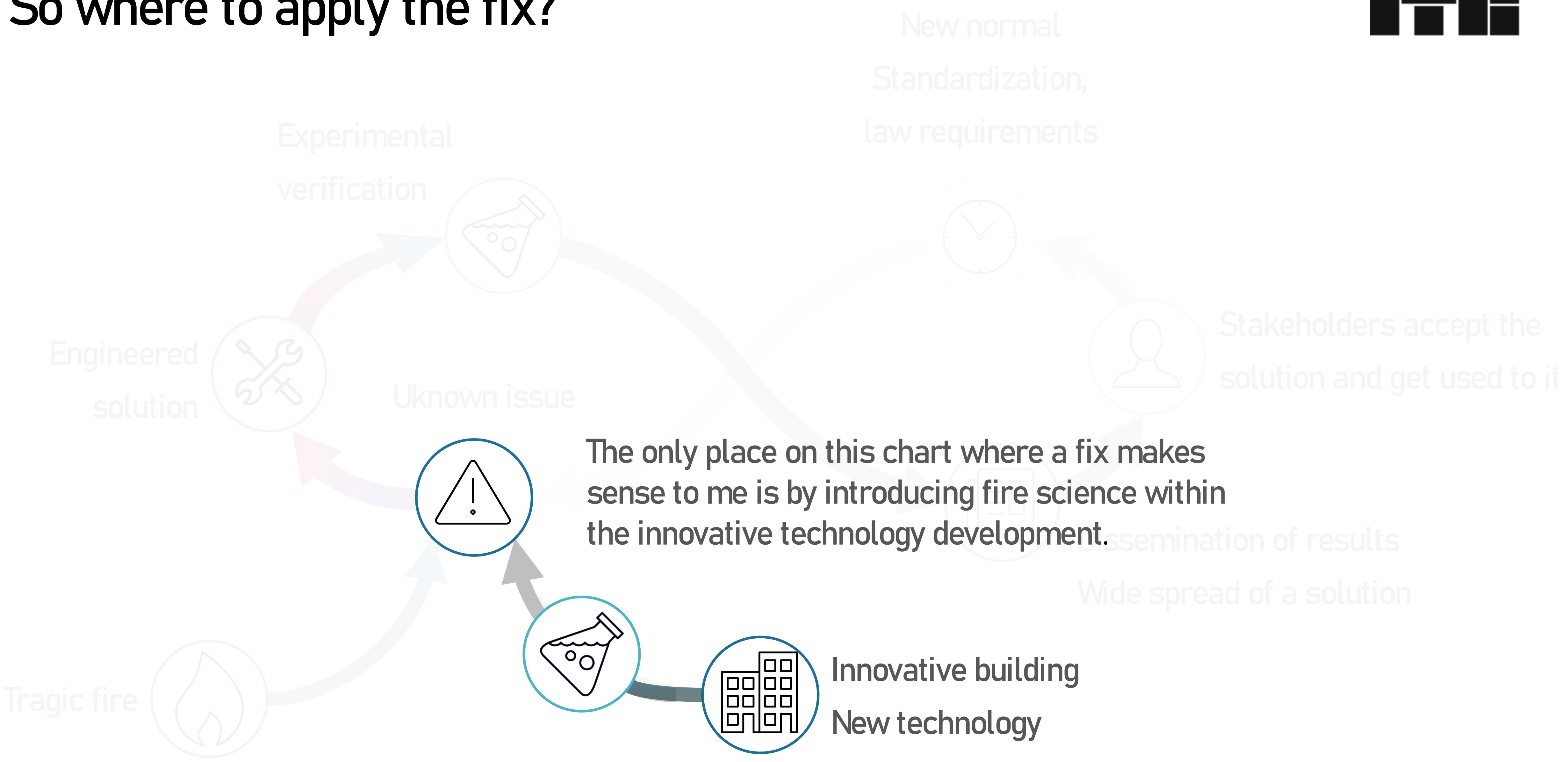


Our research directions at the ITB

So where to apply the fix?

