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Plug and Play Market Solutions for Renovation

28th September 2021

Renovation Cases and Tools Part I –
Paper Session



**SUSTAINABLE
PLACES 2021**

Sep. 28 - Oct. 1, 2021 | Rome, Italy

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- 1. StepUP**
- 2. Plug and Play Technologies**
- 3. StepUp Principles**
- 4. Protocol Specifications**
- 5. Technology Provider Cluster**

1

StepUP

**Solutions and technologies for the uptake of
deep energy renovation processes**



Make renovation more attractive and reliable with a new methodology based on near-real time data intelligence



Reduce the performance gap to 10% by developing an integrated life-cycle software platform



Optimise renovation investments by developing innovative financial models







Minimise time on site to 40% of current renovation onsite work by creating a market-ready modular renovation package of Plug & Play technologies



Accelerate the renovation market via an interoperability protocol for renovation solutions, enabling compatibility of StepUP with third-party market products

1. StepUp

-  **1 Plug & Play Envelope System**
Pre-assembled envelope panel integrating windows and provisions for the technical systems
-  **2 Plug & Play SmartHeat solution**
Groundbreaking technology for flexible consumption of thermal energy monitored and optimised through StepUP data tools
-  **3 Innovative financing tools for deep renovation**
Energy Performance Contracts (EPCs) based on co-investment, continuous performance measurement and management
-  **4 Software tools and platform for data collection**
Data intelligence solutions to generate a sound base for the continuous measurement and verification of the renovation

1. StepUp

1

Plug & Play Envelope System

Pre-assembled envelope panel integrating windows and provisions for the technical systems

2

Plug & Play SmartHeat solution

Groundbreaking technology for flexible consumption of thermal energy monitored and optimised through StepUP data tools

3

Innovative financing tools for deep renovation

Energy Performance Contracts (EPCs) based on co-investment, continuous performance measurement and management

4

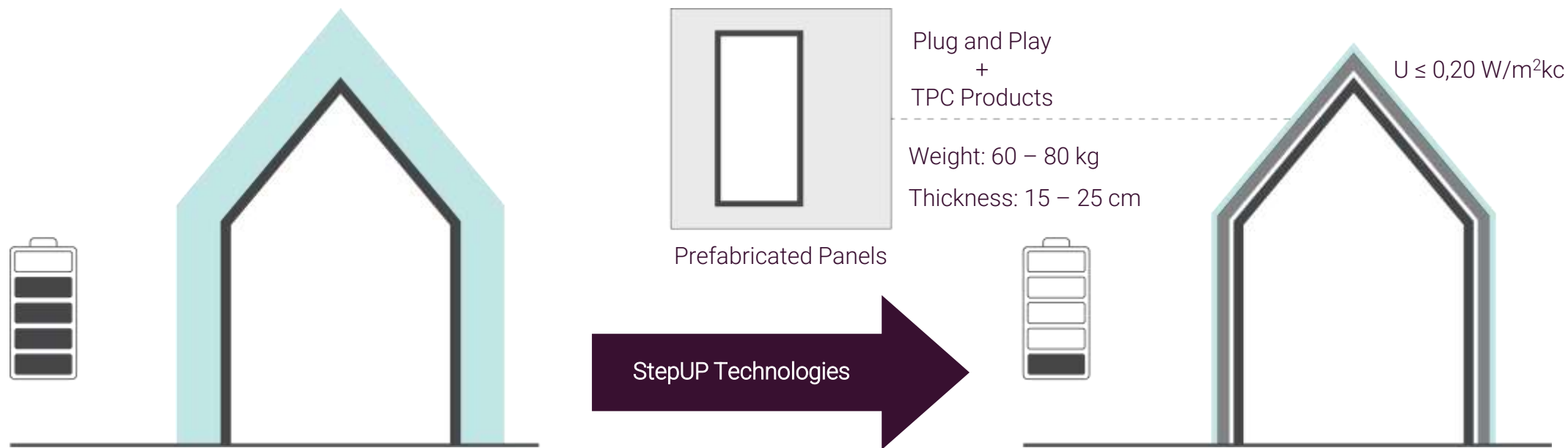
Software tools and platform for data collection

