



SUPPLY CHAIN MANAGEMENT WITH BIM: TOWARDS BETTER CONTROL OF CONSTRUCTION LOGISTICS

GRADUATION RESEARCH | LISA OOSTERWIJK
JUNE 2017



01 INTRODUCTION

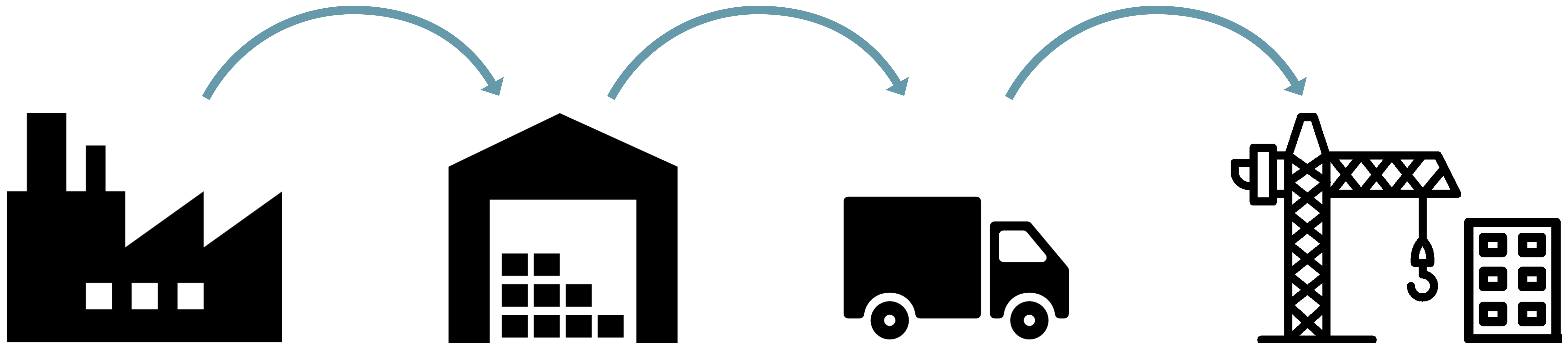
02 RESEARCH FRAMEWORK

03 CASE STUDY RESEARCH

04 CONCLUSIONS

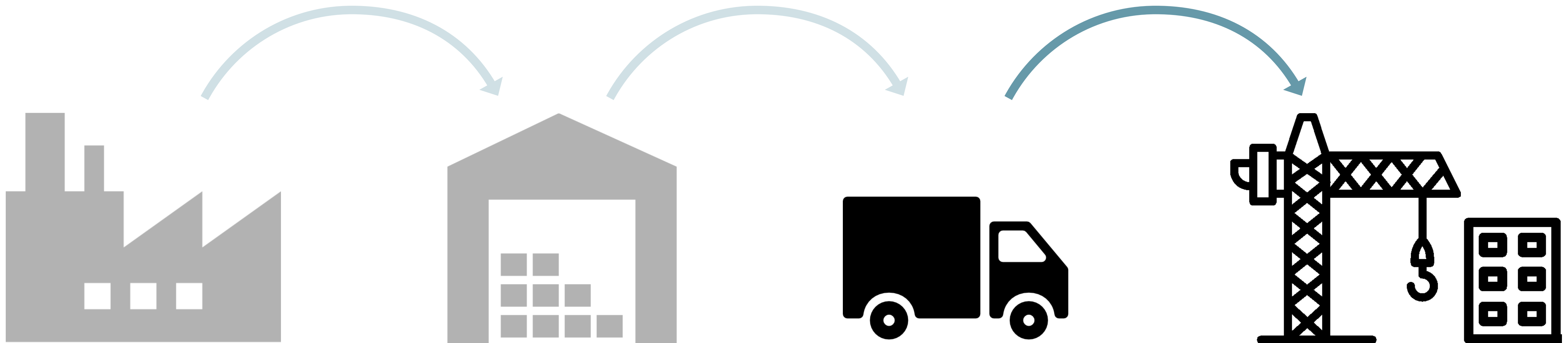
SUPPLY CHAIN MANAGEMENT

“THE MANAGEMENT OF ALL ACTIVITIES RELATED WITH THE TRANSFORMATION OF GOODS,
FROM RAW MATERIALS TO THE END USER”



LOGISTICS

“THAT PART OF SUPPLY CHAIN MANAGEMENT THAT FOCUSSES ON THE ORGANIZED MOVEMENT OF MATERIALS WITHIN A SINGLE ORGANIZATION ”





CONSTRUCTION LOGISTICS

01 ON-SITE VERSUS OFF-SITE

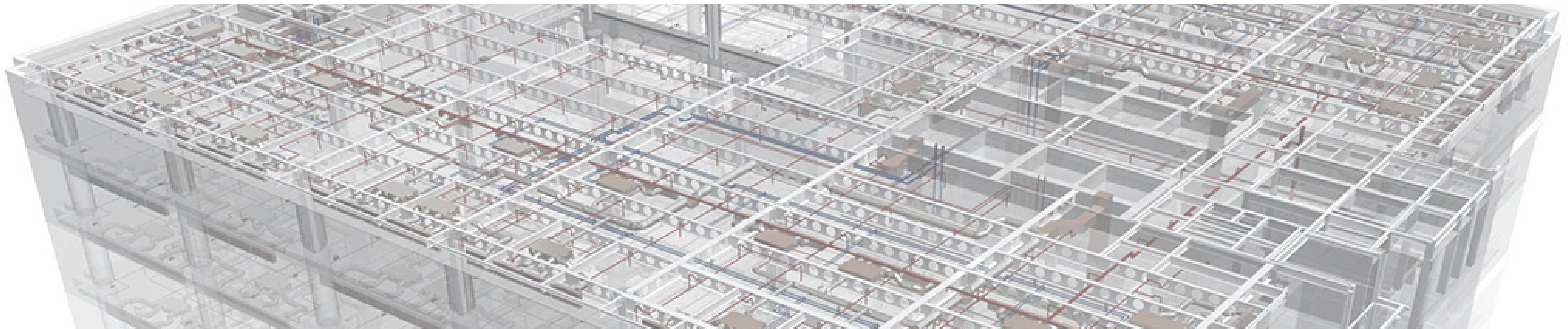
02 LOGISTICS ARE INEFFICIENT

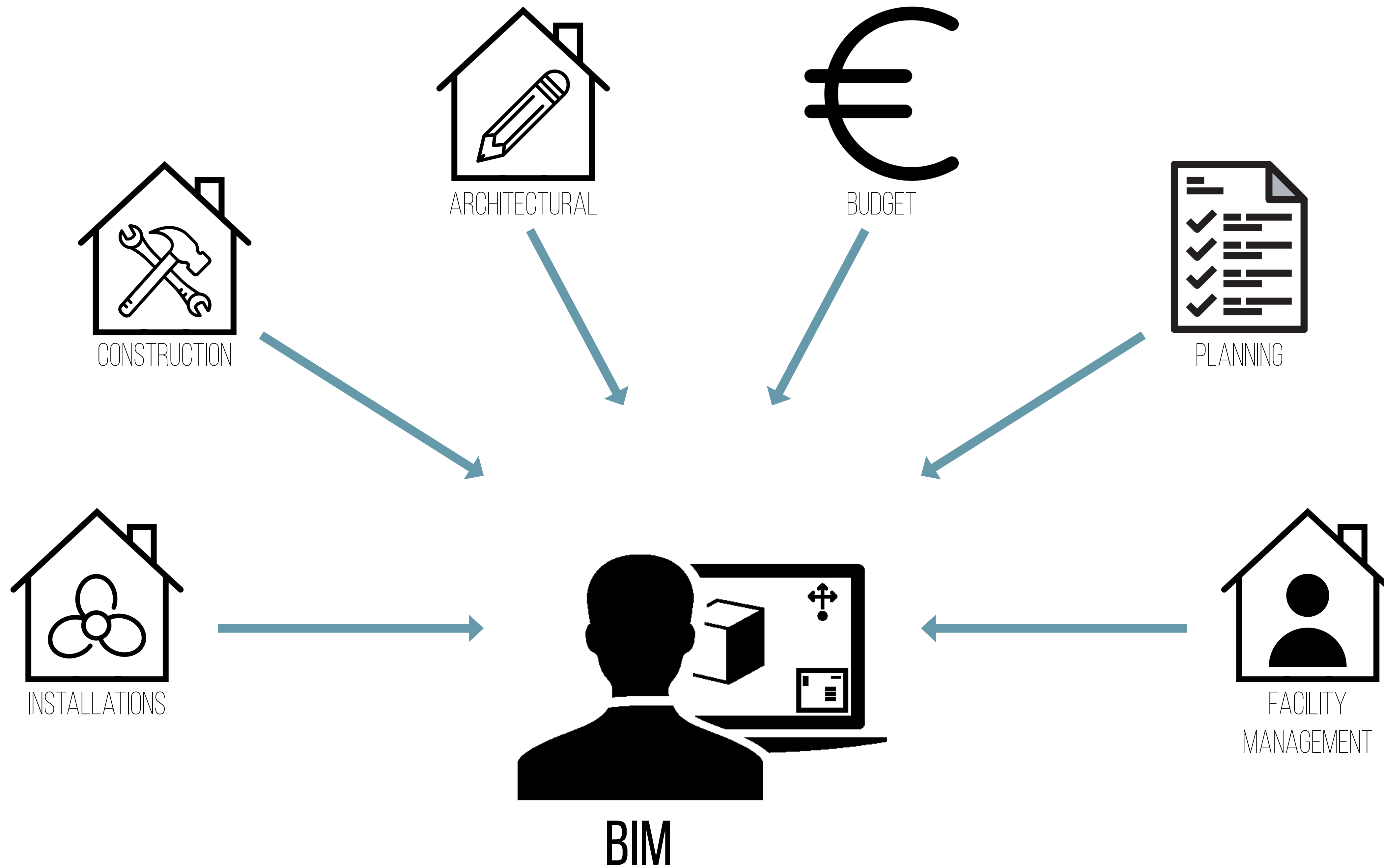
03 LACK OF CONTROL

BUILDING INFORMATION MODELLING

“A DIGITAL REPRESENTATION OF THE PHYSICAL AND FUNCTIONAL
CHARACTERISTICS OF A FACILITY”