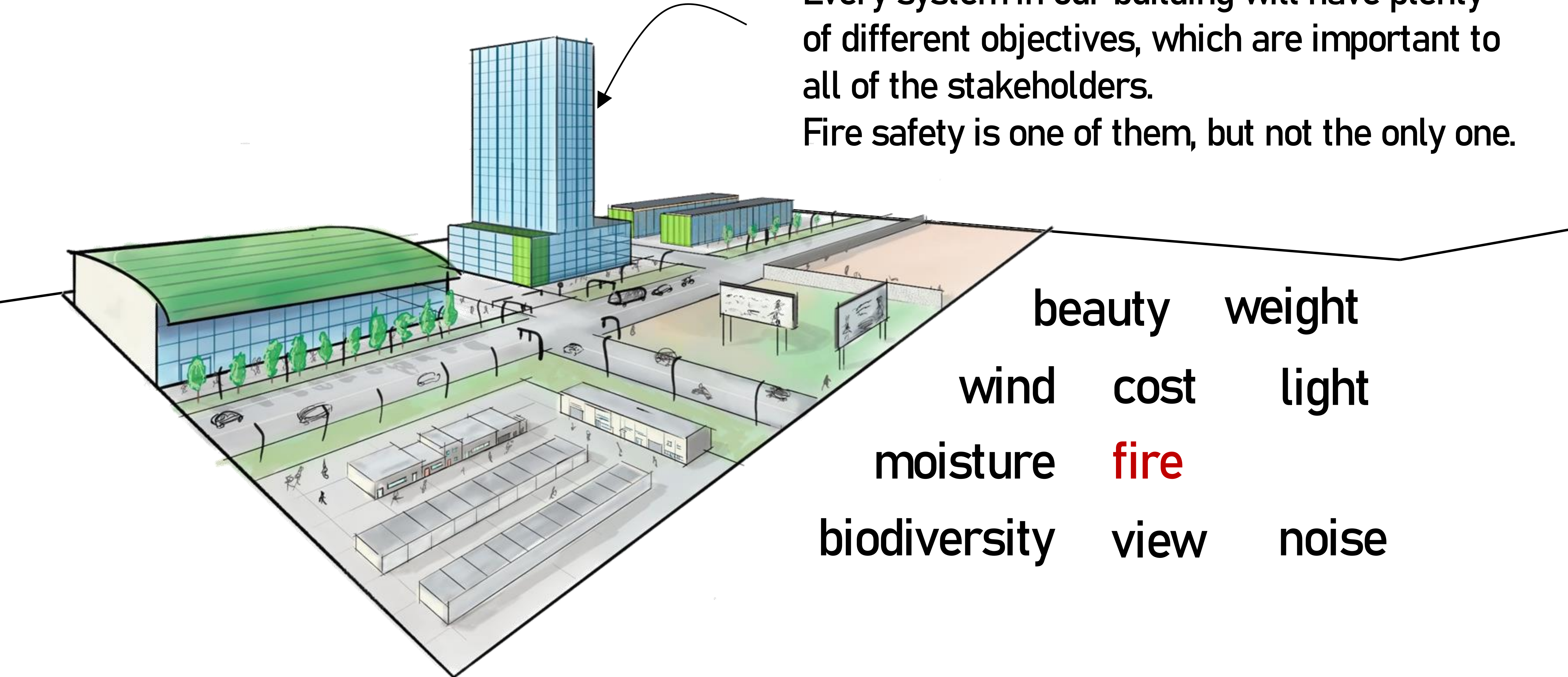


So where to apply the fix?



The only place on this chart where a fix makes sense to me is by introducing fire science within the innovative technology development.

Respecting different objectives



Every system in our building will have plenty of different objectives, which are important to all of the stakeholders.
Fire safety is one of them, but not the only one.

