



# FRONT-END DESIGN AND VALUE GENERATION: A HOUSING PROJECT ANALYSIS

Joas Serugga  
Bernardo M. Etges  
Ellen R. Bernardi  
Mike Kagioglou  
Patricia Tzortzopoulos



# INTRODUCTION



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

Designs are a representation of solutions to design problems;

Value judgements on the part of the end-user is dependent on the evolving contextual influences;

These influences include the **environment, political landscape, legal and regulatory regime, socio-cultural influences, economy, technological and biological factors** among others.

*A design team will be influenced by any of these factors at one time or another.*



# INTRODUCTION



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

Front End Design includes all the phases developed to:

- **understand;**
- **transform;**
- **keep and;**
- **delivery value for clients.**

All those phases foresee the conceptual design phase;

*All those phases serve to focus the design team to a value-generation-strategy.*



# FRONT-END-DESIGN



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

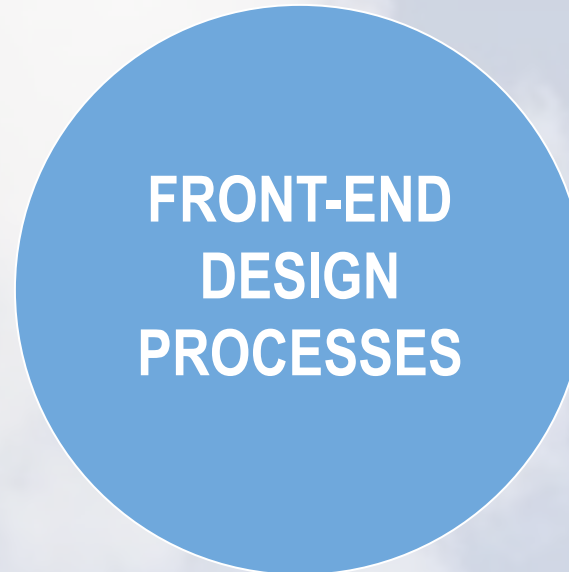
**OUTLINE EXECUTION PLAN**

**THE SCOPE FOR A PROJECT**

**JUSTIFICATION FOR PROJECT**

**HIGH LEVEL PURPOSE**

**OUTLINE DESIGN**

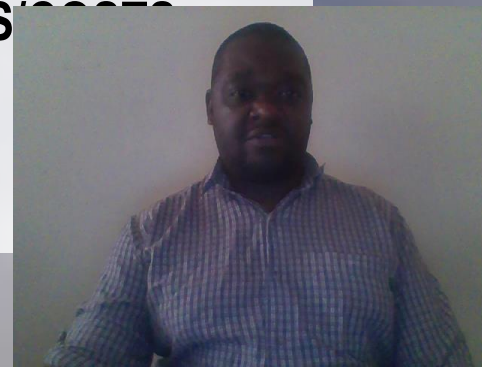


**STAKEHOLDER PLAN**

**PROJECT RISK MANAGEMENT**

**FUNDING REGIME**

**OUTLINE BENEFITS**



# FRONT-END-DESIGN



# IGLC 28

BERKELEY, CA 6-12 JULY 2020

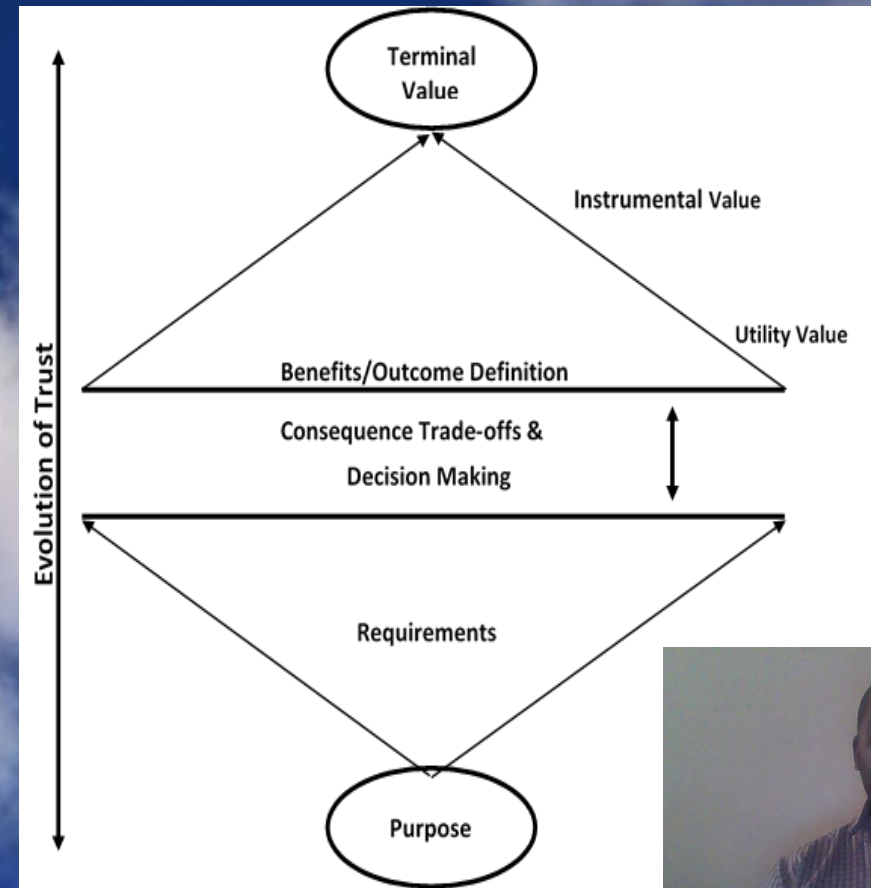
28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## FED

