

# Measuring Health and Wellbeing

Gareth Morris

Technical Project Manager

Saint-Gobain UK & Ireland



# Global assessment and overview

## Sensorial comfort criteria

	Indicators		Definition	New built		Renovation	
				Must have	Nice to have	Must have	Nice to have
<b>Feel</b> THERMAL COMFORT	TC1	Global comfort	(Top, RH)	% of time inside the hydrothermal zone		>95%	100%
	TC2	Local comfort	V	Air velocity (m/s)		<0,15 (winter); <0,25 (summer)	
			TRA	Radiant asymmetry (°C)		<5 (winter); <14 (summer)	
			DeltaT	Air temperature stratification (°C)		2 - 3	<2
<b>See</b> VISUAL COMFORT	VC1	Light quality	Artificial lighting (lux)		Required level for each room depending on use <sup>1</sup>		
	VC2	Light quality	DA		Daylight Autonomy (%) <sup>2</sup>		>60%
			UDI		Exceeded Useful Daylight Illuminance (%)		<10%
			Offices only	sDA	Spatial daylight autonomy (% of floor surface)	65 - 75%	>75%
				ASE	Annual Sunlight Exposure (% of floor surface)	7 - 10%	<7%
	VC3	Views	Opening to floor ratio <sup>2</sup>		>20% <sup>3</sup>		>20% <sup>3</sup>
			Quality of the view (rating 0 - 3)		2	3	3
	VC4	Space quality	Space quality assessment (rating 0 - 3)		2	3	3
<b>Hear</b> ACOUSTIC COMFORT	AC1	Sound level	LAeq,15mn		Equivalent sound pressure level		30 <sup>4</sup>
			NR		Noise Rating		NR30 <sup>5</sup>
	AC2	Room Acoustic	Tr		Reverberation time		Required level for each room depending on use <sup>6</sup>
			STI		Speech transmission index <sup>7</sup>		0.65
			Open space office only	rd	Distraction distance (m)	6	≤4
				D2,S	Spatial decay of weighted sound pressure level of speech per distance doubling	D2,S>7dB	D2,S>9dB
<b>Breathe</b> INDOOR AIR COMFORT	IAC1	Stiffness	CO <sup>2</sup>		CO <sup>2</sup> content in the air (ppm)		<800
	IAC2	Chemical pollutants	TVOC		TVOC (µg/m <sup>3</sup> )		<600
			Formaldehyde		Formaldehyde (µg/m <sup>3</sup> )		<1000
	IAC3	Particulate	PM10		PM10 (µg/m <sup>3</sup> )		<30
			PM2.5		PM2.5 (µg/m <sup>3</sup> )		<20
					All pollutants below specific levels defined by local health regulations, but not higher than respectively:		<10

# The Health and Wellbeing Story:

## Housing

- Better sleep
- Improved health
- Reduced stress
- Wider social / community benefits (such as NHS costs)
- Reduced financial burden (rental, bills, benefit for housing providers)



