

The background of the slide is an aerial photograph of a city, likely Hamburg, Germany. It shows a wide river (the Binnenalster) with a large ship in the center. To the left is an industrial area with cranes and storage yards. To the right is a modern urban development with several tall, grey, rectangular buildings. In the far background, a city skyline with wind turbines is visible under a clear blue sky.

# THINKING LEAN AND WORKING WITH IPD IN GERMANY

Markus Lentzler | LC-DK Annual Conference 2020 | 25.08.2020, Copenhagen





- Architect
- Focus: Real Estate
- Business Mediator
- Mediation Supervisor
- Managing Director ECE
- Chairman of IPD Competence Centre



# Current industry trends

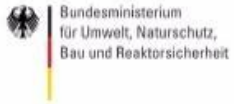


Building price increases	BIM
High capacity utilisation	Technisation   Digitalisation
Predictive maintenance	Lean management
Authority Management	Cradle to Cradle
Climate protection goals   Building certification	Settlement models



# Risk management public sector

Construction cost increases and delays



## Reform Bundesbau

Bessere Kosten-, Termin- und Qualitätssicherheit bei Bundesbauten



## Reformkommission Bau von Großprojekten

Komplexität beherrschen – kostengerecht, termintreu und effizient

**Endbericht**



## Fields of action identified

Strong project management	Reliable demand planning
Forecasting and estimation of project risks	Reliable date and cost statements
Selection of the best partners	Fast reaction in case of planning and construction process disturbances
New partnership-based contract models	Streamlined internal procedures
Adequate equipment Federal Building Administration	



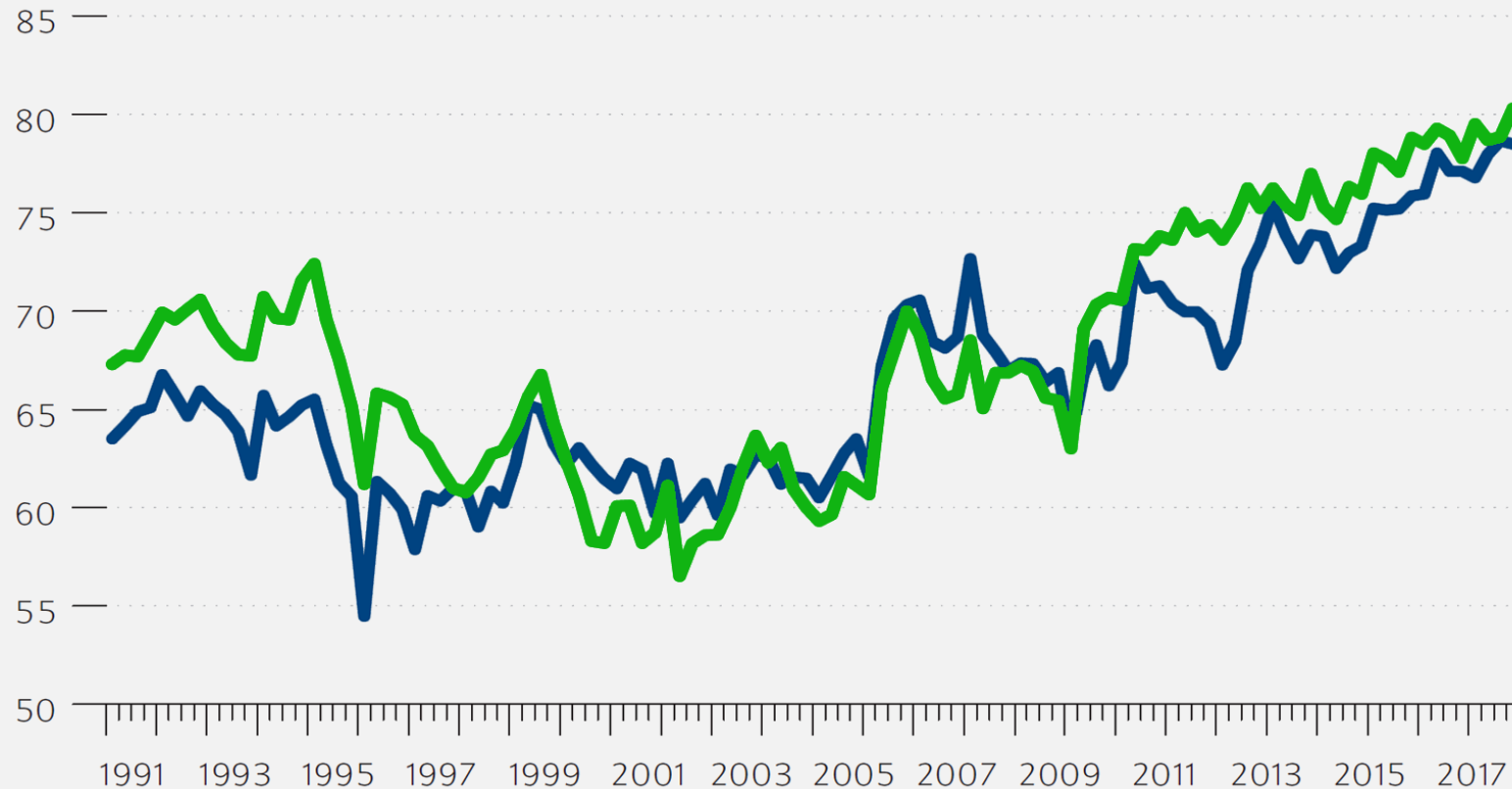
**More findings on  
the German construction industry**

**or**

**"Is there a need for action?"**



# Capacity utilisation in the construction industry at a record high



The capacity utilisation rate is also high by historical standards.

