



Città
metropolitana
di Milano



FESTIVAL
DELLO
SVILUPPO
SOSTENIBILE
2018

Sustainable Cities and Communities

Nuove tecnologie a servizio della rivoluzione green building

Protocolli green building per trainare il cambiamento del Real
Estate



Agenda

- R2M Solution & Horizon 2020
- BIPV – Building Integrated Photovoltaics
- GreenPass – Protocol and tools for nature based solutions
- Digitalization – Building and City Information Modelling and Data Capture



Innovation
Energy Services & Sustainability
Engineering
ICT & Automation

About R2M & H2020



R2M Solution



Green Building Council Italia

R2M Solution – From Research to Market



R2M Solution is an integrated and multi-disciplinary consulting company that aggressively targets filling the gap between research activities and market implementation.

We operate most in Innovation Consulting & Sustainability.



Bringing new technologies to the market since 2012

35 Staff

€123 Million Funds Raised

27 R&D Projects

17 first time H2020 participants



Horizon 2020



Horizon 2020 is the biggest EU research and innovation programme ever.

Nearly 80 billion in funding across 7 years

35% of Horizon 2020's total budget is expected to address climate action

€27 billion

60% is expected to involve sustainable development

€46 billion

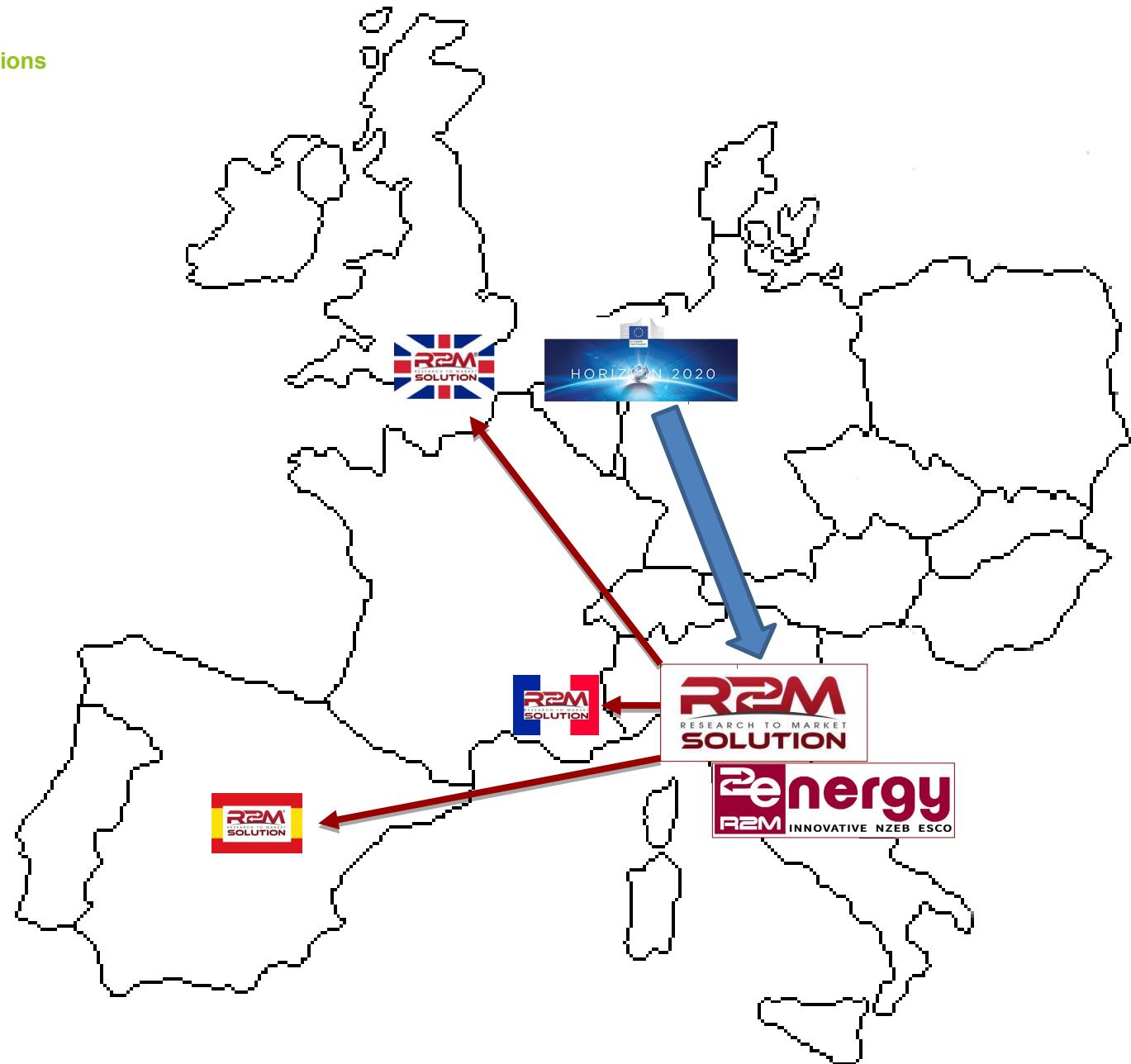


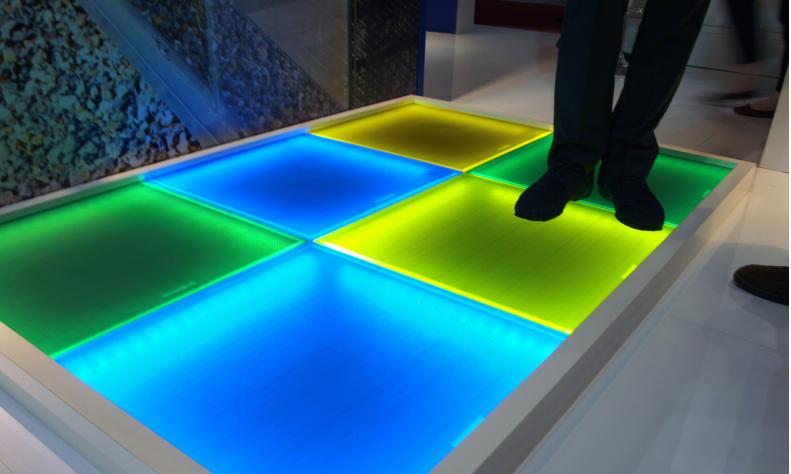
Italy Fast Facts (Feb 2018)

- 6682 Participants (#4 in Europe)
- 2.4 billion in funding (#5 in Europe)
- Success Rate: 12.2%
- 1647 Participating SMEs (€463 million)

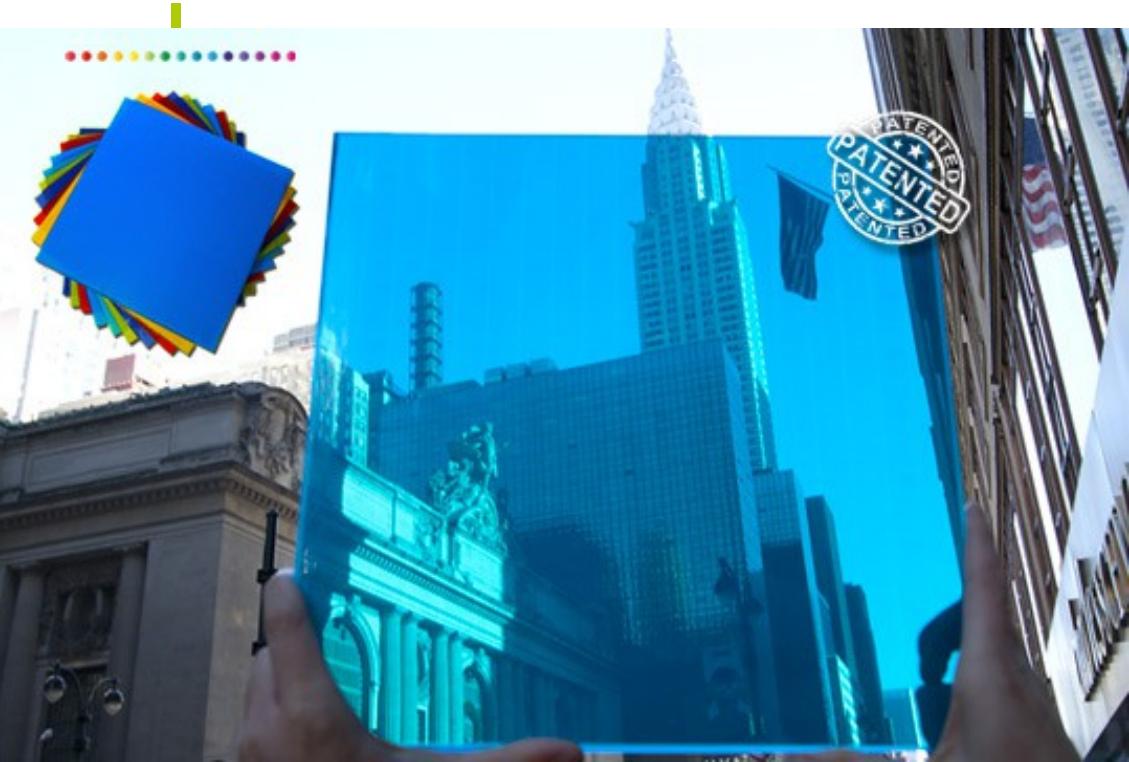


Implementing Innovations





Building Integrated Photovoltaics



What is it?

Building-integrated photovoltaics (BIPV) are photovoltaic materials that are used to replace conventional building materials in parts of the building envelope such as the roof, skylights, or facades (**2 in 1 solution**).

Why now?

- Costs have decreased
- Efficiencies have increased
- New exciting technology options

- Energy Performance of Building Directive – **2019 sta arrivando!**
 - All new buildings and deep retrofits must be NZEB (end of 2020)
 - All new public buildings and deep retrofits must be NZEB (end of 2018)

- **Clients and Owners are expecting more** (asset managers are looking for options to increase the value of their client's properties)



Collegamento con l'innovazione?