Data intelligence solutions to generate a sound base for the continuous measurement and verification of the renovation

1. StepUp

2

Step UP Technologies



2. StepUP Technologies

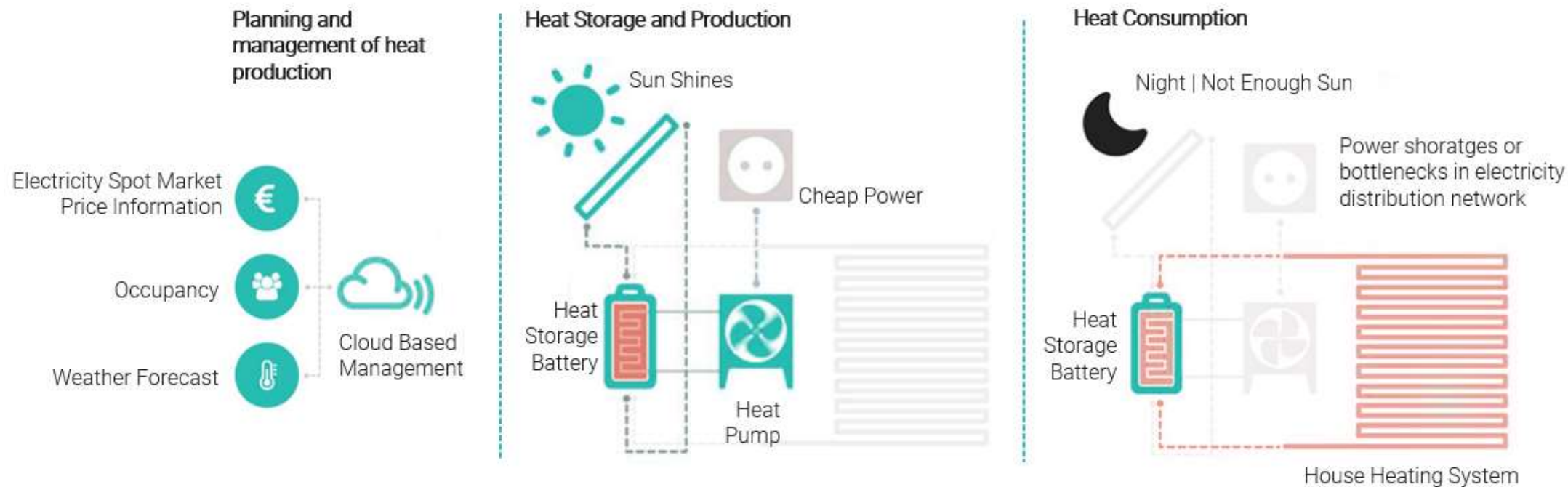
Plug and Play Envelope



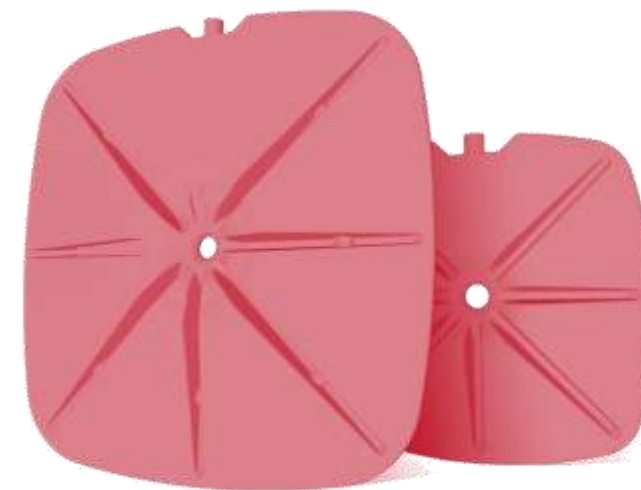
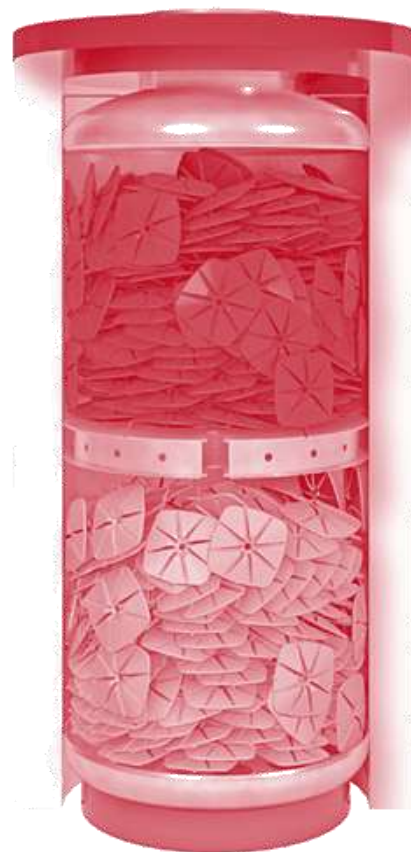
2. StepUp Technologies