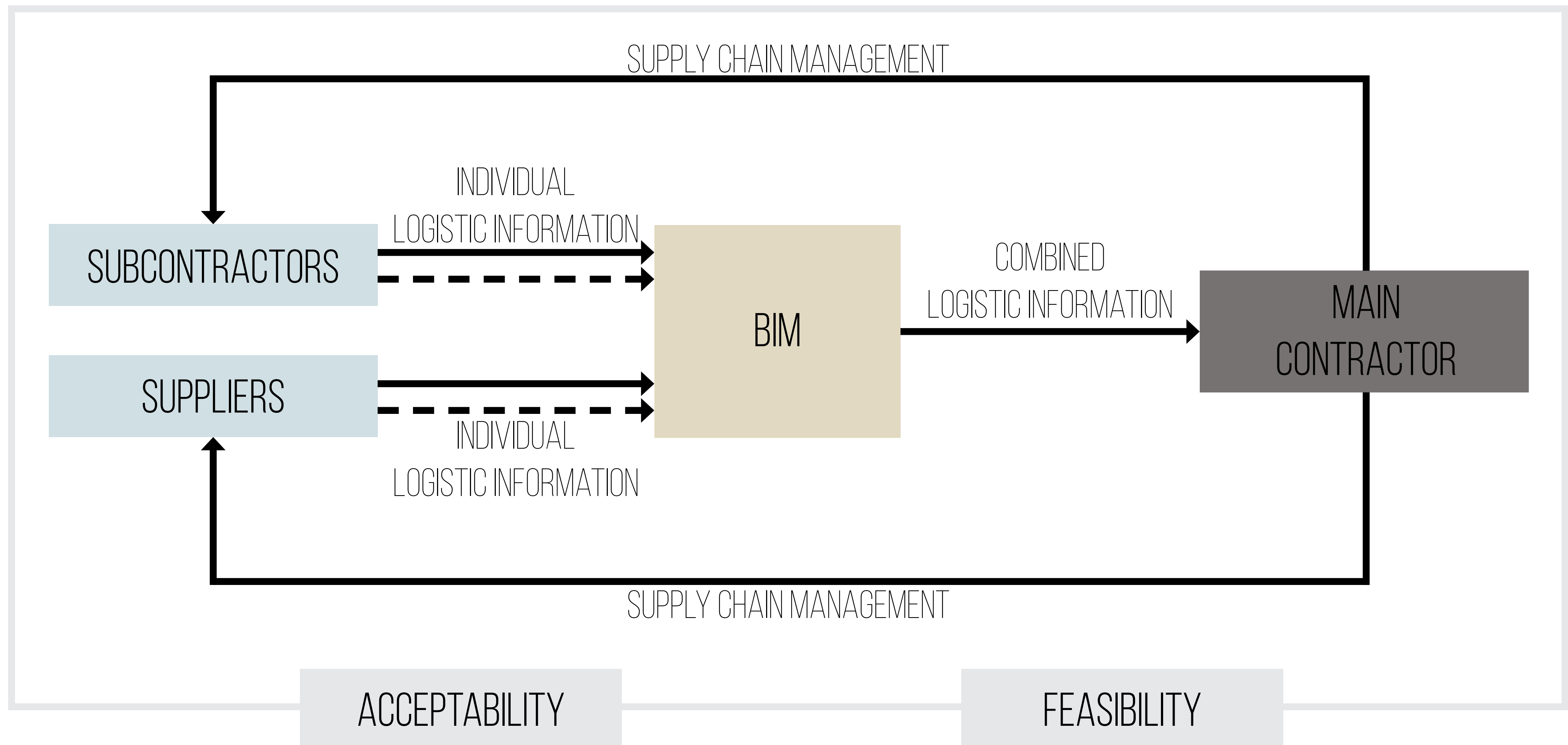
- US NATIONAL BIM STANDARD PROJECT COMMITTEE (2015)





HOW DOES SUPPLY CHAIN MANAGEMENT WITH BIM HELP CONTRACTORS TO GET CONTROL OF THE LOGISTICS OF A BUILDING PROJECT?







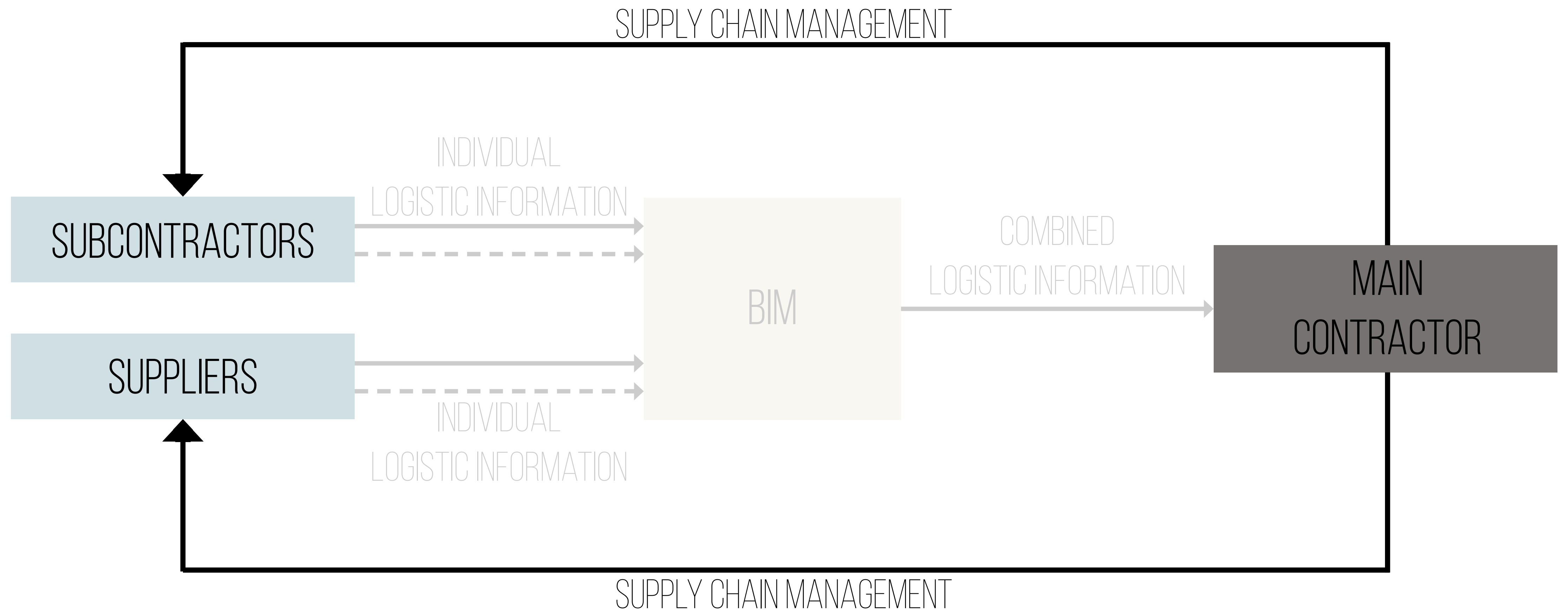
CASE

PROJECT BÈTATOREN

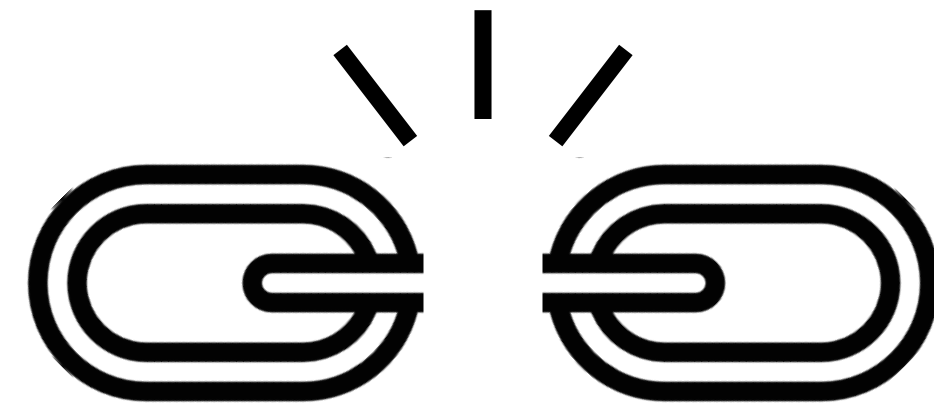
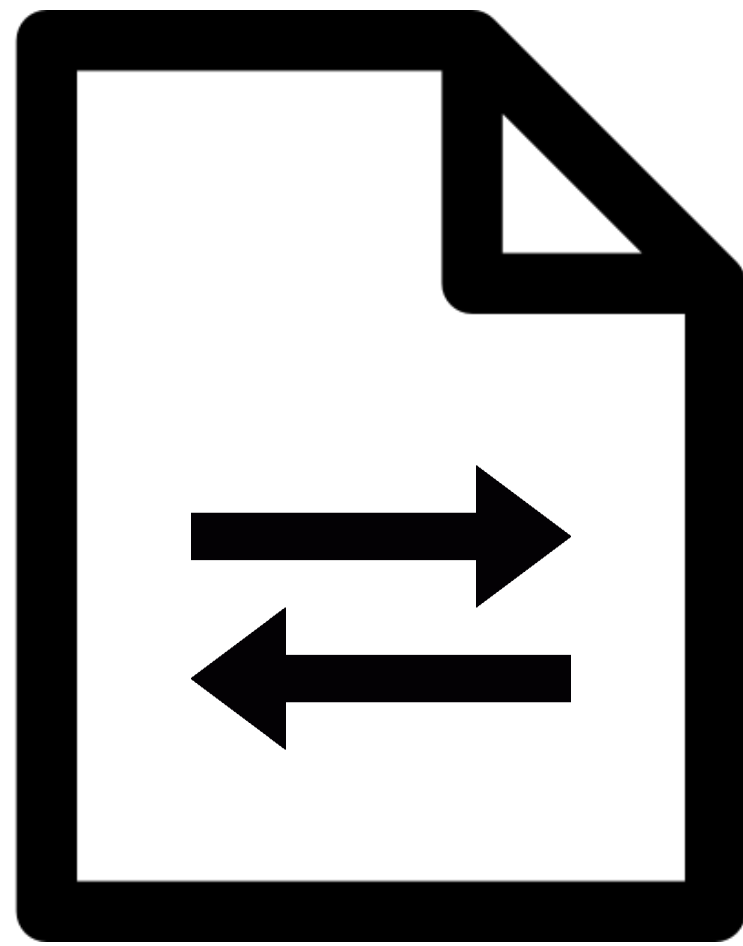


