



# Achieving near Zero and Positive Energy Settlements in Europe using Advanced Energy Technology H2020 - 678407



## Construction Management, Cost Management and Implementation of the Innovative Technologies

Shabtai Isaac, BGU

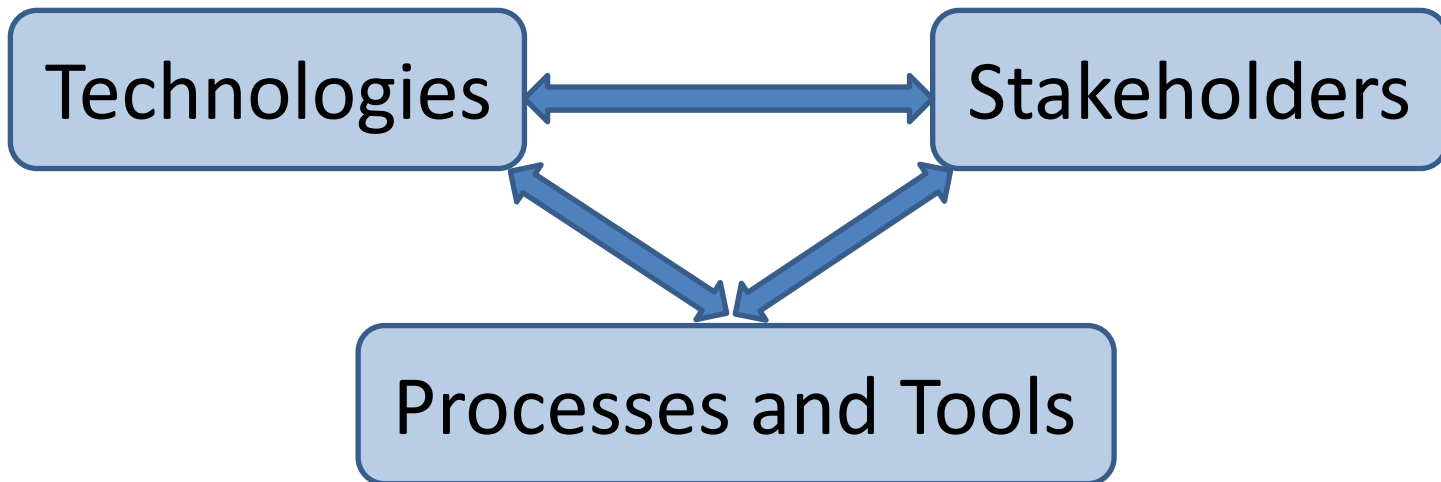


# ZERO-PLUS - Management

- Objective: reduce initial costs of NZE buildings by at least 16%
- Approach: settlement-level application of NZE goals
- Challenge: larger scope brings increased complexity, which has to be carefully managed

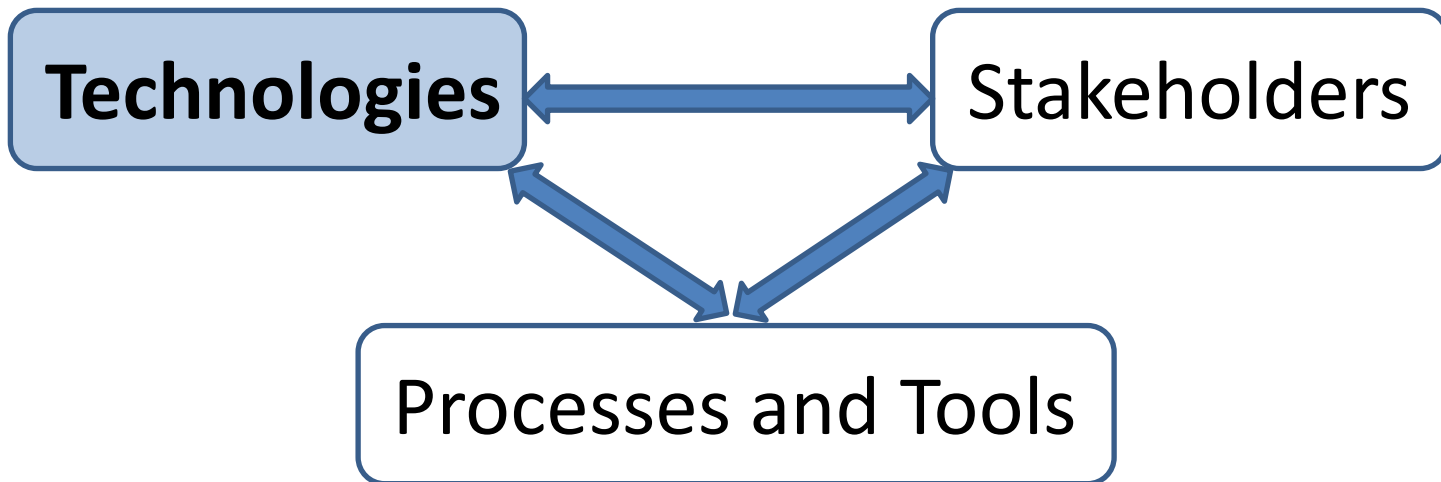
# ZERO-PLUS - Management

Careful integration and coordination of technologies, processes, tools and stakeholders