BIPV: a forceful reliable answer

To cost-effective renewable generation, reduction of energy demands and smart energy requirements.

E-mail address:
info[at]pvsites.eu

H2020 Project

3.5 year (2016-2019)

5.5 Million Euro

15 Partners

Italia:



LCE-03-2015 - Demonstration of renewable electricity and heating/cooling technologies

Building-integrated photovoltaic technologies and systems for large-scale market deployment – PVSITES

Cosa fa il progetto?

Technology improvement

Business Models

Demonstrations

Exploitation Plans



Single House



Educational building



Carports



Roofing shingles
(CIGS on steel)



Large tiles on façade
(CIGS on metal substrate)



Roof tiles
(CIGS on metal sheets)



Industrial building



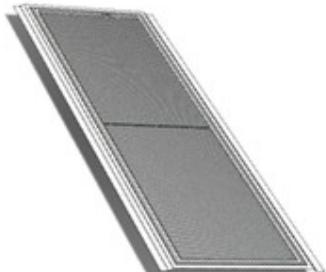
Apartment building



Office building



Large roofing shingles
(CIGS on metal substrate)



Ventilated façade
(c-Si modules with hidden bus bars)



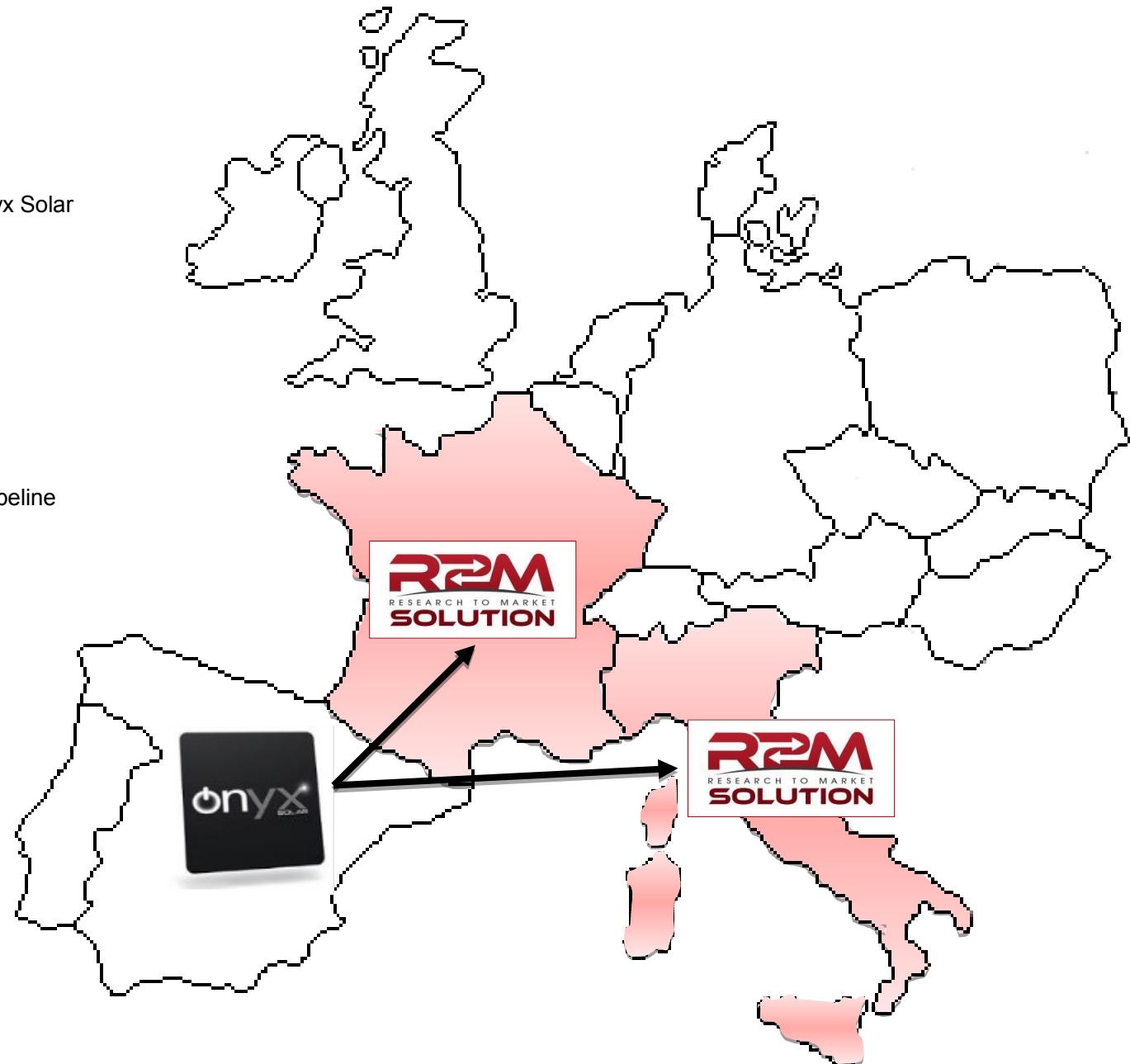
Ventilated façade
(Glass-glass back contact c-Si cells)



R2M Strategy

R2M Solution è diventato il
distributore esclusivo di Onyx Solar
in Italia e la Francia!

70 offers out
€50 million euro pipeline



Tecnologia e costi



30-60 wp/m²

Up to 156 wp/m²

110-300 €/m²

Customization

COLORS

CUSTOM COLORS



If there's anything that characterises Onyx Solar®, it's innovation in the design of the photovoltaic materials we use.

Onyx Solar®'s glass, in addition to their sustainability and efficiency, stand out due to their unlimited range of configurations, to which we can add the possibility of including colours or combinations of colours, thus adapting to the design of each project.

Starting from the different categories of colours that may be seen below (red, orange, grey, white, black, yellow, green, blue, purple) we can provide manifold colours, adapting to the personalised requirements of our clients.

These coloured photovoltaic glass can be integrated into any construction solution, generating an added value, due to the exclusive and distinguishing design of this constructive element that generates clean and free energy thanks to the sun.



Category A



Category B



ONYX SOLAR®



FINISHES

CUSTOM FINISHES

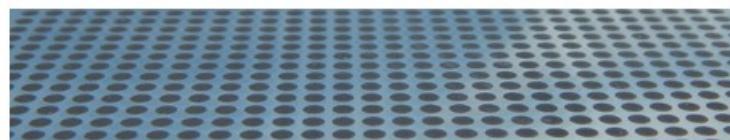
GLOSS OR MATT



METALLIC HINT GLASS



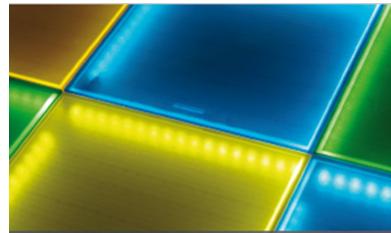
FRIT PATTERNS



ANTI-SLIP



Applications & Projects



WALKABLE FLOOR



SKYLIGHT



CURTAIN WALL



DOUBLE SKIN



a-BIPV



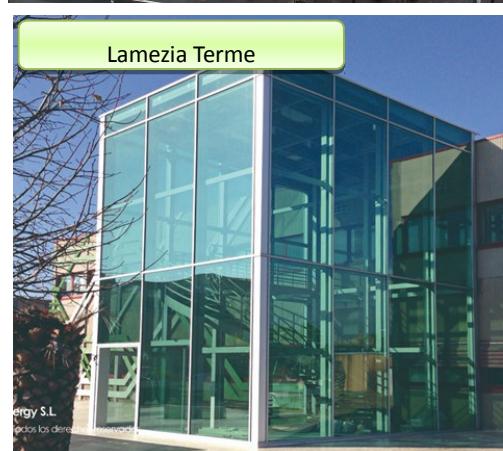
BRISE SOLEIL



ROOF



CANOPY





GREENPASS

One Stop Shop for Nature Based Solutions

Our choice of building materials, building density/orientation/volume and use of vegetation dramatically impact the urban climate – where 80-90% of the population lives



What is it?

- Methodology and Approach
- Software & Simulation Environment
- Protocol
- Certification

Value Proposition

- Allows urban planners to make decisions based on facts and analysis
- Allows architects and designers to be more competitive
- Allows contractors to save money by understanding the life cycle cost of the NBS they are implementing



