

# Lean construcción

- **Modulo 4:**
  - Nivel de implantación

A large, light gray, handwritten-style wordmark of the word "lean" in lowercase letters, positioned in the lower right area of the slide.

# Objetivo del modulo de formación

- Provide to the professionals of construction a **guide and methodology that allows them to transfer and implement** lean construction in the context of their company.



lean

- 1. Interest – Perimeter**
- 2. Identify the key and necessary actors**
- 3. Adapt company policy and strategy**
- 4. Define the project**
5. Develop team's skills
6. Learning by doing
7. Implementation by stage
8. Standardize for deployment.

# ¿Why "re-invent himself"?

*The markets signals ...*

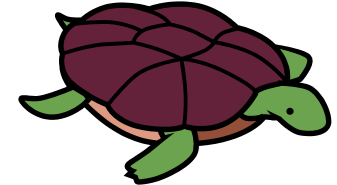


*... Sometimes they are obvious*

# Organizations / Nature

---

Some species **adapt** to changes in the environment,  
continuous process for millions of years.



Others could not handle the suddenly  
changes in climate and became **extinct**.

In the development of species on the planet, only the fittest managed to  
survive the changes in the environment. The excavations, the museums and  
the books show us the species that do not exist.

# We can't keep doing the same thing

...



*... And expect different results*

# 1 – Interest – Perimeter

---

## • Why will we need to apply in this project lean management?

- For improvement needs of level service or quality customer.
- Saving's needs €
- Imposed by costumer or onwer project.
- Innovate to grow or survive

# 1 – perimeter?.

---

## Lean construction for who?

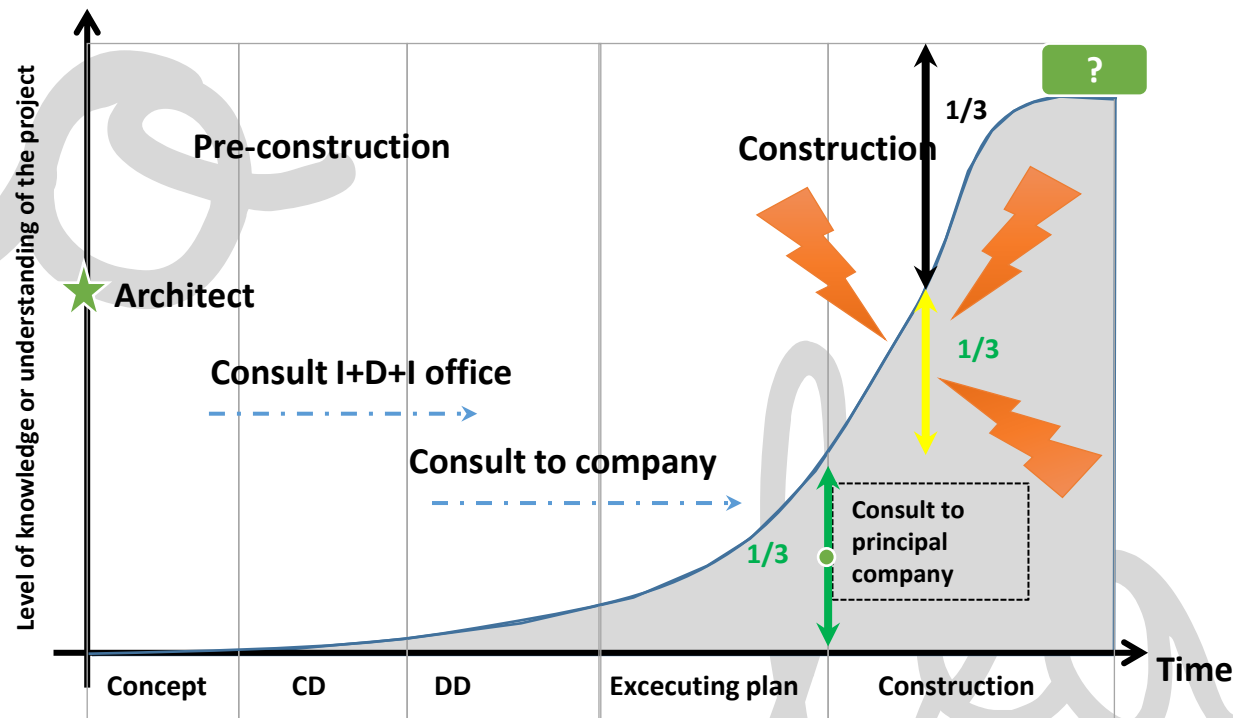
- Perhaps the first experiences of lean construction were made by the construction companies and during the project's construction. But with the current contract's conditions, it may be the owner who has more benefits for the client to apply lean construction, at the moment to delivery the final project.