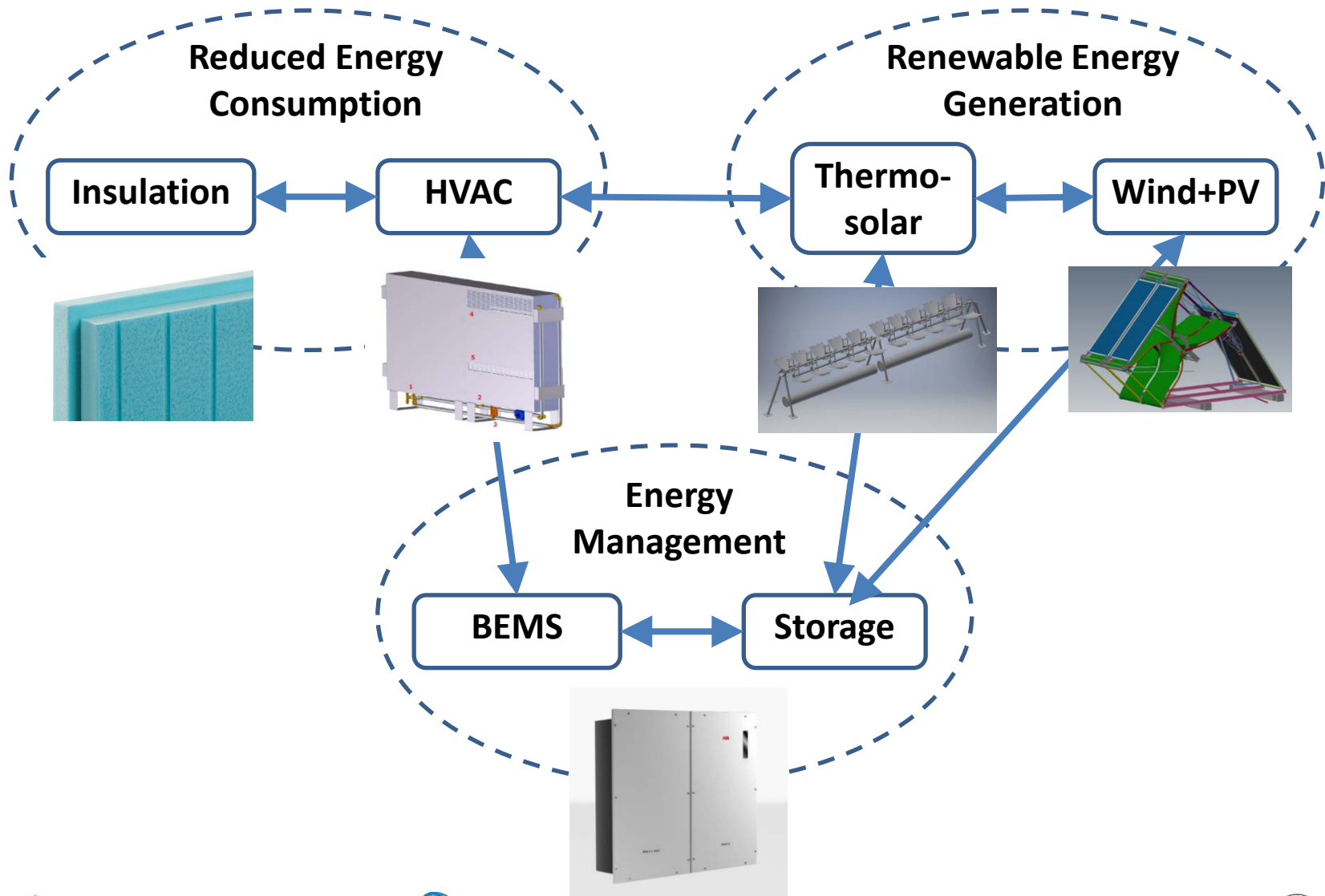


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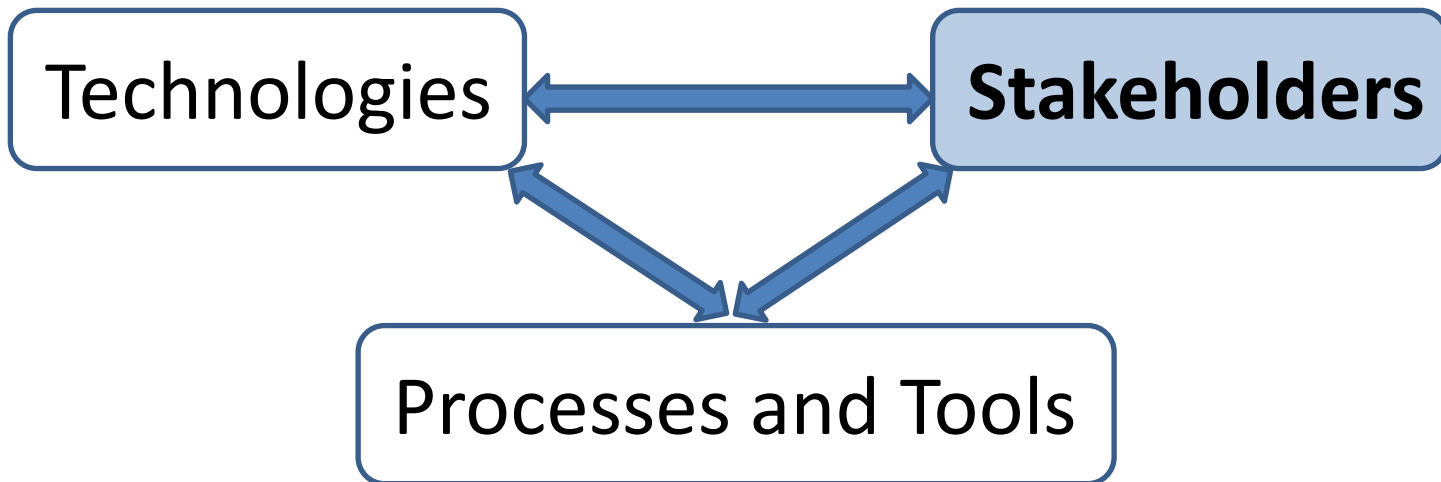