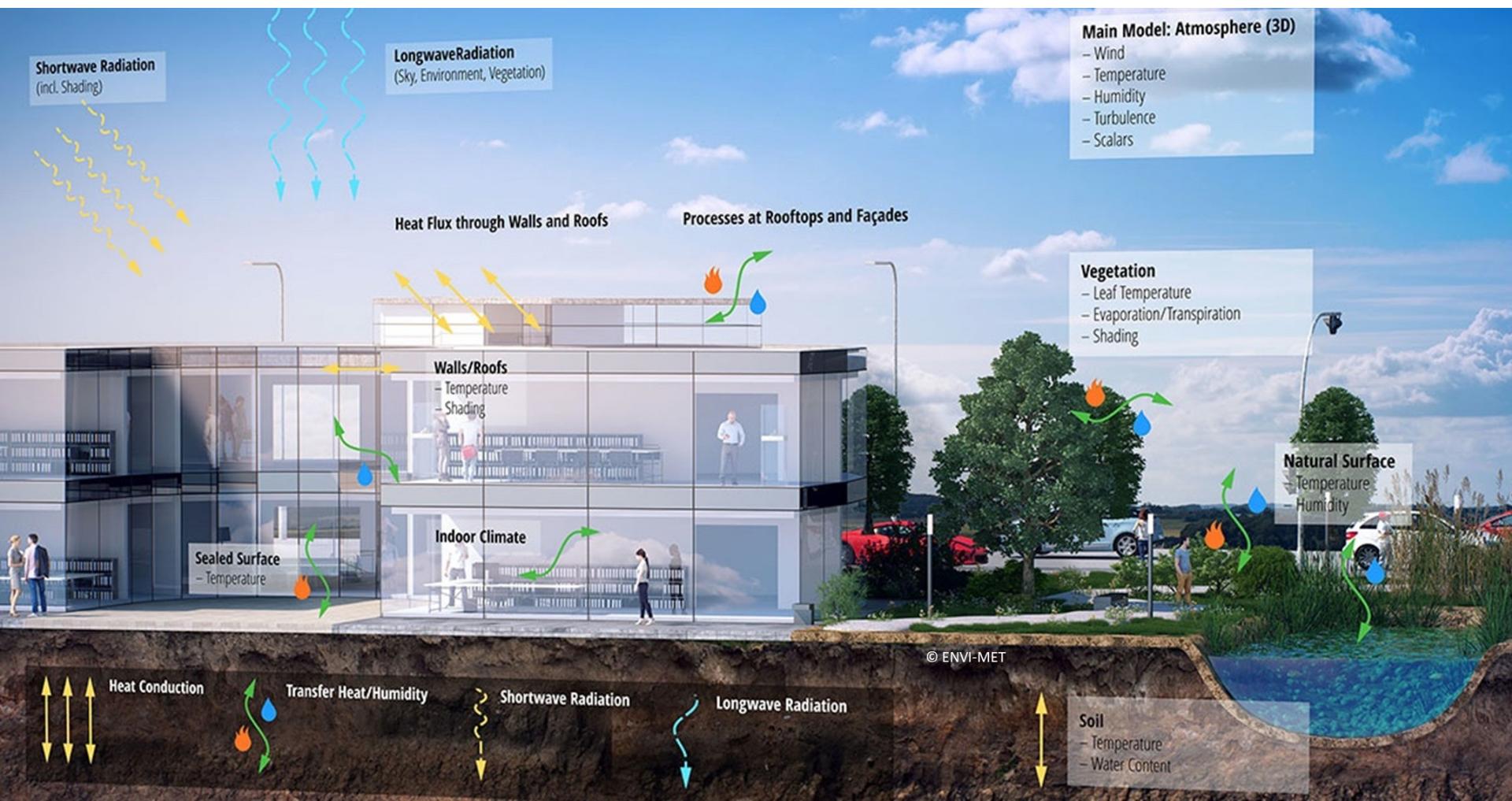


The **GREENPASS approach and** technology evaluates the **Urban Fabric** or **Urban Plan** coupled to **NBS** allowing to optimize their
effects and cost



How does it do that?

A simulation engine models the microclimate considering solar gains, wind vectors, buildings impact, ground characteristics, water runoff....





The simulation environment is called ENVI-met which has been under development for decades



Strahlungsbilanz

Putting this into a protocol

Protocol approach comparable with LEED and DNGB dynamic rating scale



GREENPASS

That can result in a certification level



Quantitative Analysis for:

- Thermal comfort
- Climate resilience
- Windfield
- Particle deposition
- Carbondioxide uptake
- Water storage
- Cost



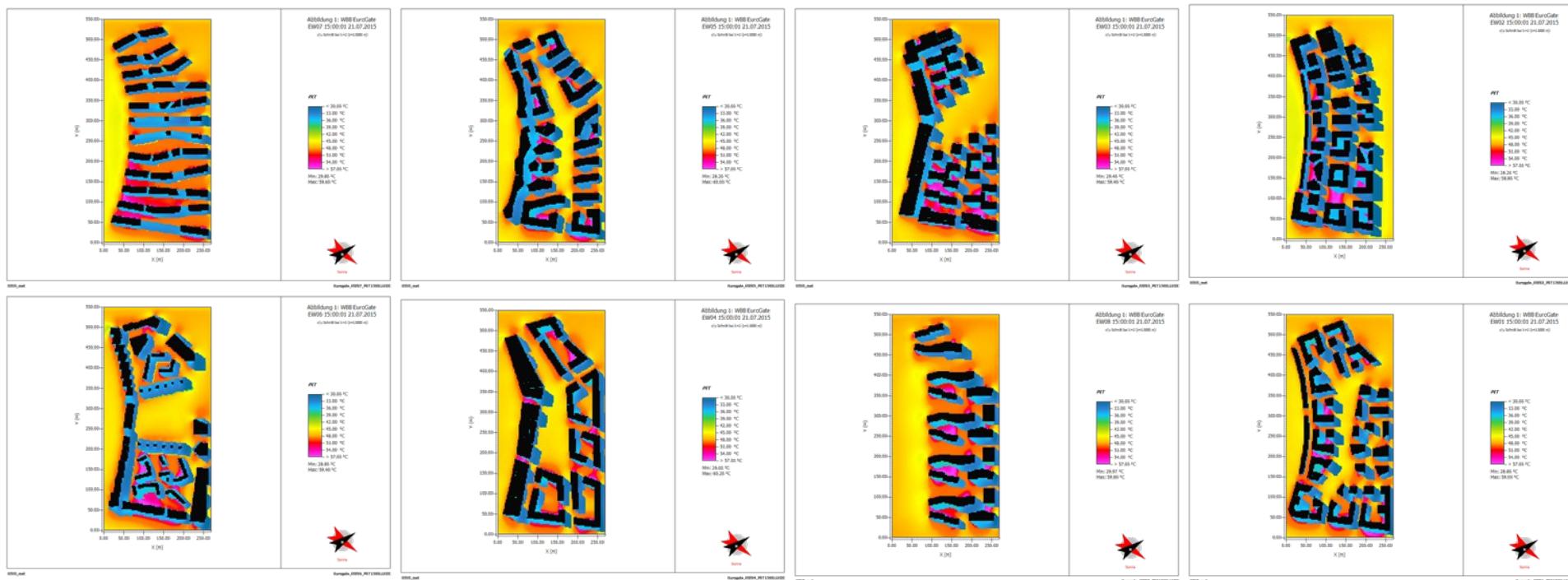
Vienna has introduced legislation where certain NBS parameters must be calculated for urban area new builds or retrofits

Esempio



Urban development project in Vienna for new social housing. 8 firms submitted designs for the project. How can the public officials understand the environmental and climatic impact of the various tender responses?

Esempio – the eight submissions and their simulations



Score & Comparative Ranking

Empfehlung	%	Entwurfsvariante	Punkte
sehr empfehlenswert	100 %	Entwurfsvariante - E02	27.29
empfehlenswert	< 75 %	Entwurfsvariante - E05	21.82
ausreichend	< 50 %	Entwurfsvariante - E06	21.06
wenig empfehlenswert	< 35 %	Entwurfsvariante - E01	20.60
		Entwurfsvariante - E07	19.75
		Entwurfsvariante - E04	17.60
		Entwurfsvariante - E03	17.23
		Entwurfsvariante - E08	13.92

* Entwurfsvariante E02 (100%) und E08 (0%) dienen als Berechnungsgrundlage für die relative Rahmenbildung der Empfehlung.

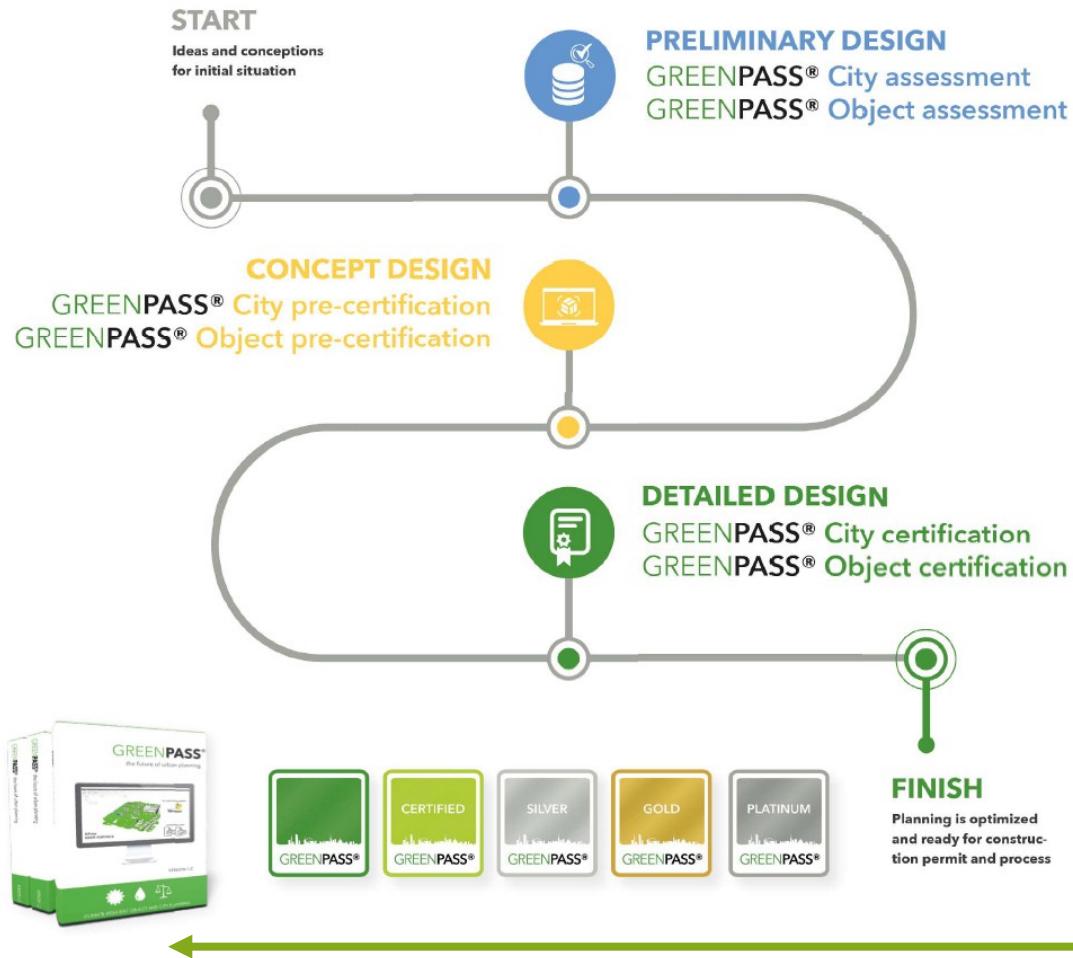
Pre-Assessment & Recommendation

GREEN **4** CITIES**EUROGATE II - Vienna (AUT)**
GREENpass® Pre Assessment

Moreover, €2 million in savings related to optimization of vegetation types (not all vegetation has the same cost or maintenance requirements)

The Service & Business Model

The Service



Pre-Gara
Hundreds of Euro

Gara
Thousands of Euro

Development Phase
Tens of Thousands of Euro

The Product

Collegamento con l'innovazione?

