RES

REsilient System for the Recognition of Energy Skills



BUONE PRATICHE PER IL RISPARMIO ENERGETICO

COMPETENZE PER LO SMART BUILDING
Roadmap verso l'agenda 2030

www.ibimi.it/res2
res2@ibimi.it

Grant Agreement
n°101120907

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RES
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INTERVENTI SULL'INVOLUCRO

Individuazione dei ponti termici



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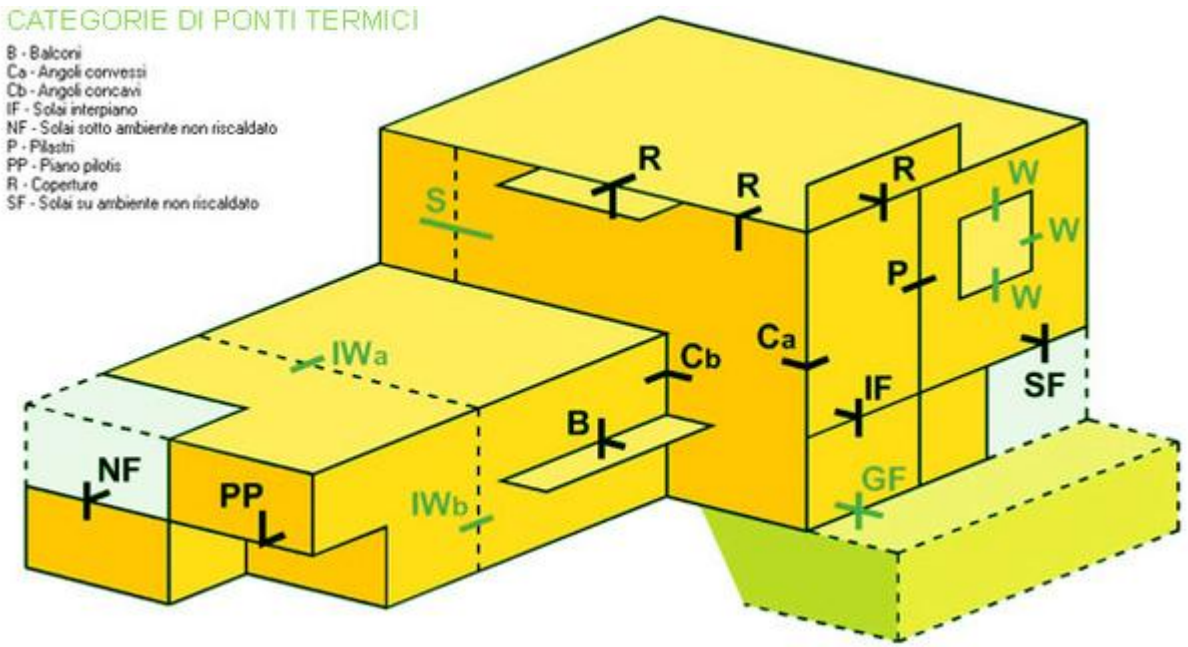
Obiettivo della lezione sui ponti termici

- Cos’è un ponte termico
- Quali danni causano i ponti termici
- L’individuazione dei ponti termici
- Le tecnologie utilizzate per individuare i ponti termici
- Gli effetti dei ponti termici
- Uso della modellazione BIM per valutare i tempi e i costi degli interventi

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Definizione di Ponte Termico



- **Parte della struttura con caratteristiche termiche diverse**
- **Favorisce il flusso di calore tra interno ed esterno**

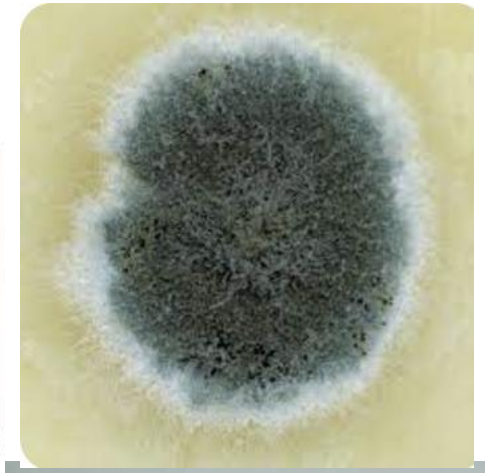
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I ponti termici e le muffe