PHASE 01

PHASE 1



LOGISTIC PLAN

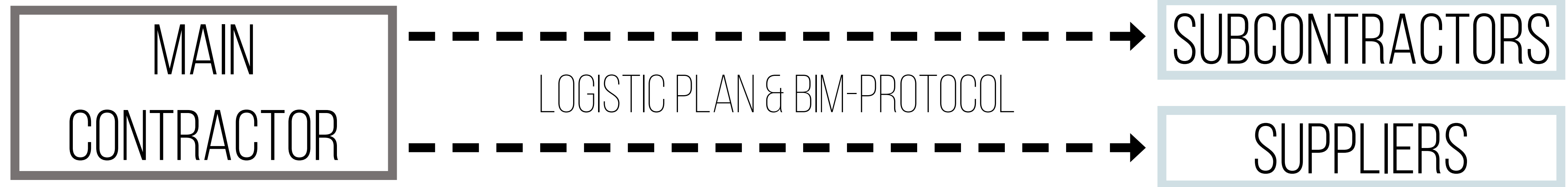


BIM-PROTOCOL

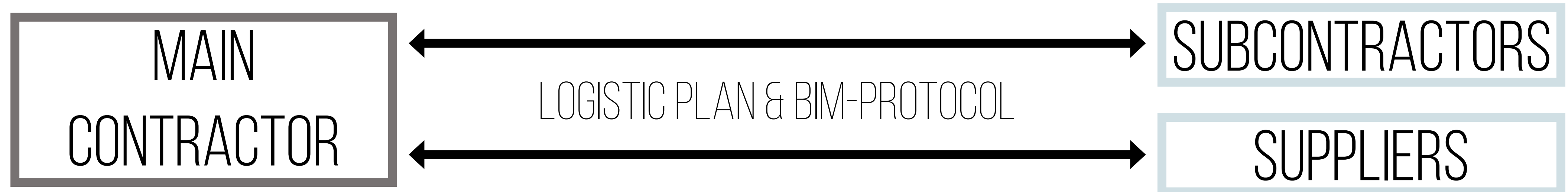


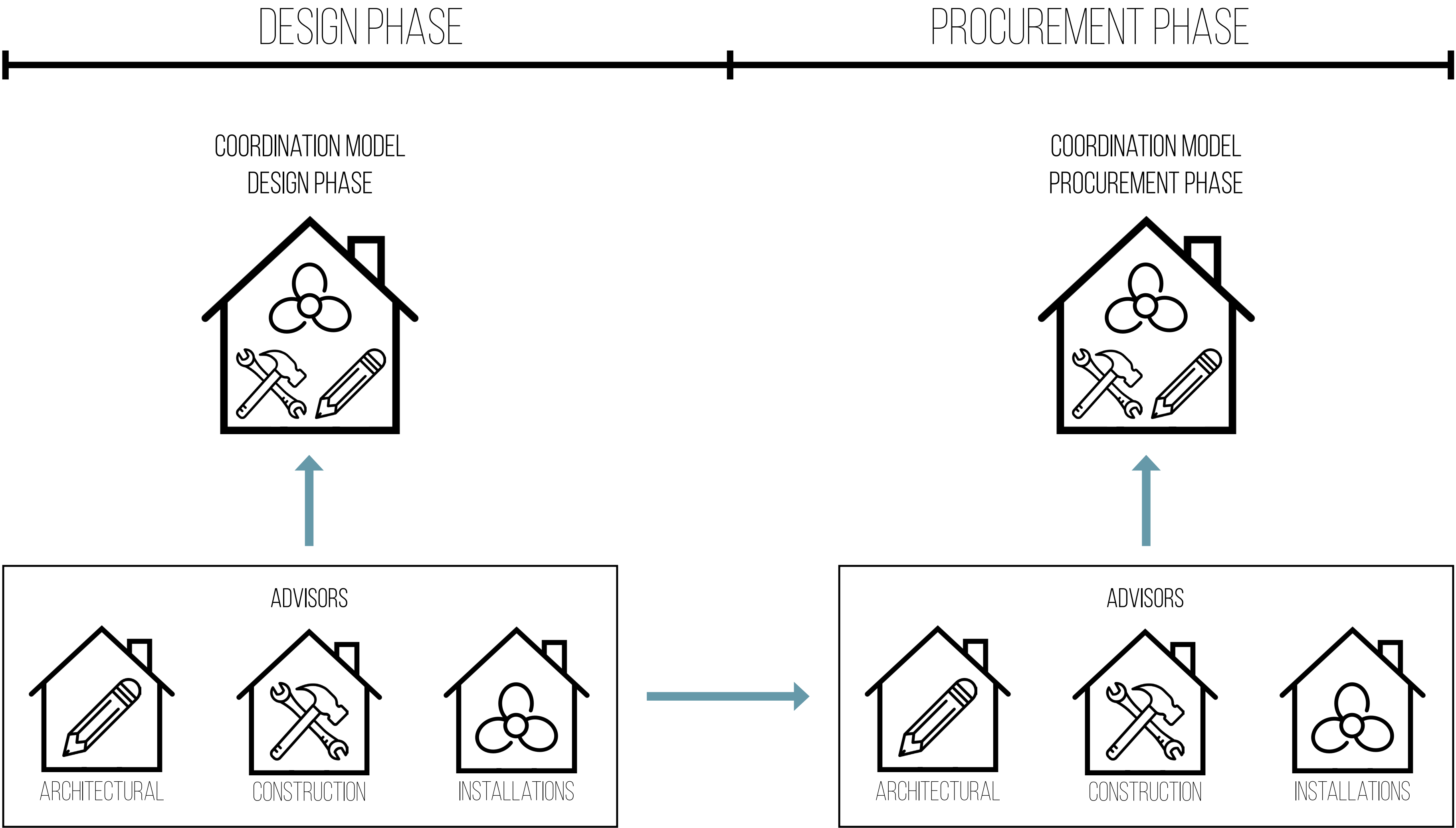
INFORMATION FLOWS

CURRENT SITUATION



IMPROVED SITUATION

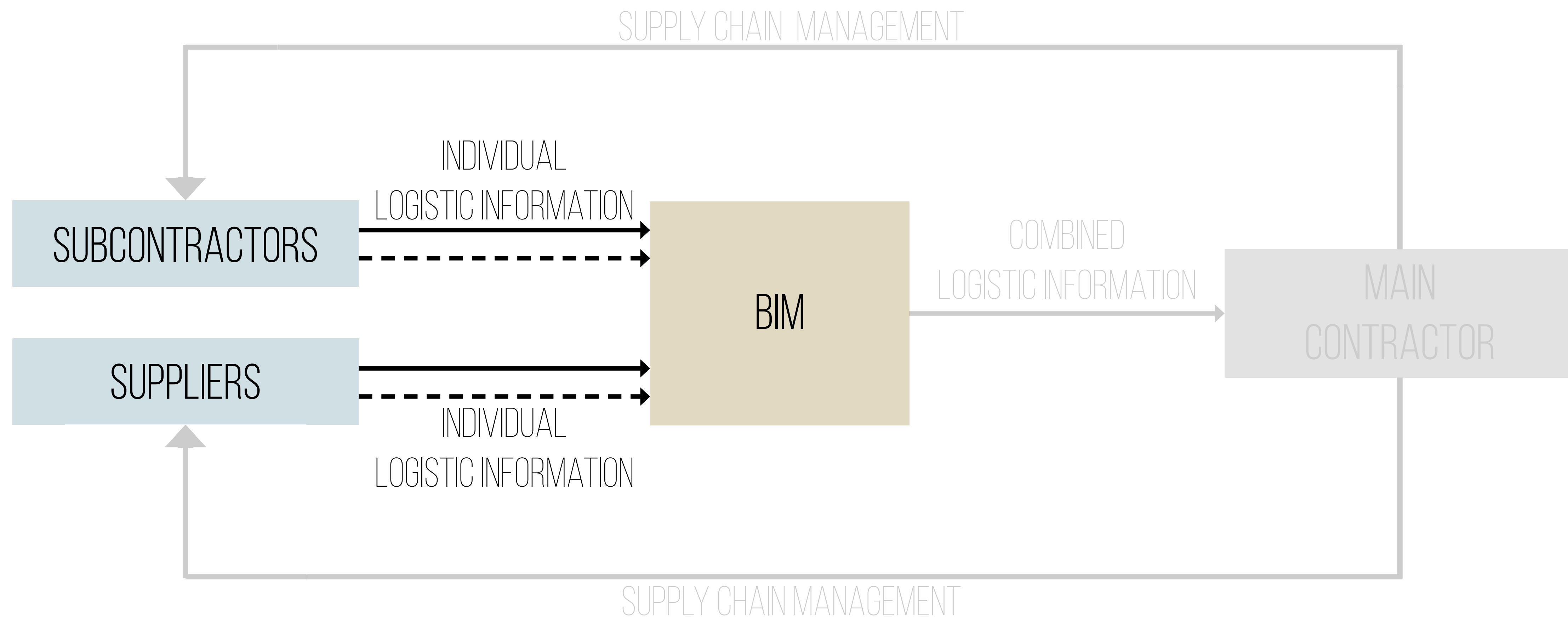






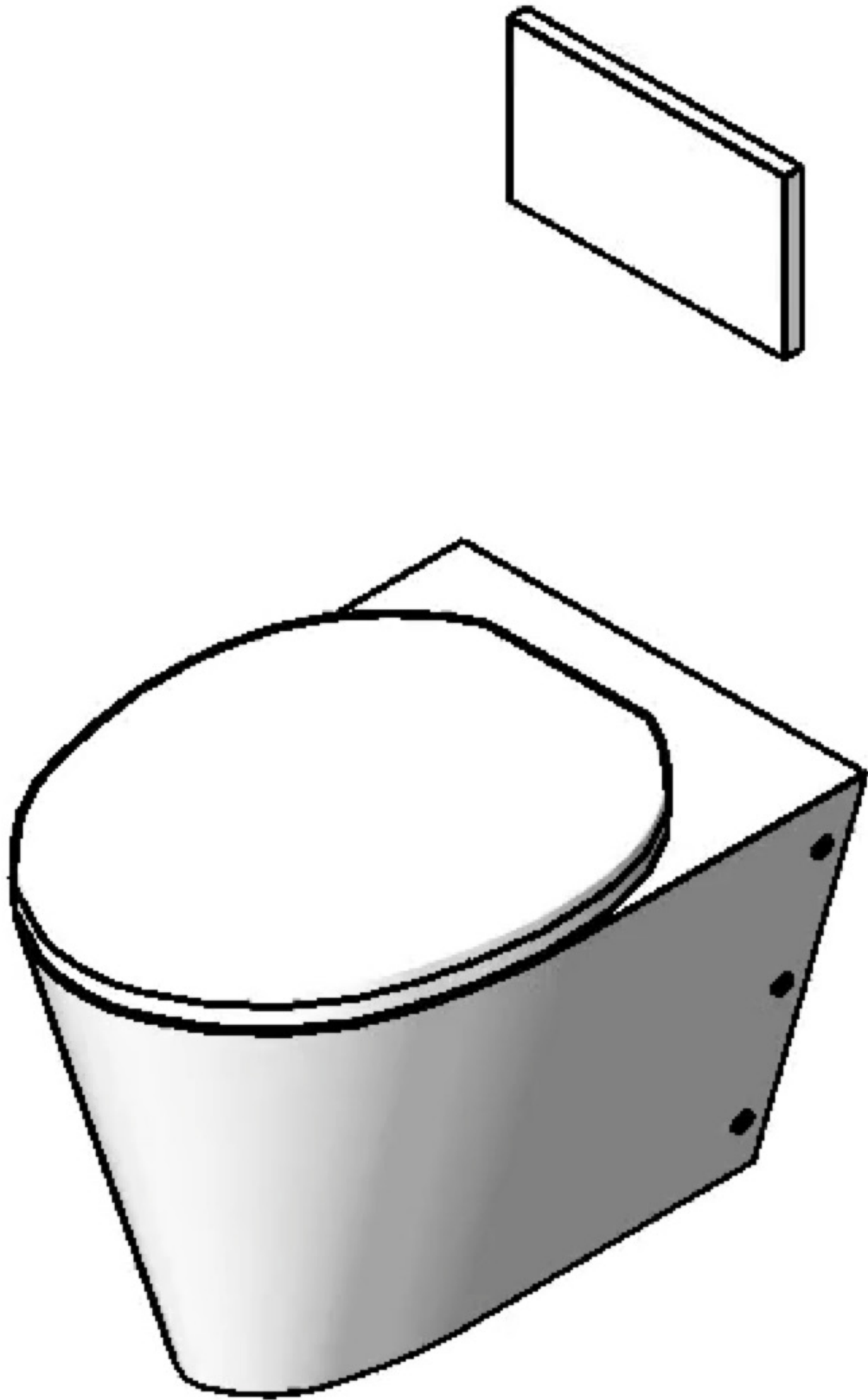
PHASE 02

PHASE 2



BIM-MODEL BÈTATOREN

				Designation		Dimensions						Location			Time			
				Family	Type	Length	Width	Height	Weight	Area	Volume	Level	Appartment	Room	Phase	Delivery date	Construction date	
Subcontractors	Bremán	Bathroom	Sink	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	
			Shower	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗		
			Bathtub	✓	✓	✓	✗	✓	✗	✗	✗	✓	✓	✓	✓	✗	✗	
			Radiator	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	
		Toilet	Toilet	✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	
			Sink	✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	
	Tegel Idee	Bathroom / Toilet	Floor tiles	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✗	✗	✓	✗	✗