The screenshot shows the homepage of the NATURE 4 CITIES website. At the top, there is a green header bar with social media icons (Facebook, Twitter, LinkedIn) and a newsletter subscription link ("Subscribe to the Newsletter!"). The main title "NATURE 4 CITIES" is displayed with a crown icon above it. A search bar and language selection buttons (English, French, German, Spanish, Italian, Portuguese, Dutch) are also present. Below the header, a navigation menu includes "HOME", "The N4C Project", "Nature Based Solutions", "Publications and Results", "Contribute", and "Press Corner". The main content area features a large image of a person working in a lush, green urban garden. Overlaid on this image is the project's logo, which consists of three stylized human figures in green and blue, standing on wavy lines that represent water. A yellow banner at the bottom of the image contains the text "Be Part of the Green Transition".

H2020 Project

4 year (2016-2020)

7.5 Million Euro

25 Partners

Italia:



SCC-03-2016 - New governance, business, financing models and economic impact assessment tools for sustainable cities with nature-based solutions (urban re-naturing)

Nature Based Solutions for re-naturing cities: knowledge diffusion and decision support platform through new collaborative models

GREENPASS



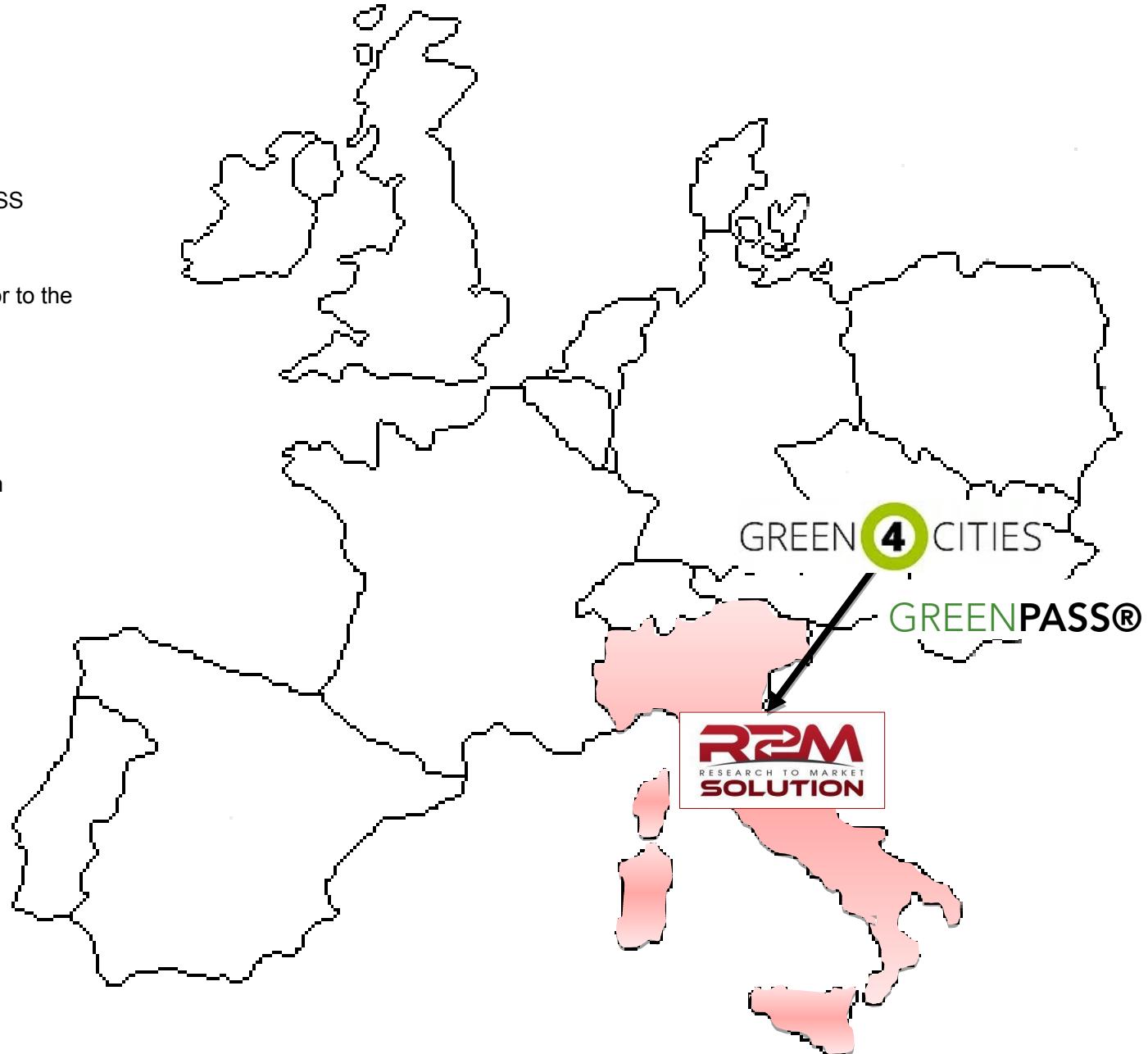
R2M Strategy

Launch of Startup Company
dedicated to the GREENPASS

Exclusive software distributor to the
Italian Market

Leading service provider for
assessment and certification

Formazione





Green Building Council Italia



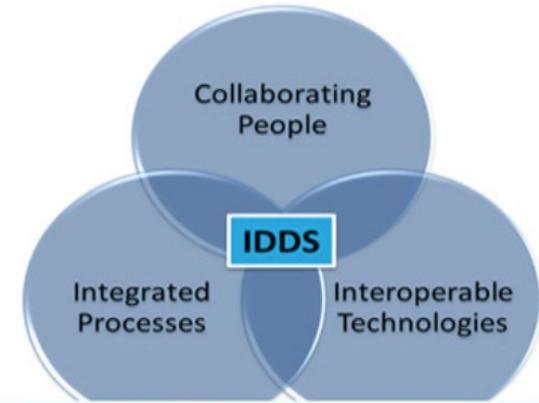
Digitalization and the Optimization of Construction Processes
and Facility Management



Motivations

- Integrated Design & Delivery Solutions
- Energy Performance Gap
- Decreto BIM
- Criteri Ambientali Minimi (CAM)

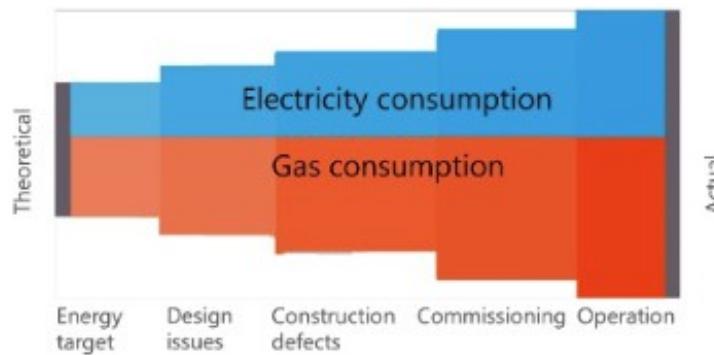
The Three Imperatives



to minimise all forms of waste,
whilst delivering greater assured value
for sustainable whole lifecycle outcomes

The Energy Performance “GAP” between the Design and Operation of a Building always exists!

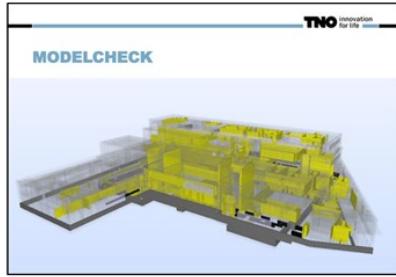
- Differences between expected and actual energy consumption arise from problems with the design, construction, commissioning and operation of buildings.



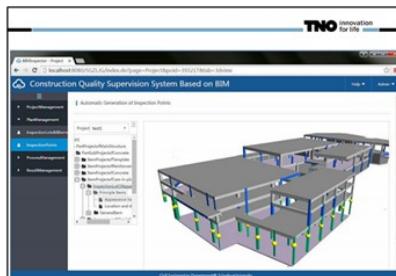
“Decreto BIM”
1 Dec 2017

- 1 Jan 2019: public works > 100 M€
- 1 Jan 2020: public works > 50 M€
- 1 Jan 2021: public works > 15 M€
- 1 Jan 2022: public works > 5.2 M€
- 1 Jan 2023: public works > 1.0 M€
- 1 Jan 2025: public works < 1.0 M€

Concepts – Each one a Line of Research / Product / Service



BIM 4 Design



BIM 4
Construction
Management



BIMBOTS





The Platform



Supporto lungo tutto il ciclo vita dell'edificio



Login Area with Assigned Projects



Zutec - Software Platform

ZUTEC PLATFORM

COLLABORATIVE PROJECT DATA MANAGEMENT SYSTEM
FOR CONSTRUCTION INFORMATION AND PROCESSES

Overview | Software Platform | History | Contact Us

Sign in

sara.ruffini@r2msolution.com

Password

Sign in

Support

If you are having difficulty logging in please email support@zutec.com

Important Information regarding cookies

Zutec uses cookies to enhance your browsing experience and to create a more efficient user interface. By using this site you agree that Zutec may store and access cookies on your devices, unless you have disabled cookies.