# Technologies

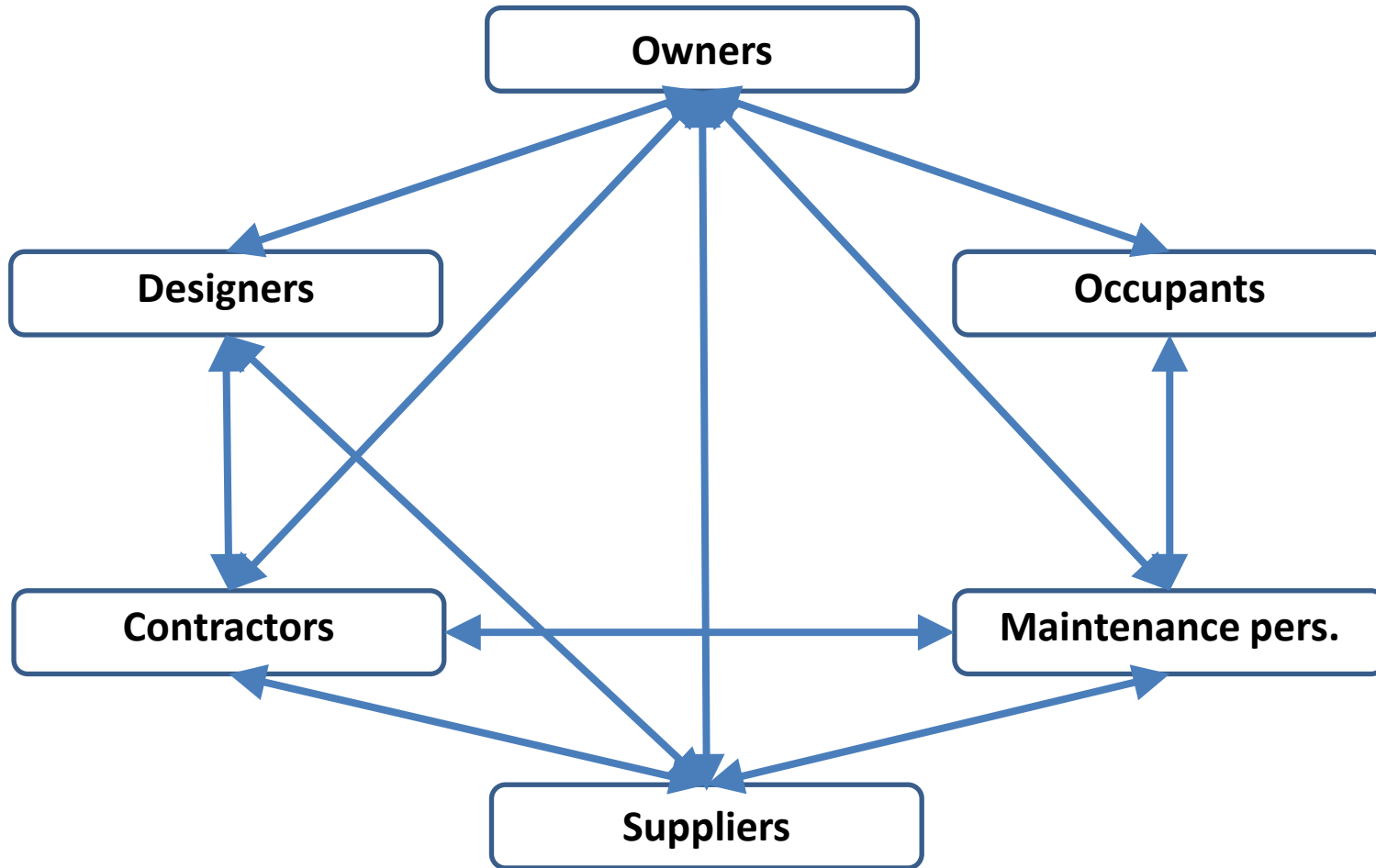


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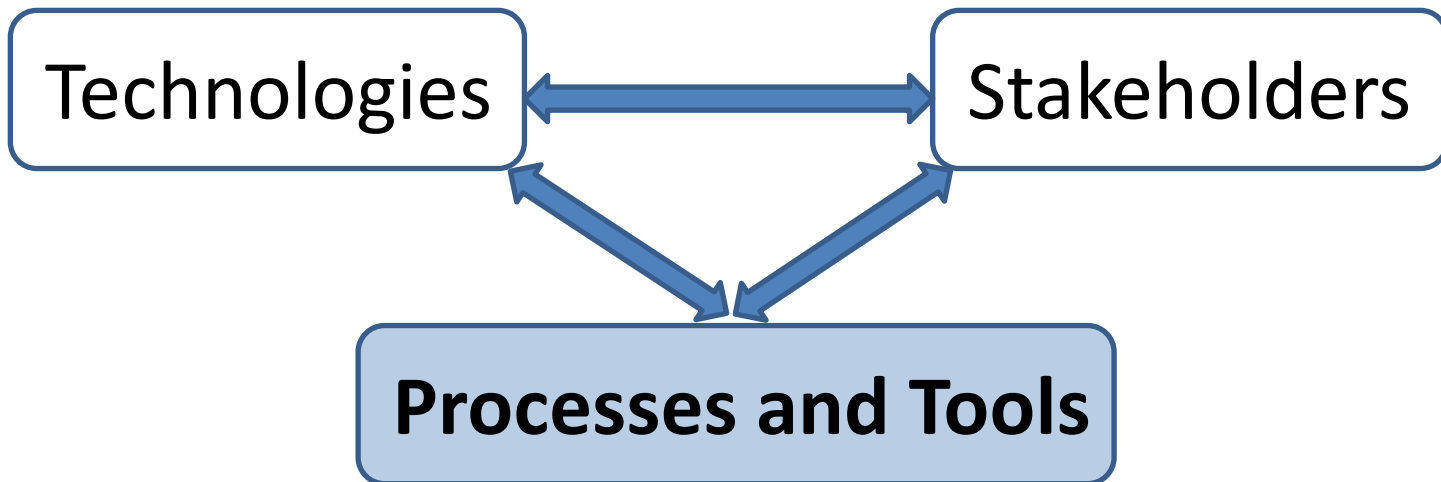