Austin, 2001  
Lawson, 2003  
Williams, 1999

## VALUE

Koskela, 2001



# FED > VALUE CREATION



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

**USER REQUIREMENTS**



**DESIGN REQUIREMENTS**



**RANKING DECISION MAKING**



# METHODOLOGY



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- A case study approach is adopted to support intricate investigation of the dynamics of FED in contributing to value creation and delivery
- Housing context in Porto Alegre, Brazil.
- open interviews with designers and mains contractors in two Companies involved in the FED development of a Housing Project.



# METHODOLOGY



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## *DESIGN COMPANY*

### **ARCHITECTURE & ENGINEERING PRACTICE & REAL ESTATE CROWDFUNDING**

*data collection by open interview  
(project leader), documentation  
analysis and one of the authors directly  
related to the case study.*

## *MAIN CONTRACTOR*

### **REAL ESTATE DEVELOPMENT & CONSTRUCTION RESPONSIBLE**

*data collection by open interview  
(CEO), documentation analysis  
and site visiting*





# MAIN CONTRACTOR



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## COLLABORATION

- Workshop with designer, neighbors, potential clients;
- Understanding the desires, wishes and values for the final users for the building;

## CONCEPT

- Co-living, emotional link with past developments within the community (representing original and motivating concept);
- The approach for a design concept was not achieved at that project;



