

# Upskilling the Nation for Passivhaus



**Tomás O'Leary, MD**





# MosArt

Since 1993

Creatively Cutting Carbon

## Energy Consulting

- Passive House Modelling
- Passive House Certification
- SAP and BER
- Thermal bridge analysis

## Design

- Architecture
- Urbanism
- Landscape

## Training

- Trade-Specific NZEB
- On-Site Coaching
- Passive House Designer
- Passive House Trades

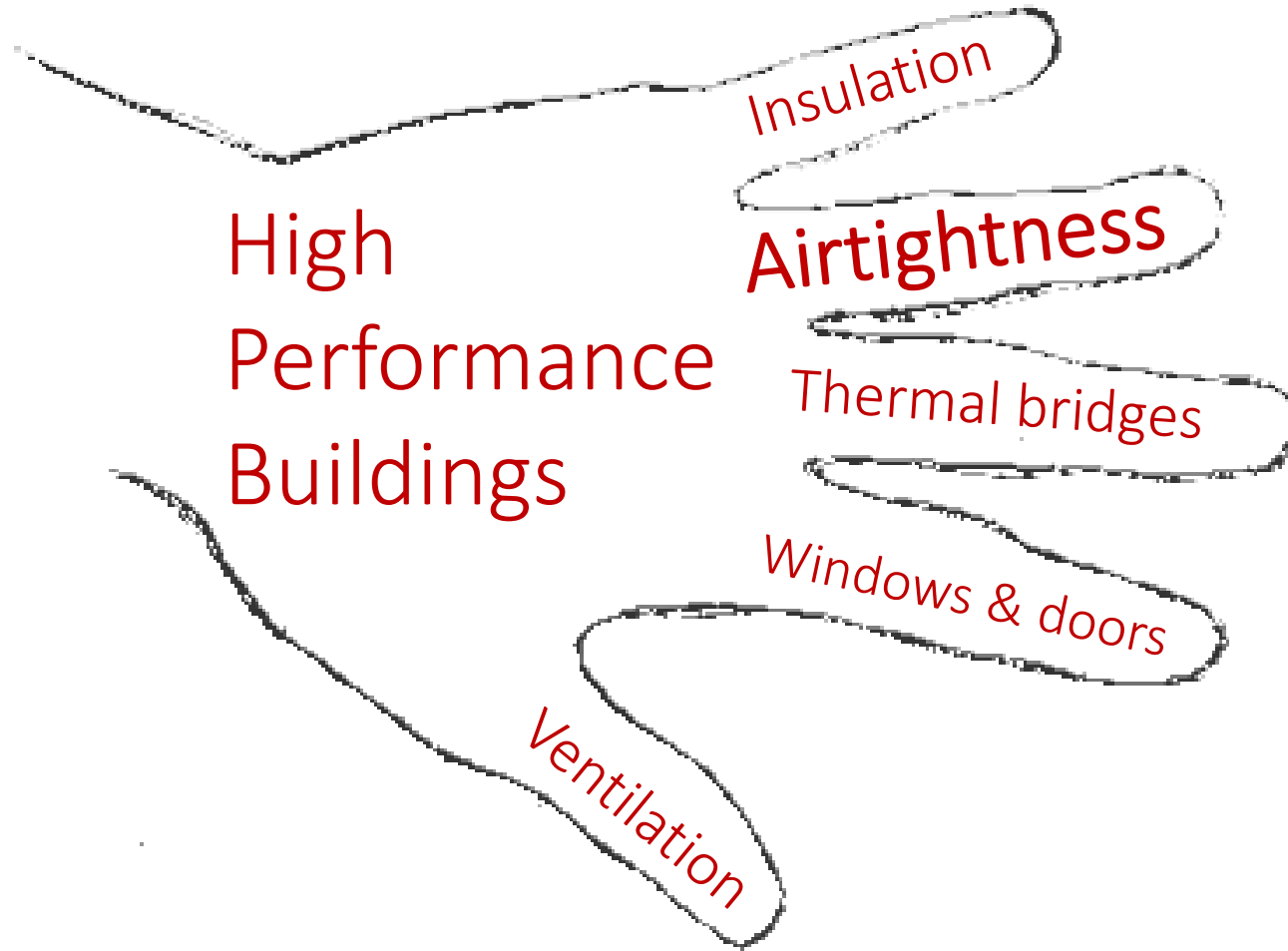