# Stakeholders



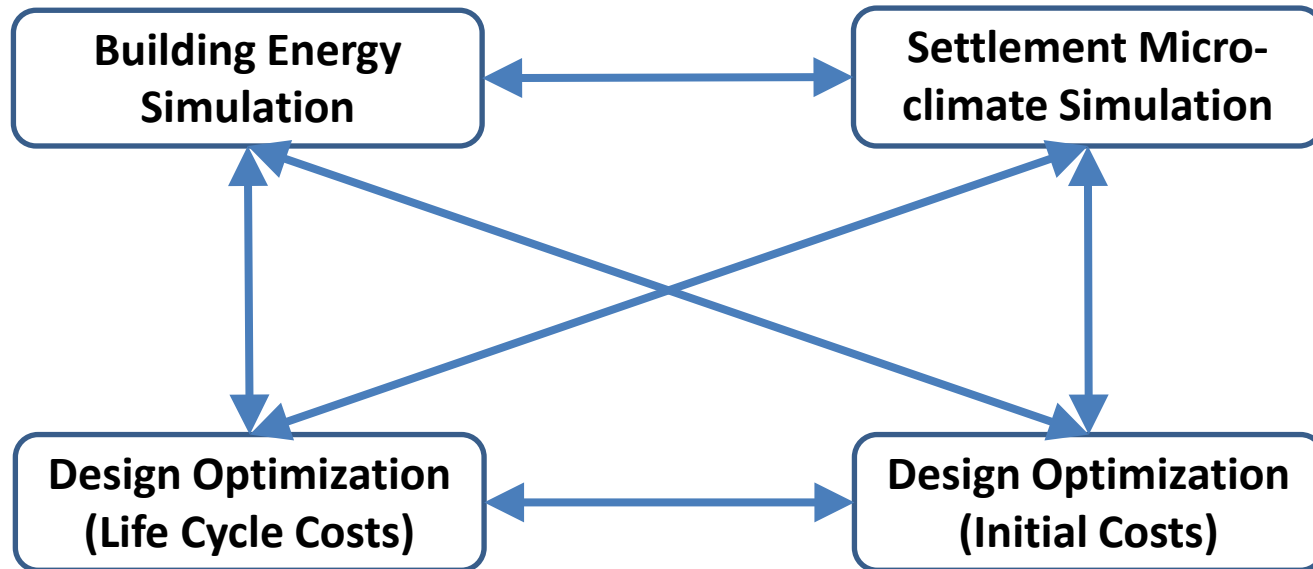
# ZERO-PLUS - Management

Careful integration and coordination of technologies, processes, tools and stakeholders