Zutec Version 2.101 Zutec Cloud System Sign in

You are a member of more than one project, please select the project you wish to view.

Search Refresh Project List Change Your Password Sign Out

ATI Project Global Deployment 2

DE5 Project Global Deployment 2

esa esrin

IT - Meravigli

Multiplex Modules Global Deployment 2

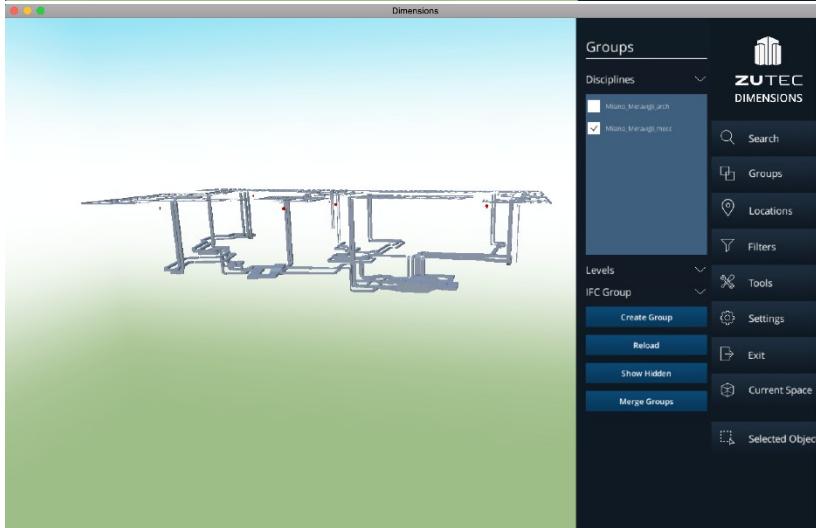
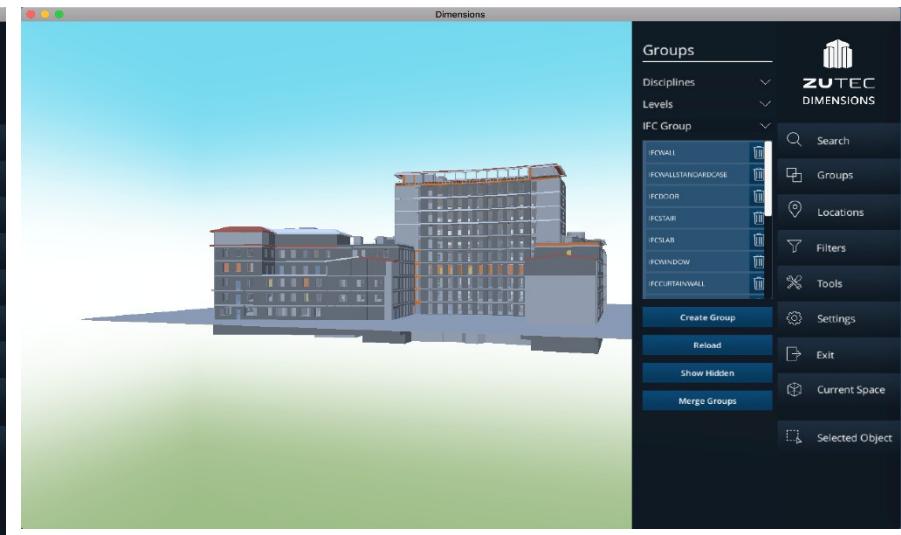
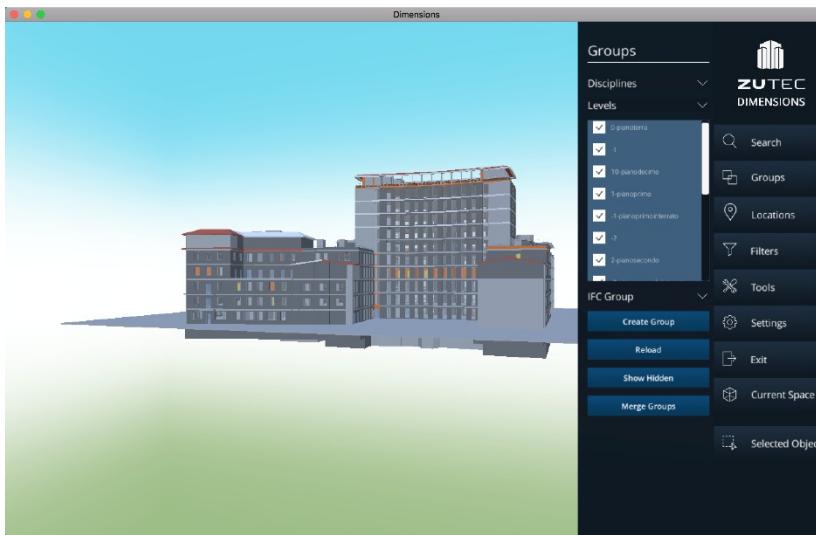


Login utente direttamente dal sito zutec.com e interfaccia con i progetti in corso

A seconda della tipologia di utente, lo stesso potrà vedere o meno alcuni progetti o potrà avere delle restrizioni negli stessi



Various BIM Functionalities

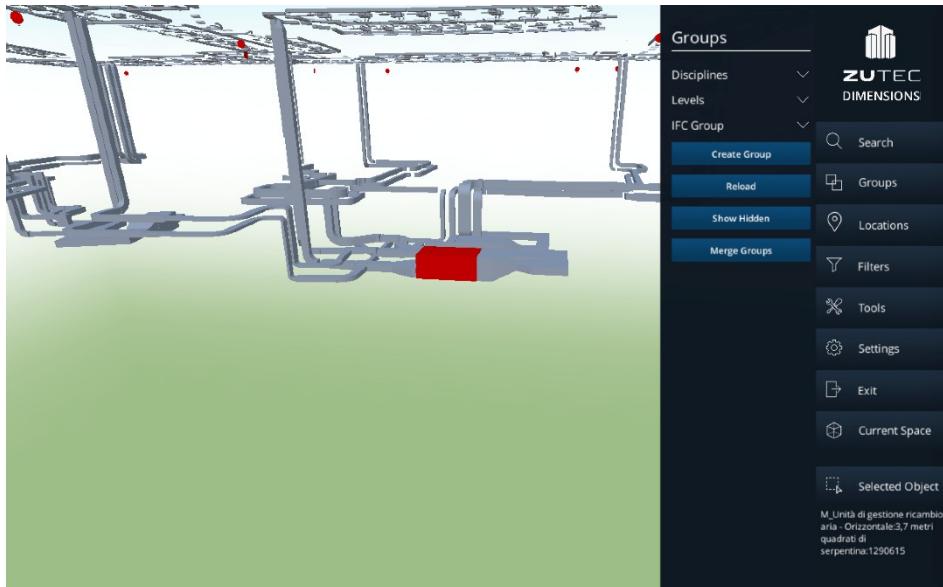


Il menu *Groups* permette di visualizzare i vari modelli BIM caricati all'interno della piattaforma (i.e., architettonico, strutturale, MEP)

Permette di visualizzare i *layer* ed eventualmente di nasconderli

Suddivide i gruppi IFC per renderli di facile individuazione (e.g., muri, infissi, impianti, ecc.)

Object Visualization



The screenshot displays the 'Asset Register' interface. On the left, a detailed data table for a selected asset is shown:

Review Status	BIM Linked
Eq Reference	A-12
Building	NewsUK
Level	Level 12
Room Number	12-GENERAL
Drawing Number	7000-DRG-12-LT-001
Category	A
System	Electrical
Sub System	Lighting
Service	General Lighting
Contractor	Phoenix
Guid	2urZp0KWUfNW0000008AVM
Barcode	
Asset Code	NewsUK-Electrical-A-1 2

Below the table, it says 'Record 1 of 1'. At the bottom of the table are buttons for 'Hide', 'Related Rec', 'Data Link', and 'Email'. The background shows a 3D perspective view of the building's interior with various pipes and ducts in yellow, blue, and purple.

Sia dall'applicazione che dalla piattaforma online è possibile selezionare gli oggetti (in rosso una UTA).

Degli stessi vengono visualizzate le caratteristiche, la GUID, e il nome con cui sono state archiviate per permettere una ricerca più mirata e veloce e per vedere se ci sono delle operazioni connesse alle stesse.

Query a portata di BIM

ZUTEC

- Job
- Impact
- Document
- Attribute
- Coordinate
- Issue
- Layout
- CxA
 - Meravigli_CxA
 - CxA_table
- Schede di Approvazione
- Manutenzione programmata
 - Meravigli_PPM
 - Drawing Manager
 - Inspection
 - Inspection_2_table
- Change your password
- Mail
- Create Tables
- Account Settings
- Manage Users
- Manage Groups
- Review Processes
- Manage Forms
- Download Apps

IT - Meravigli
sara.uffinari@zutecsolution.com Home Mail Dashboard Search Projects Sign out

Meravigli_PPM
Folder Path: IT - Meravigli / Manutenzione programmata / Meravigli_PPM

New Record Delete Selected Import Export

Show: 100 records Search: Hide Columns Actions

Showing 1 to 29 of 29 (total: 29) Back | Next

			Tipo Impianto	Azione	Scadenza Azione	Responsabile	Frequenza
			Porte REI	Controllo della corretta chiusura dell'anta o se a due ante della corretta sequenza3 di chiusura delle due ante	13/10/2018 00:00	G. Garibaldi	Trimestrale
			Porte REI	Controllo della corretta chiusura dell'anta o se a due ante della corretta sequenza3 di chiusura delle due ante	15/07/2018 00:00	G. Garibaldi	Trimestrale
			Porte REI	Controllo della corretta chiusura dell'anta o se a due ante della corretta sequenza3 di chiusura delle due ante	16/04/2018 00:00	G. Garibaldi	Trimestrale
			3stgNfvu0dATL0gBEx0JC UTA	pulizia/avaggio filtri	22/08/2017 00:00	D. Rossi	mensile
			3stgNfvu0dATL0gBEx0JC UTA	sostituzione filtri	02/10/2017 00:00	D. Rossi	annuale
			Porte REI	Controllo della corretta chiusura dell'anta o se a due ante della corretta sequenza3 di chiusura delle due ante	18/10/2017 00:00	M. Verdi	Trimestrale



Dati di progetto salvati in IFC

Storico delle approvazioni

Schede tecniche

Risultati ispezioni DL

Documentazione di collaudo

Documenti di garanzia

Verbali di avviamento

Documentazione di Commissioning

Pianificazione Manutenzione programmata

Gestione eventi di Manutenzione reattiva

Si possono ritrovare gli oggetti all'interno delle tabelle per poi individuarli nel modello BIM.