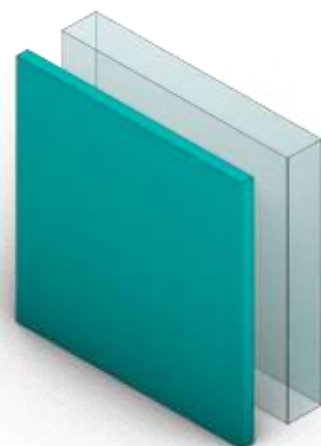
Collecting specifications and technical aspects for successful deep renovations



2. StepUp Technologies



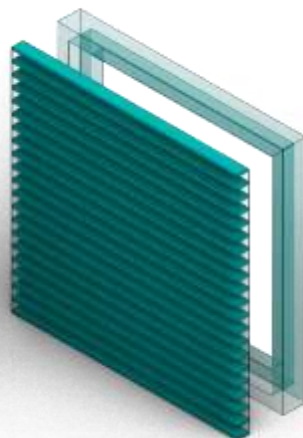
2. StepUp Technologies



External Layer

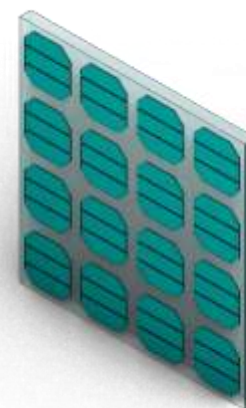


High Performance Windows



Solar Protection | Sun Shading

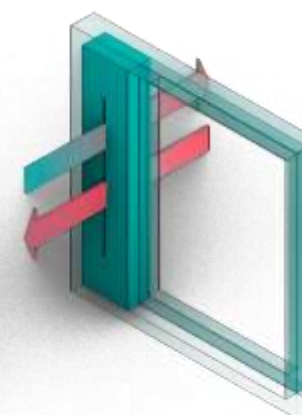
TPC Passive Technologies



PV | ST Panels



Heating | Cooling Systems



Demand Controlled Ventilation

TPC Active Technologies

2. StepUp Technologies

3

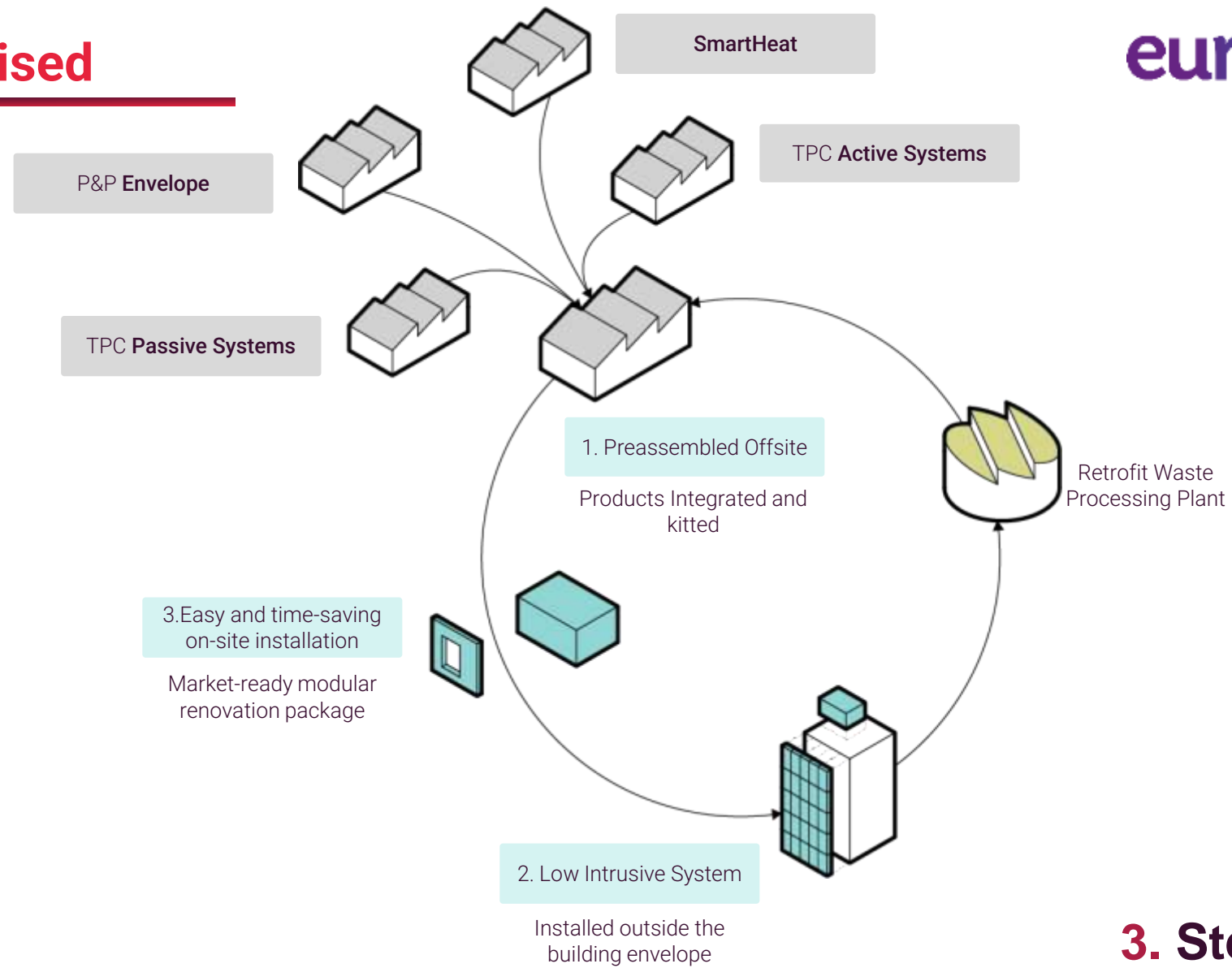
Step UP Principles

Industrialised [P1]	Customised [P2]	Compatible and Interoperable [P3]	Circularity [P4]	Open Exchange Information [P5]	Certification and Regulation [P6]
Preassembled Offsite	Adaptable to different architecture geometries	P&P Envelop and Smart Heat	Low Embodied Energy	Technical Sheets	EOTA
Low Intrusive System	Adaptable to different architectural aesthetics	P&P envelope and TPC	Lean Philosophy	2D 3D drawings	CE Marking
Easy and time-saving on-site installation		SmartHeat and TPC	Design For Disassembly	BIM Objects	Local Standards
		SmartHeat and District Heating Systems			