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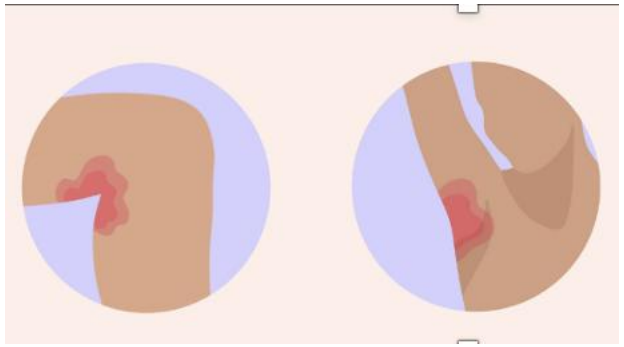
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I ponti termici causano danni per la salute…

Problemi respiratori
Infezioni e infiammazioni
Problemi cutanei.
Effetti sistemici.
Vulnerabilità di bambini e anziani









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… e per le strutture



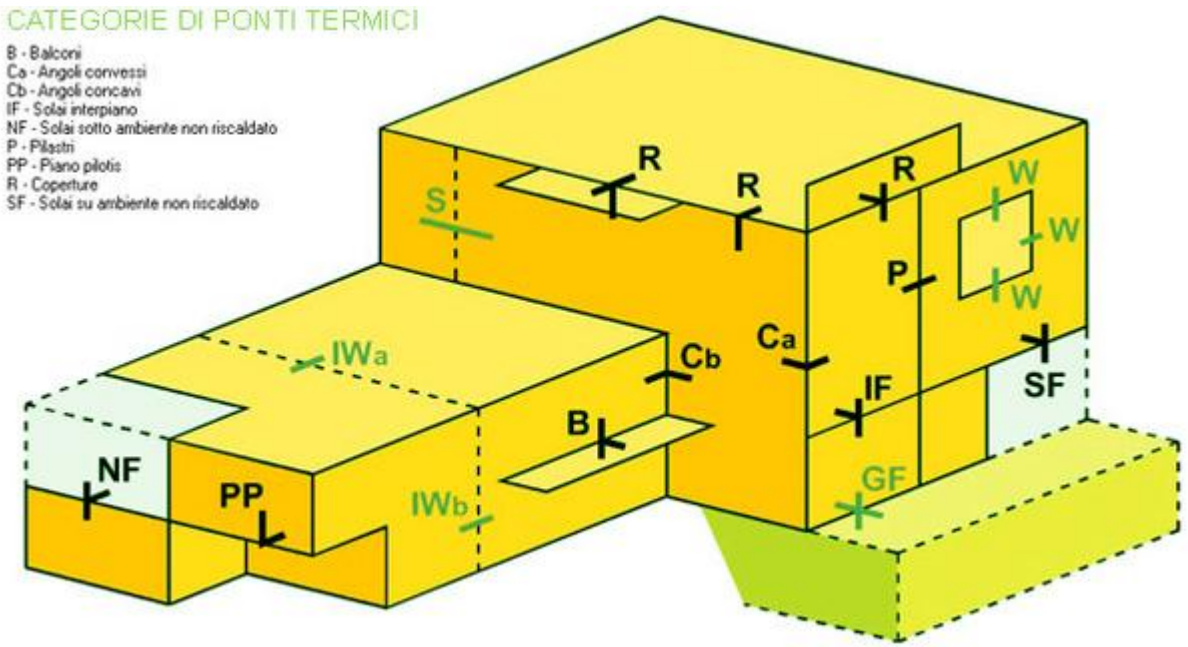




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Importanza della Mappatura dei Ponti Termici



- **Essenziale per il risparmio energetico negli edifici**
- **Permette interventi mirati sulle criticità termiche**