# 1<sup>st</sup> Passive House in English-Speaking World (MosArt, 2004)





# Requirement: 'Thinking Fingers'



'Out of the Blue' Passive House 2004

# Target Audiences for Training and Education

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## **Government**

Why should we go  
Passivhaus?

## **Producers**

What performance  
standards?

## **Design Teams**

How to model &  
detail it?

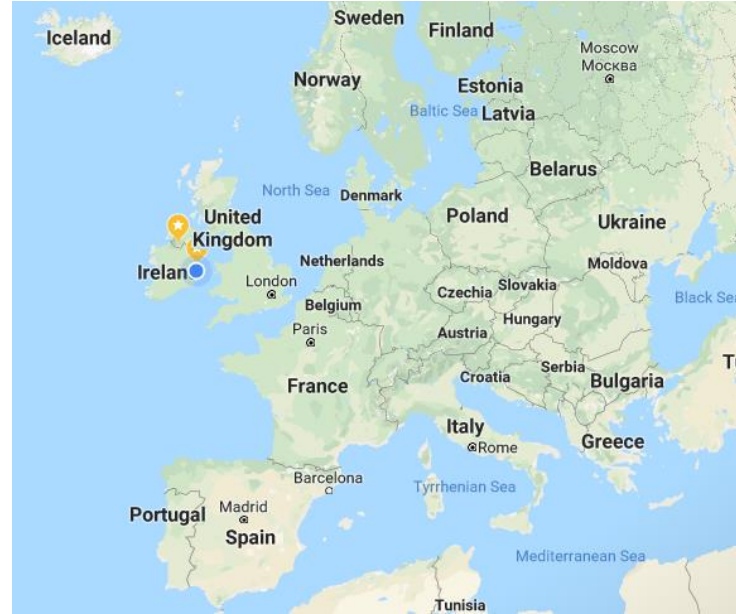
## **Contractors**

How to build it &  
meet airtightness?