			Wall tiles	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✗	✗	✓	✗	✗
Suppliers	Calduran	Corridor	Limestone	✓	✓	✓	✓	✓	✗	✓	✓	✓	-	-	✓	✗	✗	
		Bicycle Storage	Limestone inside wall	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	-	-	✓	✗	✗
			Limestone outside wall	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	-	-	✓	✗	✗
	Halfen	Facade	Facade structure	✓	✓	✓	✓	✓	✓	✗	✗	✗	-	-	✓	✗	✗	
			Miscellaneous	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	-	-	✓	✗	✗

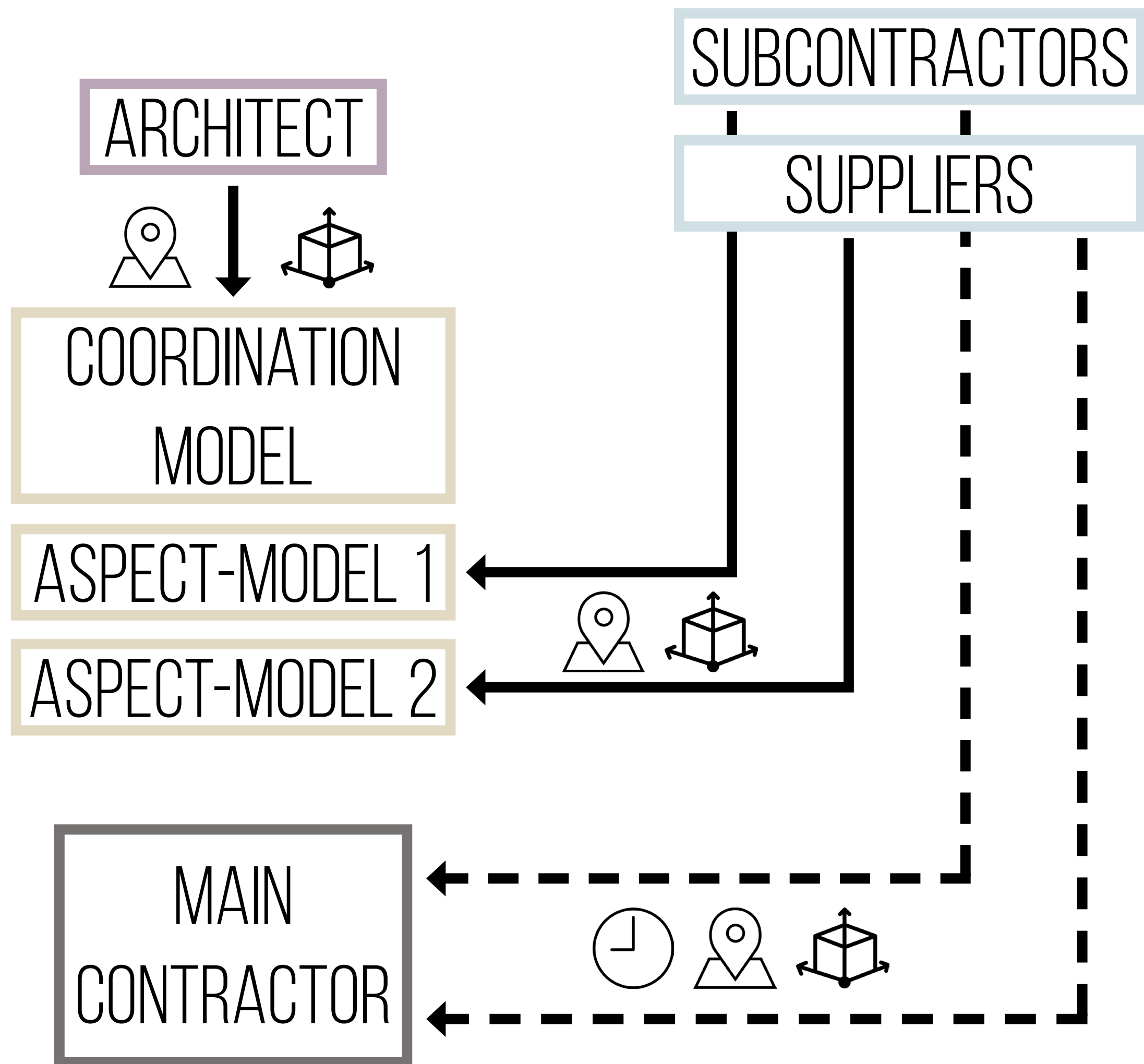


General	
System Family	Plumbing Fixtures
Type	74_PF_toilet_wand
Brand	Villeroy & Boch
Collection	Architectura
Model	568410
Constraints	
Level	7th floor*
Apartment	4*
Room	2*
Dimensions	
Width	370 mm
Depth	530 mm
Height	400 mm
Volume	0.078 m3
Volume_packaging	0.086 m3
Weight	21.18 kg
Material and Finishes	
Material_seat	Plastic
Material_lid	Ceramics
Phasing	
Phase Created	2. new construction
Date_delivery	26/06/2017*
Date_construction	07/07/2017*
Identity Data	
Description	Toilet
Assembly Code	74.11