**Civil engineering in %**  
**Building construction in %**

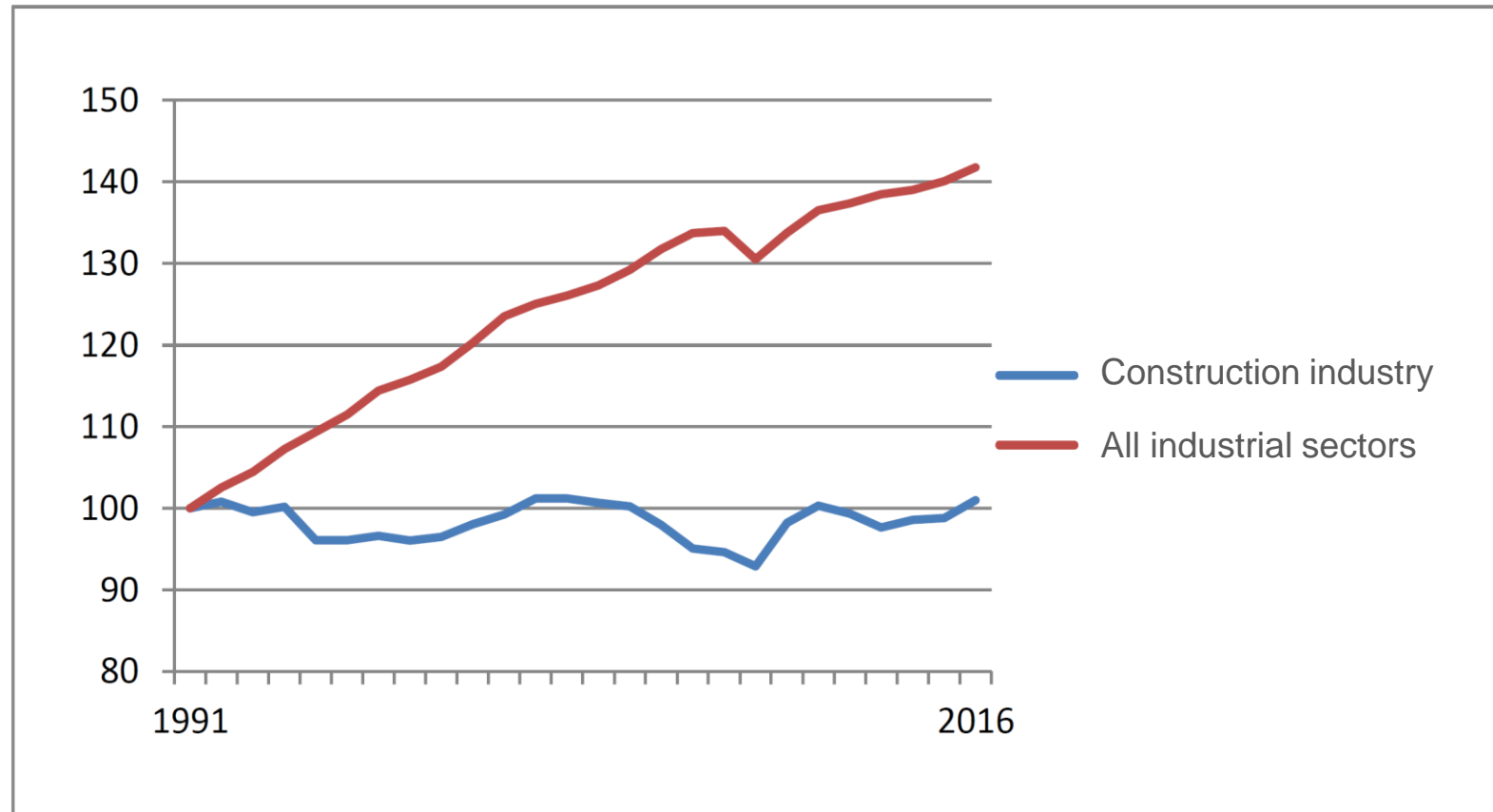


**"Construction industry causes 14.9 billion  
defect costs in 2017"**

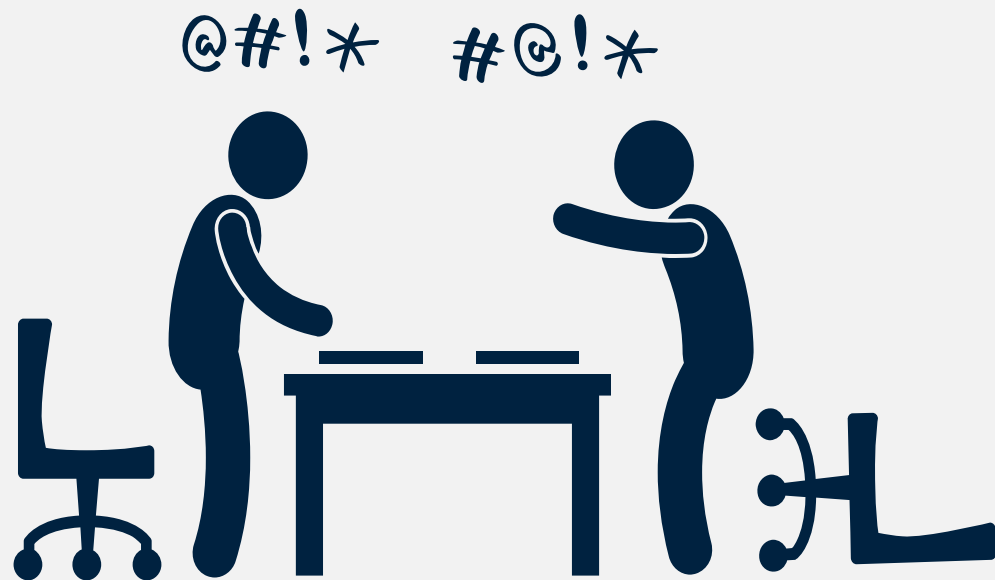


# Productivity

Development of labour productivity per hour worked







2014

**approx. 70,000 court cases  
in building and architectural  
matters in Germany.**



**In order to match the market requirements  
we need:**

- a culture change**
- new contract models**

**in our industry.**



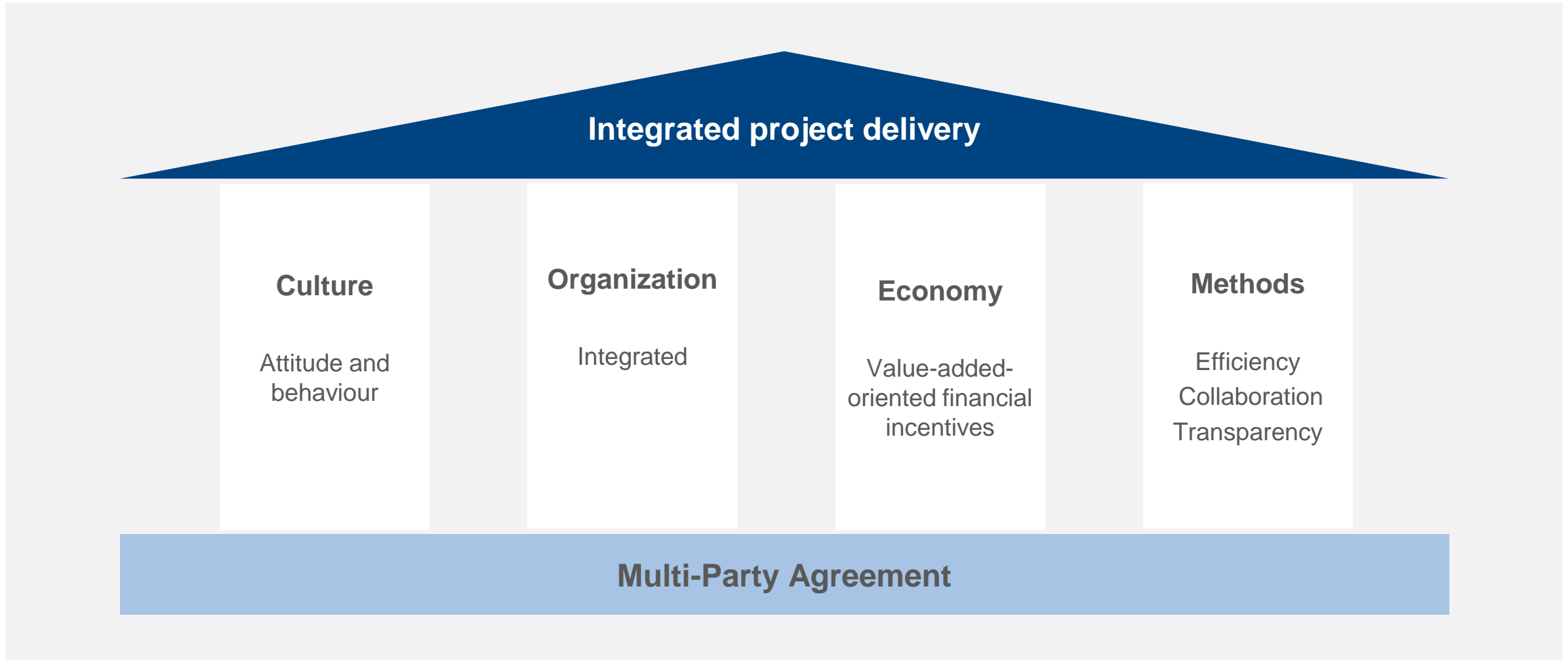
**Cooperation needs attitude.**

**And:**

**Cooperation needs structures and processes.**



# Integrated project management is based on several columns. Building blocks for a system and culture change.

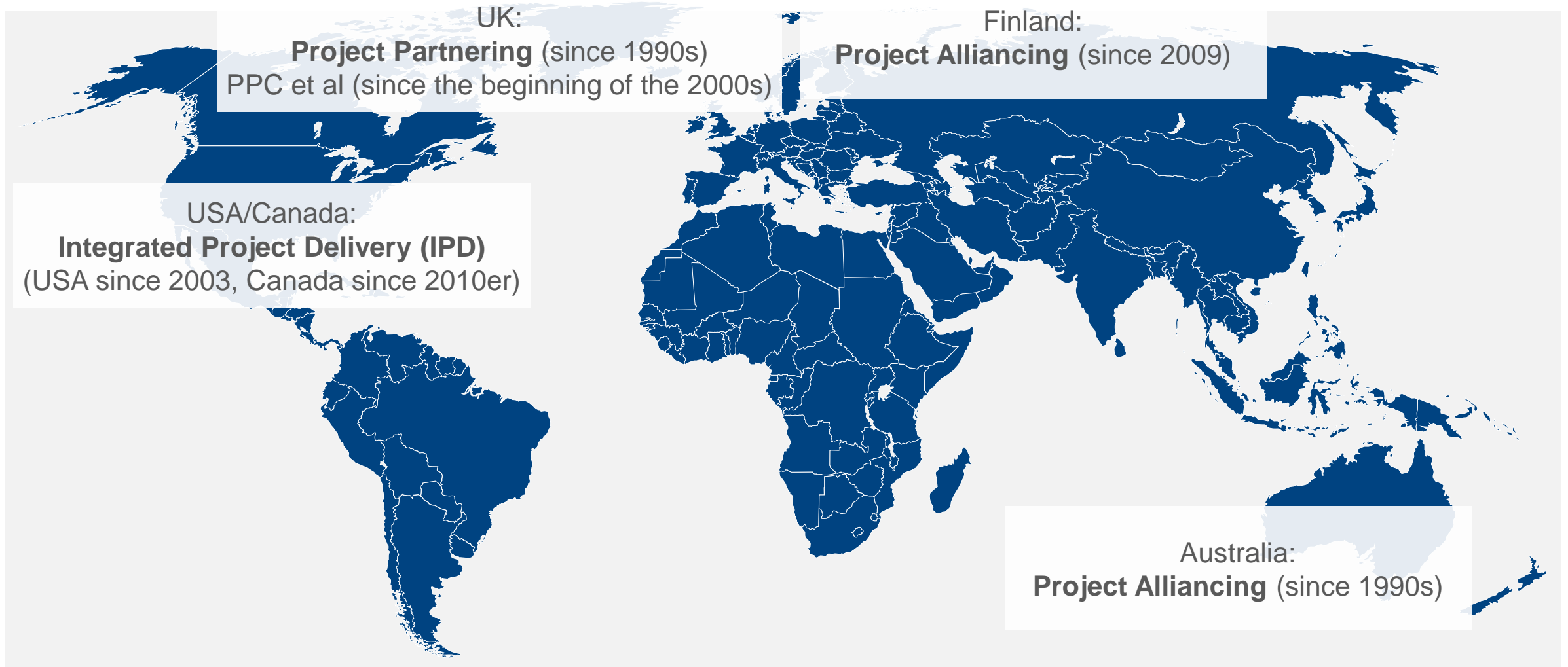




# Overview of integrated project management worldwide



# Worldwide overview





# Development in Germany



- Since 2014 - **German Lean Construction Institute (GLCI)**



- Since 2016 - **Initiative TeamBuilding changed to IPD Competence Center as part of GLCI since 2020**



- Since 2017 - **Working Group XI „Innovative Contract Models“ of the German Building Court Conference**



- Since 2018 - **First pilot project in Germany (Kongresshotel Hamburg)**



- Since 2020 - **First pilot in the public sector in Germany**



Call to **develop best-practice models** for integrative project management (based on international experience).