[C] > Components
[S] > Solutions

3. StepUp Principles

[P1] Industrialised



3. StepUp Principles

Adaptable to different
architecture geometries

Adaptable to different
architectural aesthetics



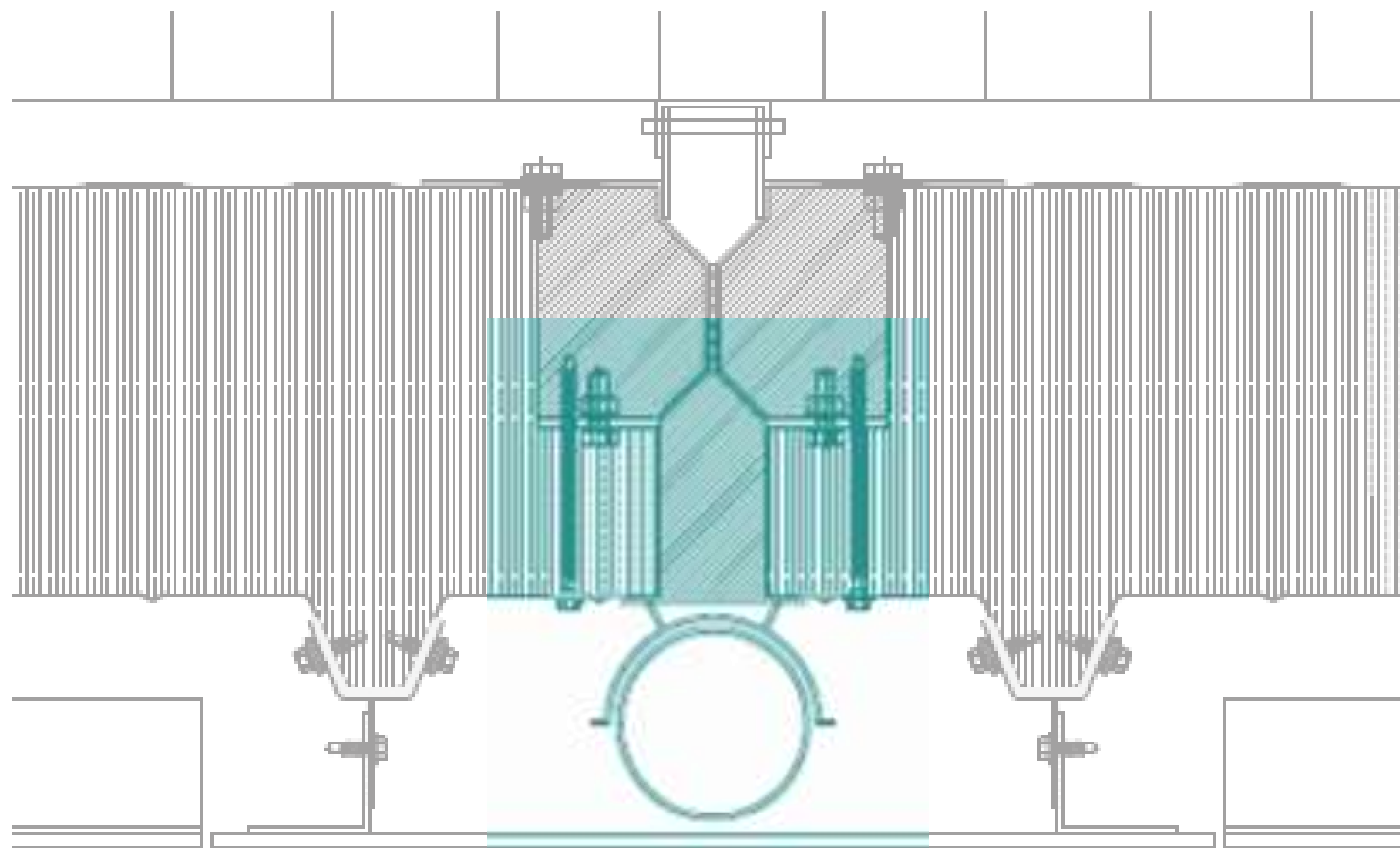
3. StepUp Principles

P&P Envelop and
Smart Heat

P&P envelope and TPC

SmartHeat and TPC

SmartHeat and District
Heating Systems

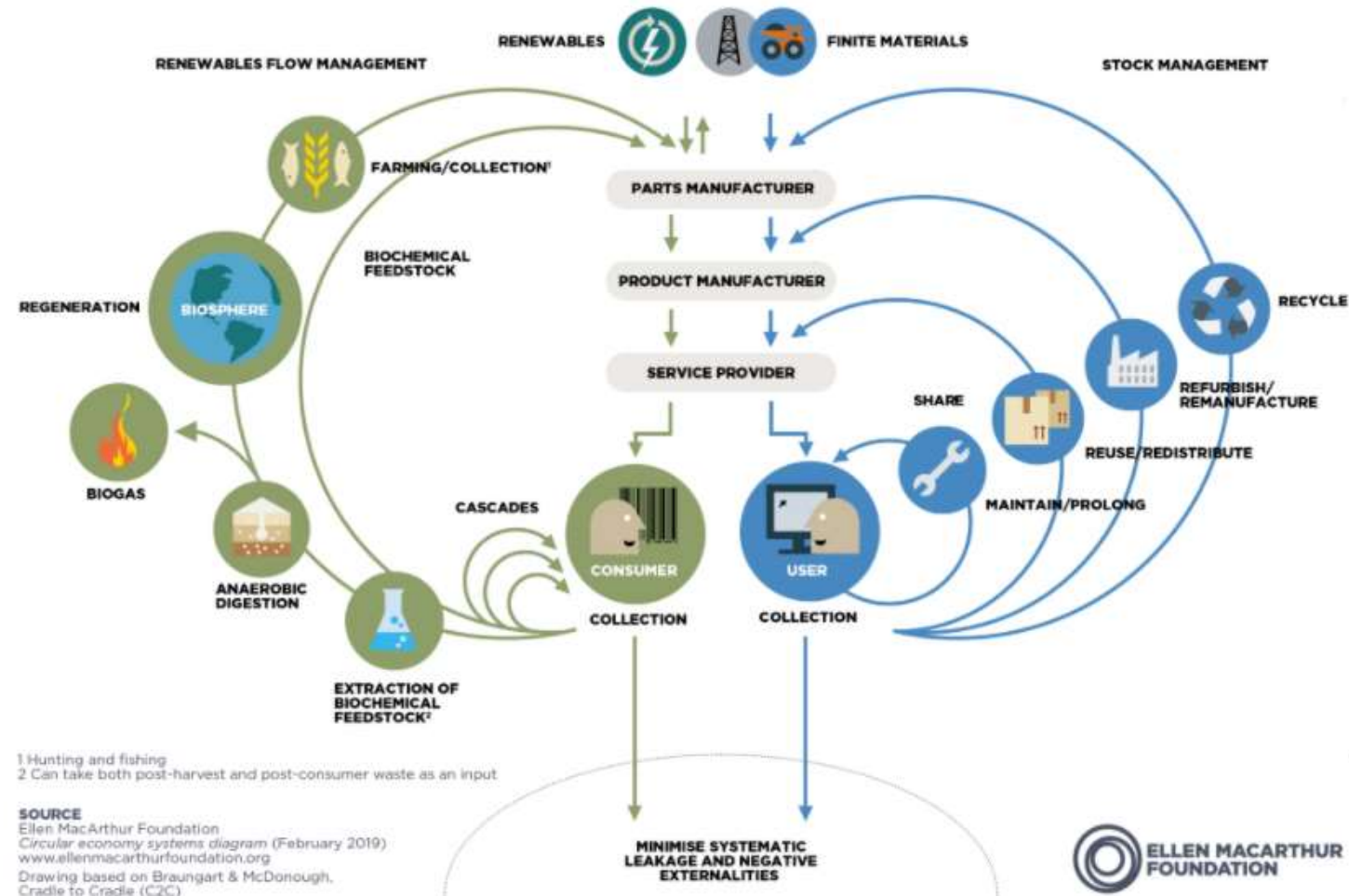


3. StepUp Principles

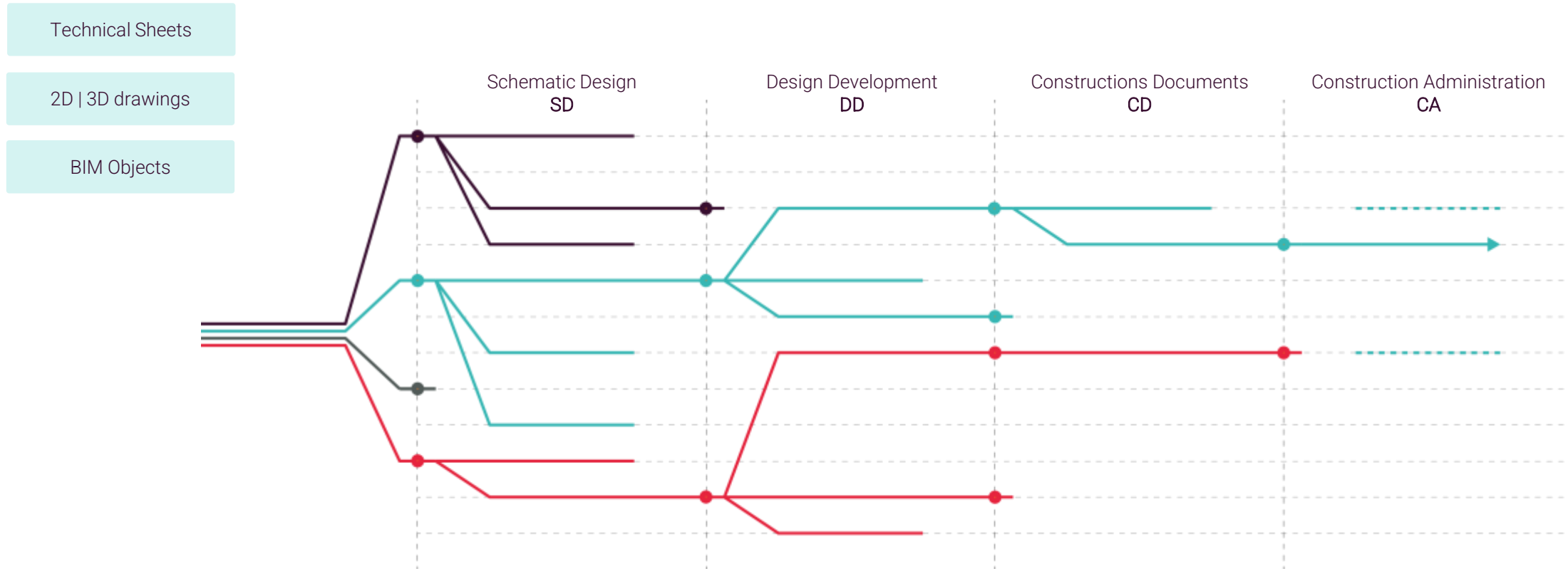
Low Embodied Energy

Lean Philosophy

Design For Disassembly



3. StepUp Principles



3. StepUp Principles



European Union Regulations

Local Standards

Environmental Certificates