# MAIN CONTRACTOR



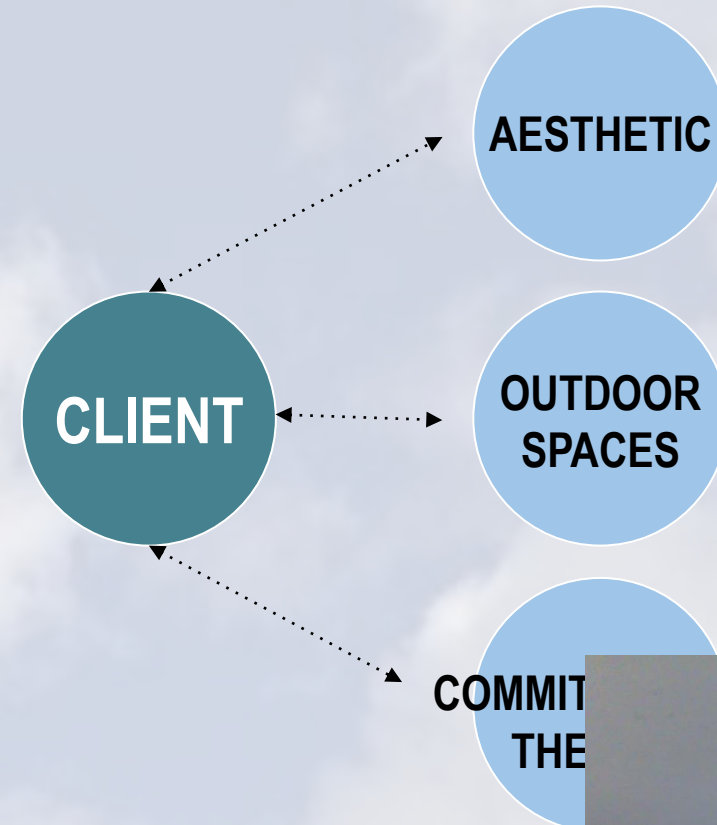
**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## VALUE TO CLIENT

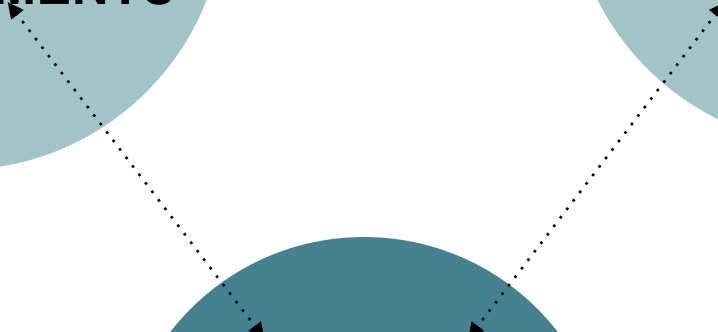
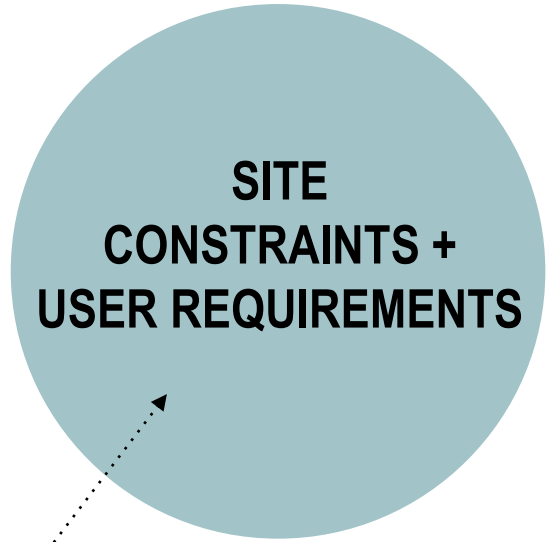
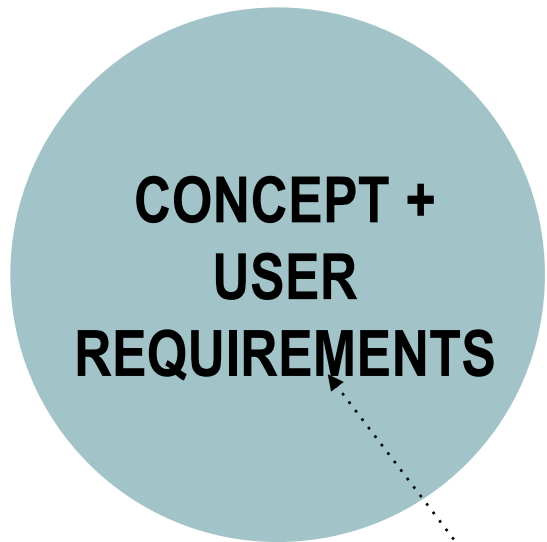
- Understanding that the client (end-user) buys and what they want;
- e.g. Aesthetics and architecture concept as representing real value;
- e.g. building must be connected to the city.