Furthermore, it was found that "integrative project management" was not against

- Competition Law
- Law on contracts for work and services
- Company Law

...in this case.

## Target:

Inclusion of a mission statement in the BGB for integrative project management



# Suitability matrix for multi-party contracts

Source: Journal Bauingenieur Sonderdruck from issue 10 (2013), Schlabach / Racky

		1	2	3	4	5		Weighting x Points
Project volume [Mio. Euro]	5,6	< 25	25 - 50	> 50 - 80	> 80 - 100	> 100	5,0	0,28
Market structure, number of suppliers	2,7	> 10	8 - 10	5 - 7	2 - 4	0 - 1	4,0	0,11
Entry of the construction company after HOAI work phases (LP)	5,6			LP5	LP3-4	LP1-2	4,0	0,22
Uncertainty regarding the building project, consequence k* [%]	22,2	k < 3	3 ≥ k < 5	3 ≥ k < 5	10 ≥ k < 20	k ≥ 20	4,0	0,89
Stakeholder influence, consequence k* [%]	11,1	k < 3	3 ≥ k < 5	3 ≥ k < 5	10 ≥ k < 20	k ≥ 20	4,0	0,44
Fast Track-Processing, Degree of completion Execution planning [%]	13,9	100,0	75,0	50,0	30,0	10,0	5,0	0,70
Probability of significant design changes [%]	19,4	< 10	≥ 10 - 40	> 40 - 50	> 50 - 75	> 75	4,0	0,78
Optimisation of project costs consequence k* [%]	13,9	k < 3	3 ≥ k < 5	3 ≥ k < 5	10 ≥ k < 20	k ≥ 20	4,0	0,56
Suitability of conventional forms of execution for the realisation of aspects not related to costs or deadlines (e.g. tenants / users)	5,6	well	well	medium	low	very low	5,0	0,28
n.n								0,00
Total weighting / Total points	100,0	Suitability of a multi-party Agreement from 4 points						4,25

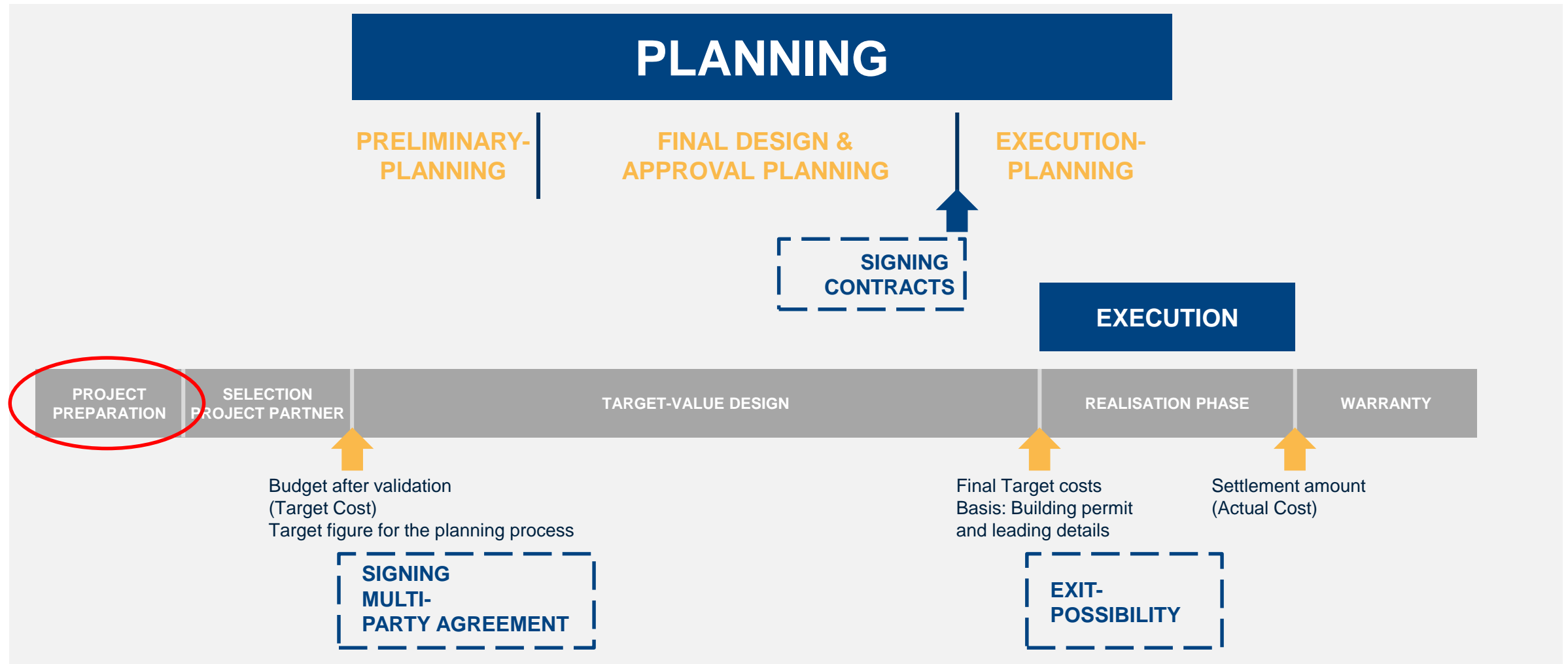


\* based on the manufacturing costs



# Lean IPA | Phase 1 - Project Preparation

Phase model of joint project management





# Location | Property

Urban environment





# First pilot project in Germany

Project preparation / Owner's programme



## Technical data

**Hotel:** 40.000 m<sup>2</sup>

**Room:** 700

**Congress area:** 4.500 m<sup>2</sup>

**Underground car park:** 400 PL

**Start of planning:** 2017 / 2018

**Start of construction:** 2019

**Completion:** 2023



The background of the slide is a faded image showing a hand holding a pen, poised to write on a document. The document contains several bar charts with colorful bars (blue, green, yellow, orange) and tables of data. The overall theme is financial analysis or project management.

**Cost  
estimation**

**Suitability  
matrix**

**Profitability  
calculation**

**Functional  
building  
description**



**Why do  
project partners  
decide to participate in  
multi-party agreements?**





In this contract model, there is a 360-degree view of the entire project from day one. The cooperation of planning and construction enables the building to be supervised holistically in the sense of the "master builder" and thus to create sustainable quality.



**NICOLAUS GOETZE**

Partner | gmp general planning company mbH





No construction site is without problems. This is due not least to the different interests of the parties involved in the construction. We have overcome this problem because of joint collaboration between the clients, contractors and planners already in the early planning stages.



**JENS QUADE**

Technical Management | Ed. Züblin AG





Integrated Project Delivery is a highly effective method for delivering complex projects. Harnessing the knowledge and skill of the entire design and construction team, IPD overcomes many of the dysfunctions documented by the Construction Users Roundtable, the World Economic Forum, McKinsey Global Institute and others.