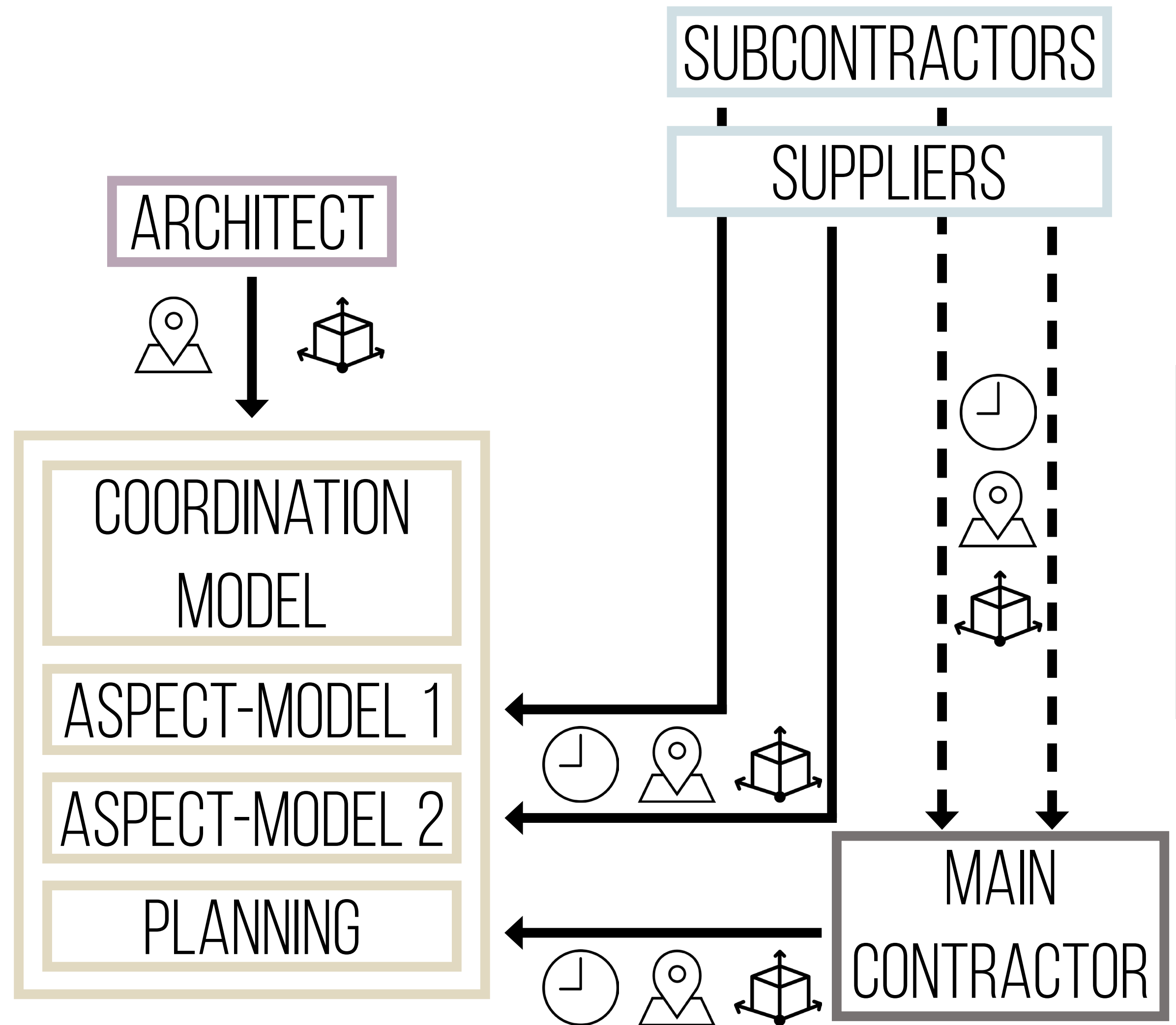
*PARAMETER DIFFERS PER COMPONENT

INFORMATION FLOWS

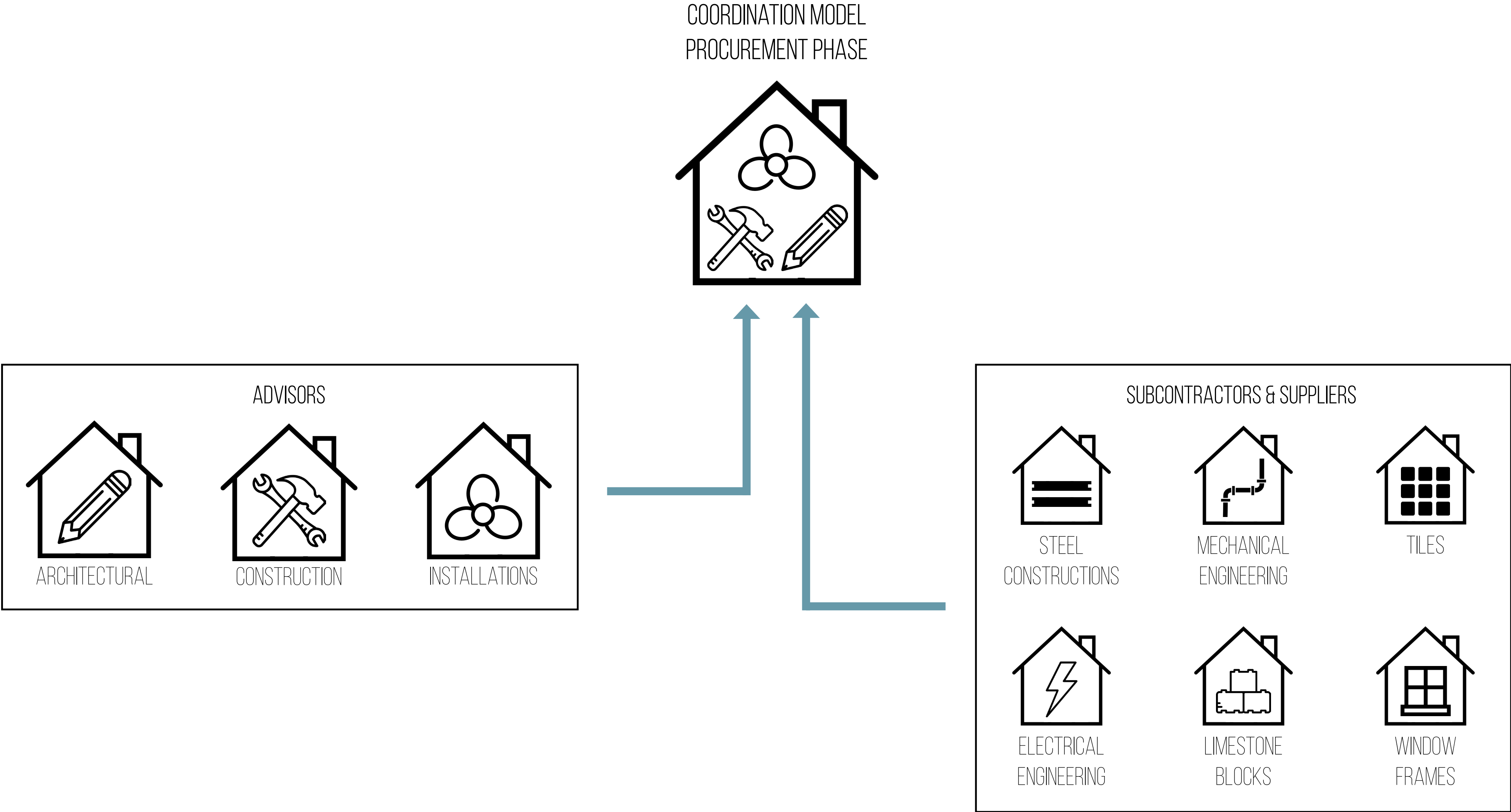
CURRENT SITUATION

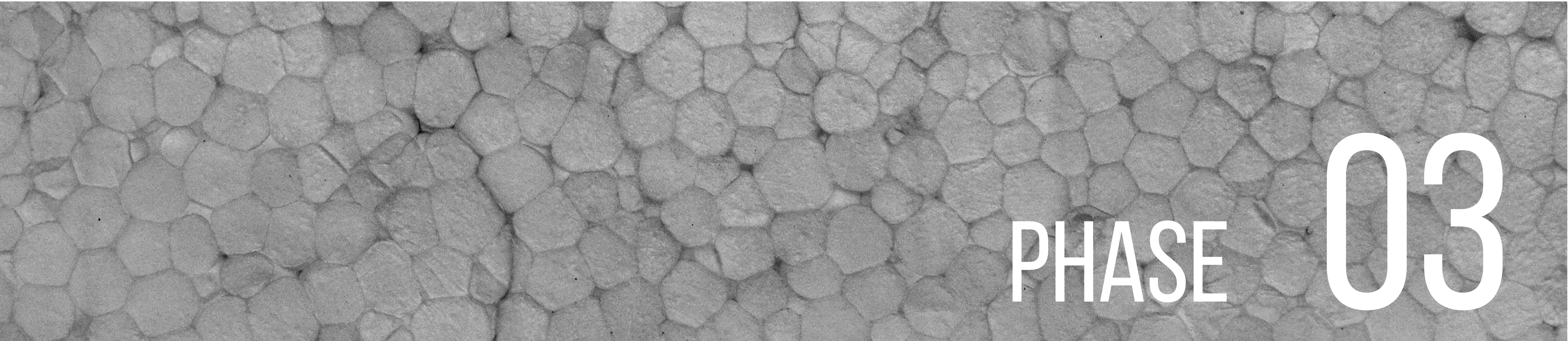


IMPROVED SITUATION

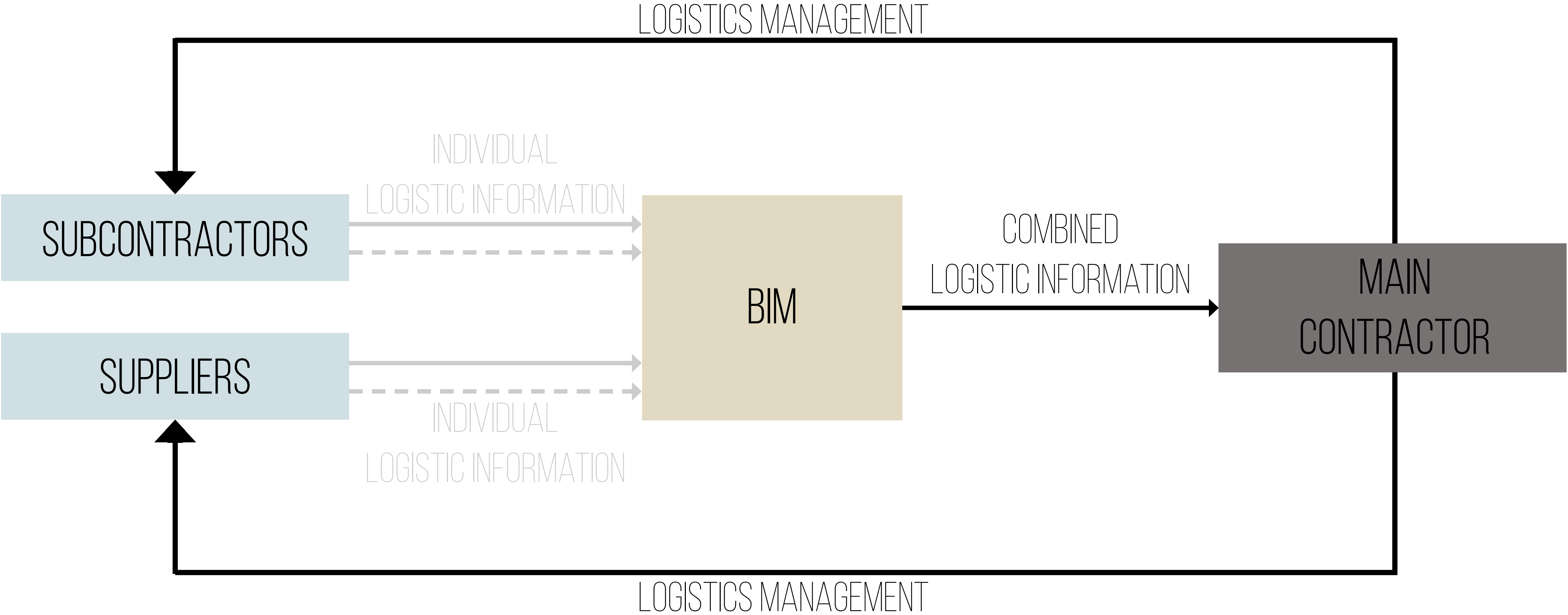


PROCUREMENT PHASE





PHASE 03



MANAGING THE ON-SITE LOGISTICS

01 CHECKING THE ASPECT-MODELS

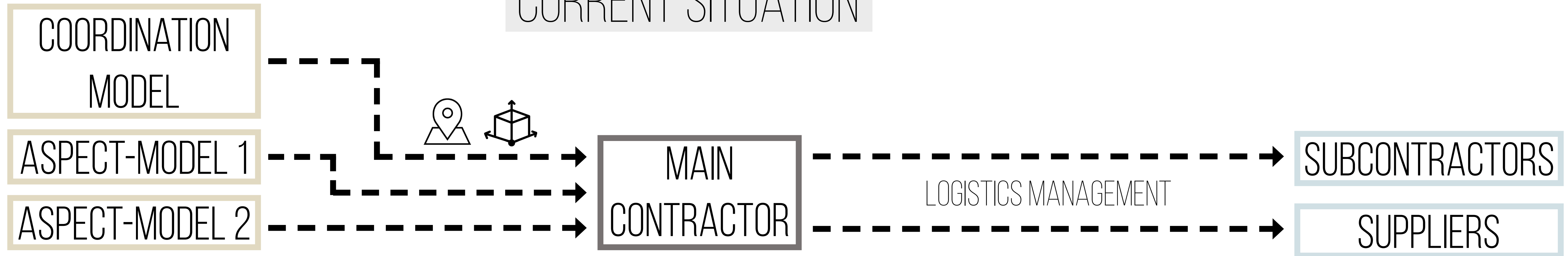