Da BIM a Database

The screenshot illustrates the integration between BIM and a central database. On the left, a 3D BIM model of a building structure is displayed. A red arrow points from this model to a database table on the right. The database table, titled "schede approvazione", lists three records:

	Codice	Descrizione Fornitura	Marca	Prodotto O Modello	Commenti	Attached Files
<input type="checkbox"/>	3stgNFvuf0dATL0gBEx1zS	FAN COIL	AERMEX	FCXI P		fxl_i-it.pdf fxl_p_i-de-en-es-fr-it.pdf MM044.pdf
<input type="checkbox"/>		Pompa di calore polivalente	Climaveneta	ERACS2-WQ3202		MM043 - ISA E MEC SCHEDA SOTT LEED.pdf ERACS2_WQ_3202.pdf ERACS2_WQ_3202 scambiatore.pdf ERACS2_WQ_0802_3202 Bollettino tecnico_IT.pdf MM043.pdf
<input type="checkbox"/>	3stgNFvuf0dATL0gBEx0JC	UTA	FAST	5000 mc/h - 2500mc/h		_UTA 25.000 mc h.pdf _UTA - 5.000 mc-h.pdf MM042 rev. 01.pdf

Below the table, a context menu is open for the third row, listing options: Open, Open File & Show Data, and Merge Files.

Da BIM a Database



Cicli di approvazione e checklist

Gestione dei cicli di approvazione e sottomissione

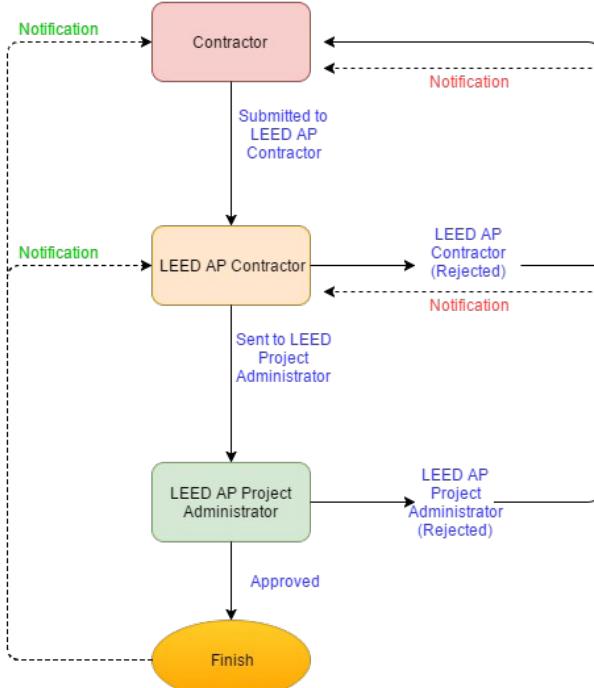
Gestione delle checklist di cantiere / DL

Checklist di cantiere

Legend

Document Status

Actors



R2M_ESC Plan

Sort: Data Ispezione | Filter: Contractor (...) | Search | Reset

Items 2 of 33

	Contractor (Submitted)
Data Ispezione:	12/06/2017 08:00:00
Orario Fine:	
	<input type="button" value="Edit"/>
	<input type="button" value="Delete"/>

	Contractor (Submitted)
Data Ispezione:	19/06/2017 08:00:00
Orario Fine:	
	<input type="button" value="Edit"/>
	<input type="button" value="Delete"/>

R2M_ESC Plan

Status: Contractor (Submitted)
Comments:

SSp1 Piano per il controllo dell'erosione e della sedimentazione
Rapporto periodico di ispezione

Contractor: xxxxx
Certificazione LEED: LEED v4 f or BD+C: New Construction and Major Renovation

Informazioni generali
General Information

Progetto: R2M Solution
Project:
Luogo: via Fratelli Cuzio Pavia
Location:
Data e ora di inizio ispezione: 12/06/2017 08:00:00
Date of inspection:
Nome dell'ispettore/Qualifica/ Contatto
Inspector's Name/Title/Contact:
Orario fine ispezione
End time of inspection

Descriere l'attuale fase di costruzione.
Describe present phase of construction:

Tipologia di ispezione/ Type of inspection
 Normale Regular Prima di un evento piovoso Pre-storm event Durante evento piovoso During storm event Post evento piovoso Post storm event

Informazioni meteorologiche
Weather information

Si è verificato un evento piovoso dopo l'ultima ispezione? Sì No
Has there been a storm event since the last inspection?

Se sì, indicare: if yes provide:
Data d'inizio dell'evento: Storm Start Date and Time: dd/mm/yyyy hh:mm:ss

Durata delle precipitazioni (ore): max 255 chars Quantità delle precipitazioni (mm) max 255 chars
Storm Duration (hrs) Approximate Amount of Precipitation (in)

Che condizioni meteorologiche ci sono durante l'ispezione?
Weather at time of this inspection?

Sereno/ clear Nuvoloso/ cloudy Pioggia/ rain Nevicchio/ sleet
 Nebbia/ fog Neve/ snowing Vento/ high winds Altro/ other

Temperatura (degC) max 255 chars
temperature

Si sono verificate delle perdite di suolo / sedimento dopo la precedente ispezione?
Have any discharges occurred since the last inspection? Sì No

Prev | Save | Back | View Files | More | Next

Gestioni verbali, giornale di cantiere e action list

Gestione dei verbali e delle action list tramite la piattaforma online. Una notifica avvisa automaticamente il responsabile dell'azione che deve intraprendere.

Site Diary

Show: 100 records Search: <input type="text"/> Hide Columns Actions				
Showing 1 to 4 of 4 (total: 4) Back Next				
	Codice Verbale	Data	Argomento	Commenti
<input type="checkbox"/>	V001.05	30/05/2017 00:00	Valutazione vasca di accumulo acqua piovana per irrigazione, e impianto di irrigazione	Una vasca di circa 10 m3 (in funzione delle piantumazioni definitive) permetterebbe l'acquisizione di un credito aggiuntivo. La committente si dice disponibile a valutare la realizzazione della vasca interrata in corrispondenza della sistemazione esterna con il pergolato. È prevista irrigazione a goccia per le aree verdi con centralina di controllo in base alle condizioni igrometriche.



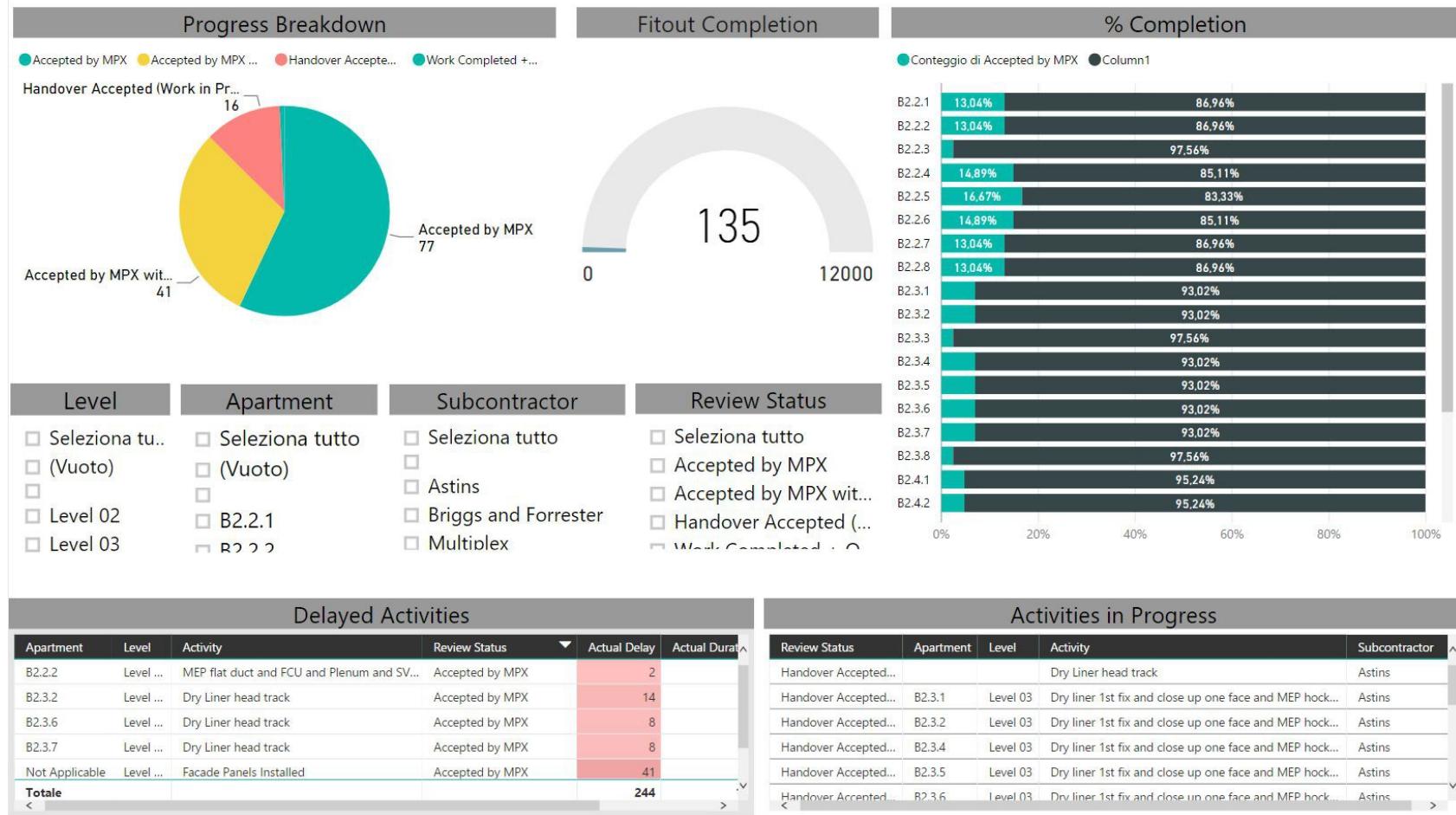
Verbale	Punto	Data	Argomento		
V001	1.	30/05/17	Valutazione vasca di accumulo acqua piovana per irrigazione, e impianto di irrigazione		
Tesito					
			Una vasca di circa 10 m3 (in funzione delle piantumazioni definitive) permetterebbe l'acquisizione di un credito aggiuntivo. La committente si dice disponibile a valutare la realizzazione della vasca interrata in corrispondenza della sistemazione esterna con il pergolato. È prevista irrigazione a goccia per le aree verdi con centralina di controllo in base alle condizioni igrometriche.		
Azioni				Responsabile	Scad.
1	Invio a R2M delle specifiche del sistema di controllo dell'impianto di irrigazione.			MT-Committenza	09/06/17
2	Dimensionamento finale vasca in funzione delle piantumazioni e del controllo dell'impianto di irrigazione previsto e requisiti dell'impianto di irrigazione.			GS-R2M	16/06/17
Allegati					
-					