# 1 – perimeter?.

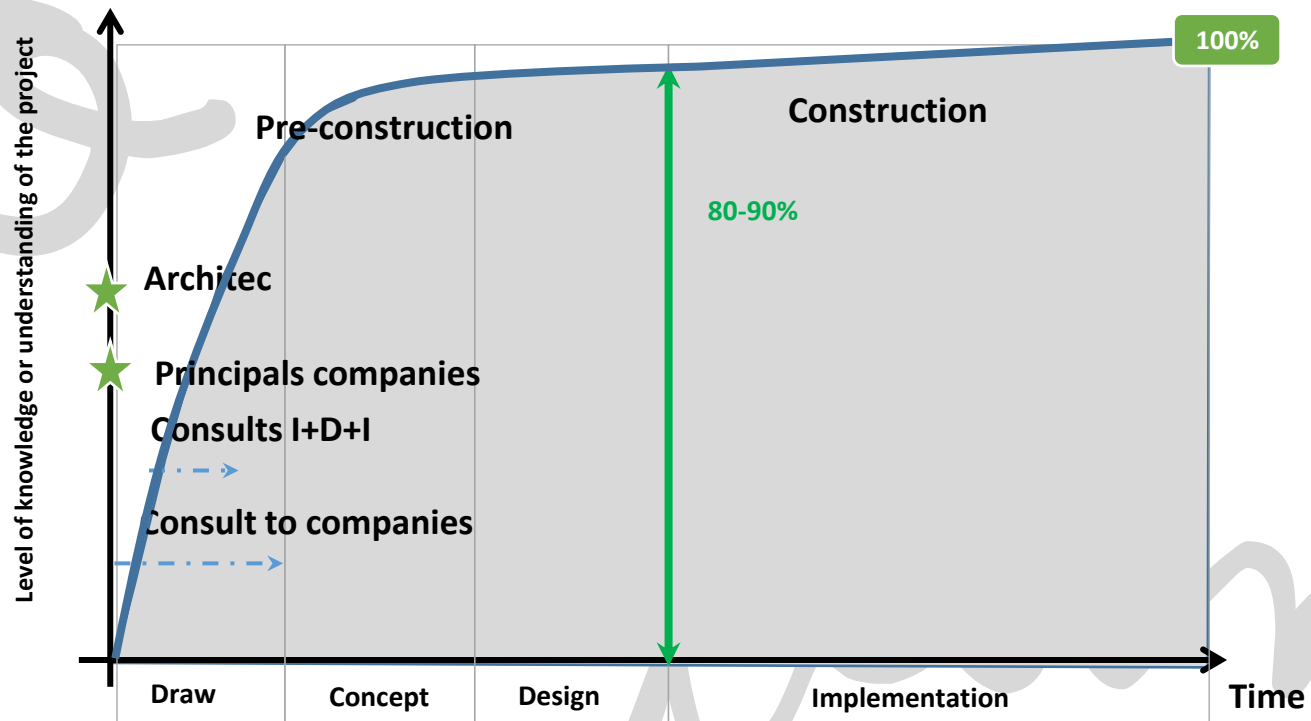
Evolution of the level of understanding of a project with a "traditional" delivery methodology.



CD= Criteria design  
DD = Details Design  
BET = Bureau d'Etudes Technique

# 1 – Perimeter?.

Evolution of the comprehension's level of a project with an "IPD" methodology of integrated delivery.