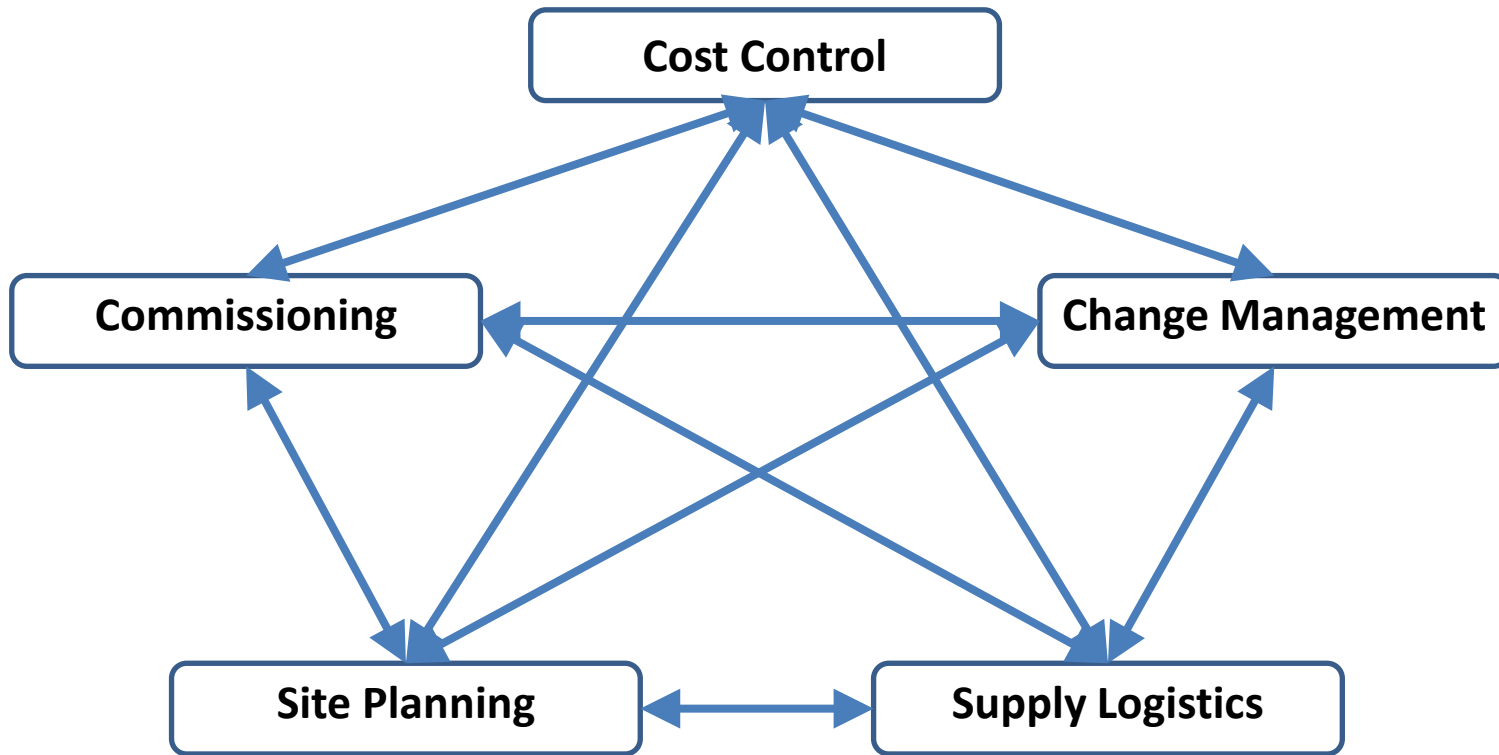




# Design Processes and Tools



# Management Processes and Tools



# Management Processes and Tools

## Task

T6.1

**Design Integration**

## Tool

T6.2

**Cost Control**

**Cost Control Tool**

T6.2

**Change Management**

**Change Management Tool**

T6.3

**Supply Logistics**

**JIT Supply Logistics Plan**

T6.4

**Site Planning**

**Site Planning Process**

T6.5

**Implementation**

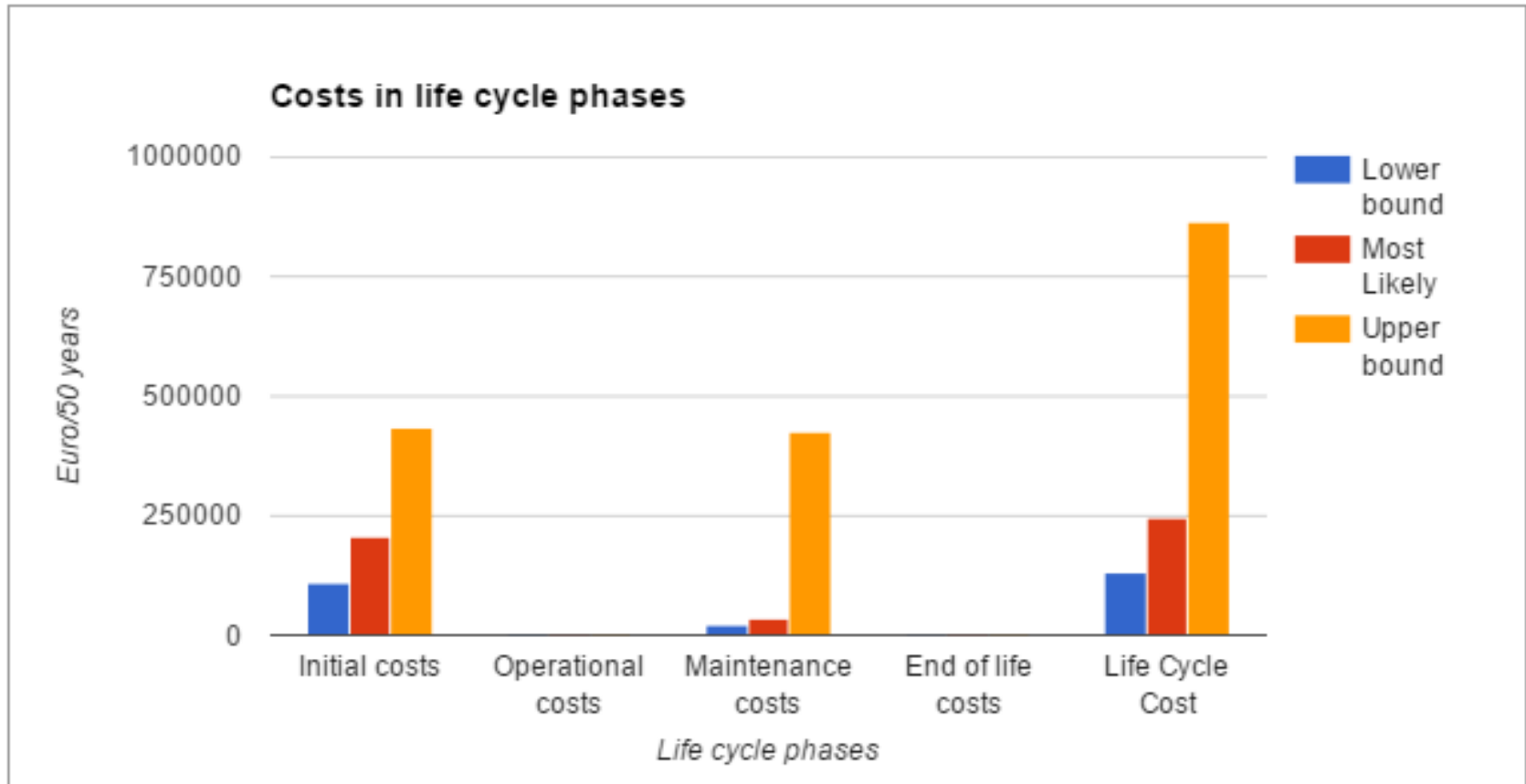
**Progress Tracking Platform**

T6.6

**Commissioning**

**Commissioning Plan**

# T6.1 Design Management



# T6.2: Cost Management

Instructions for use ZE reference building		Cyprus ZP Design			Instructions:	Please fill the empty cells in the tables that have white background and are <b>NOT</b> surrounded by a broken line.	
Summary							