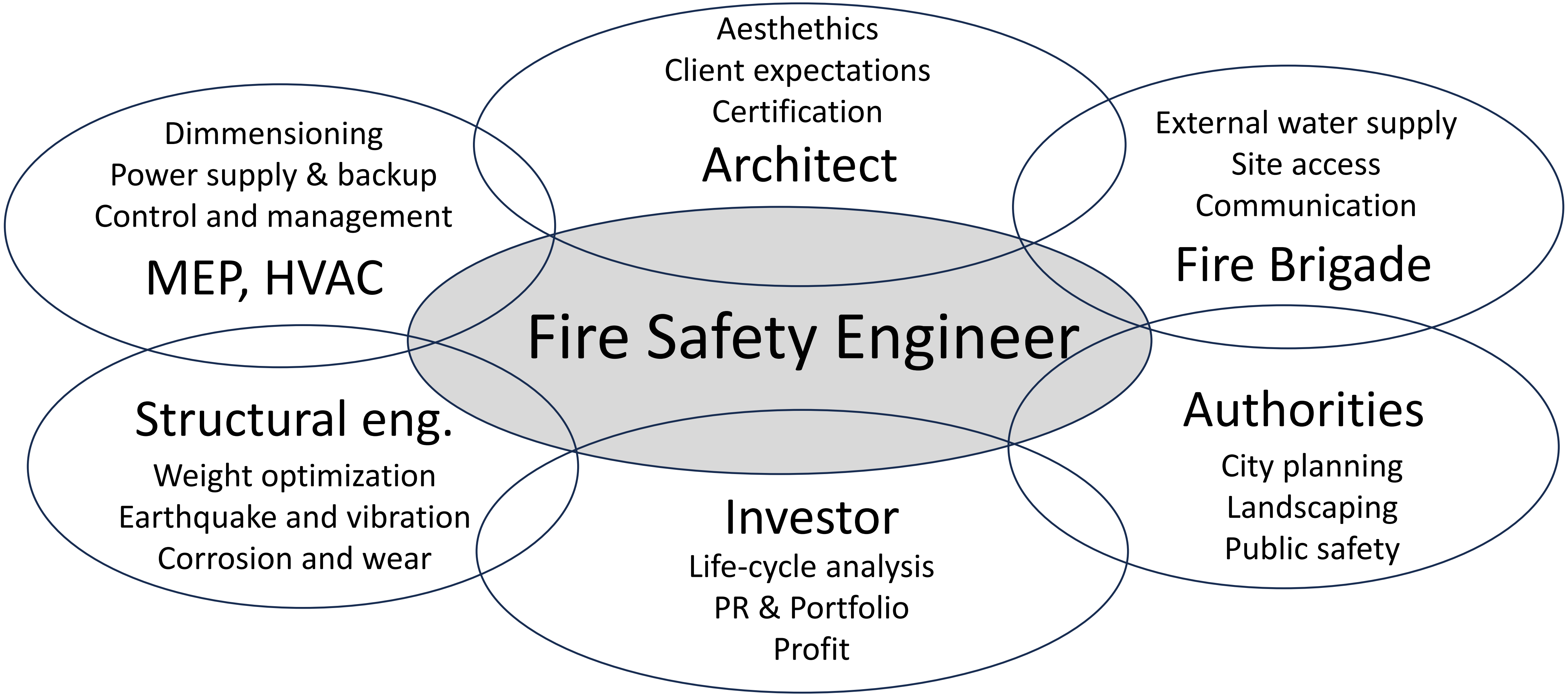
beauty weight

wind cost light

moisture fire

biodiversity view noise

Respecting different objectives



Lessons from trying to break the gap

Compliant does not yet mean safe.

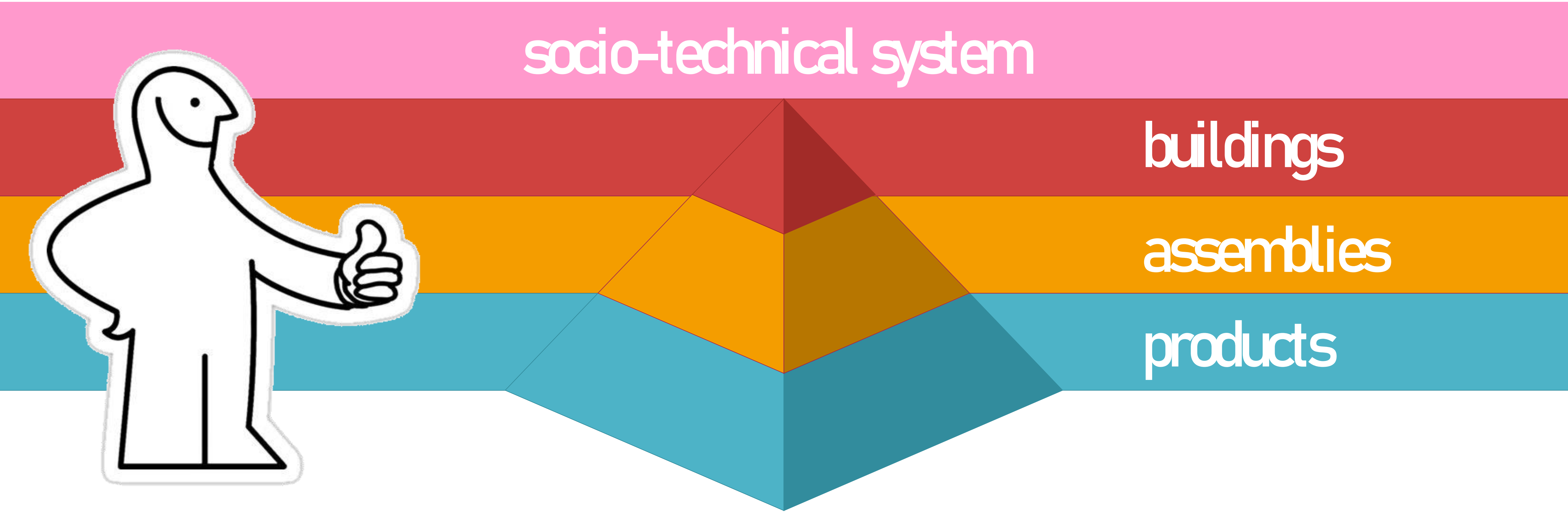
Compliance makes buildings legal, fire safety engineering and fire safety sciences makes products, assemblies and buildings safe.

Lessons from trying to break the gap

It's about systems, not just materials assemblies or compartments.

And if you think about fire safety, it is not just technical solutions we apply. It is at an interface between humans, technology and institutions. It must be considered as a socio-technical system (read B. Meacham to learn about this).

Where to apply this thinking?



We need to act across the boundaries of different scales, and understand fire safety solutions from the material up to a building level. We need fast, well funded, fundamental fire science across all levels.

Fire safety is a key enabler of sustainable future.

Why are we racing against others who innovate in the built environment? If we lose the race, everyone loses.

Fire safety needs to work alongside innovation, making sure the goals of the innovators are obtained, but without creating new hazards for the society.

This can be done through well funded, fundamental fire research, that crosses the boundaries at which other stakeholders are found.

Thank you.

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