IPD Integrated Project Delivery

# 1 – perimeter?.

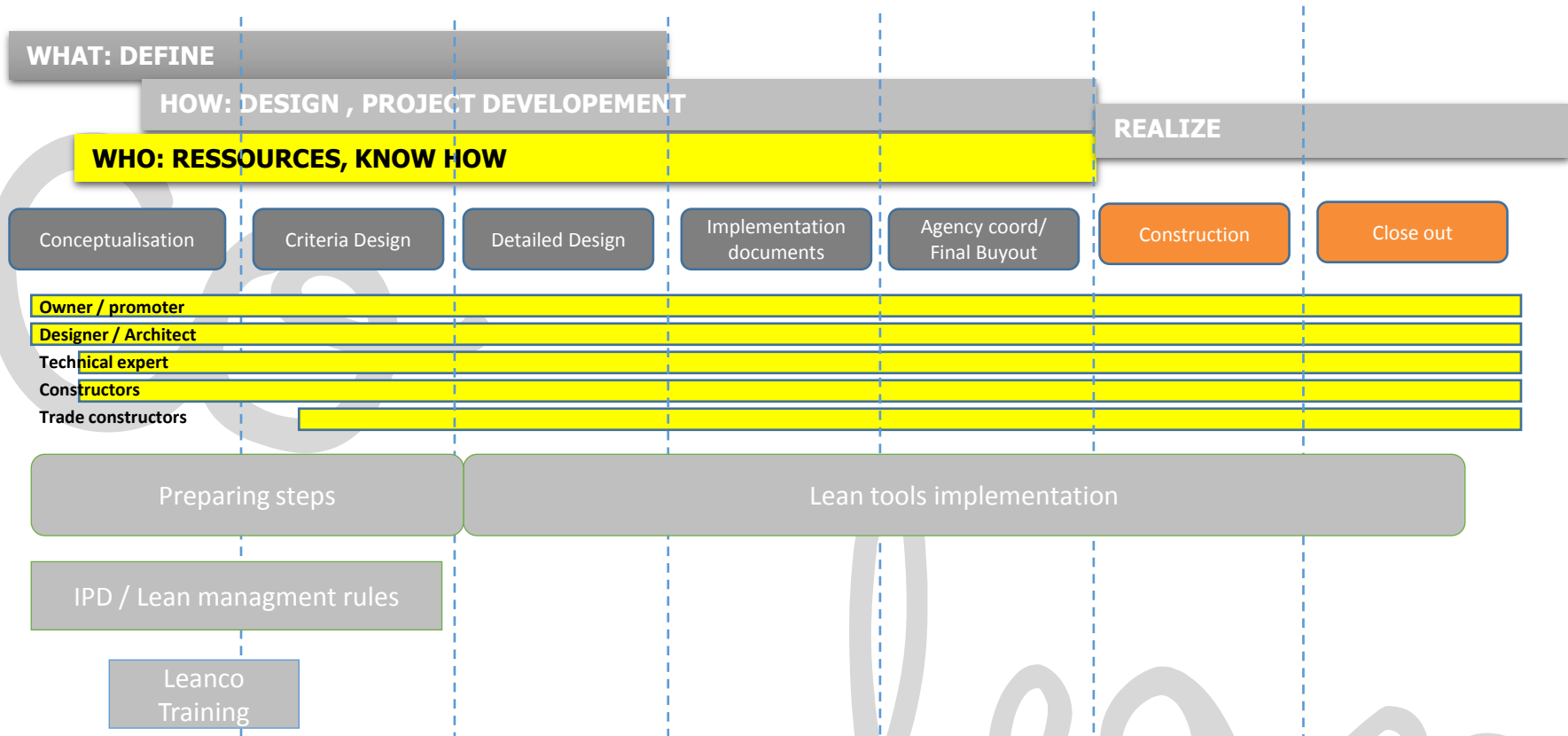
---

Keys points at the moment to define the perimeter:

- As soon as possible = Since IPD
- Select a manageable project for the pilot project.
- Project with pre-agreement of the actors.
- Do not limit yourself to a small area.

It is very difficult to do a pilot test only in one stage of a project, we will think that method of work, it is necessary to deploy during all the project.

# 2 – Identify the key and necessary actors



## 2 – Identify the key and necessary actors



Ressource	Leanco Manager / Project manager						
Mission:	Coordination of the project and promoter of lean management in the project. Manage the different actors to guarantee the goals set in the project.						
Step project	conceptualisation	Criteria design	Detailed design	Implementation documents	Final buyout	Construction	Close out
Implication Leanco	100%	100%	100%	100%	100%	100%	100%

### Relation with leanco:

- Expert of lean tools. Provide formations and supports for this tools.
- Support the different actors in their implementation throughout the project.

# 2 – Identify the key and necessary actors



Ressource	Onwer / Promoter						
Mission:	The promoter of the project construction in all aspects. Express the customer's need.						
Step project	conceptualisation	Criteria design	Detailled design	Implementation documents	Final buyout	Construction	Close out
Implication Leanco	100%	100%	50%	50%	50%	25%	50%

## Relation with leanco:

- It should be the co-driver with the builder to start the initiative to implement a lean management system in the project.
- In all phases of the project, give support and guide the lean construction project with the help of leader lean project.
- Concrete the real needs of the costumer and transmit them through all phases of the project.

# 2 – Identify the key and necessary actors

Ressource	Architect / designer						
Mission:	Define and do the construction project. Control that the work excuted is conforms that the project says.						
Step project	Conceptualisation	Criteria design	Detailled design	Implementation documents	Final buyout	Construction	Close out
Implication Leanco	75%	75%	75%	100%	25%	25%	50%

## Relation with leanco:

- Collaborative work with costumer or end-users in the project definition phases.
- Participates more actively in solving project problems.