KPI (Key Performance Indicator)	ZP Design	Required	Requirement Status	Relevant Calculations	Zero-Energy Reference building	ZERO-PLUS building	
Reduction percent of total average cost (€/m <sup>2</sup> ) compared with reference	10.97%	≥16%	Not Fulfilled	Total average cost of all building energy technologies (€/m <sup>2</sup> )	433.10	385.58	
Annual regulated energy consumption (kWh/m <sup>2</sup> per year)	-25.82	≤20	Fulfilled	Annual regulated energy consumption (kWh/m <sup>2</sup> per year)	-25.60	-25.82	
Annual total average energy production (kWh/m <sup>2</sup> per year)	53.01	≥50	Fulfilled	Annual total average energy production from building integrated RES (kWh/m <sup>2</sup> per year)	61.30	0.00	
				Annual total average energy production from community integrated RES (kWh/m <sup>2</sup> per year)		53.01	
26					0.00	0.00	performance data
27					0.00	0.00	Please provide energy performance data
28					0.00	0.00	Please provide energy performance data

# T6.2: Cost Management

- Facilitate timely, consistent and comprehensive framework for **preparation of cost assessments**.
- Provide platform for **analysis** of assessed costs and **tracking their status**.
- **Cost Control Tool**
- Facilitate early identification of **implications of changes on project cost**, by linking the CC tool with a Change Management tool.

# T6.2: Cost Management

## Step 4

### Impact of the change on the project's Key Performance Indicators (KPI)

Please check the impact of the proposed change on the project's Key Performance Indicators by clicking the "Click here" button and then proceed to step 5

KPI	Value before change	Status before change	Value after change	Status after change



## Step 5

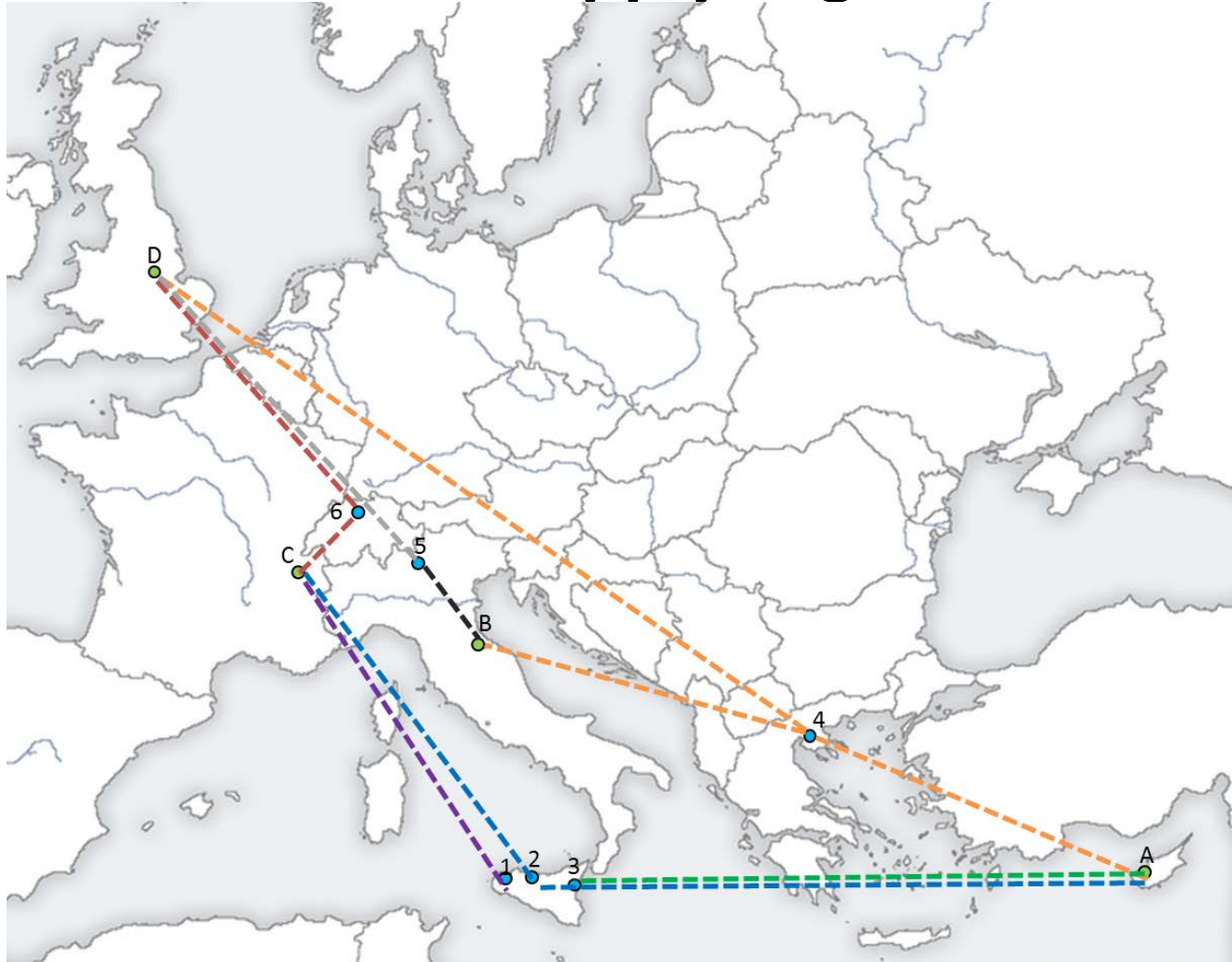
### Impact of the change on other ZP technologies