**“WE NEED A NEW CONCEPT OF PRODUCT!”**





*(Developed by au*



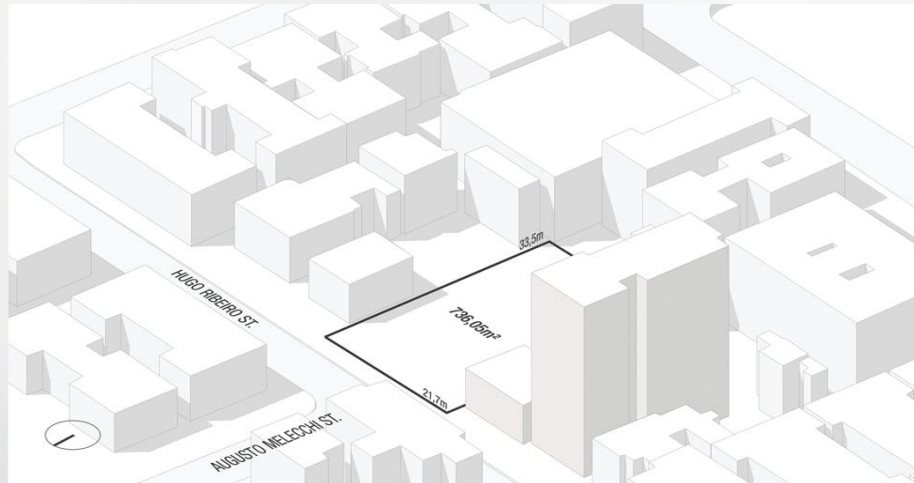
# OUTLINE DESIGN



# IGLC 28

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION



# JUSTIFICATION FOR PROJECT



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## **BUSINESS**

- Good opportunity of business considering the conditions of the site;

## **DESIGN**

- “Let’s do something different”;



# PROJECT RISK MANAGEMENT



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## **DESIGN**

- Investors and clients previously mapped to previous projects in the same context;
- The possibility of enlarging the market for specific consumers (investors in design);

## **SITE**

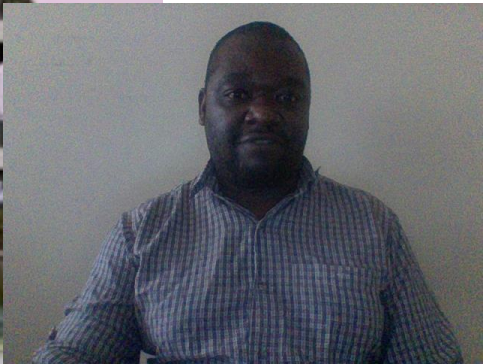
- Previously mapped terrain conditions in the same context (neighbor Project);
- Previous experience in construction and real estate developers (participants with 30 years of operation in the market);



(Main contractor, 2016)



(Main contractor, 2018)





# STAKEHOLDER PLAN



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- Main contractor and its employers;
- Design company and its employers;
- City council;
- Users of the building;
- City/neighborhood.



# STAKEHOLDER PLAN



## IGLC 28

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

<i>Company</i>	<i>Name</i>	<i>Role</i>	<i>Goals</i>	<i>Background</i>
<b>Design practice</b>	01	Partner / Manager	Change the world one building at a time. Willing to reduce the communication noise between design teams in order to achieve a better design result.	35+ years old, graduation in architecture. Mediator and responsible for all contracts; willing to take risks.
	02	Partner / Architecture Project leader	Change the world one building at a time. Willing to reduce the communication noise between design teams in order to achieve a better design result.	25+ years old, graduation in architecture and post-graduation in project management. Little experience in construction site. Communicative. Willing to take risks.
	03	Partner / MEP Project Leader / Electrical Engineer	Improve your working conditions and support architecture team on decision making process.	30+ years old, graduation in electricity engineering and post-graduation in project management. Little experience in construction site. Willing to take risks.
	04	Partner / Architecture Specialist	Change the world one building at a time. Focused on architecture quality.	30+ years old, graduation in architecture. Little experience in construction site. Willing to take risks.
	05	Partner / Architecture Specialist / General sales Manager*	Change the world one building at a time. Focused on business development.	35+ years old, graduation in architecture. Little experience in construction site. Willing to take risks. Operations in another company (USA). Willing to take risks.