## 2 – Identify the key and necessary actors



Ressource	Constructor / Construction foreman (aparejador)						
Mission:	Execute with own or third resources the realization of the project. Carry out the correct execution.						
Step project	conceptualisation	Criteria design	Detailled design	Implementation documents	Final buyout	Construction	Close out
Implication Leanco	25%	25%	50%	50%	100%	100%	100%

### Relation with leanco:

- He should participate more in the project definition phases, providing his experience in how can we do some tasks. (to prevent)
- The task force of lean construction management during the stage of construcción.



## 2 – Identify the key and necessary actors



Ressource	Trade constructor						
Mission:	Execute specific job during the project of construction and under control of the constructor's company.						
Step project	conceptualisation	Criteria design	Detailed design	Implementation documents	Final buyout	Construction	Close out
Implication Leanco	0%	25%	25%	25%	75%	100%	100%

### Relation with leanco:

- Participate more actively in the definition of the project.
- Participate in the continuous improvement of the project and the resolution of problems.

# 2 – Identify the key and necessary actors



Step project	conceptualisation	Criteria design	Detailled design	Implementation documents	Final buyout	Construction	Close out
<b>Leanco Manager / Project manager</b>	100%	100%	100%	100%	100%	100%	100%
<b>Onwer / Promoter</b>	100%	100%	50%	50%	50%	25%	50%
Architect / designer	75%	75%	75%	100%	25%	25%	50%
<b>Constructor / Construction foreman</b>	25%	25%	50%	50%	100%	100%	100%
Trade Constructor	0%	25%	25%	25%	75%	100%	100%

The involvement of the different actors in all phases of the project is important and according to the stage of the project, their participation and contribution will change but never deleted or disappeared.

# 3 – Adapt company policy and strategy

---

Understand the need to change since the top management first and the need to change the **relationship** between all actors of the project.

Create alliances based on teamwork and mutual benefits.

Need to **adapt really** the company policy and change the mode of communication.

# 3 – Adapt company policy and strategy

## More internal communication :

- To **promote** and to plan the **cultural change** necessary to adopt lean management in your company and the sector.
- To give more ideas and **encourage continuous improvement** in the project or your company.
- To **train** the project teams, or to encourage the need to learn by doing.
- To know and understand at all levels what really happens in the "terrain" = place where value is generated and created waste.



# 3 – Adapt company policy and strategy

## Matrix of communication:

WHO					WHAT	TO WHO								HOW	FREQUENCY
OWNER	DESIGNER	LEAN CHAMPION	CONSTRUCTOR	ETC		TEAM PROJECT	TEAM CONSTRUCTION	PUBLIC ADMINISTRATION	ETC						
X		X			Open meeting project	X	X	X	X					Boletines ilustrados, en el tablero dedicado + mailing	Beginning of project
		X			Training plan	X								4.2.1- Matrix skill leanco	Monthly
		X			Dasboard of continuous improvement "Kaizen place"	X	X							Dasboard in Obeya room	Monthly
					Planning management									LPS	Weekly
					To define									To define	To define



lean

# 3 – Adapt company policy and strategy

## Have a competency development plan:



- There is a strong need to increase collaborative work in the project environment.
- Open mind more to out of your doors to save time and to adapt existing solutions.
- Provide organizations with resources to promote change and continuous improvement.