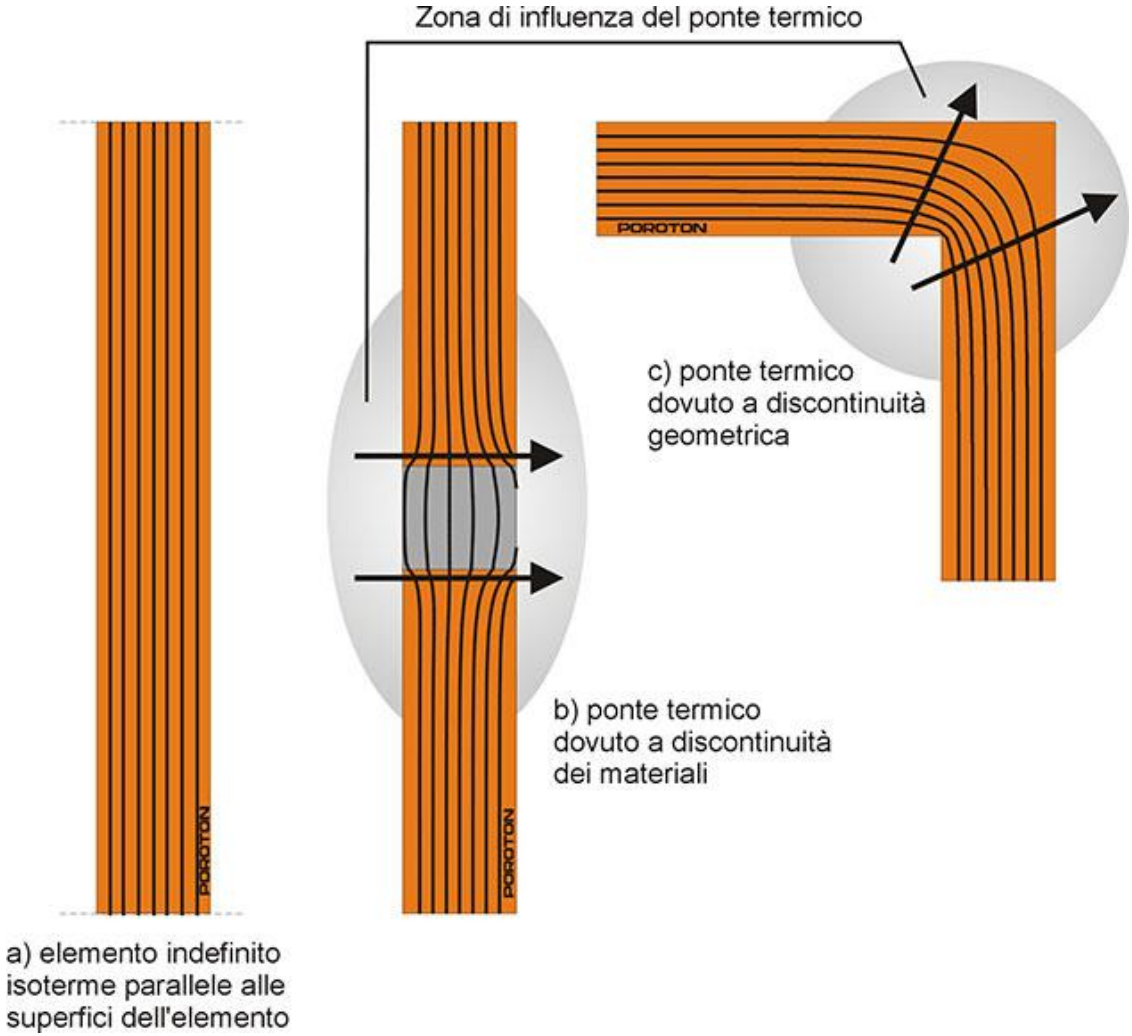
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Tipologie di Ponti Termici

a) Diffuso: Eterogeneità della struttura (angoli muri, pilastri)
b) Strutturale: Materiali diversi accostati (es. travi di ferro in muri)
c) Morfologico: Discontinuità geometrica (angoli, telai finestre)