Action list

Show: 100 records Search: <input type="text"/> Hide Columns Actions				
Showing 1 to 7 of 7 (total: 7) Back Next				
	Codice Verbale	Azione	Commenti	Descrizione
<input type="checkbox"/>	V001.05	2	Una vasca di circa 10 m3 (in funzione delle piantumazioni definitive) permetterebbe l'acquisizione di un credito aggiuntivo. La committente si dice disponibile a valutare la realizzazione della vasca interrata in corrispondenza della sistemazione esterna con il pergolato. È prevista irrigazione a goccia per le aree verdi con centralina di controllo in base alle condizioni igrometriche.	Dimensionamento finale vasca in funzione delle piantumazioni e del controllo dell'impianto di irrigazione previsto e requisiti dell'impianto di irrigazione.
<input type="checkbox"/>	V001.05	1	Una vasca di circa 10 m3 (in funzione delle piantumazioni definitive) permetterebbe l'acquisizione di un credito aggiuntivo. La committente si dice disponibile a valutare la realizzazione della vasca interrata in corrispondenza della sistemazione esterna con il pergolato. È prevista irrigazione a goccia per le aree verdi con centralina di controllo in base alle condizioni igrometriche.	Invio a R2M delle specifiche del sistema di controllo dell'impianto di irrigazione.



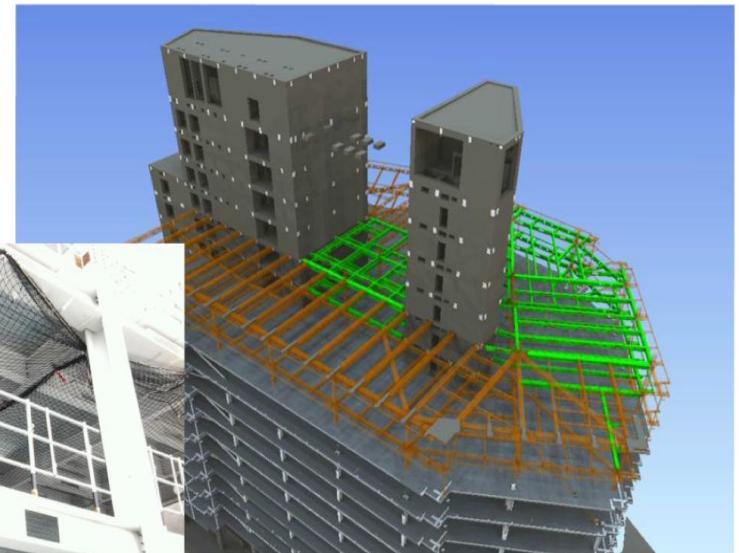
Dashboard personalizzabili di monitoraggio status



Monitoraggio real time del processo di costruzione

Possibilità di monitorare in real time il progresso delle fasi costruttive con gli oggetti mostrati nel modello BIM con colori diversi in base alla fase in cui si trovano

Possibilità di collegare anche altre fonti di dati quale gestione accessi di persone in cantiere.

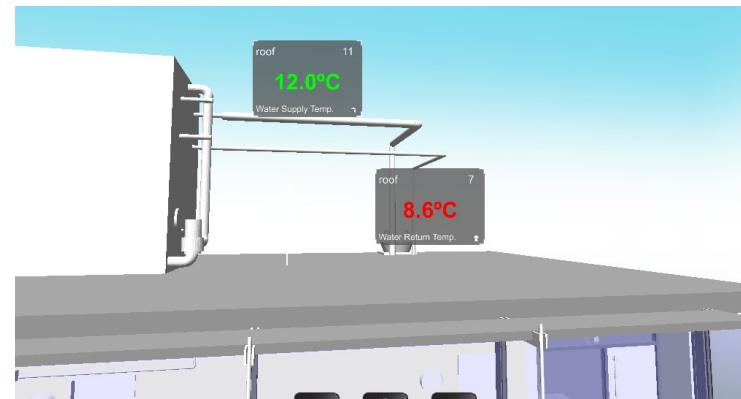
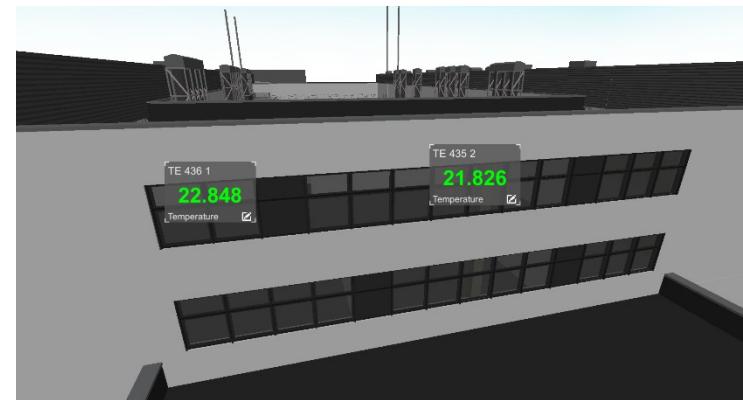


Visualizzazione dati prestazionali real time nel BIM

Interfaccia per collegare il BIM a sorgenti di dati (BMS, IoT...)

Visualizzazione delle prestazioni in real time

Possibilità di fissare soglie/allarmi (traffic light color coding)



Apps



Una soluzione mobile che permette di utilizzare e acquisire i dati di progetto sul campo

- Strutture di dati personalizzate
- Supporto alle foto, codici QR e codici a barre
- Permette il funzionamento offline
- Assegna i dati alle tue planimetrie
- Supporto di localizzazione GPS