# 3 – Adapt company policy and strategy

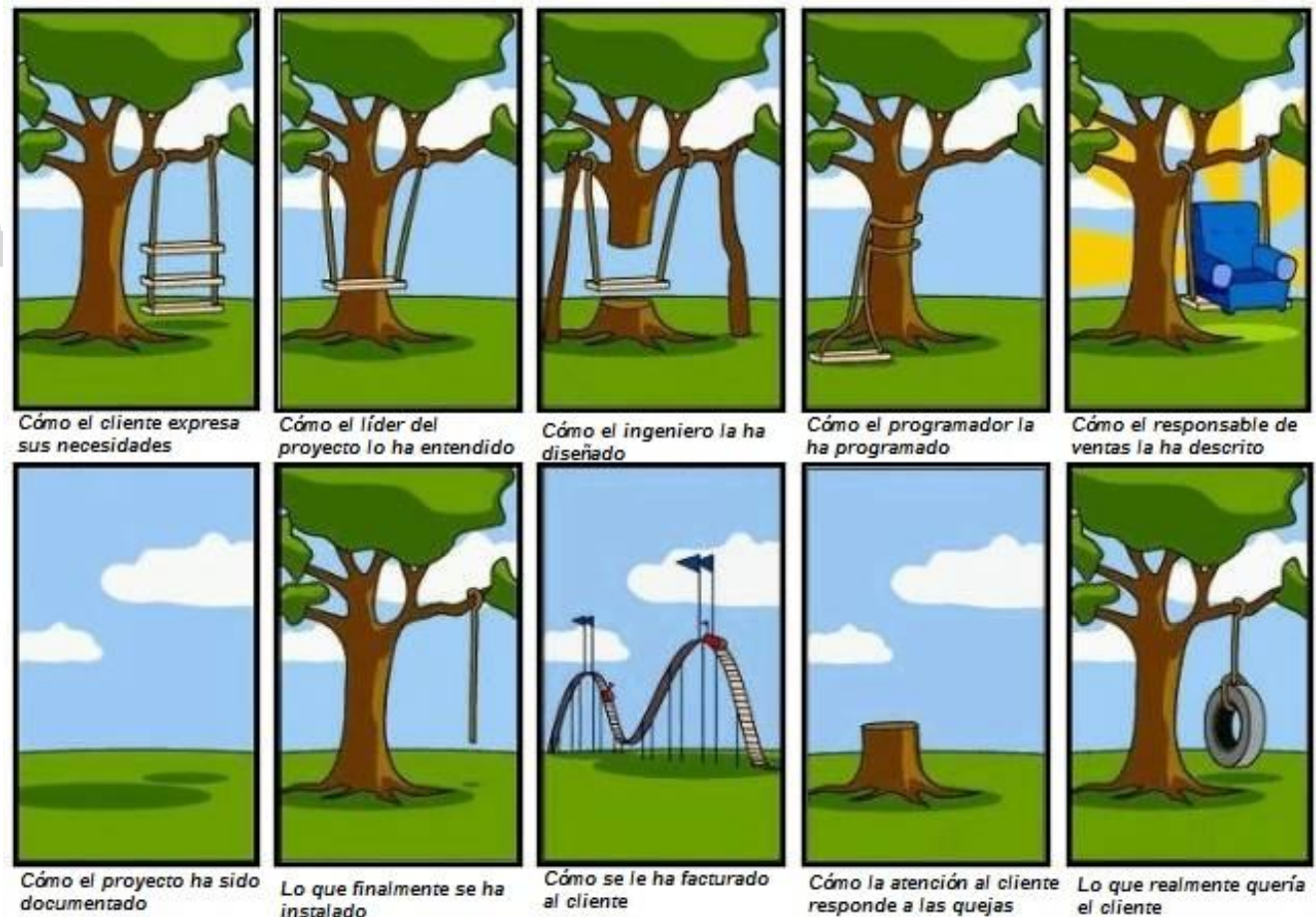


Co-funded by the  
Erasmus+ Programme  
of the European Union

Traditional management		IPD –Leanco mangement
Separated by areas /island, based on the “just necesarry / minimum needs” with hierarchycal quía model “command/control”	Team - ressources	Integrated team composed entirely of key stakeholders for the successful completion of the project. Teams formed from the beginning oriented to continuous improvement and collaboration.
Linear process , minimum of information collected to archive or report to the top management.	Process	Several concurrent levels, shared experience, confidence and respect in the team.
Individual, minimize effort to maximize profitability.	Implication / Contract	The success of the team is linked with the success of the project: based on the creation of value.
Managed individually, formalize and persecute many claims to find responsible	Risks	Managed together, equitably shared.
Minimum, and generally face to face.	Communication	Periodic, accessible for everybody, concrete,
Individual work, In case of problem it is tried to hide or to solve without sharing.	Compromise agreements	Collaboration and share difficulties to anticipate or solve problems together.

# 4 – Project definition

Before to start, we know where we have to go EVERYONE?





# 4 – Project definition

---

**During this step it is important to:**

- Identify the **Project Decision Committee**
  - Points of view should be shared
  - Know your level of authority and responsibility
- To choose the **leader** Project
  - Choose by the Project Decision Committee
  - Consider aspects such as; availability, technical and project management skills and attitude and motivation.
- Prepare the **Project Definition Charter**: A document issued by top management that formally authorizes the existence of a project.

# 4 – Project definition

---

**During this step it is important to :**

- **Crear the Project team**
  - Compose by key actor of the project
  - Must be self-directed and interactive
- **Have launch meeting to share:**
  - Organization problem
  - Expectations, objectives and criteria of success (critical)
  - Project scope and timetable
  - Deliverables at global level of the project
  - Rules and responsibilities
  - Communication plan of the project

## 4 – Project definition

### Phase I: Define

Scope and limits of the Project

- The “**Link with the strategy**” A brief justification of the reasons why the project is necessary to do. It shows the influence of the project on the strategic objectives.
- It is essential in order to insure the agreement to all resources of the project to **implicate** in the project.