# STAKEHOLDER PLAN



## IGLC 28

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

Company	Name	Role	Goals	Background
<b>Main contractor</b>	01w	Partner / CEO	Change the world. Increase sales with an innovative design; to make things differently than before; brand repositioning considering quality of architecture and user experience.	30+ years old; enthusiast of architecture; business graduation; sales manager on past jobs. Not afraid of taking risks.
	02w	Partner / General Manager	Increase sales and maintain the currently quality. Open to changes and open to collaboration, but afraid of losing the conquered market by being too innovative.	60+ years old; graduation in civil engineering and experience in construction site, management, acquisitions and risk. More conservative posture because faced market turbulence in past jobs.
	03w	Partner / General manager of all construction sites	Improve your working conditions. Conscious that if increasing the project quality and technical specifications the company could see better results on the construction site.	60+ years old, graduation in civil engineering and experience in construction site, management, risk. Willing to take risks. Faced many project specification incoherencies during the past years that caused waste of money.
	04w	Project Manager	Improve your working conditions. Willing to reduce the communication noise between design teams in order to achieve a better design result.	35+ years old, graduation in civil engineering and experience in construction site and management. Mediator; willing to take risks but is not the one with the final word.
	05w	Quality Manager	Improve your working conditions. Willing to reduce communication noise between design teams in order to achieve a better design result.	35+ years old, graduation in civil engineering and experience in construction site and management. Mediator; willing to take risks but is not the one with the final word.



# FUNDING REGIME



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- Own capital;
- Site negotiation;
- Group of investors;
- Possibility of future crowdfunding of the project;



# OUTLINE BENEFITS



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- Reduced site risk management;
- Reduced concept risk of acceptance of market;
- Increase design quality in a safer context;



# HIGH LEVEL PURPOSE



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- Integration among multiple disciplines in design using BIM;
- Increase design quality;
- Seamless flow of processes during the execution phase;



# OUTLINE EXECUTION PLAN



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- 30 years experience on  
construction and real estate  
development company;



# DESIGN COMPANY PROJECT SCOPE



# IGLC 28

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## ESCOPO DOS SERVIÇOS

PROJETO	PROCEDIMENTOS E DOCUMENTAÇÃO	ETAPAS				
		EV	CO	SD	CD	AD
	Acompanhamento da tramitação do projeto junto aos órgãos de aprovação ART / RRT					
<b>Projeto de arquitetura de interiores - AI</b>						
<b>Projeto de paisagismo - PSG</b>						
O Projeto das áreas externas apresenta a definição de calçadas e áreas ajardinadas, espécies vegetais e procedimentos de plantio, pavimentação, meios-fios, mobiliário, etc. A seleção das espécies será pautada pela adaptação ao ambiente local. Serão apresentadas plantas baixas do terreno e dos demais pavimentos onde houver terraços com ou sem ajardinamento, além de especificação das espécies e quantitativos.	Definição geométrica das áreas ajardinadas e calçadas atendendo os condicionantes legais Definição das tipologias vegetais (vegetações de forrações, arbustivas, arbóreas, etc) Definição do mobiliário urbano (bancos, lixeiras, bicicletários, luminárias, etc) Definição de todos os elementos do projeto e da materialidade  Plantas baixas Indicação e locação de forrações, de espécies arbustivas e arbóreas Indicação do tipo e paginação das pavimentações Detalhamento do mobiliário urbano (bancos, lixeiras, bicicletários, luminárias, etc) Detalhes construtivos necessários Memorial descritivo / Especificações técnicas Lista de materiais com quantitativos Imagens / perspectivas renderizadas para entendimento do projeto (uso não comercial) Imagens / perspectivas renderizadas para uso comercial ART / RRT					
<b>Projeto de sinalética - SIN</b>						
O projeto de sinalética deve aplicar à edificação em projeto as indicações e especificações de um manual	Identificação dos fluxos de usuários no interior do edifício e dos ambientes funcionais, de apoio e de instalações prediais e					