## Training and Education Roll-Out



# Global



# Continental



# National



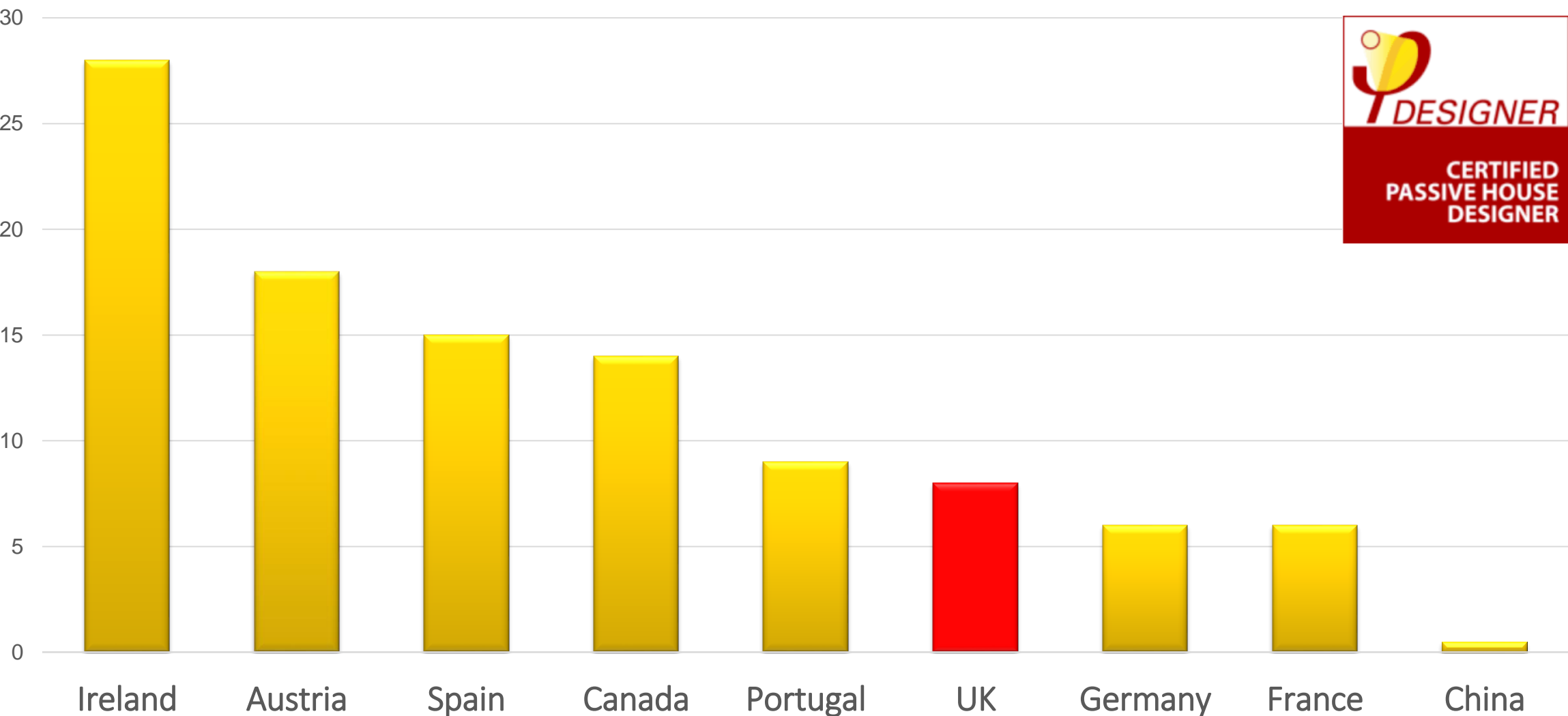
# Global: Certified Passive House Designers

## Trained by MosArt

Ireland	517
United States	768
Canada	85
Australia	35
China	21
<hr/>	
<b>Total</b>	<b>1,426</b>
 All CPHD's	 5,591