## 4 – Project definition

---

# Requirements for project success

- Clear and understandable definition of the project.
- Information, communication and “sales of project”
- Obtain that the participants make project “something own”
- Supply of resources
- Give support
- Respect for people
- Motivation and Permanent reinforcement
- Celebration and Recognition of Results

# 4 – Project definition

---



## The 10 responsibilities of lean leader project

- Clarify expectations
- Show trust. Give the example
- Promote autonomy. Contribution
- Encourage to test-create-innovate => continuous improvement
- Communicate and encourage collaborative work
- “open the door” to implement new aspect
- Train the team to lean’s skills
- Celebrate success with the team
- Practices benchmarking
- Communicate the best practices to the company or organization

## 4 – Project definition

---

**Leadership consists of the  
ability to influence the  
behavior of others**



# 4 – Project definition

---

## Responsabilidades de los miembros del equipo:

- Aportar su saber al proyecto.
- Participar de forma activa en las reuniones de trabajo.
- Aportar a las mismas datos, experiencias e ideas.
- Planificar las tareas que implica el proyecto y compaginarlas con su trabajo habitual.
- Aprender a utilizar adecuadamente las metodologías.
- Utilizar los soportes y herramientas para la resolución de problemas.
- Contribuir al progreso del equipo y a su eficacia.
- Equilibrar la defensa de las propias ideas con una visión global del proyecto.