02 LINKING THE MODEL TO THE PLANNING

03 MANAGING THE INVENTORY

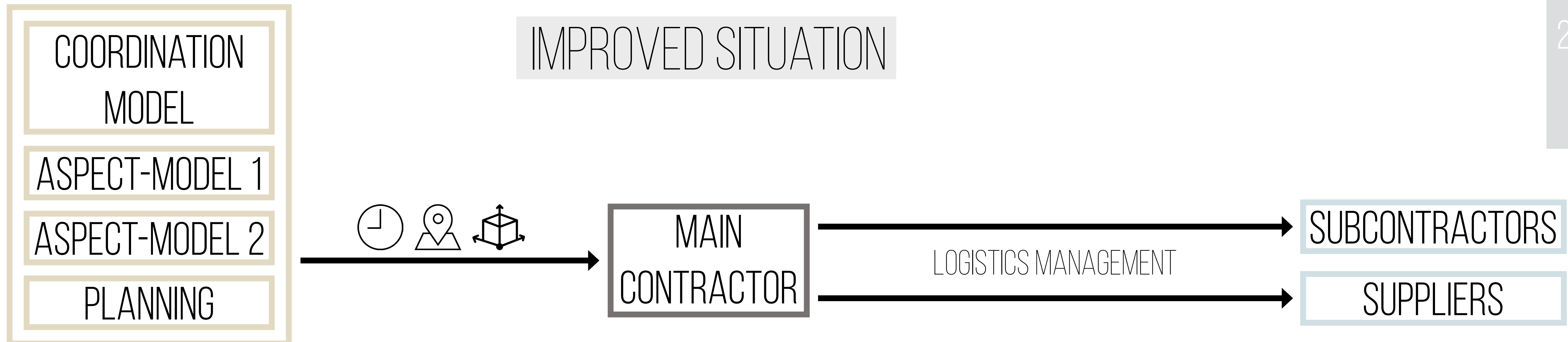


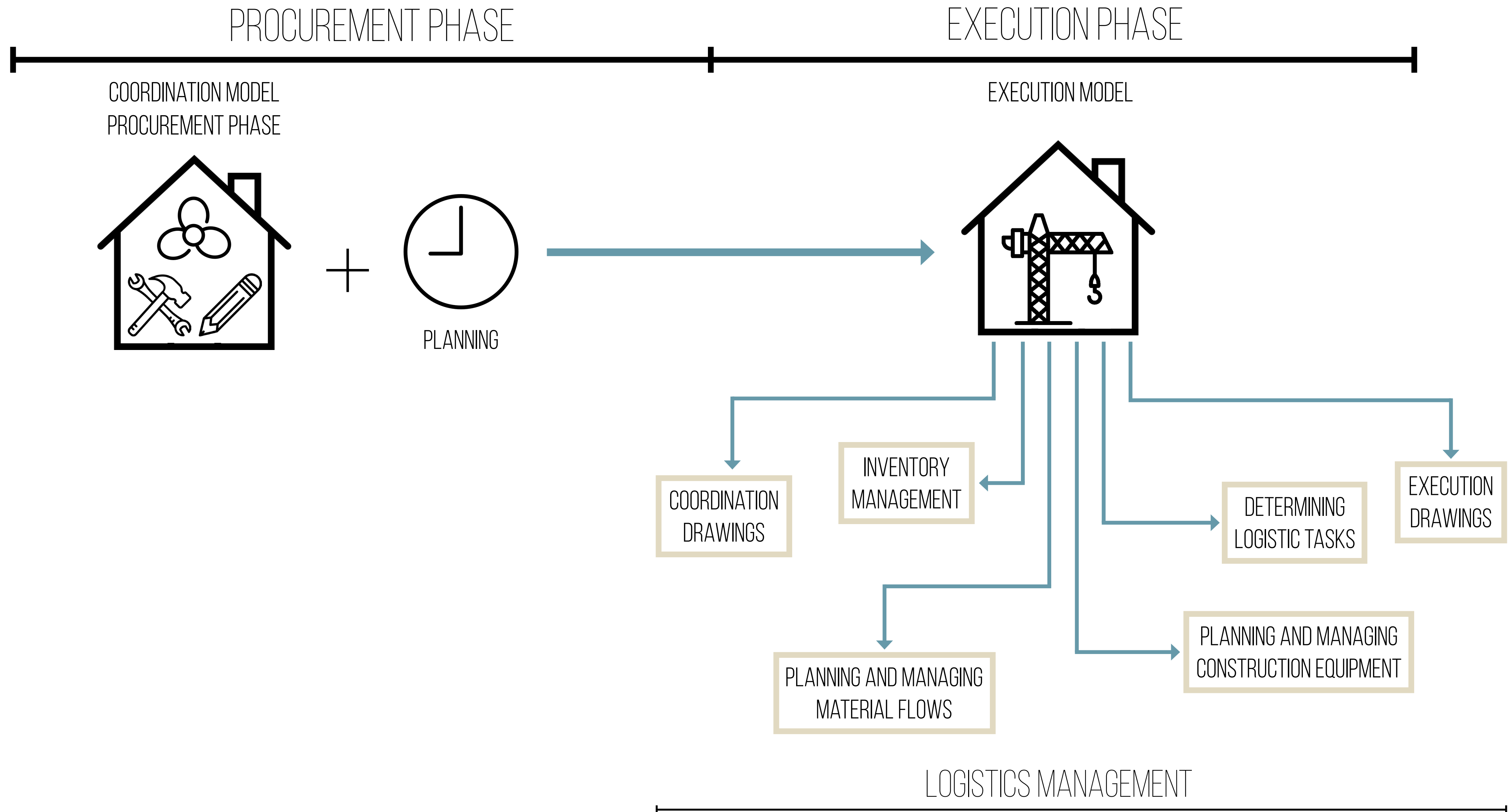
INFORMATION FLOWS

CURRENT SITUATION



IMPROVED SITUATION

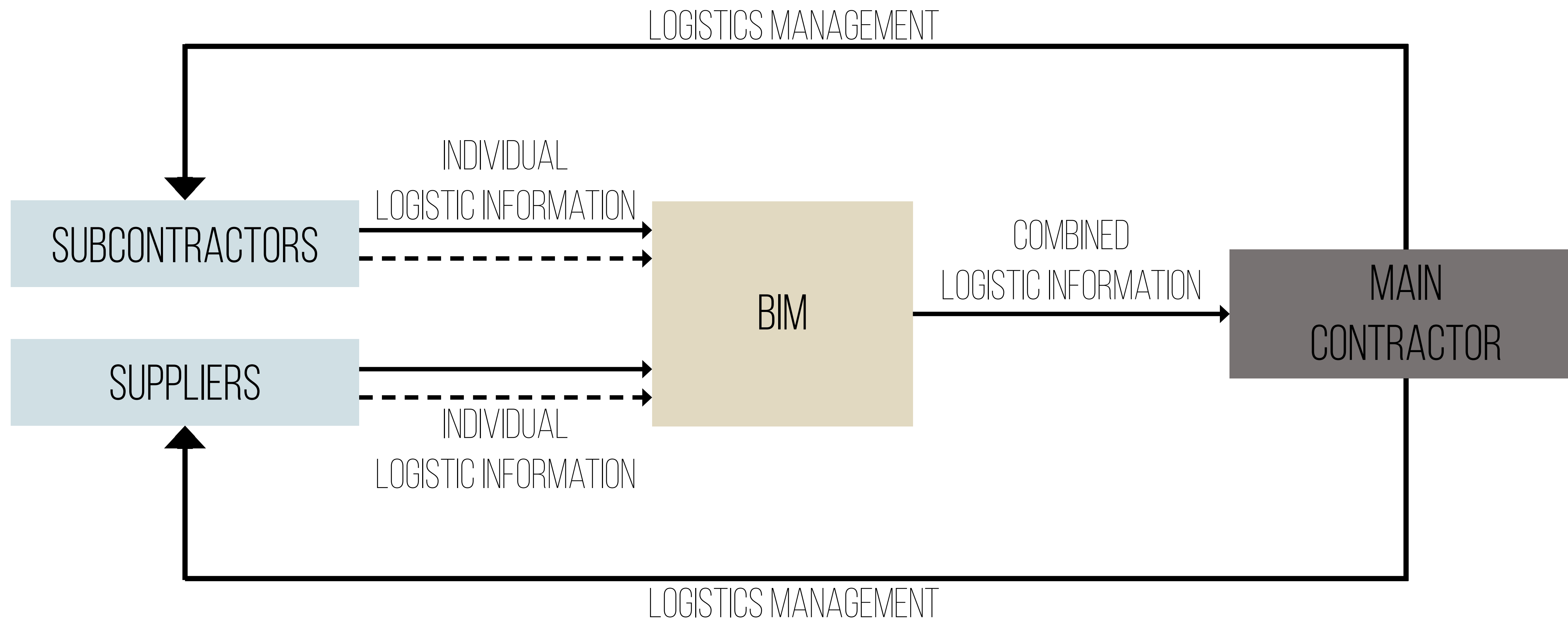




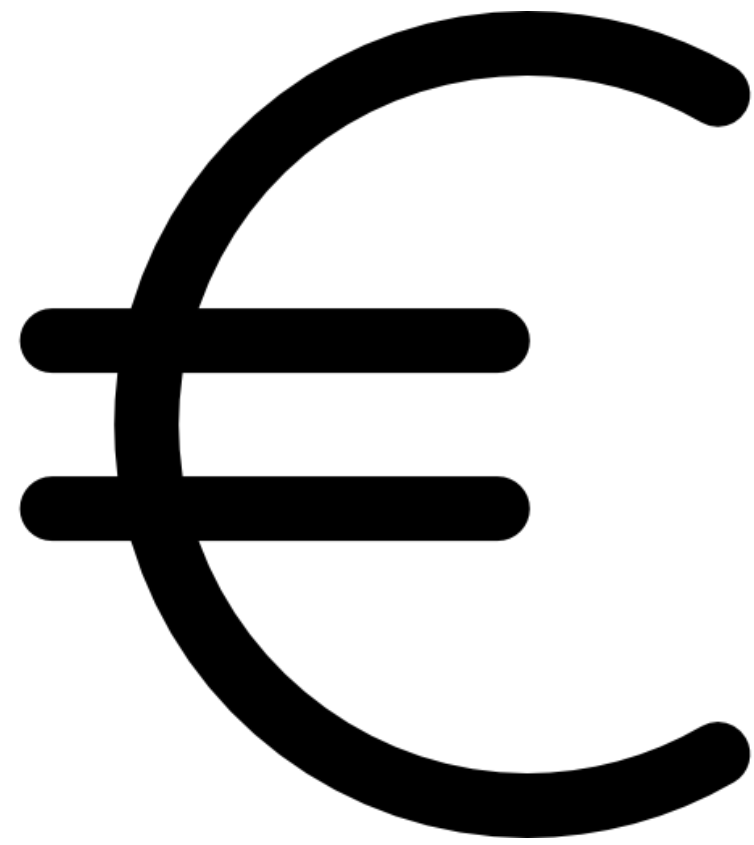


PHASE 04

PHASE 4



“THE **ADOPTION OF BIM** FOR THE MANAGEMENT OF THE ON-SITE LOGISTICS, IS **FINANCIALLY FEASIBLE**”