Source: <https://socialinnovation.blog.jbs.cam.ac.uk/2015/04/01/one-two-free-how-natural-capital-accounting-can-help-drive-environmental/>

3. StepUp Principles

	Principles		Requirements		[S]	[C]
[P1] Industrialised	P1.1	Preambled Offsite	R1.1	Delivery of components in kits	X	X
	P1.2	Low Intrusive System	R1.2	Installed outside the building envelope	X	X
	P1.3	Easy and time-saving on-site installation	R1.3	Modular renovation package	X	
[P2] Customised	P2.1	Adaptable to different architectural geometries	R2.1	Identification of panel configuration	X	
	P2.2	Adaptable to different aesthetical design	R2.2	Aesthetical options	X	X
[P3] Compatibility and Interoperability	P3.1	P&P envelope and SmartHeat	R3.1	Integration of services and sensors within the passive solution	X	X
	P3.2	P&P envelope and TPC	R3.2	Adapt to P&P modularity and characteristics		X
	P3.3	SmartHeat and TPC	R3.3	Physical requirements active TPC components		X
	P3.4	SmartHeat and District Heating System	R3.4	Tailored heating strategies	X	
[P4] Circularity	P4.1	Low Embodied Energy	R4.1	Life Cycle Assessment	X	
	P4.2	Lean Philosophy	R4.2	Lean Construction	X	X
	P4.3	Design for Disassembly	R4.3	Create deconstruction and maintenance plans	X	X
[P5] Open Exchange Information	P5.1	Technical Sheets	R5.1	P&P Technical Sheets		X
	P5.2	2D 3D drawings	R5.2	Drawing exchange format .dxf		X
	P5.3	BIM objects	R5.3	5D BIM objects	X	X
[P6] Certification and Regulation	P6.1	EU Regulations	R6.1	OE Local Regulations		X
	P6.2	Environmental Certificates	R6.2	EPD		X