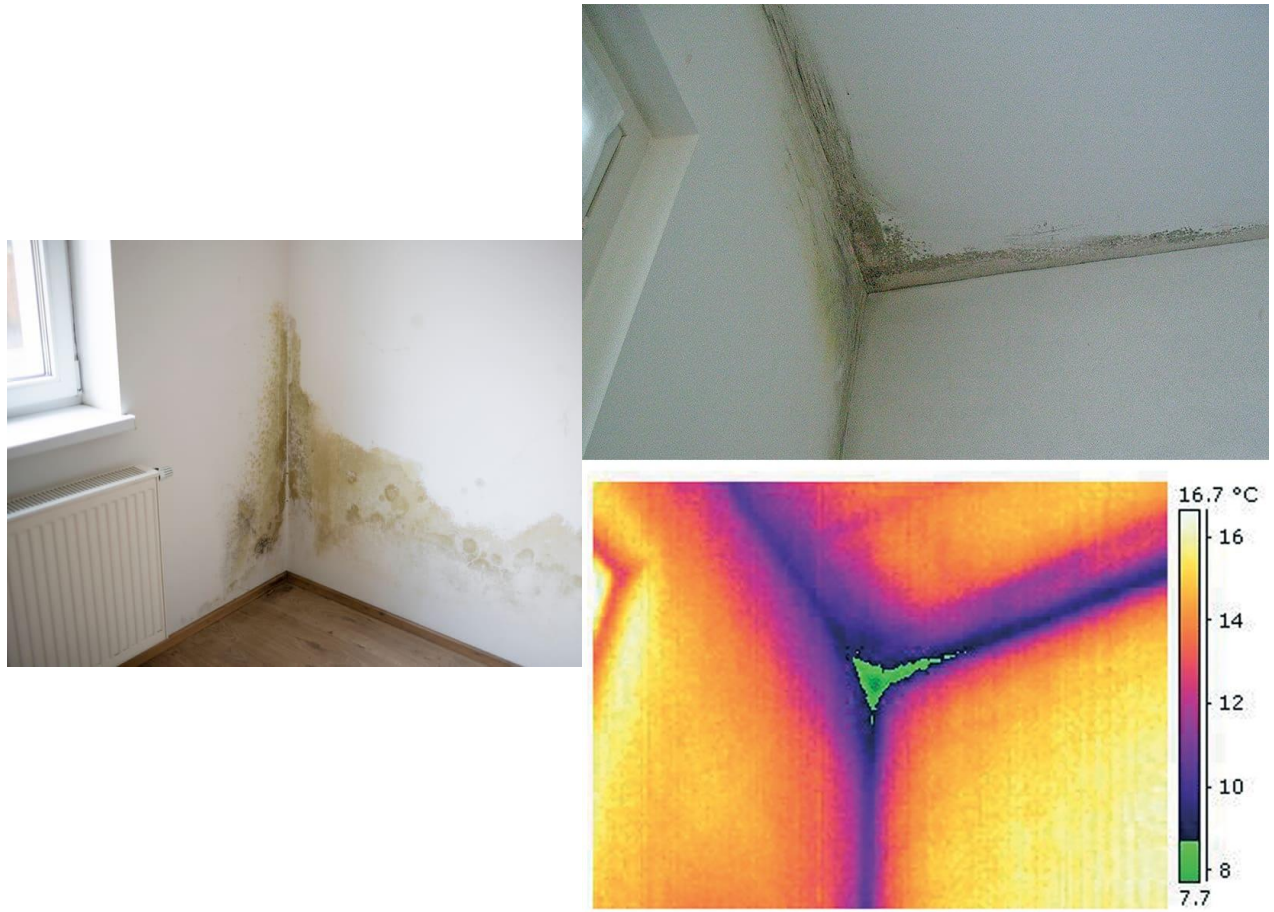


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Effetti Negativi dei Ponti Termici

- **Perdite di Calore: Fino al 40% delle perdite totali**
- **Condensazione: Umidità su superfici fredde**
- **Muffe: Presenza di alta umidità e basse temperature**
- **Danni Superficiali: Variazioni cicliche di temperatura**
- **Confort Termico Ridotto: Disagio vicino a superfici più fredde**



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Tecniche di Individuazione - Termografia