**HOWARD W. ASHCRAFT**

HansonBridgett Attorneys





Lean IPA is a holistic approach

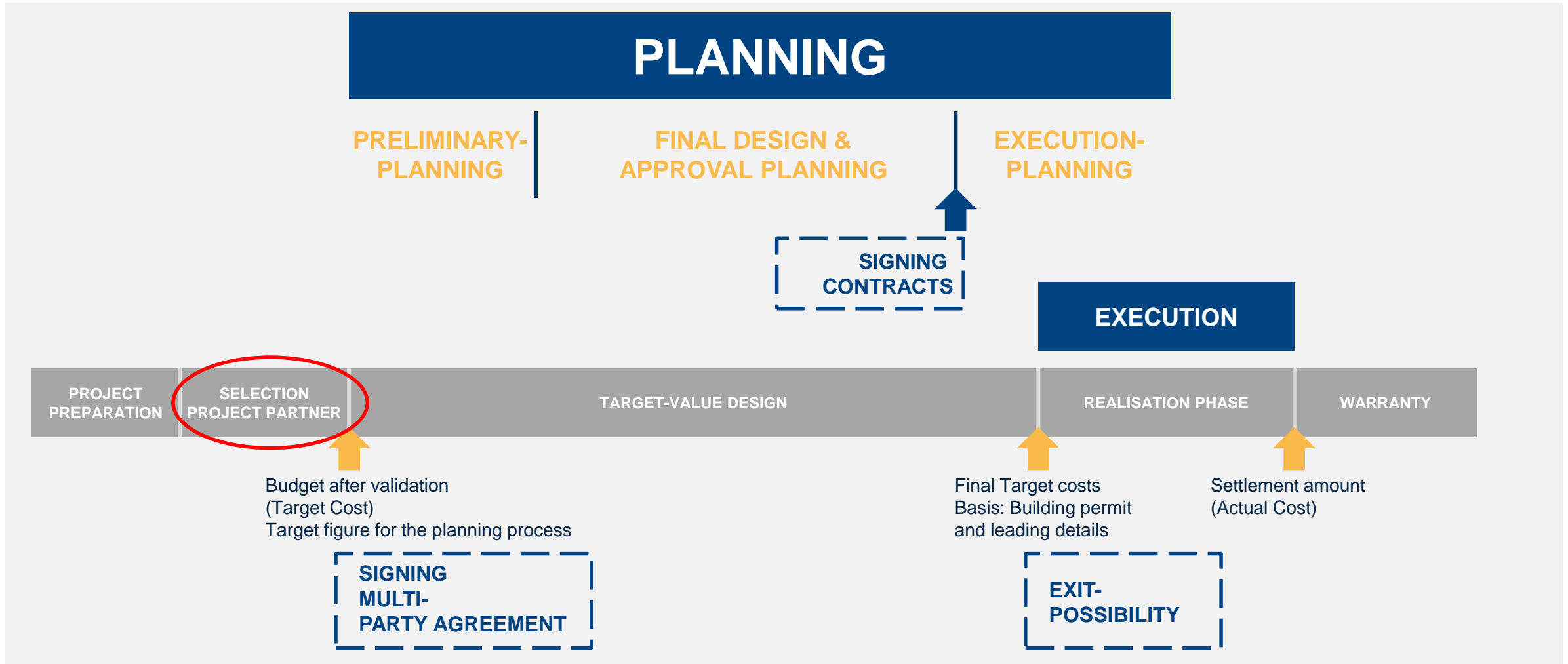
A dark blue world map with white outlines of continents and countries, serving as a background for the central text.

**BEST  
FOR PROJECT**



# Lean IPA | Phase 2 - Selection of project partners

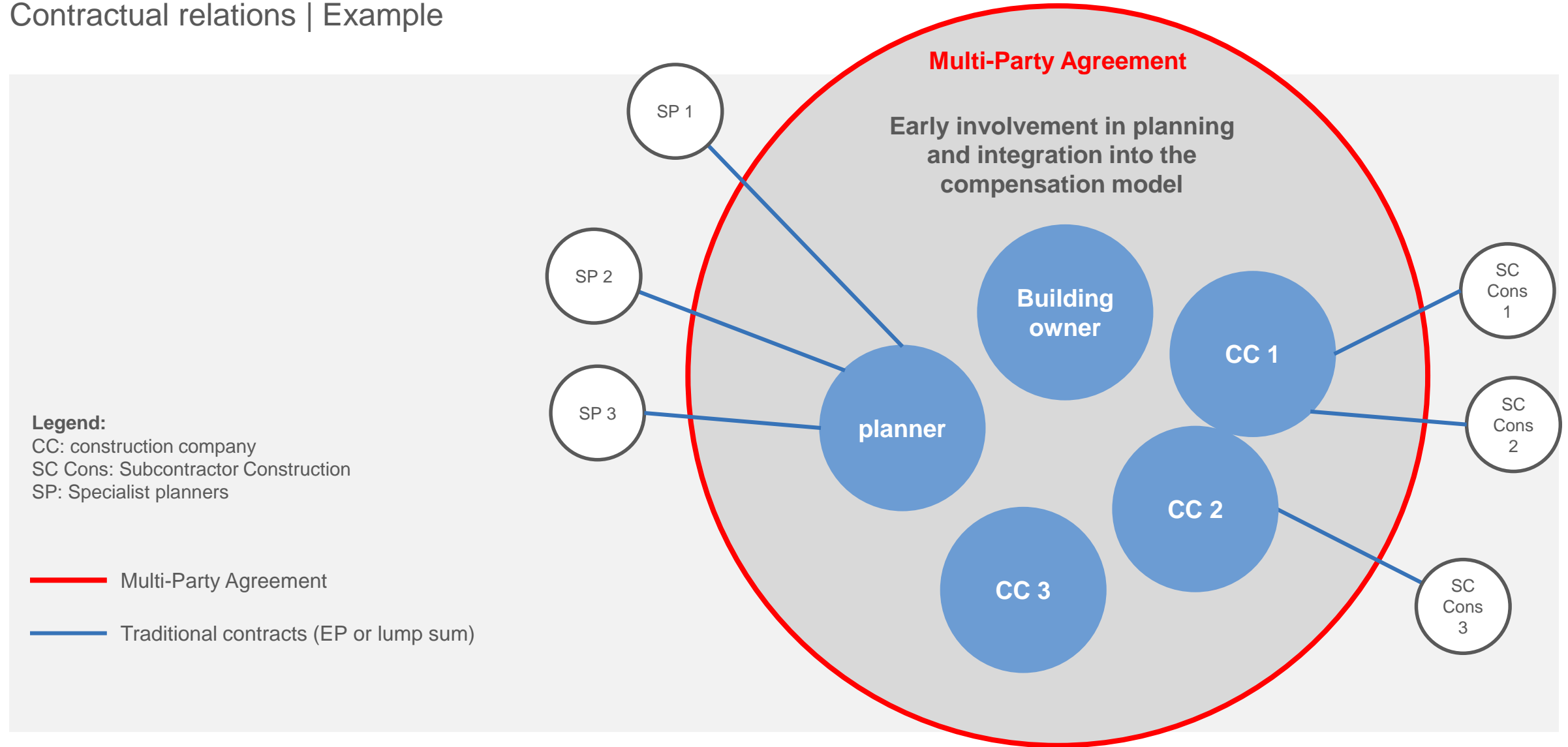
Phase model of joint project management





# Project organization

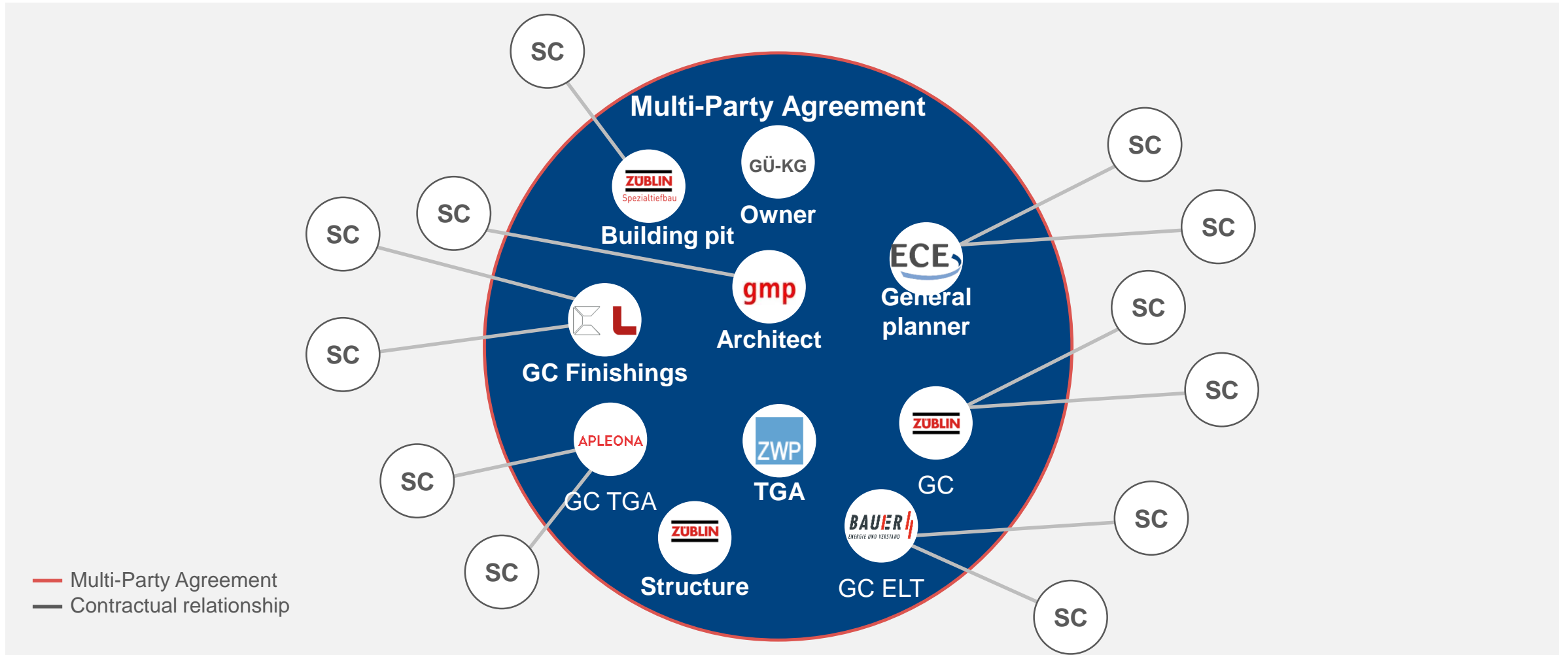
Contractual relations | Example





# Project Organization

Pilot project Kongresshotel HafenCity Hamburg





# Special features of integrated project delivery

- **"Spirit of the contract" as in "Best for Project"**
- **Relational contract (Rules of cooperation are the main focus).**
- **Common project goals**
- **Integrated organization**
- **Decision-making mechanisms**
- **Dispute resolution mechanisms**
- **Project management and planning methods**
- **Compensation model with incentive system**
- **Extensive limitations of liability to promote innovation and collaboration**
- **...**



# Cultural change | Cooperation

Why is the project culture important?