- MAIN COSTS: HARDWARE, LICENCES AND TRAINING

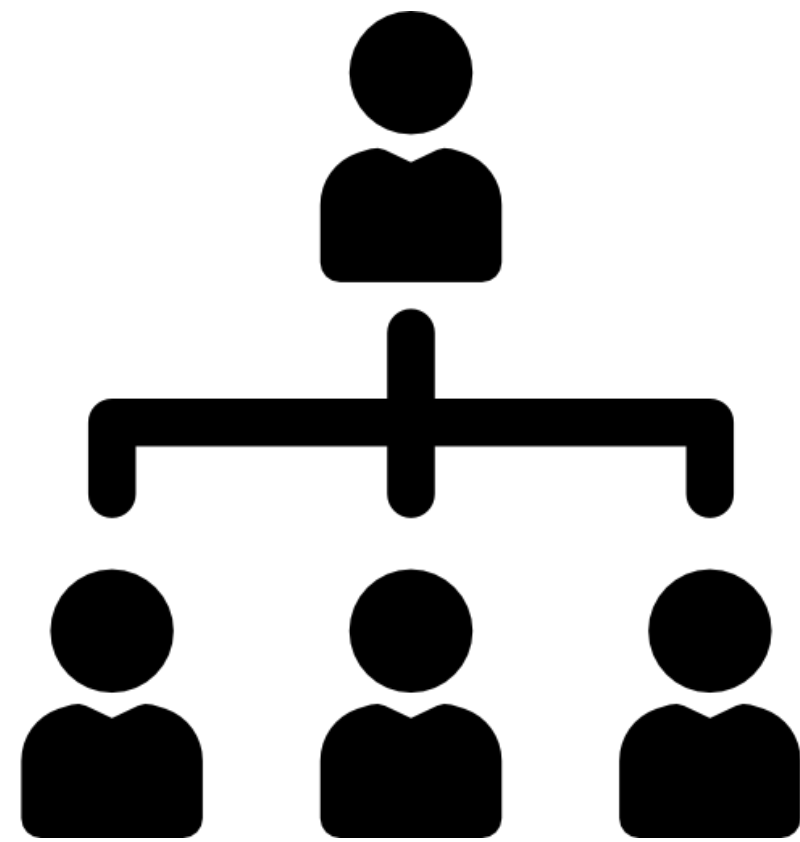
- SERIOUS INVESTMENT

- COSTS ARE SIMILAR TO COMMON CAD-SOFTWARE

- COSTS ARE OFTEN PERCEIVED HIGHER THAN THEY ARE

- BENEFITS OUTWEIGH THE COSTS

“THE **ADOPTION OF BIM** FOR THE MANAGEMENT OF THE ON-SITE LOGISTICS, IS **ORGANIZATIONALLY FEASIBLE**”



MAIN CONTRACTOR ALREADY HAS A COORDINATING ROLE

STEP-BY-STEP IMPLEMENTATION

ADOPTING NEW SOFTWARE AND NEW PROCESSES

SUPPORT FROM (TOP)MANAGEMENT

BENEFITS OUTWEIGH THE COSTS

“THE **ADOPTION OF BIM** FOR THE MANAGEMENT OF THE ON-SITE LOGISTICS, IS **SOCIALLY FEASIBLE**”



THIRD PARTIES NEED TO COOPERATE

SHOWING THE BENEFITS

TRAINING AND EDUCATION

FOCUS ON INTEGRATION AND COMMUNICATION

DEMAND COOPERATION



CONCLUSION

CURRENT SITUATION

“THE LOGISTIC INFORMATION AND
BIM ARE **DISCONNECTED**”

01 MISMATCH BETWEEN PRODUCTION PROCESSES
AND INFORMATION PROCESSES

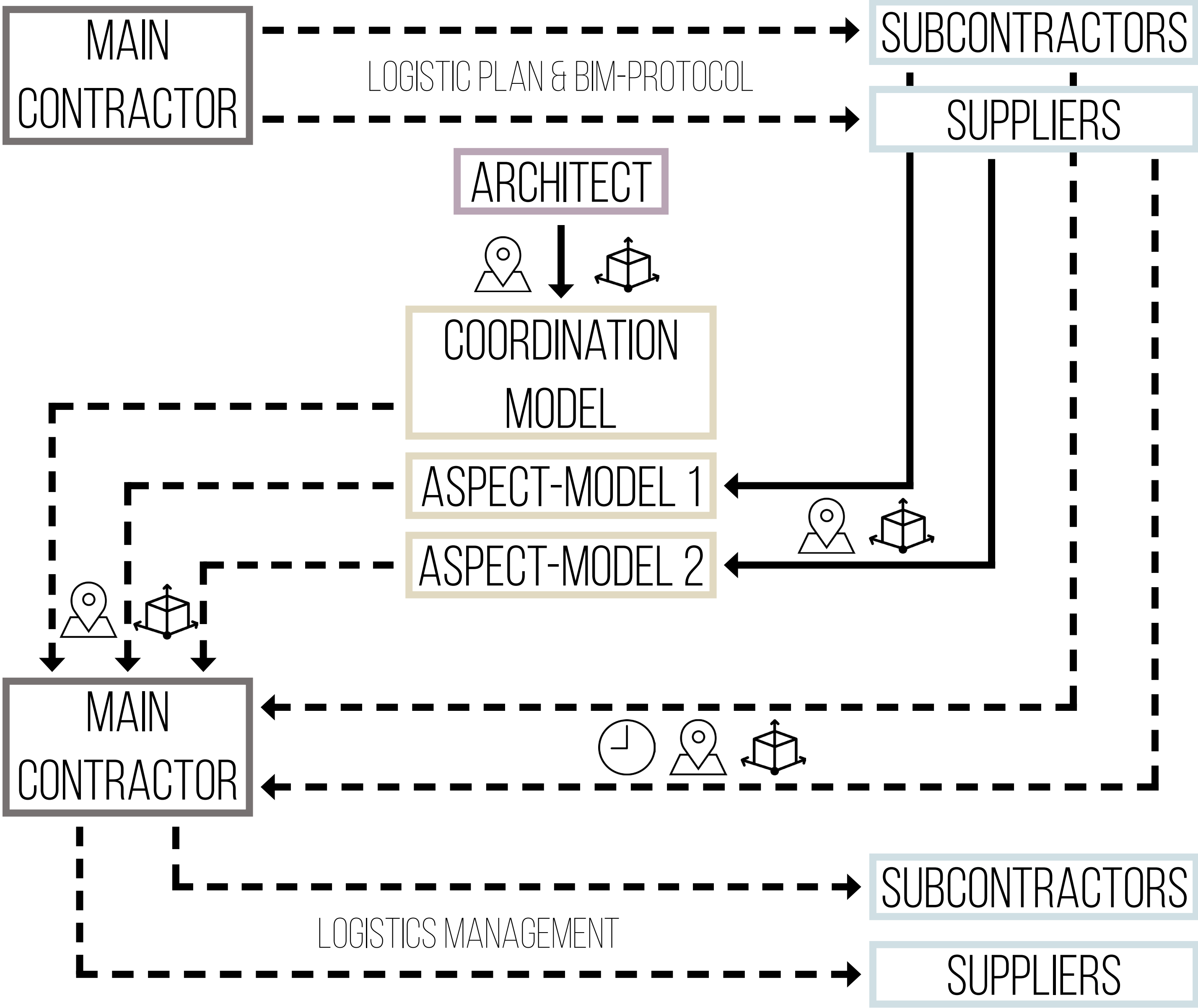
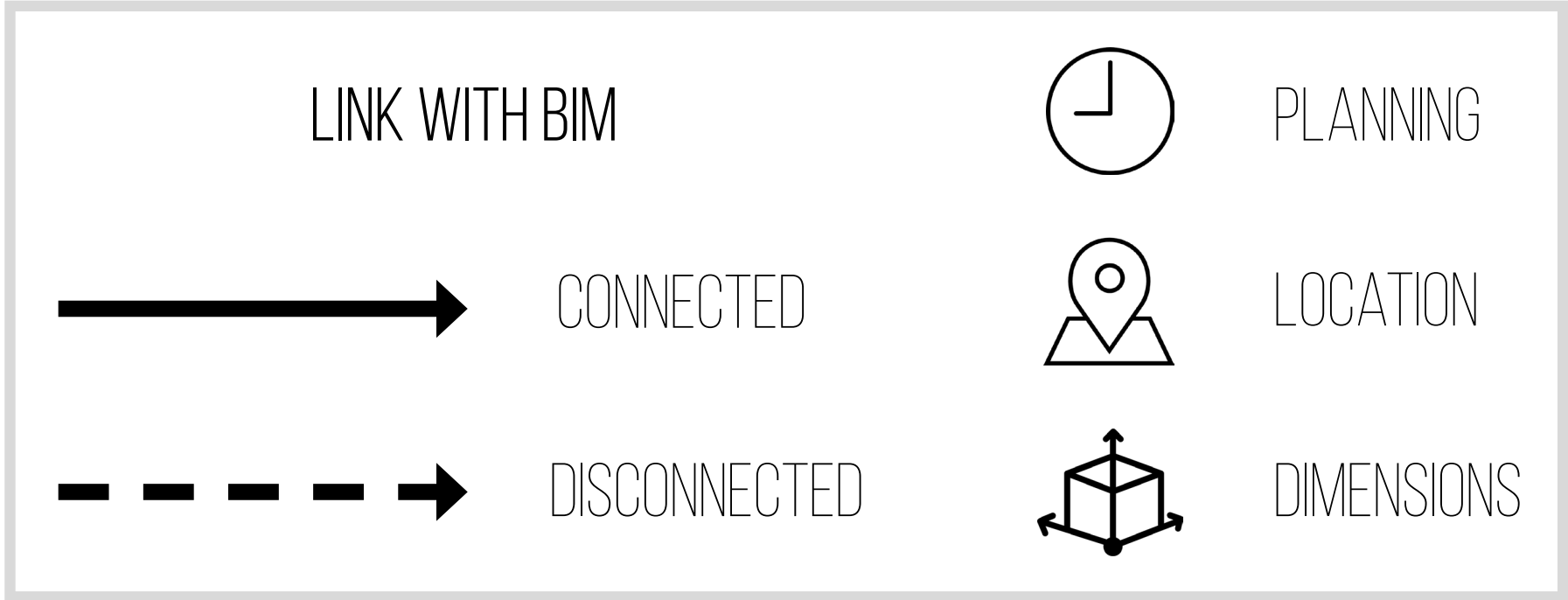
1.1 CONTRACTORS HAVE LITTLE INSIGHT IN THEIR
OWN INFORMATION PROCESSES

1.2 CONTRACTORS ARE AFRAID TO TAKE THE RISK
OF IMPLEMENTING BIM



INFORMATION FLOWS

CURRENT SITUATION



IMPROVED SITUATION

“GETTING **CONTROL** OF THE ON-SITE LOGISTICS”