Please obtain the impact of the proposed change on other ZP technologies (as provided by the project owner) by clicking the "Click here" button and then proceed to step 6

Impacted technology	Type of connection	Description



# T6.3: Supply Logistics



● Site Location  
 A: Cyprus B: Italy C: France D: UK

● Supplier Location  
 1: SBSKin 2: IDEA 3: Solarinvent 4: Fibran 5: ABB 6: ANERDGY



# T6.3: Supply Logistics

Complicating factors, such as:

- Costs of shipping, travel of supporting team
- Direct acquisition / indirect through local contractors
- Responsibility, warranty
- Local certification
- Etc.

# T6.5: Implementation of the ZP technologies

Progress Tracking - Granarolo, Bologna, Italy  
Changes are highlighted

	A	B	C	D	E
1	<b>Fibran Insulation</b>				
2	<b>Stage No.</b>	<b>Stage Name</b>	<b>Planned Date of Completion</b>	<b>Revised Date</b>	<b>Reason for Revision</b>
3	<b>1</b>	<b>Specification:</b>			
4	1a	Detailed design prepared and approved.	22/09/2017		
5	1b	Request for quotation completed by case study owner.	20/10/2017		
6	1c	Bid given by technology provider.	27/11/2017		
7	<b>2</b>	<b>Procurement:</b>			
8	2a	Subcomponents ordered by technology provider.	N/A		
9	2b	All subcomponents available at the technology provider's site.	N/A		
10	2c	Product pre-assembled.	N/A		
11	2d	Product tested by technology provider.	N/A		
12	2e	Product ready for shipping.	29/11/2017		
13	2f	Product shipped.	30/11/2017		
14	2g	Product supplied to site.	01/12/2017		
15	<b>3</b>	<b>On-site Activities:</b>			
16	3a	On-site preparatory works completed.			
17	3b	Product installed.	06/12/2017		
18	3c	Functional testing completed.			
19	3d	Product connected to M&E infrastructure and monitoring system.			
20	3e	System tested and delivered to owner.			
21					

# T6.5: Implementation of the ZP technologies

The screenshot shows a cloud storage interface with a dark blue header bar containing a cloud icon and the text 'Files'. Below the header, a sidebar on the left lists navigation options: 'All files', 'Favorites', 'Shared with you', 'Shared with others', and 'Shared by link'. The main content area displays a breadcrumb path: 'CASE STUDIES - documentation exchange' > 'UK' > '+'. Below the path, there is a table of folders with a 'Name' column header. The folders listed are 'D6.1', 'Execution', 'General', 'Planning', and 'Tendering'. At the bottom of the folder list, it indicates '5 folders'.

Name
D6.1
Execution
General
Planning
Tendering

5 folders

# T6.6: Commissioning of the ZP technologies

- Commissioning of **ZP technologies**
- Provide owners with **guidelines** for preparation of detailed commissioning
- **Ensure performance of technologies** in line with owners' requirements
- Building commissioning plan

# T6.6: ... Technologies

**Technology**  
**Monitoring platform:**

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- 2 Complete ir
- 3 Complete ir
- 4 Complete p
- 5 Test proper
- 6 Complete te
- 7 Complete ir
- 8 Complete te

**Building diagnostics:**

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- 2 U-value tes
- 3 Additional t

**1st RES:**

- 1 Complete ir
- 2 Complete te
- ...

**Nth RES:**

- 1 Complete ir
- 2 Complete te

**Access to Web-GIS:**

- 1 Test acces:
- 2 Test acces:

	A	B	C	D	E	F	G	H	I
1	Measurement	eg. Infrared thermography							
2	Instrument used	eg. Infrared camera							
3	Model Number	eg. flir Thermacam B2							
4	Ownd by	eg. TUC							
	Location of the instrument during the measurement	eg. outside/around of the house							
5									
6	Has the measurement been recorded on Web-GIS platform?	YES/NO	If Yes write in Measurement column below: Web-GIS platform. If No insert the measurement						
7									
8	Date/Time	Measurement	measurement unit	Notes					
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the Web-GIS platform

# Lessons Learned

For example:

- Need for flexible process that can accommodate frequent **changes**, yet ensure adherence to KPIs
- Challenges in obtaining **permits** from local authorities
- Challenges in installing **shared** energy generation and control technologies