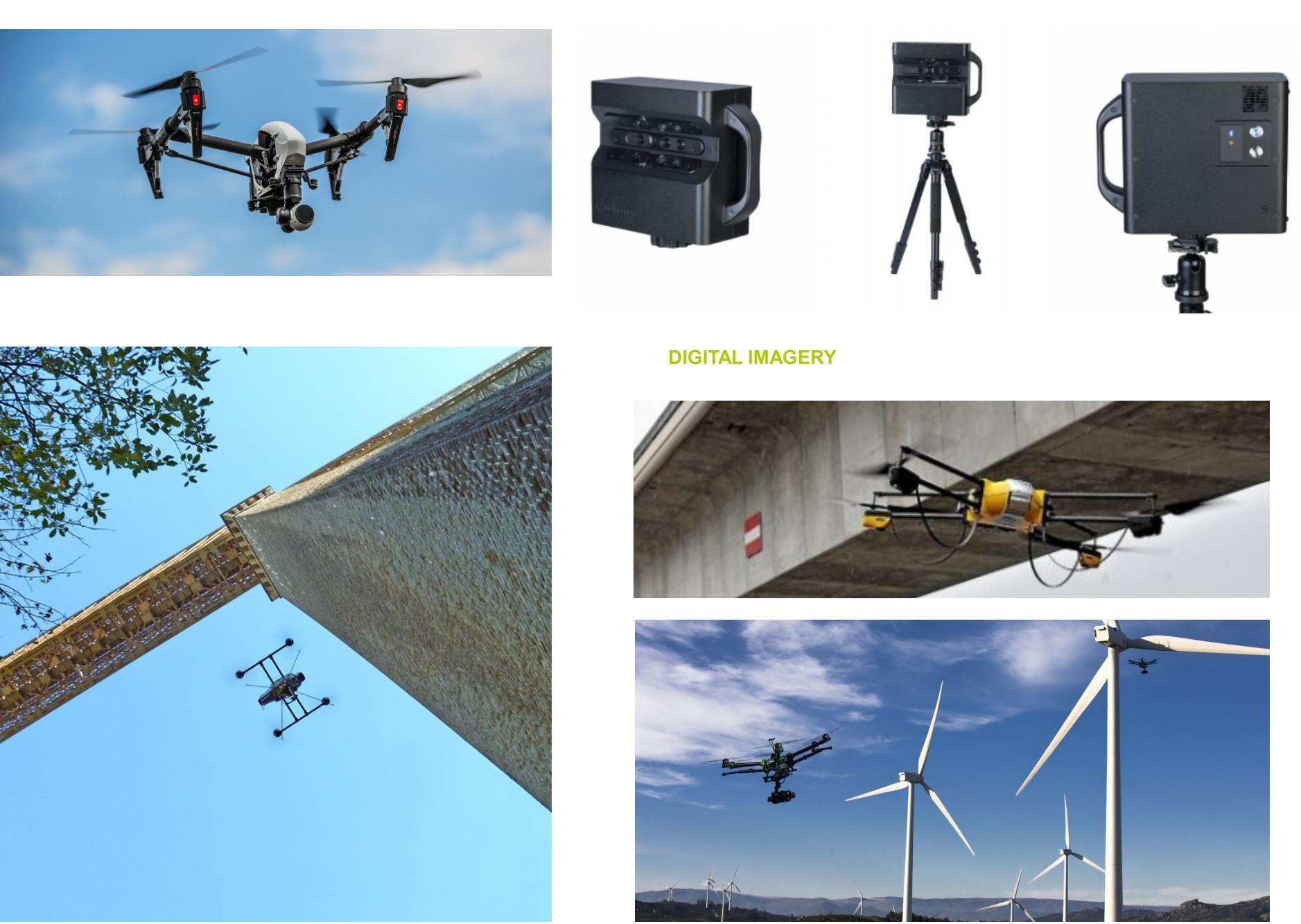
QR Scanning



Uno scanner QR portatile per le informazioni dell'asset a portata di mano. Totalmente integrato con la piattaforma Zutec

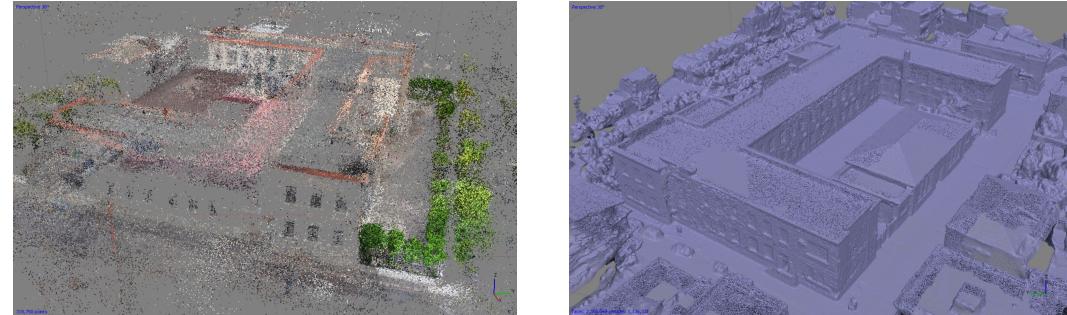
- Recupera dati dal cloud di Zutec
- Mostra foto e file allegati
- Supporto ai codici QR e codici a barre
- Recupera informazioni collegate





Green Building Council Italia

Drone Point Clouds



MATTERPORT – Nostro sito a Milano



Sta Arrivando! CORSO CAM



GBC Italia @GBCItalia · May 3

Come cambiano gli **#appalti** con l'introduzione dei **#CriteriAmbientaliMinimi** per l'**#edilizia?** Scopritelo con il nostro corso di **#formazione!**

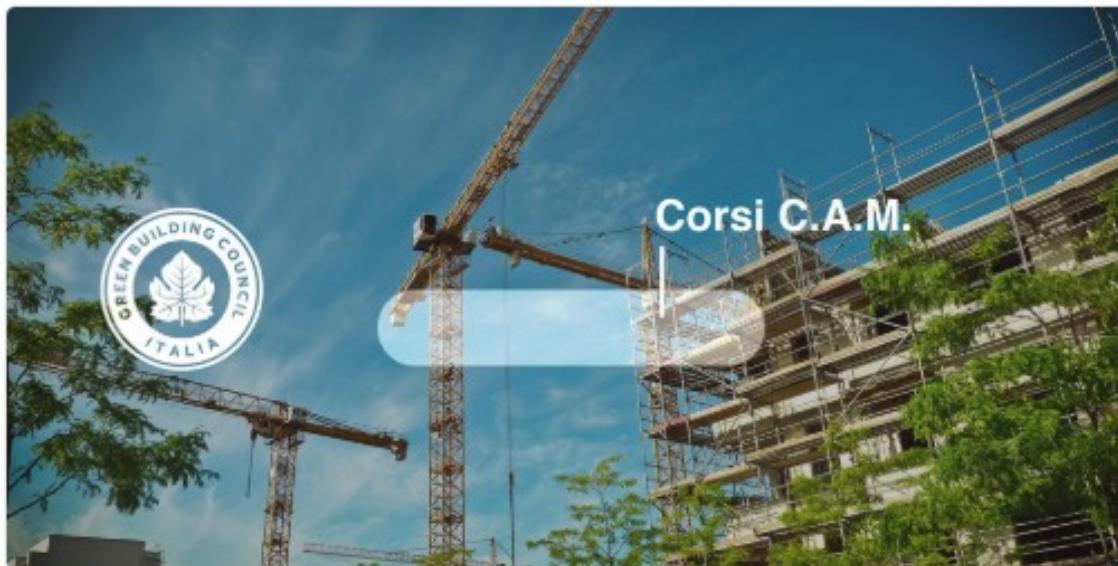
Date:

Mod. B | Online | 4-5-7-8-18 giugno 2018

Mod. C | Online/Aula | 27-28 giugno e 2 luglio 2018 gbcitalia.org/corso-cam

#CAMedilizia

Translate Tweet



JOIN US!

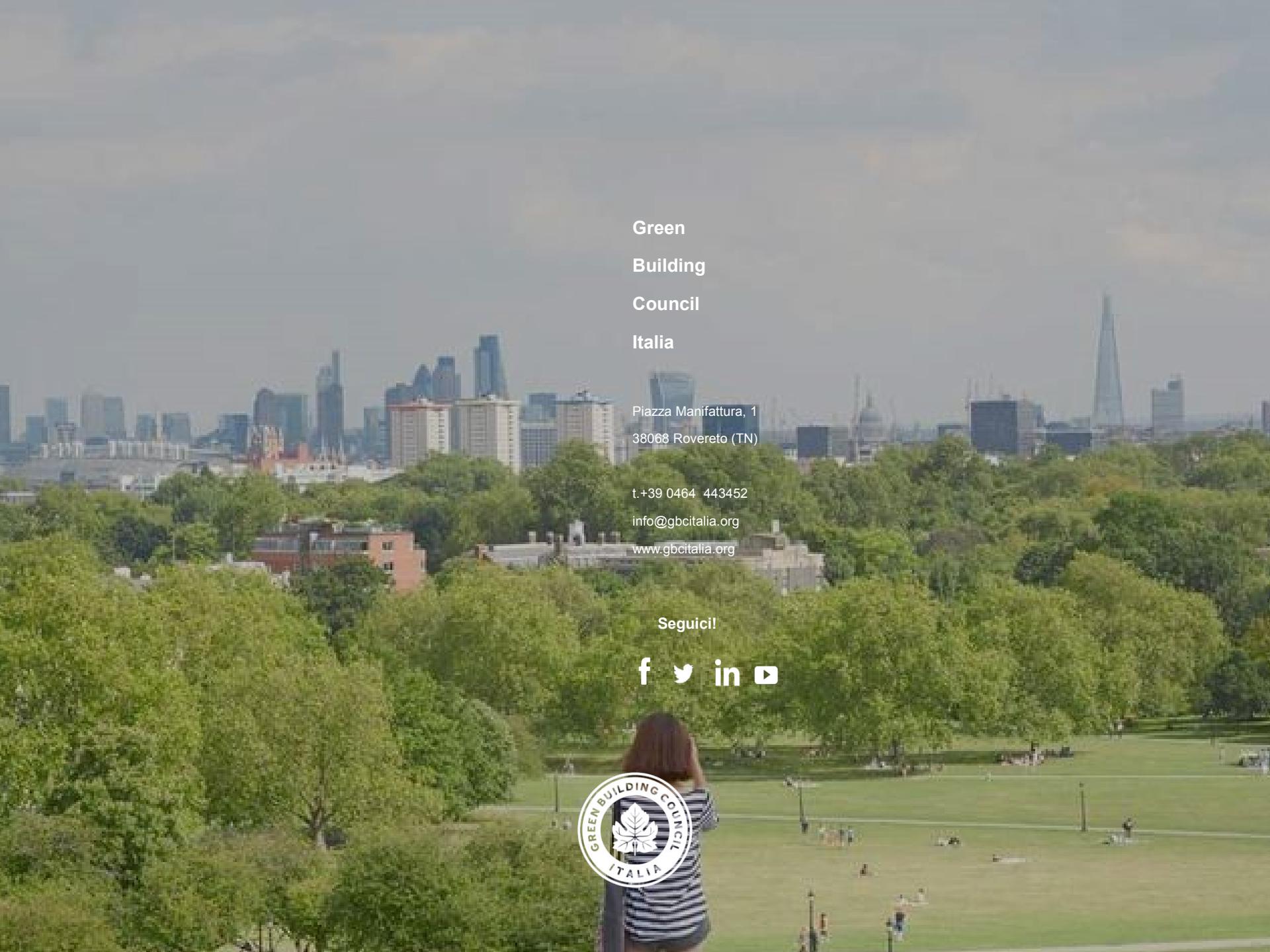


**Green
Building
Council
Italia**

www.gbcitalia.org

formazione@gbcitalia.org





A photograph of a woman with long dark hair, seen from behind, wearing a black and white horizontally striped shirt. She is standing in a park with green grass and trees in the foreground, looking out over the landscape towards a distant city skyline under a hazy sky.

**Green
Building
Council
Italia**

Piazza Manifattura, 1
38068 Rovereto (TN)

t. +39 0464 443452
info@gbcitalia.org
www.gbcitalia.org

Seguici!