01

TAKE RESPONSIBILITY AND CONTROL THE
CHANGES IN THE PROCESS

02

MAKE SURE THE INFORMATION PROCESSES AND
BIM ARE CONNECTED, AND LINKED TO LOGISTICS

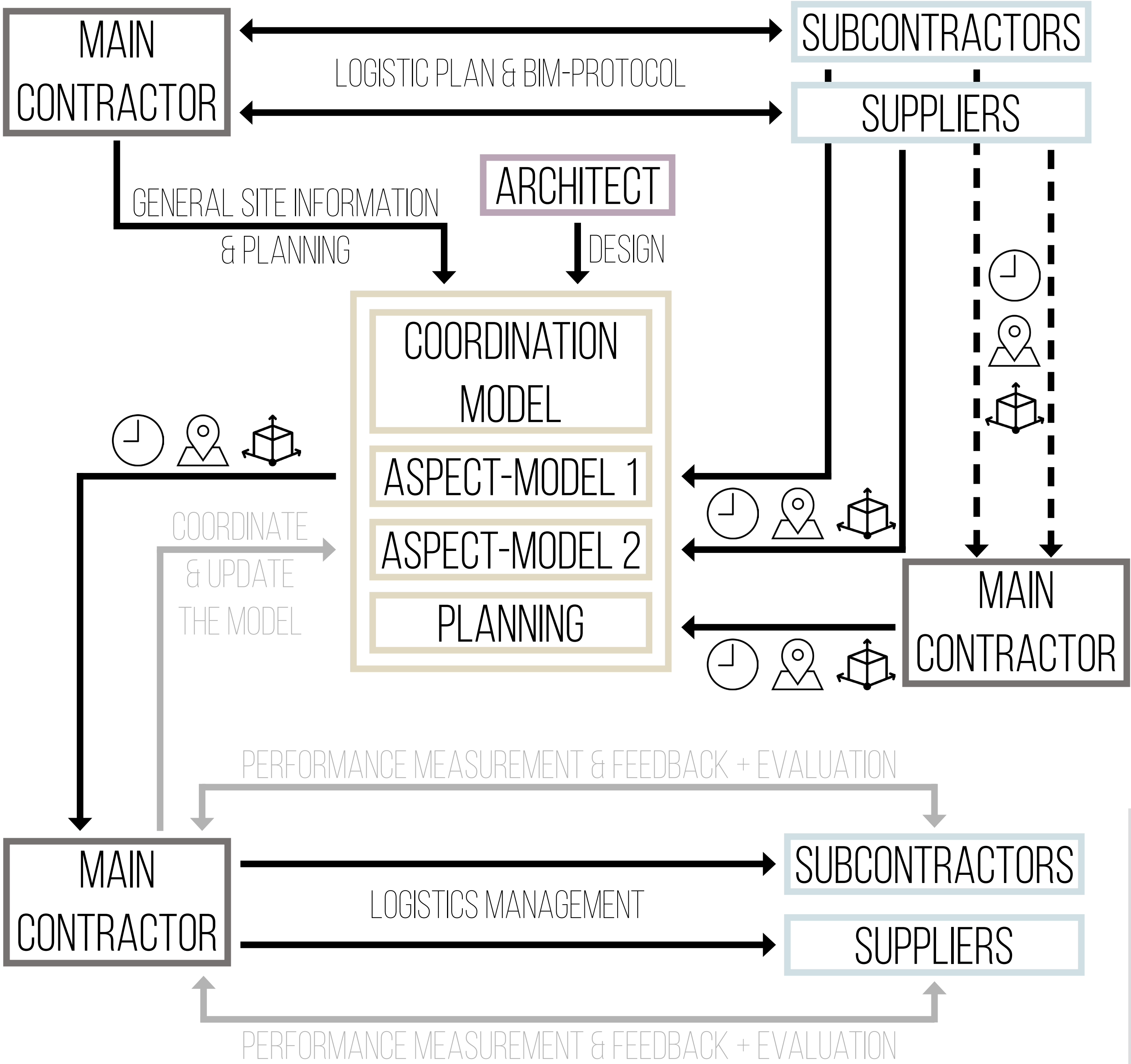
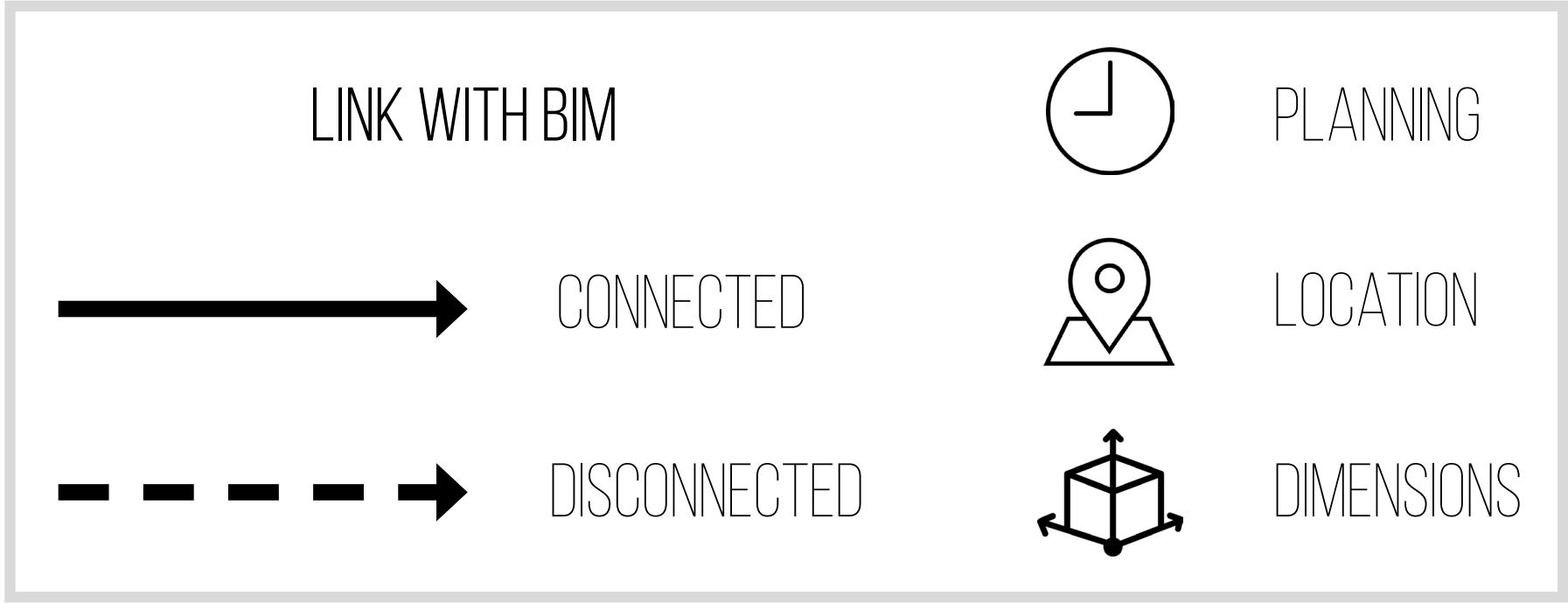
03

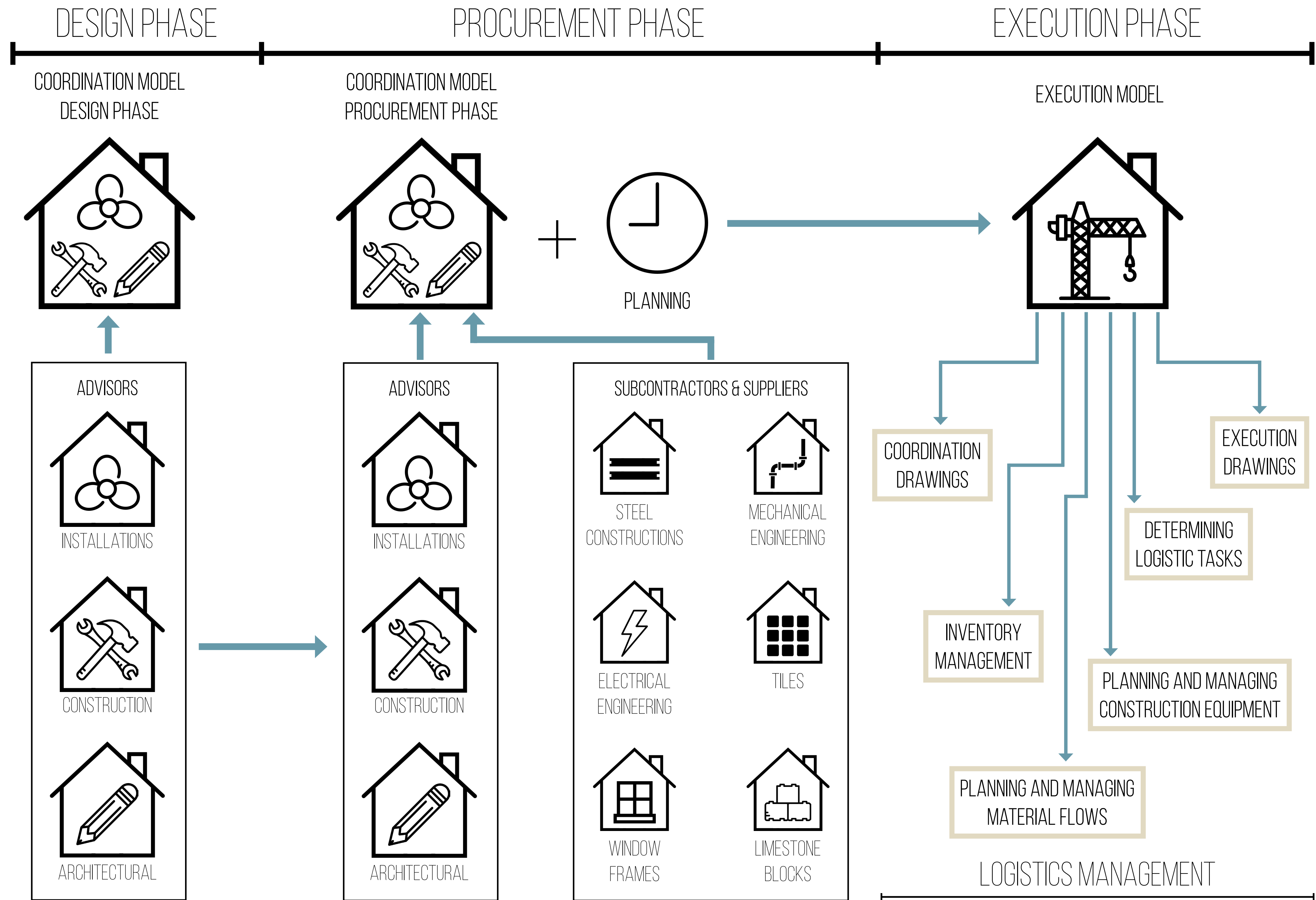
ALIGN THE BIM-MODEL WITH THE ON-SITE
CONSTRUCTION LOGISTICS



INFORMATION FLOWS

FINAL FRAMEWORK







THANK YOU FOR YOUR ATTENTION



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