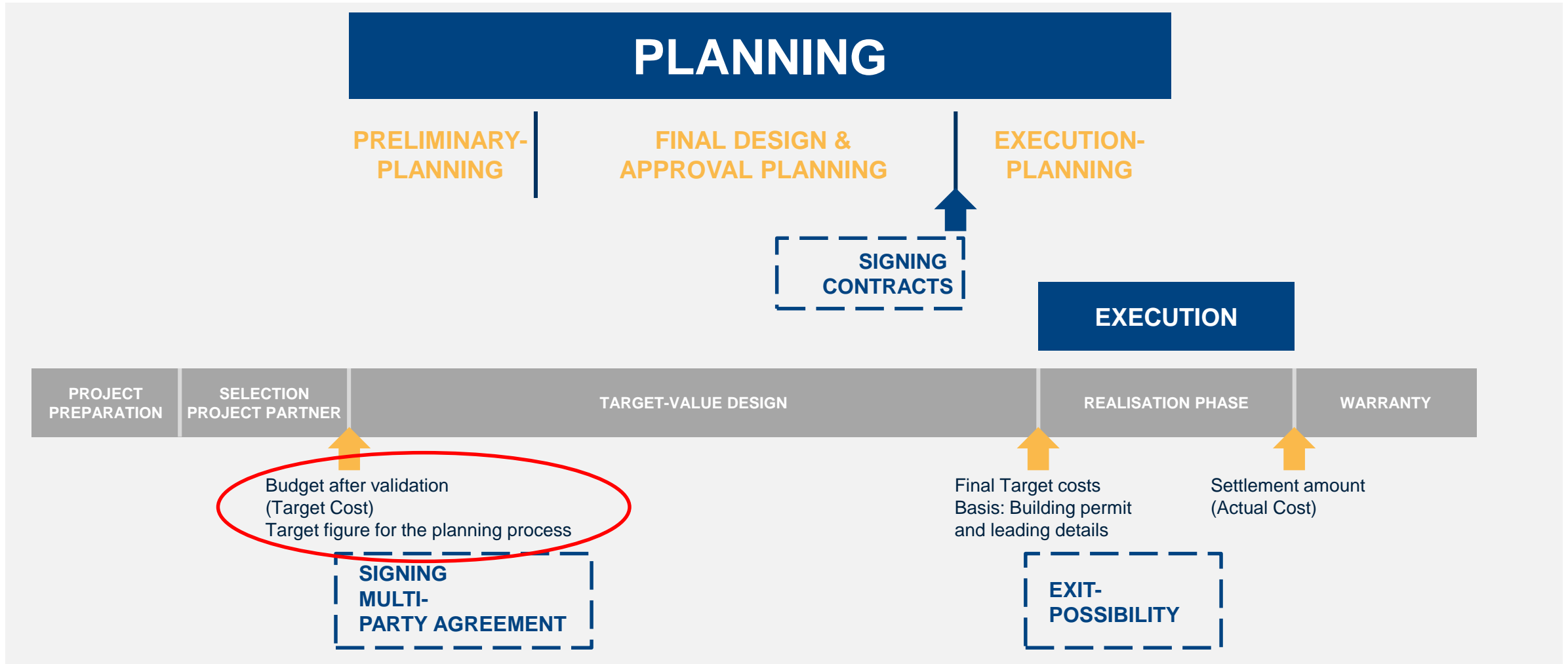


- **IPD relies on a high degree of collaboration to achieve the project objectives.**
- **The attitude and behaviour of the project participants plays a decisive role.**
- **Without this attitude the project development model cannot be successful.**
- **It is an essential leadership task to develop a collaborative culture in the project.**



# Lean IPA | Phase 3 - Target Cost

Phase model of joint project management





# First pilot project in Germany

**After** validation



## Technical data

Hotel: 38.000 m<sup>2</sup>

Room: 680

Congress area: 3.500 m<sup>2</sup>

Office space: 6.000 m<sup>2</sup>

Underground car park: 230 PL

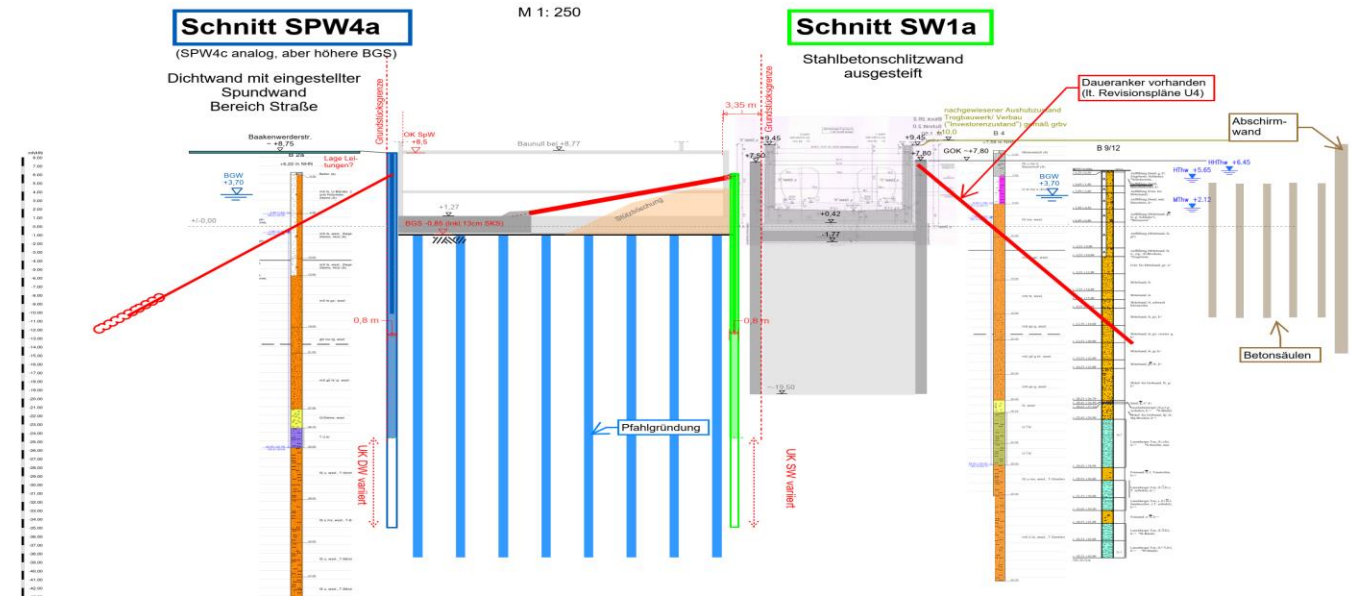
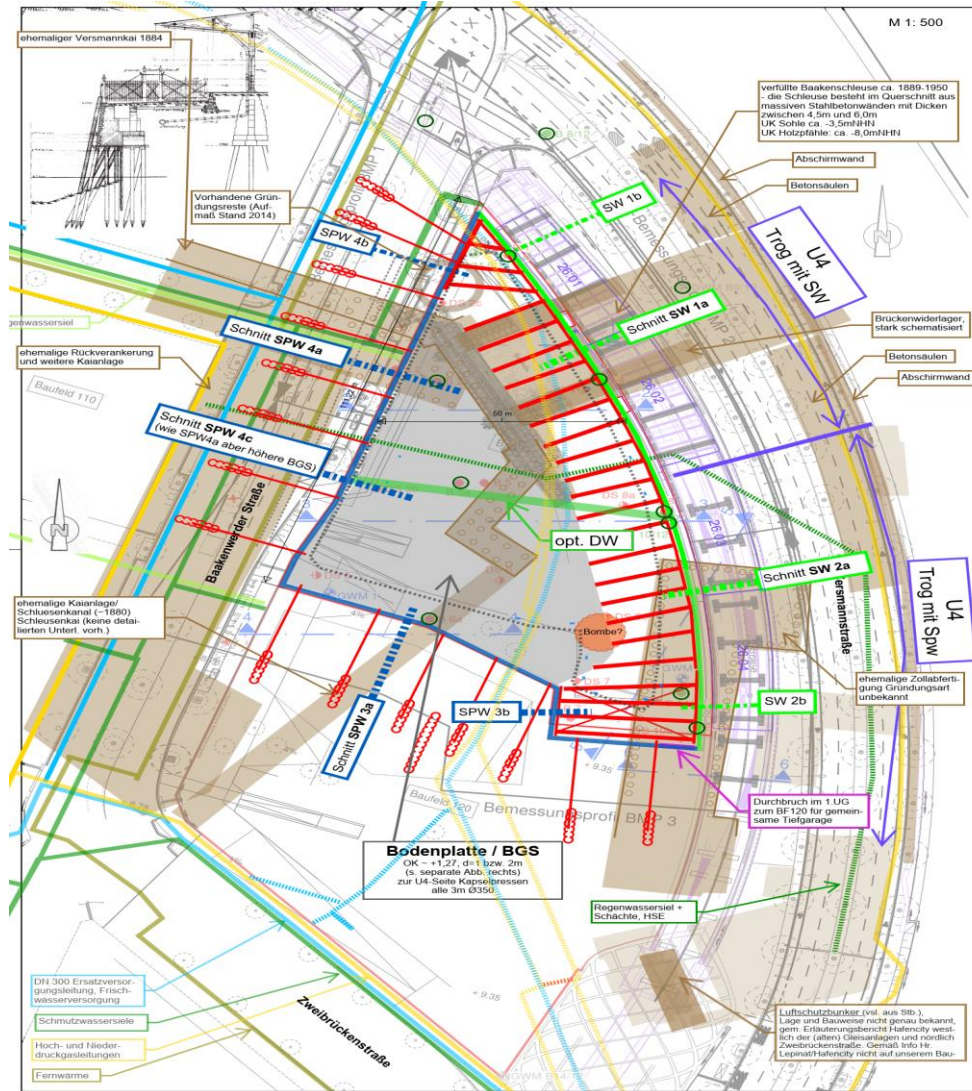
Start of planning: Q2 2019