# The Health and Wellbeing Story:

## Offices

- Productivity
- Staff sickness
- Retention
- Morale
- Cost



# The Health and Wellbeing Story:

## Education

- Student attainment
- Behaviour
- Absenteeism
- Health
- Cost





# The Health and Wellbeing Story:

## Healthcare

- Recovery times
- Cost
- Staff morale
- Available bed space
- Patient wellbeing



# Ingredients for measurement of a project:

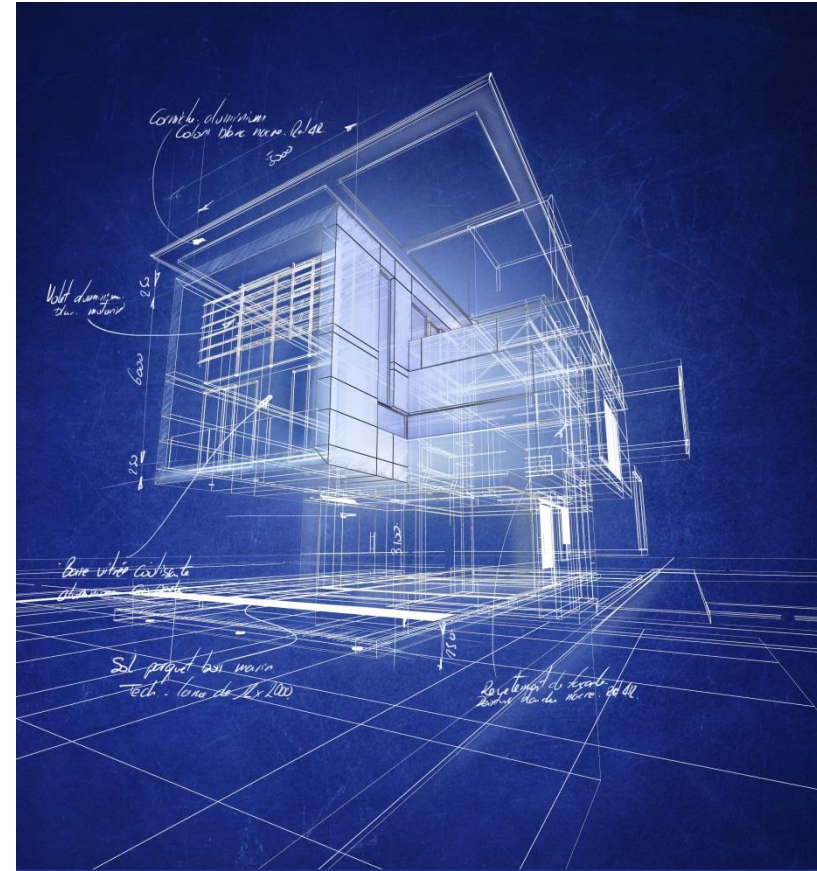


- **Suitable projects** – building type, occupants, activities, comparison with existing
- **Collaboration** – project team, building owner, building occupants (FM, HR, Staff), researchers/academics
- **Benchmarking** – national, local, project specific
- **Sample analysis** – categorisation, understanding external variables
- **Monitoring and testing** – existing v's new
- **Data** – qualitative and quantitative (historic, existing, future)
- **Evaluation and interpretation** – what was achieved, could it be better, can we change things or learn for next time?



# Tools to enable meaningful evaluation:

- Modelling software
- Sensors and monitoring strategy (environment & occupants)
- Regular planned (and unplanned) spot tests (environment & occupants)
- Record keeping
- Continued post-occupancy study



# The interpretation and challenges:



- What environment are these people going home too, or working in?
- What other variables could be influencing the results?
- Is existing research giving us a true picture of what impacts us?
- Are we just excited by new toilets and a coffee machine?
- Can we validate measured improvements and relate this directly to the change in indoor environmental quality?

# What are we doing?



The Cave  
(Copenhagen)



Saint-Gobain Research Centres



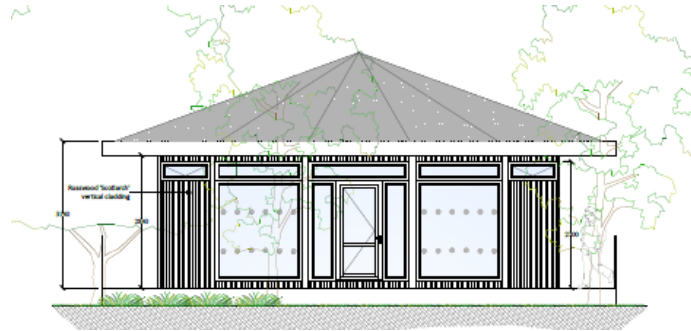
Domolab  
(Paris)

# What are we doing?

## Multi Comfort reference projects



Housing



Palliative care



Education



# Finish

- This is still new!
- Are we even monitoring to show what environment we actually providing?
- Proving health and wellbeing benefits is difficult and open to interpretation
- We need to work together to deliver more projects and collate more data to try and demonstrate a trend to build the business case