# Global: Certified CPHD's per 1 Million Population





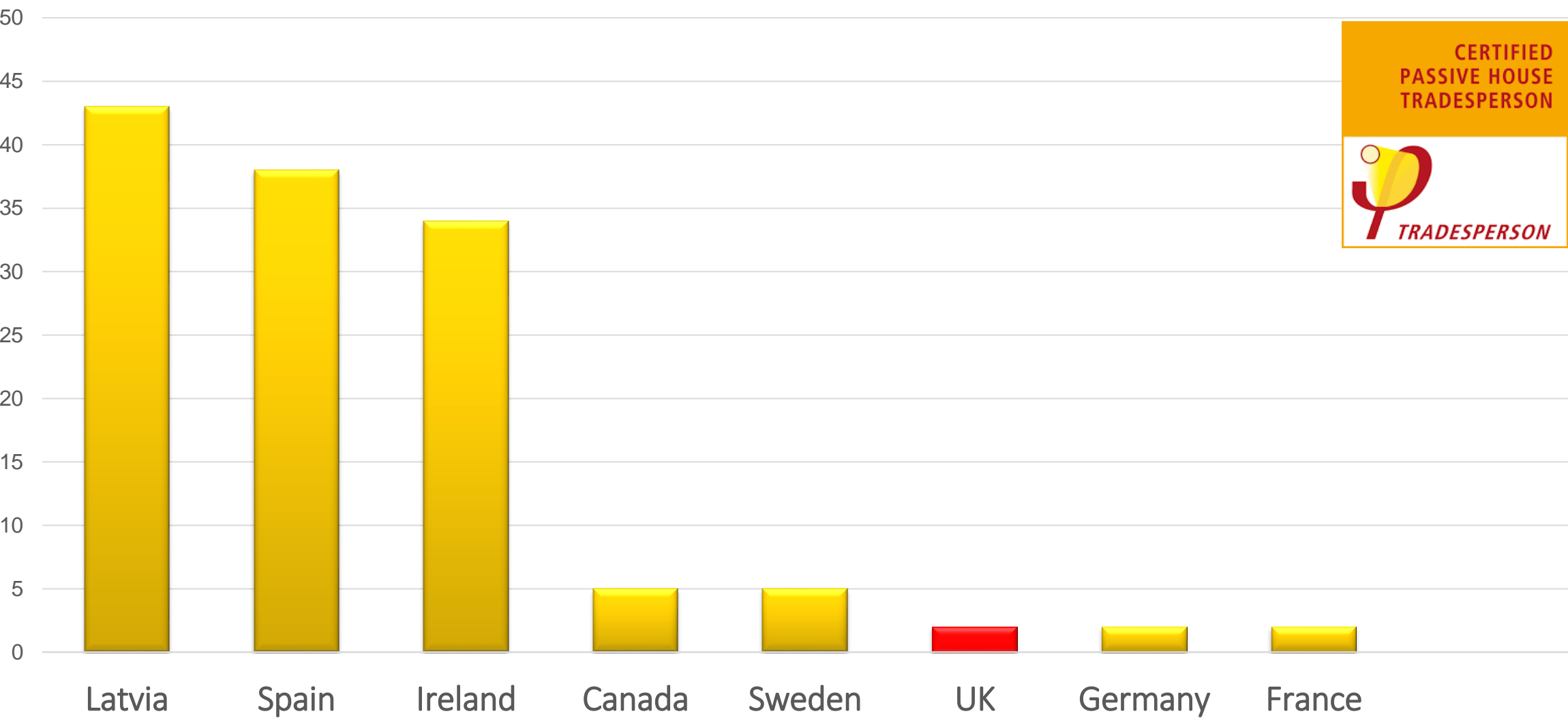
# Global: Certified Passive House Tradespersons

## Trained by MosArt

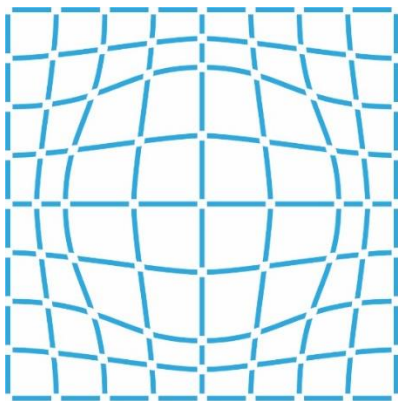
Ireland	306
United States	245
UK	35
Australia	24
China	21
<hr/>	
<b>Total</b>	<b>609</b>
 All CPHT's	 4,605