Start of construction: Q1 2020

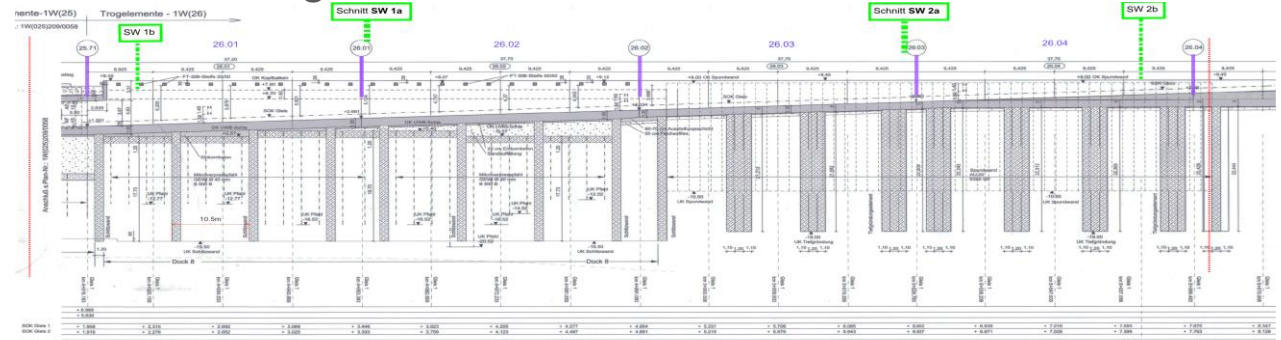
Completion: Q4 2023



# Risk management in Lean IPA / Example of the excavation pit at the Kongresshotel Hamburg



## Section through axis U4





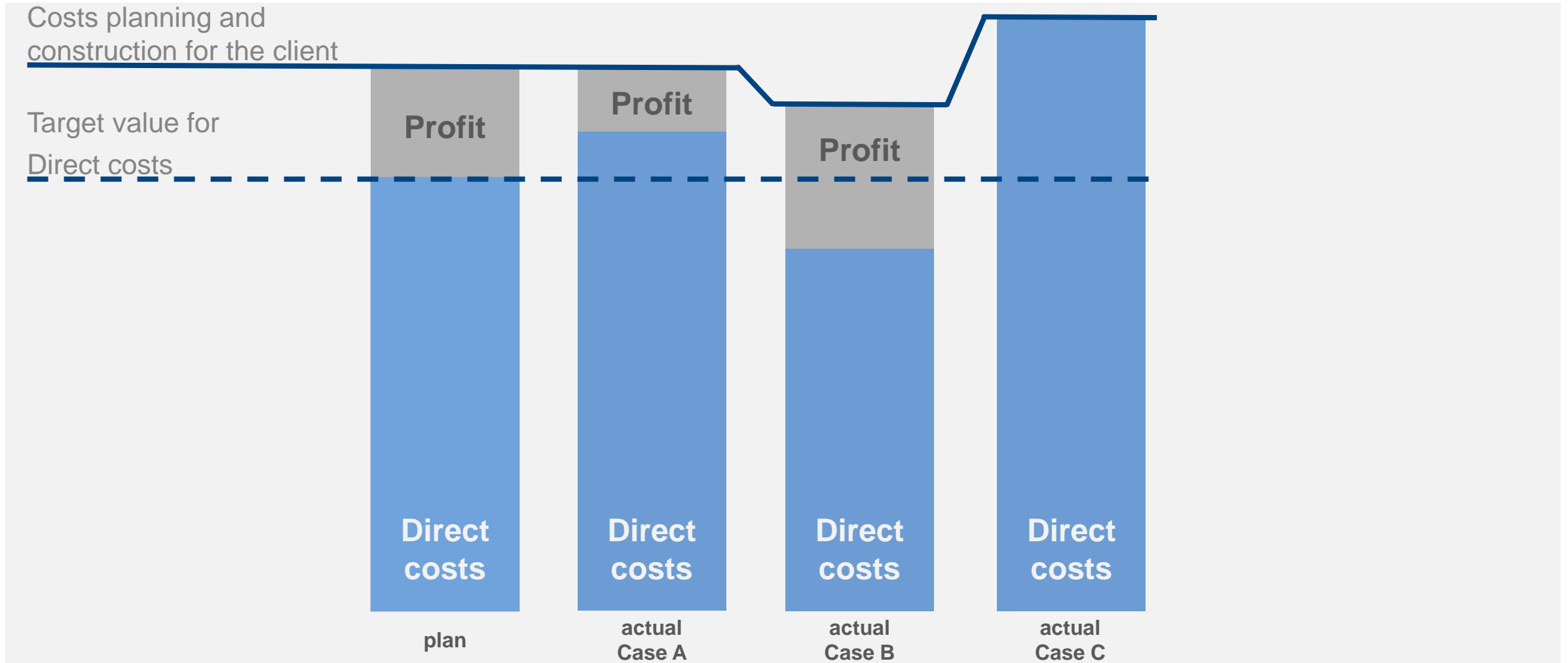
# Validation result Costs + Target





# Compensation model

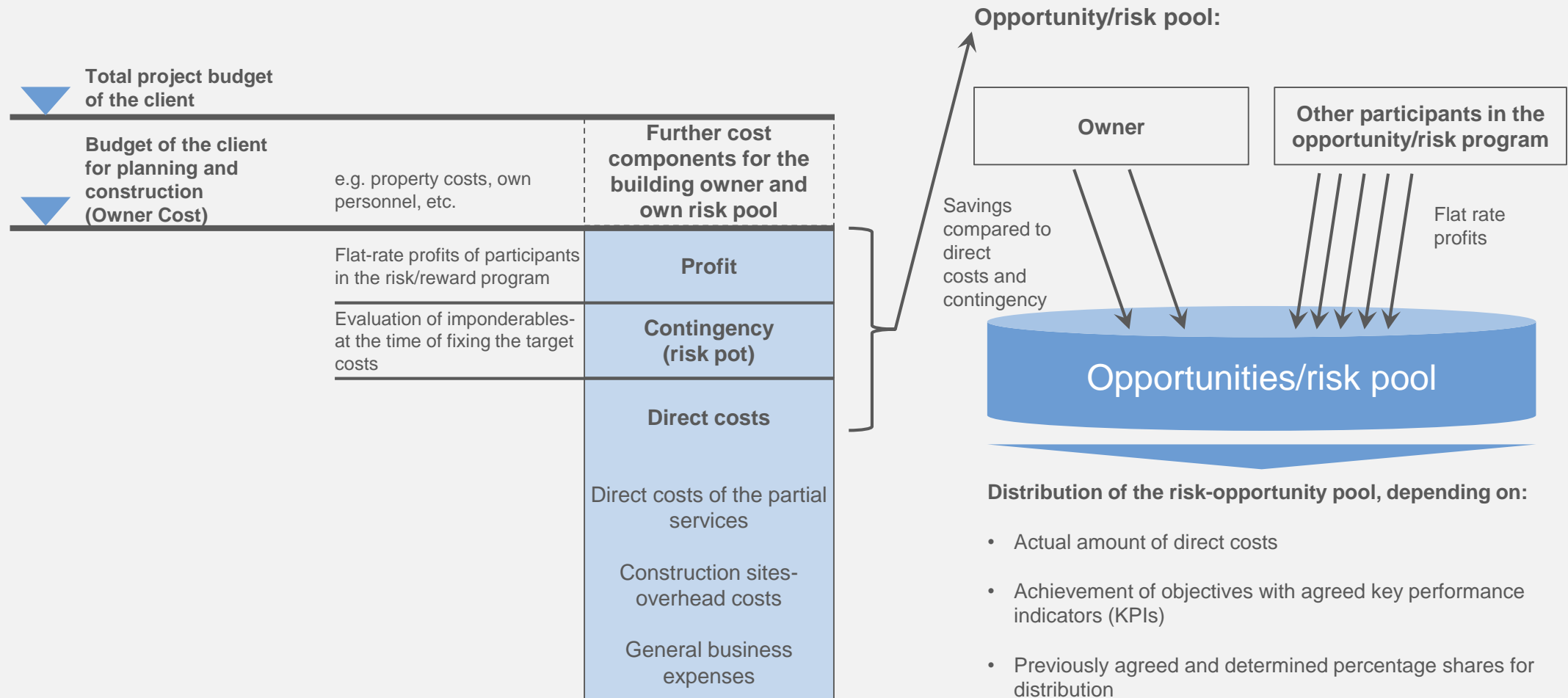
Schematic representation of the mode of action