# 4 – Project definition

## ¿Cómo definir un objetivo?

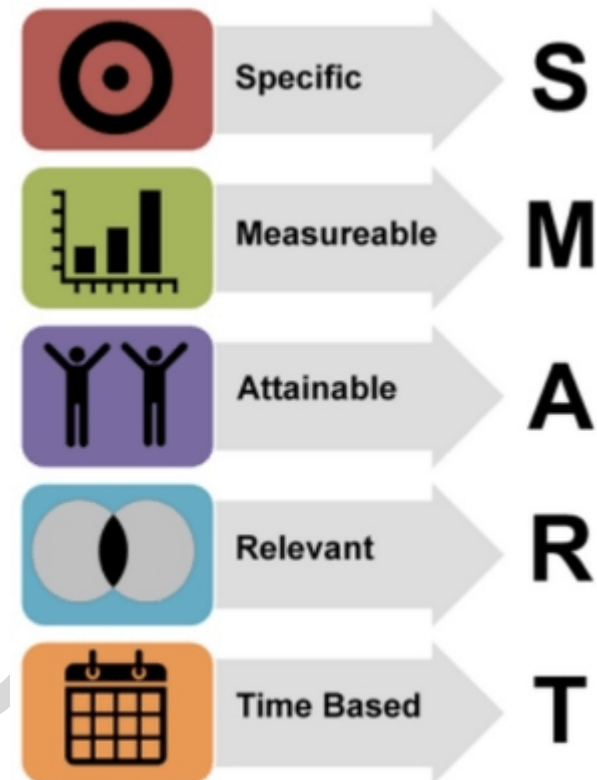




# 4 – Project definition

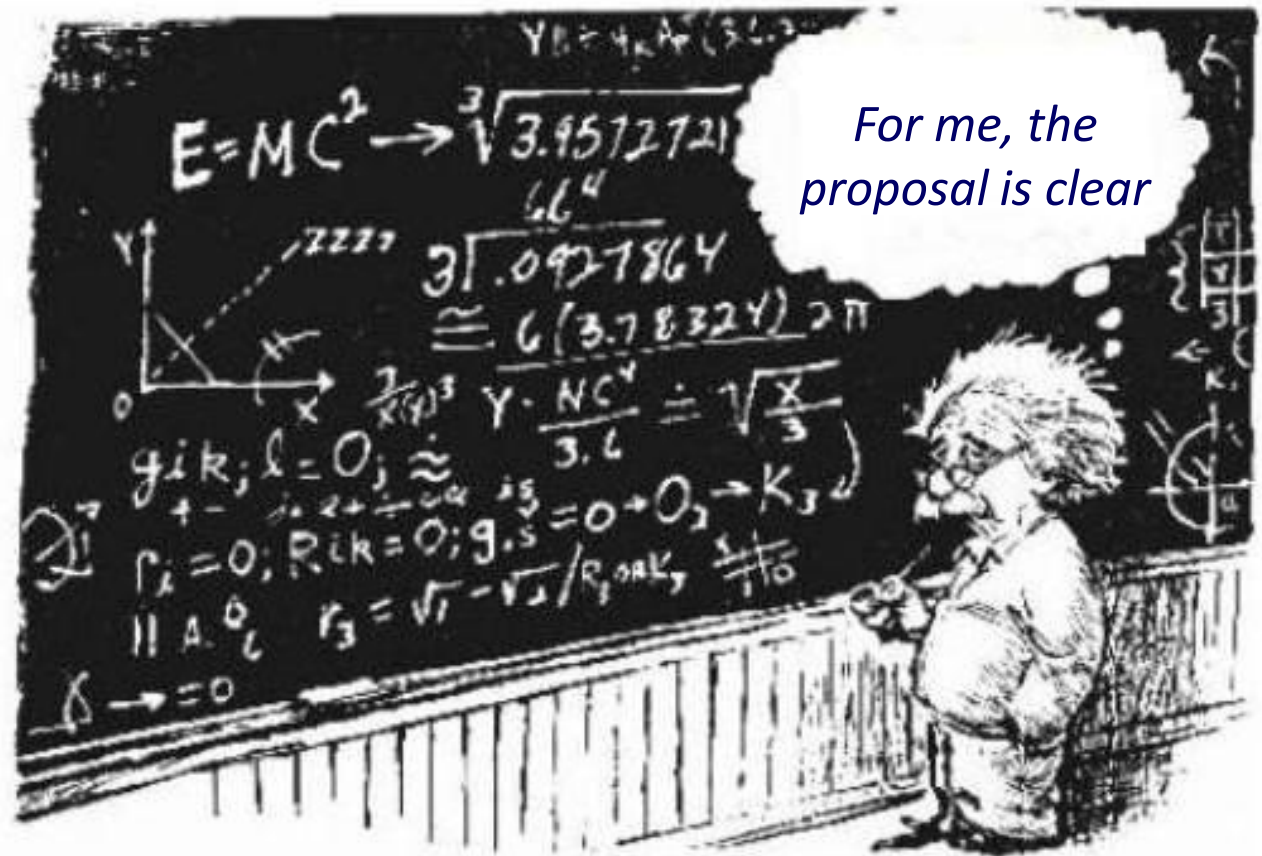
## How to define goals?

- A good definition of goals is based on the SMART model:
  - S: Specific
  - M: measurable
  - A: Attainable
  - R: Relevant
  - T: Timely



# 4 – Project definition

The goal and the presentation should be clear and concrete



# 4 – Project definition



## FICHA DE CONTRATO PROYECTO LEANCO

**PROYECTO:**

**SPONSOR:**

Jefe de proyecto :

**CASO DE NEGOCIO**

- 
- 



**FINALIDAD / OBJETIVOS**

- 
- 

**RESULTADOS ESPERADOS / AREA DE ACTUACION**

- 
- 

**PLANNING PROYECTO y HITOS IMPORTANTES:**

al de planning 1-5-2008		Duracion total: 285 dias naturales		PLANING DE TIEMPOS DE OBRA																									
tarea	t. ini	t. fin	dur	Semana																									
ACCIONES PREVIAS	01-05-2008	04-05-2008	35																										
RENTADO DE TIERRAS	05-05-2008	28-07-2008	64																										
LLENO	05-05-2008	18-07-2008	54																										
CAVACION	05-05-2008	28-07-2008	34																										
TACION-FORJADO SANITARIO	01-07-2008	20-09-2008	51																										
ECTURA	09-07-2008	21-10-2008	85																										
TALICA	09-07-2008	29-09-2008	63																										
SAS DE HORMICON	19-08-2008	19-09-2008	33																										
TRUCTURA DE CUBIERTA	19-09-2008	21-10-2008	33																										
ILERIA	19-09-2008	30-12-2008	125																										
ADAS	19-09-2008	19-11-2008	62																										
IOS Y ALICATADOS	25-11-2008	21-01-2009	80																										
NTERIA DE MADERA	25-11-2008	13-02-2009	101																										

**EL EQUIPO:**

**Grupo de trabajo:**

Nombre	Función	E.mail	Telefono
•			
•			

**Grupo de validación:**



## FICHA DE CONTRATO PROYECTO LEANCO

**Presupuesto / medios necesarios específicos para el proyecto:**

- 

**Conductas y reglas de gestión del proyecto:**

- 

**RIESGOS IDENTIFICADOS y LIMITES**

- 

**FACTOR CLAVES DEL EXITO**

- 

**INTERACCIONES CON OTROS PROYECTOS o RECURSOS**

- 

**INDICADORES:**

- 

- 

-

# 4 – Project definition

First concrete step => Decision to adopt the Integrated Project Delivery (IPD) for our pilot project leanco.

The IPD will be one of the key parts of the implementation of lean philosophy in construction. This tool is based on the collaboration of the different actors from the beginning of the project to the end.

Without IPD you can implement lean philosophy only in construction phase but limited on improvement of operative process.