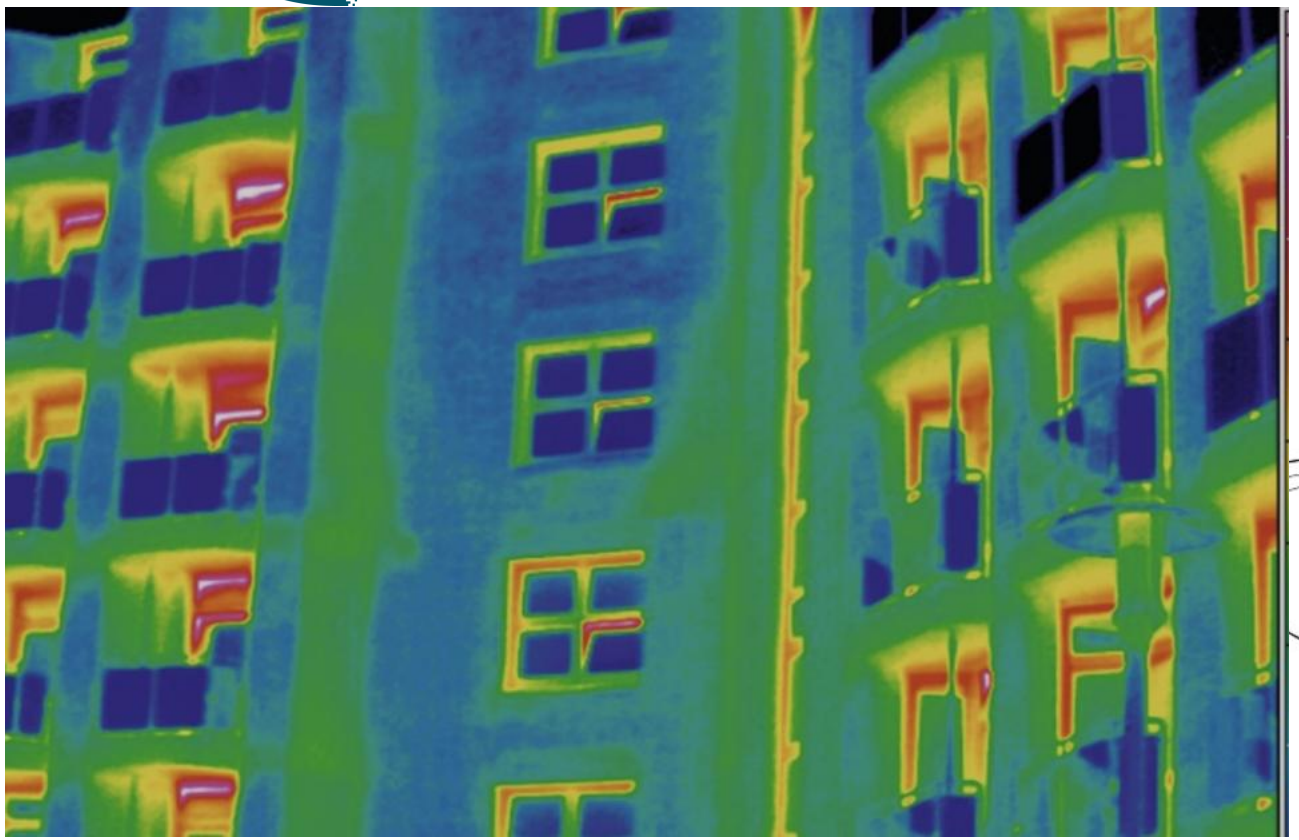


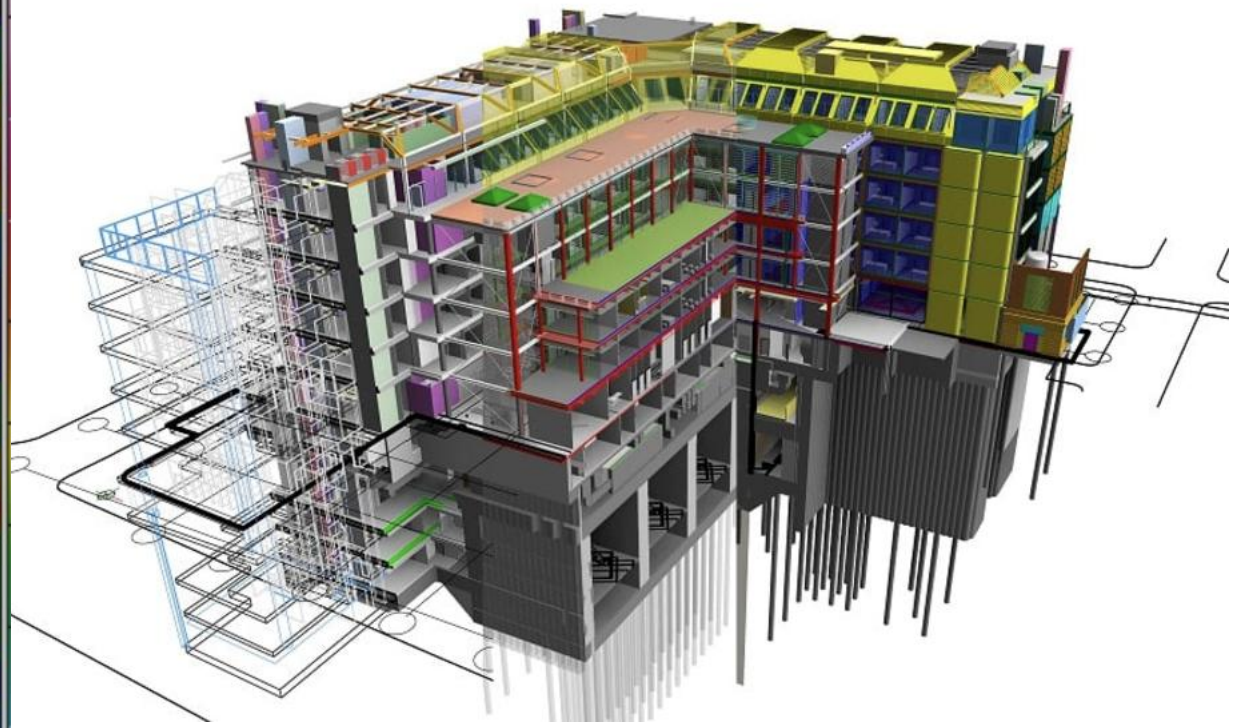
- **Tecnica non distruttiva basata sull'infrarosso**
- **La termocamera trasforma l'energia infrarossa in immagine termica**
- **Permette la mappatura precisa delle criticità termiche**