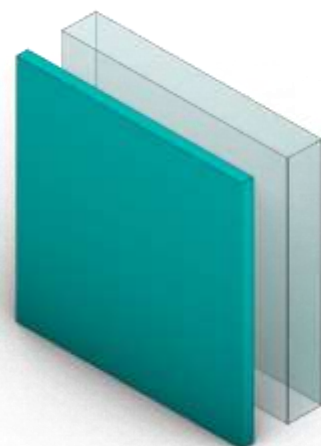
4

Step UP Specifications

Mock-up Isopan Ibérica

Phase I – August 2021

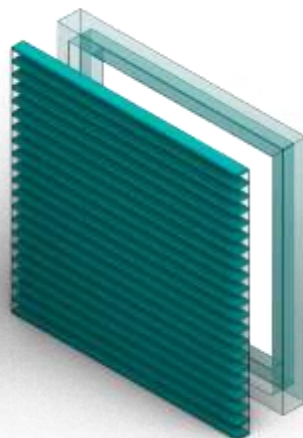




External Layer

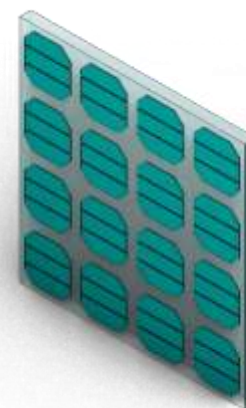


High Performance
Windows



Solar Protection | Sun
Shading

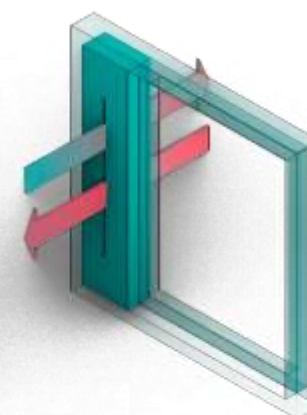
TPC Passive Technologies



PV | ST Panels



Heating | Cooling
Systems



Demand Controlled
Ventilation

TPC Active Technologies

4. StepUp Specifications

External Layer	High Performance Windows	Solar Protection Sun Shading	PV ST Panels	Heating Cooling Systems	Demand Controlled Ventilation		
6.1	6.2	6.3	6.4	6.5	6.6		
X	X	X	X	X	X	R1.1	Delivery of components in kits
X	X	X	X		X	R1.2	Installed outside the building envelope
X	X	X	X		X	R2.2	Aesthetical options
	X	X	X	X	X	R3.1	Integration of services and sensors within the passive solution
X	X	X	X	X	X	R3.2	Adapt to P&P modularity and characteristics
			X	X		R3.3	Physical requirements active TPC components
				X		R3.4	Tailored heating strategies
X	X	X	X	X	X	R4.2	Lean Construction
X	X	X	X	X	X	R4.3	Create deconstruction and maintenance plans
X	X	X	X	X	X	R5.1	P&P Technical Sheets
X	X	X	X	X	X	R5.2	Drawing exchange format .dxf
X	X	X	X	X	X	R5.3	5D BIM objects
X	X	X	X	X	X	R6.1	CE Local Regulations
X	X	X	X	X	X	R6.2	Environmental Product Declaration

4. StepUp Principles

5

Technology Provider Cluster

Role (output) and Benefits (input)



O_01

**Protocol
Feedback**



I_01

**Networking,
Exposure and
Visibility**



I_02

**Product Testing
and Verification**



I_03

**Innovative
Environment**

5. Technology Provider Cluster

StepUP

for Technology
Providers Cluster
(TPC)



<https://www.stepup-project.eu/tpc-getinvolved/>

THANK YOU!



www.stepup-project.eu



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[StepUP Project](#)



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