# Global: Certified CPHT's per 1 Million Population



# Global: UN Network of International Centres of Excellence

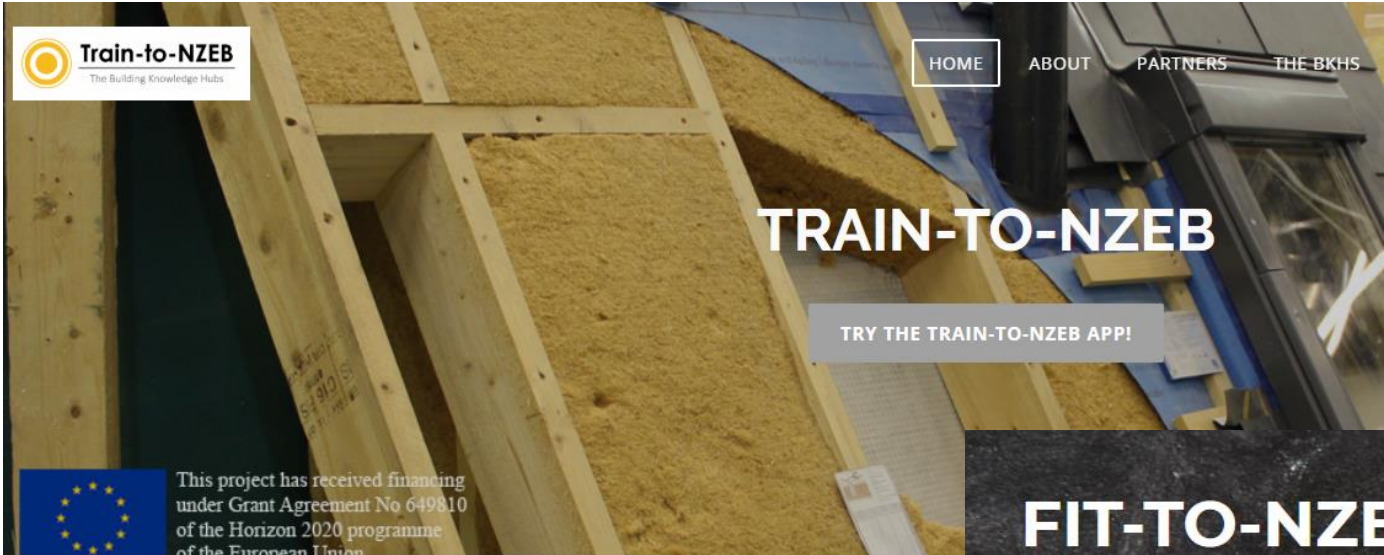


INTERNATIONAL  
CENTRE OF  
EXCELLENCE  
ON HIGH  
PERFORMANCE  
BUILDINGS

## United Nations



# European: Horizon 2020 Funded Innovation Projects



# National: Skills Specification for Contractors Drafted by MosArt

## National Skills Specification in Nearly Zero Energy Buildings (NZEB)



Fundamental Awareness	Electrical	Plumbing	Site Supervisor
First-in-Europe: Launched November 2018	Plastering	Carpentry	
	Bricklaying	Ventilation	NZEB Retrofitting







Government Target of  
500 Trainees in 2019

300 Trainees in 1<sup>st</sup> Half 2019









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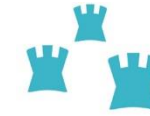