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I ponti termici e la modellazione BIM



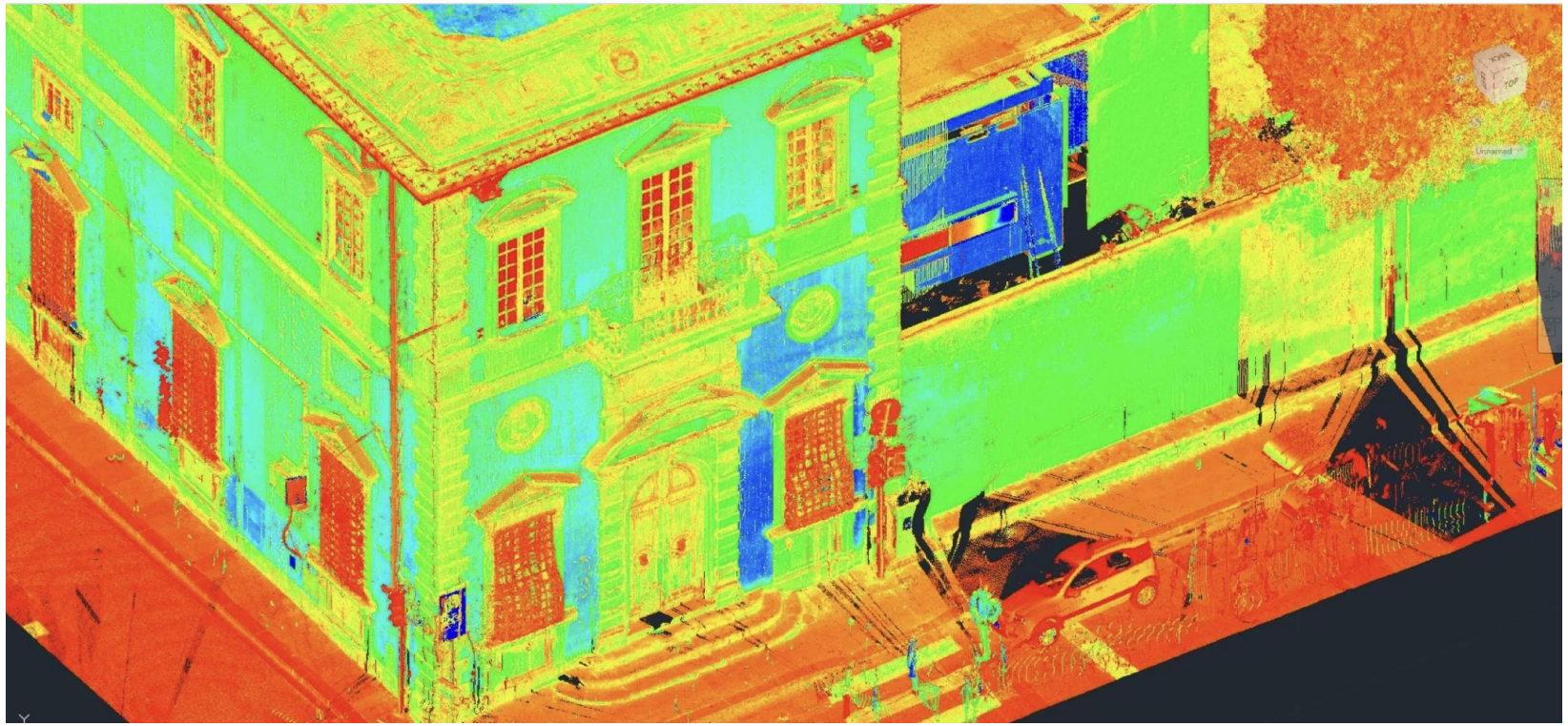


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Essere precisi e non perdere tempo



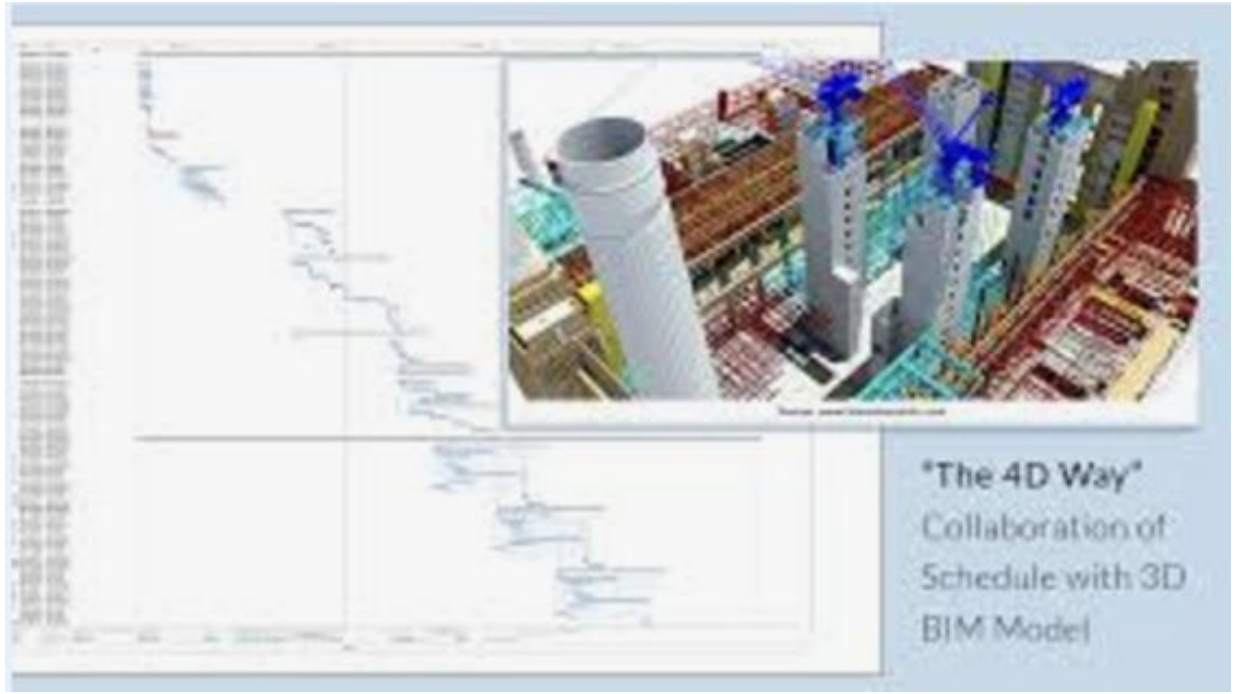
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BIM 4 D e BIM 5D per valutare tempi e costi

Stima dei tempi



Stima dei costi



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La certificazione delle competenze BIM

Per approfondire



Autovalutazione dei risultati degli studi e delle esperienze già maturate

Elenco degli organismi di formazione riconosciuti

Portale Lavoro dedicato all'incontro tra domanda e offerta di professionalità BIM

Centro esame di un Organismo di Certificazione accreditato Accredia

Attestato di qualità e di qualificazione professionale (Legge 4/2013) e Certificato sotto accreditamento Accredia

Associazione ad IBIMI inclusiva del mantenimento della certificazione

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