# Compensation model

## Basic structure





# Compensation model

## Objective



- **First priority:**  
Orientation of the economic interests of the project participants towards the achievement of the project objectives
- I.e. **collaboration and decisions in the sense of „best for project“.**  
are in the economic interest of the parties concerned
- The participants should have an economic incentive,  
**communicate problems and risks at an early stage**
- Stakeholders should have an economic incentive to **develop proposals for good solutions and to participate proactively in finding solutions**
- The participants should have an economic incentive,  
**to act in a solution-oriented manner when problems arise and not to switch to confrontation or defence strategies**



# Project Organization

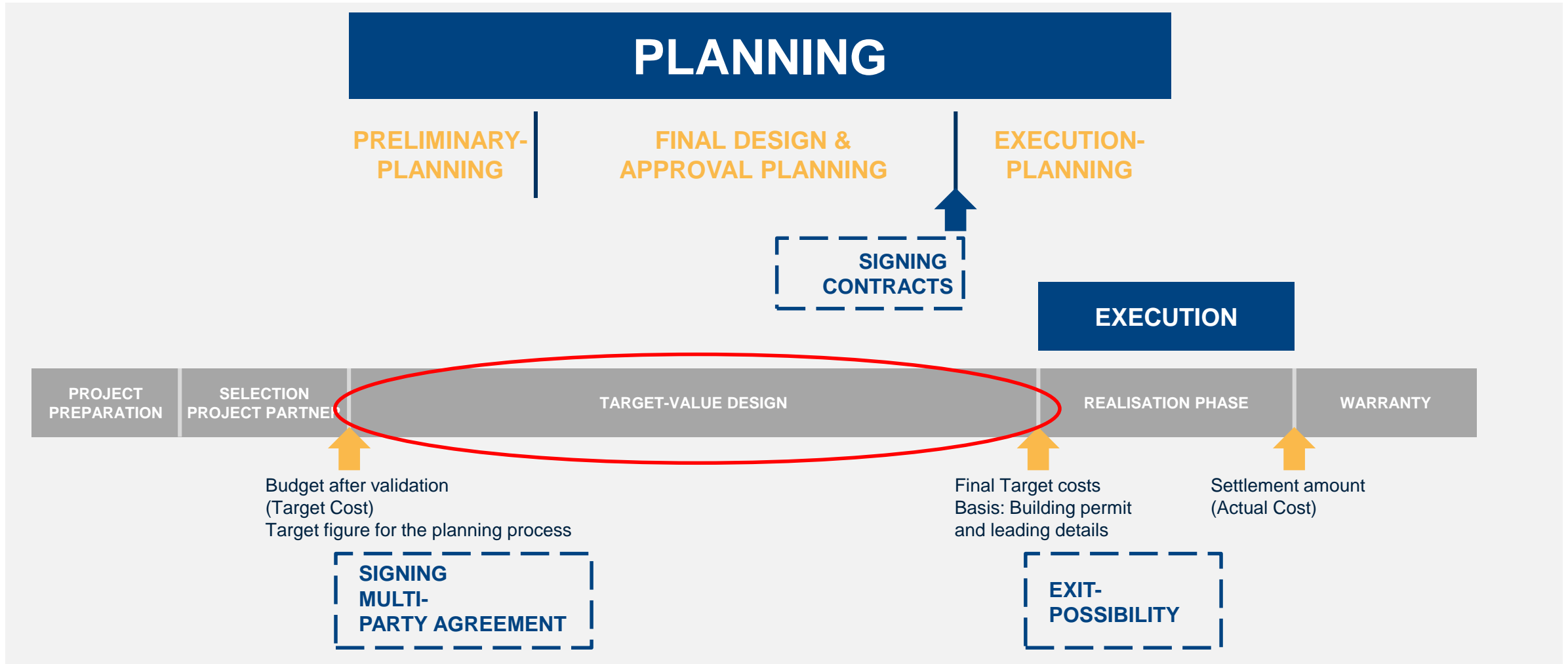
Decision making, escalation and conflict management





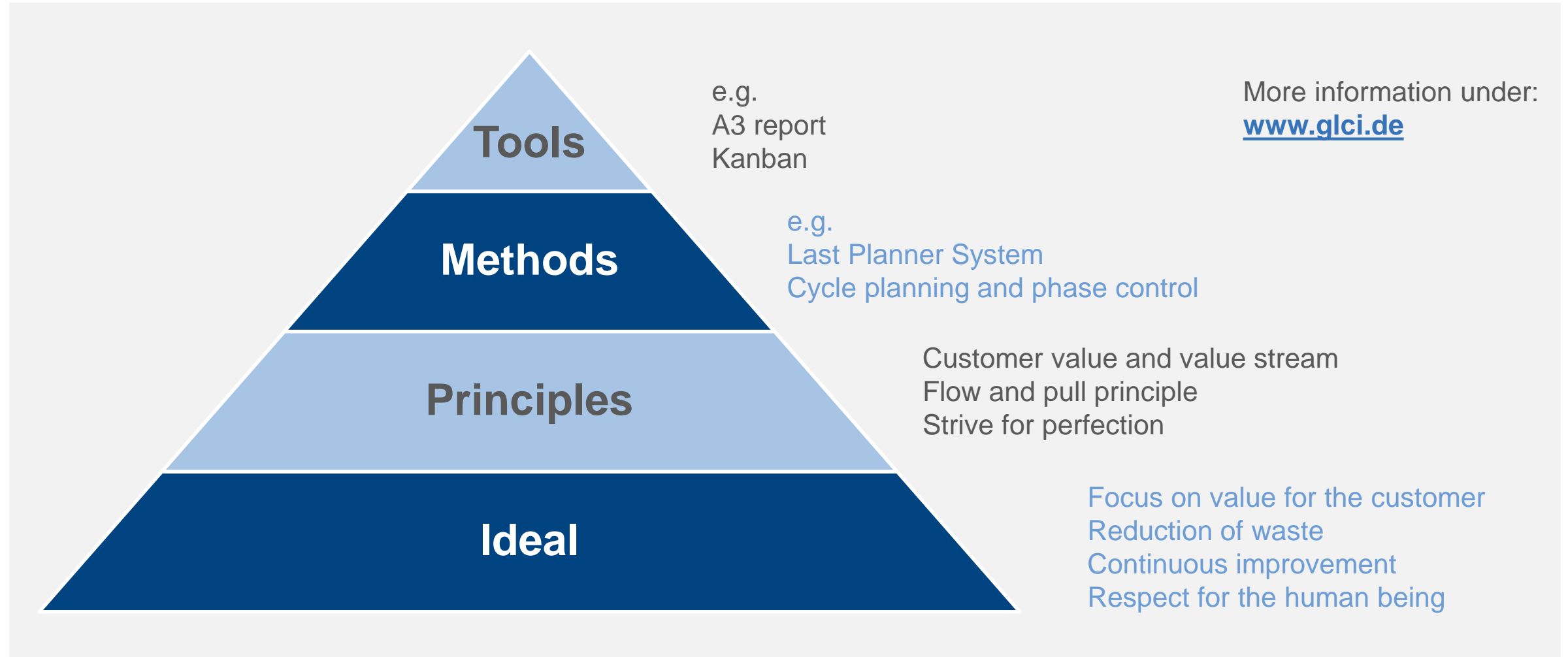
# Lean IPA | Phase 4 – Target Value Design

Phase model of joint project management





# Lean as management philosophy

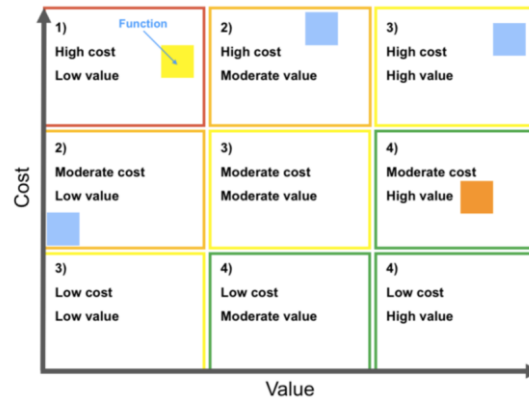




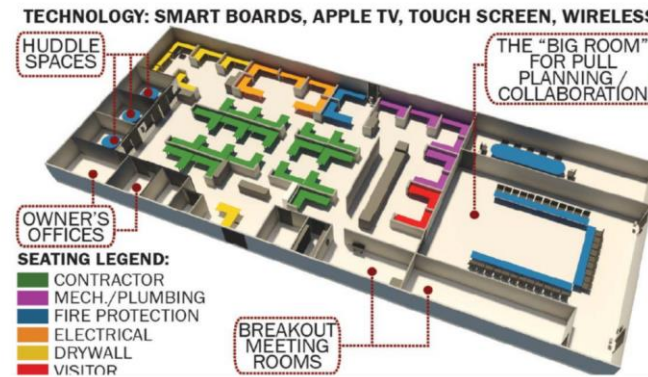
# Collaborative planning and project management methods

Lean Construction, BIM, etc.