# Local: EnerPHit Project at Arbour Hill, Dublin

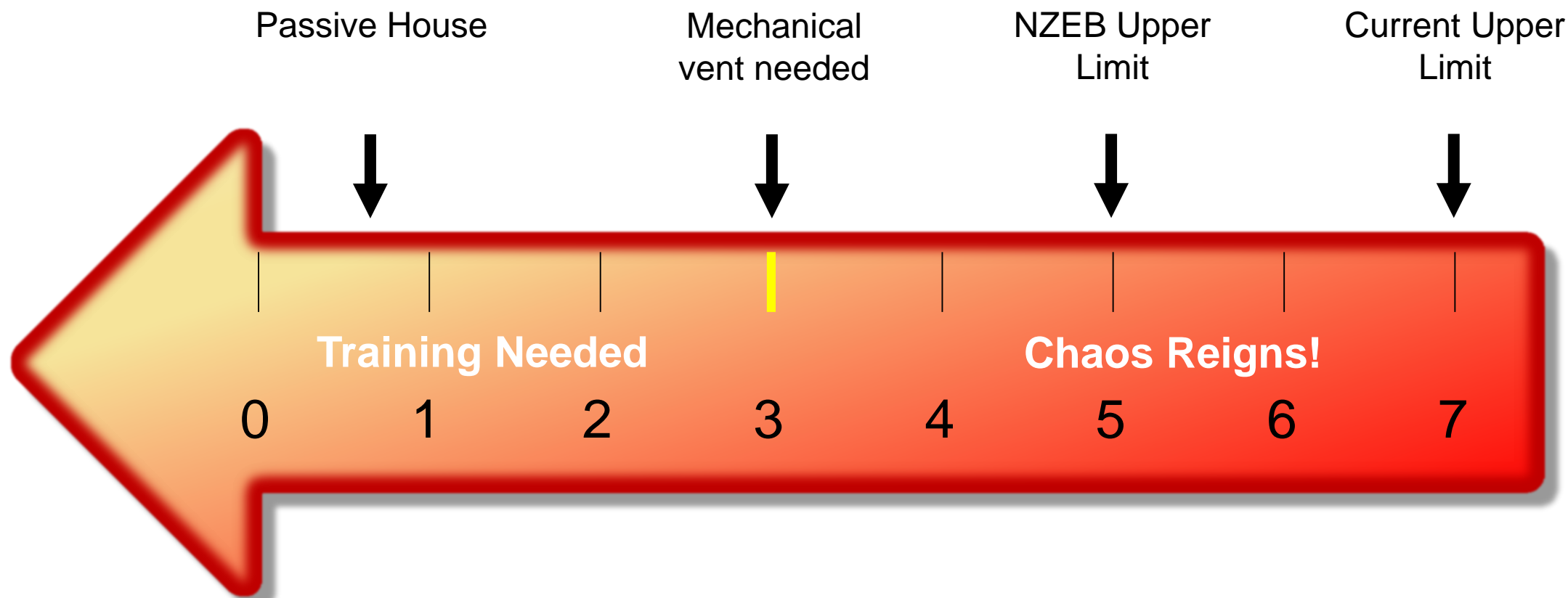


Dublin City Council  
Comhairle Cathrach Bhaile Átha Cliath

Objective:

Achieve an  
airtightness  
result of  $< 1.0$   
ACH @ 50 Pa

# What are you Airtightness Ambitions?



Air permeability  $qE_{50}$ :  $\text{m}^3/\text{hr.m}^2$

Passive House = air changes per hour (ACH) @ 50 Pa



# Training is Critical to Success – Theoretical



Not just 'what' to do,  
but 'why' to do it



## ... and Practical Hands-on (initially using models)





# On-site 'Pro-Demos' – Airtightness Installation





# Next: Hands-On Application



**Liquid-applied floor to wall junction sealing**



**Taped floor to wall junction sealing**



# Hands-On Application



**Membranes and Tapes to Ceilings**



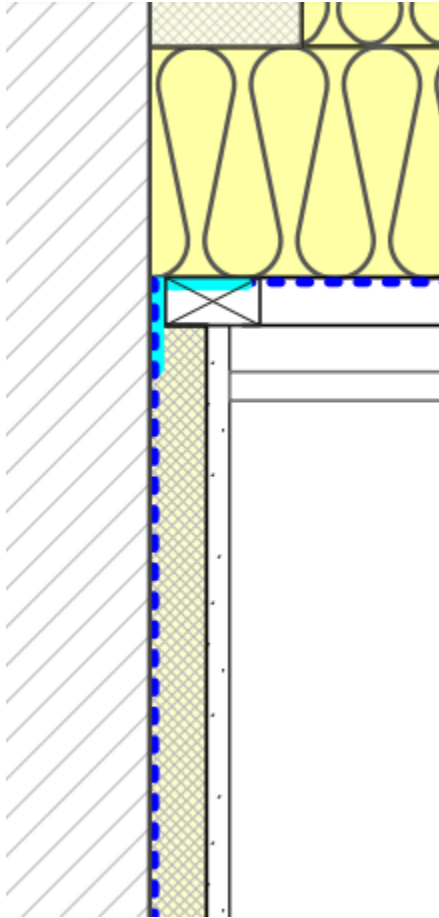
**Taped window surrounds**



# Roof to Party-Wall Connection



The challenge



The detail



The application



# We Did it! Achieved New-Build Passive House Standard



A close-up of the whiteboard from the previous image, showing the calculation for air tightness. The calculation is as follows:

$$\begin{aligned} n_{50} &= \frac{V_{50}}{V_{n50}} \\ &= \frac{\text{Flow Rate}}{\text{Net Volume}} \\ &= \frac{76.3 \text{ m}^3/\text{h}}{131 \text{ m}^3} \\ &= 0.58 \text{ L} \end{aligned}$$

The final result,  $= 0.58 \text{ L}$ , is highlighted with a red rectangular box.





# Dublin, Ireland

## November 13<sup>th</sup> – 14<sup>th</sup> 2019

*Climate Action through nearly zero energy buildings*

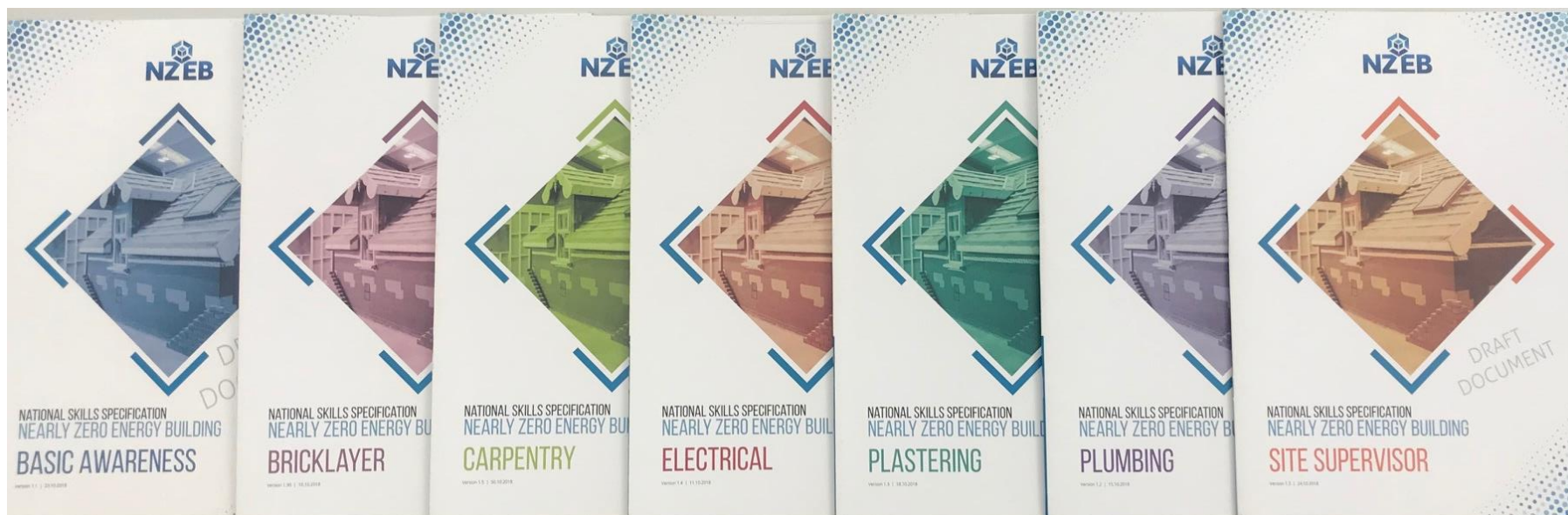
### Come and meet the Experts in Dublin...



Tomás O'Leary  
Trainer, MosArt



National Skills Specification:  
Michael O'Brien, WWETB





Thank You!  
tomas@mosart.ie

**MosArt** Since 1993  
Creatively Cutting Carbon