# 4 – Project definition

IPD => ¿Where and how?

One of the main difficulties when implementing a lean pilot project is that all the first phases of the project are rather "immaterial".

- The intervention of many different resources is needed.
- Lots of information is needed.
- You need to manage a lot of documentation and reports.
- etc

***OBEYA room***

大部屋

Obeya



« "BIG room" »

***4 physical walls to delete the virtual  
walls of our spirits or mind***

# ¿What is the Obeya room?

- ❑ **Obeya** = " big room" in japanes, Is a Lean practice in visual management.
- ❑ It is an intensive place of collaboration with ritual of work
- ❑ The information is available and managed collectively through short and periodic meetings
- ❑ It is a simple and effective tool to respond to efficiency challenges.



# The "know-how" of project management?



- ✓ Organize
- ✓ Plan
- ✓ Check
- ✓ Control
- ✓ Coordinate
- ✓ Validate / repport

**The dream life?**



Monitoring planning and  
reporting

- ✓ Satisfy a customer who changes his needs
- ✓ Face the unexpected
- ✓ Manage changing alliances
- ✓ Manage emotion
- ✓ Reach commitments

**The real life**



**OBEYA**



### Leader Leanco project :

111

111

115

Pl. de planning 1-5-2008		Duración total: 288 días naturales		PLANING DE TIEMPOS DE OBRA																																																			
tarea	f. ini	f.fin	dur	Semanas																																																			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ACIONES PREVIAS	01-05-2008	04-06-2008	35																																																				
IENTO DE TIERRAS	26-05-2008	28-07-2008	64																																																				
LLENO	26-05-2008	18-07-2008	54																																																				
CAVACION	25-06-2008	28-07-2008	34																																																				
TACION-FORJADO SANITARIO	01-07-2008	20-08-2008	51																																																				
ICTURA	29-07-2008	21-10-2008	85																																																				
TALICA	29-07-2008	29-09-2008	63																																																				
SAS DE HORMIGON	18-08-2008	19-09-2008	33																																																				
TRUCTURA DE CUBIERTA	19-09-2008	21-10-2008	33																																																				
ILERIA	28-08-2008	30-12-2008	125																																																				
IDAS	19-09-2008	19-11-2008	62																																																				
IOS Y ALICATADOS	03-11-2008	21-01-2009	80																																																				
ENTERIA DE MADERA	05-11-2008	13-02-2009	101																																																				

Name	Responsability	E.mail	Phone number
•			
•			

Validation team:





## CHARTER LEANCO PROJECT

### Specific budget / resources required for the project:

- 
- 

### Project management rules and attitudes:

- 
- 
- 

### IDENTIFIED RISKS AND LIMITS

- 

### KEY FACTORS OF SUCCESS

- 
- 

### INTERACTIONS WITH OTHER PROJECTS or RESOURCES

- 
- 

### INDICATOR OF LEANCO PROJECT:

- 
- 
-



### Leader Leanco project :

111

1001

115

Pl. de planning 1-5-2008		Duración total: 288 días naturales		PLANING DE TIEMPOS DE OBRA																																																			
tarea	f. ini	f.fin	dur	Semanas																																																			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ACIONES PREVIAS	01-05-2008	04-06-2008	35																																																				
IENTO DE TIERRAS	26-05-2008	28-07-2008	64																																																				
LLENO	26-05-2008	18-07-2008	54																																																				
CAVACION	25-06-2008	28-07-2008	34																																																				
TACION-FORJADO SANITARIO	01-07-2008	20-08-2008	51																																																				
ICTURA	29-07-2008	21-10-2008	85																																																				
TALICA	29-07-2008	29-09-2008	63																																																				
SAS DE HORMIGON	18-08-2008	19-09-2008	33																																																				
TRUCTURA DE CUBIERTA	19-09-2008	21-10-2008	33																																																				
ILERIA	28-08-2008	30-12-2008	125																																																				
IDAS	19-09-2008	19-11-2008	62																																																				
IOS Y ALICATADOS	03-11-2008	21-01-2009	80																																																				
ENTERIA DE MADERA	05-11-2008	13-02-2009	101																																																				

Name	Responsability	E.mail	Phone number
•			
•			

Validation team:



## CHARTER LEANCO PROJECT

### Specific budget / resources required for the project:

- 
- 

### Project management rules and attitudes:

- 
- 
- 

### IDENTIFIED RISKS AND LIMITS

- 

### KEY FACTORS OF SUCCESS

- 
- 

### INTERACTIONS WITH OTHER PROJECTS or RESOURCES

- 
- 

### INDICATOR OF LEANCO PROJECT:

- 
- 
-