# DISCUSSION



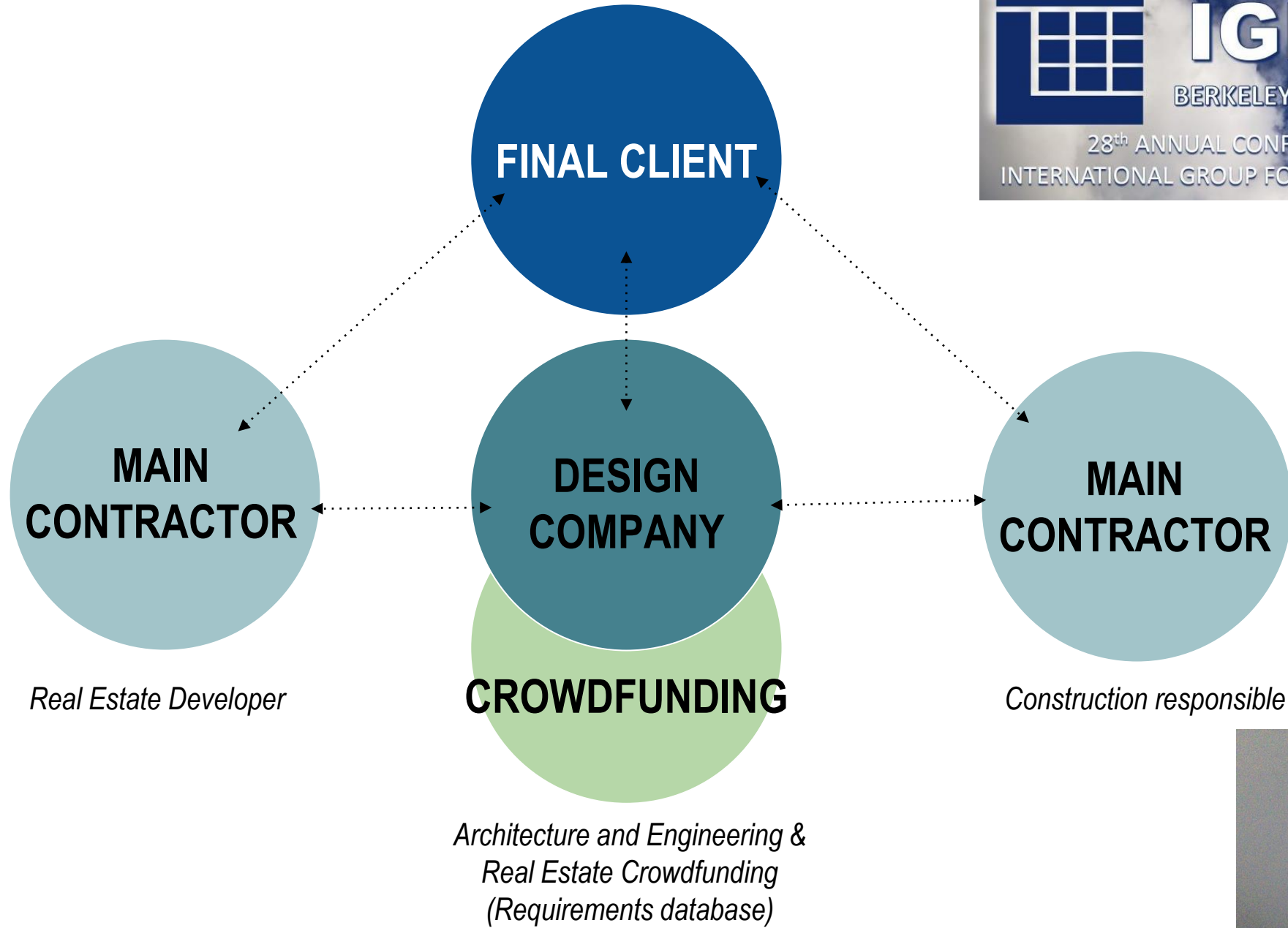
**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- Most dimensions of the FED Process were applied in the analyzed project;
- It was possible to understand value generation through each phase.