## Target Value Design (TVD)



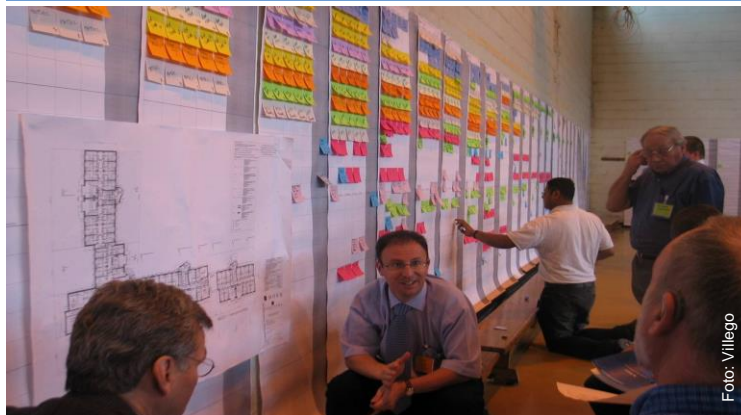
## Co-Location



## Big Room

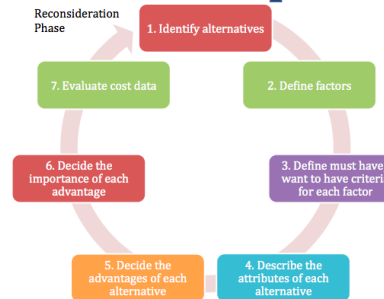


## Last Planner System



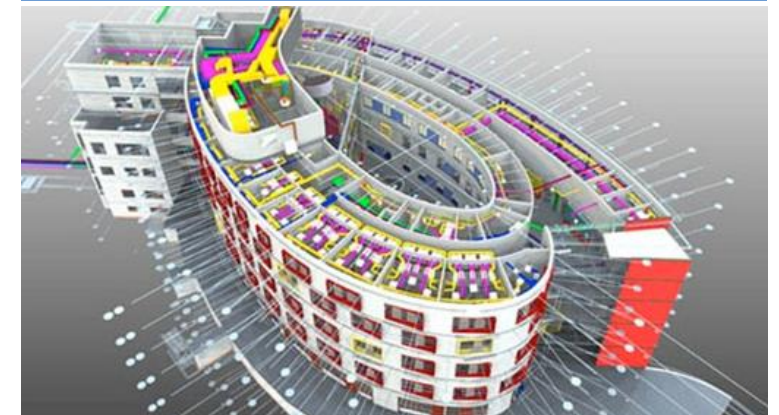
## Choosing by Advantages (CbA)

### CbA Steps



© 2014 Paz Arroyo

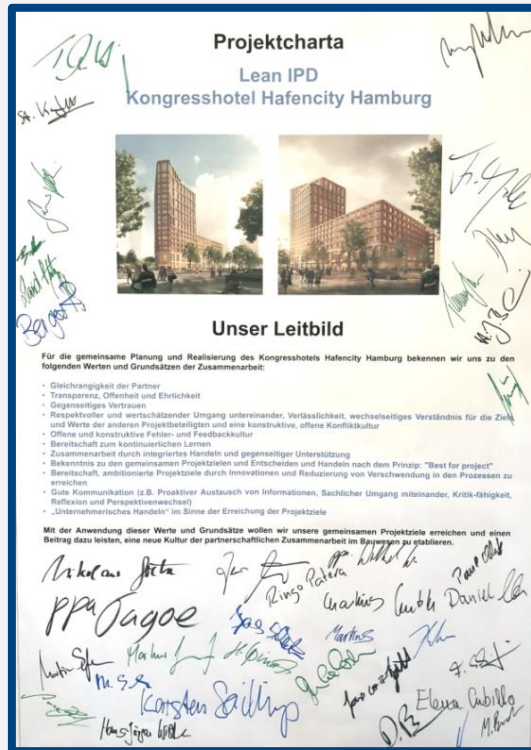
## BIM





# Values and principles of cooperation

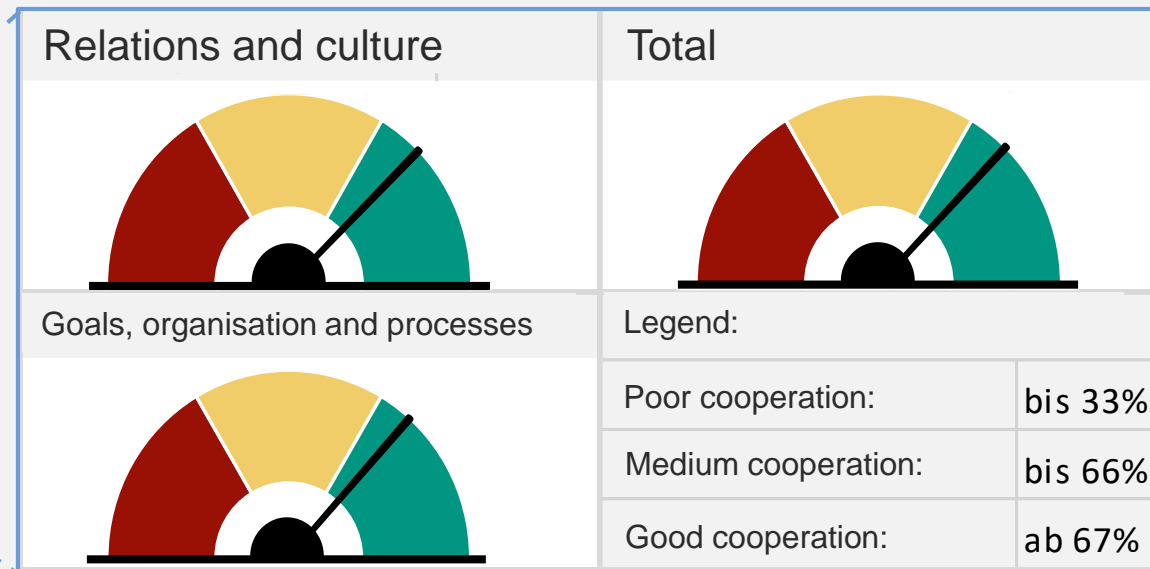
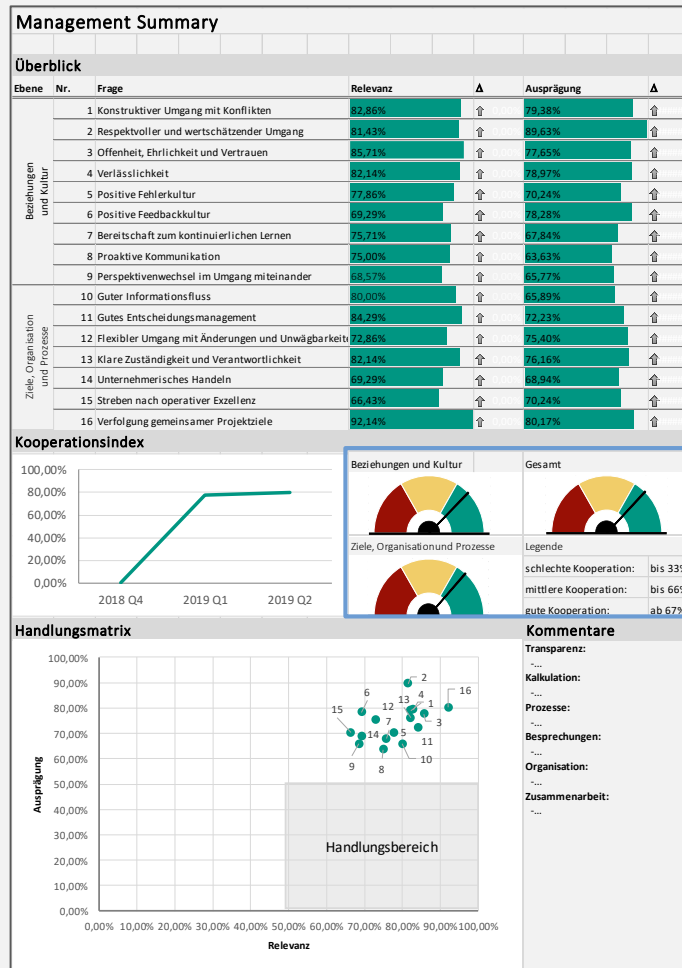
## Examples Project Charter



- **Personal commitment of managers and all project participants**
  - Transparency, openness and honesty
  - Respectful and appreciative treatment of each other
  - Open and constructive faults- and feedback culture
  - Readiness for continuous learning
  - ...



# Example cooperation barometer





# Conclusion



**In order to realize real cooperation for the benefit of all parties involved in complex construction projects, it is necessary**

- a **change of culture**

**and**

- a **change of system** to promote collaboration and value creation.





Members SMT and PMT at the signing of the contract for the first pilot project Lean IPD in Germany