# DISCUSSION



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## FED PHASE

**THE SCOPE FOR A PROJECT**

**JUSTIFICATION FOR PROJECT**

**HIGH LEVEL PURPOSE**

## VALUE FOR CLIENT

Clear Project Scope delivered more quality and reliable design;

Something new, innovative in accordance with client value understanding;

High quality of design and ve integrated design delivery;



# DISCUSSION



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## FED PHASE

**OUTLINE DESIGN**

**STAKEHOLDER PLAN**

**PROJECT RISK MANAGEMENT**

**OUTLINE BENEFITS/COSTS**

## VALUE FOR CLIENT

Collaboration and trust were established before and maintained during the design process;

Main contractor see the Design company as a partner for continuing future project plans

Minimized by the previous knowledge from the final clients requirements (workshops);

Market visibility, alignment of teams possible future projects.



# DISCUSSION



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

## FED PHASE

**PROJECT RISK MANAGEMENT  
OUTLINE BENEFITS/COSTS  
HIGH LEVEL PURPOSE**

## VALUE FOR PROJECT TEAM

Opportunity to collaborate with construction team during the earliest design phase;

Opportunity to receive feedback from final users about the design just after the project release;

+1 project in progress; perceived satisfaction and loyalty.



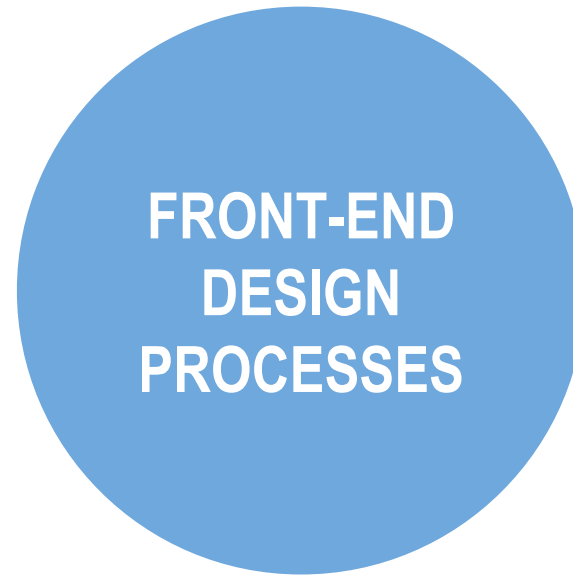
OUTLINE EXECUTION PLAN

THE SCOPE FOR A PROJECT

JUSTIFICATION FOR PROJECT

HIGH LEVEL PURPOSE

OUTLINE DESIGN



STAKEHOLDER PLAN

PROJECT RISK MANAGEMENT

FUNDING REGIME

OUTLINE BENEFITS/COSTS

VALUE GENERATION



# CONCLUSIONS



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

FED played an important role considering the approach of value development and design process.

Main Contractor foresee real value generation for final client considering the design phases developed.

Missed opportunities - relating to the extensive data collated by Company 02, through their crowdfunding venture

no objective effort made to understand and integrate such up to date





# THANK YOU

Joas Serugga  
Bernardo M. Etges  
Ellen R. Bernardi  
Mike Kagioglou  
Patricia Tzortzopoulos

