

# Contractual Pathways to Collaboration: A Swiss Case Study Comparing Transactional and Relational Models with Implications for Global IPD Practice

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**Abstract:** Integrated Project Delivery (IPD), also referred to as Project Alliancing, promotes collaboration through the integration of people, systems, and practices to optimize construction project outcomes. This study explores how IPD is implemented in the Swiss context by comparing traditional transactional contracts with relational contracts that align with IPD principles. Using qualitative content analysis in MAXQDA, twelve contracts—eight relational and four transactional—were systematically analyzed to identify 61 regulatory themes, which were assigned 2,490 times across 463 paragraphs. The findings show that relational contracts regulate nearly twice as many topics as transactional ones, particularly in areas such as joint decision-making, shared responsibilities, collaborative methods, incentive-based remuneration, and active client involvement. These relational features align with IPD’s emphasis on partnership, risk-sharing, and value creation, and suggest a reduced potential for conflict and smoother project execution. The study provides a comprehensive checklist of regulatory considerations, aiding the drafting of future IPD contracts. Although rooted in Swiss practice, the results offer transferable insights for international application, especially in regions adopting or refining collaborative construction models. This research contributes to both academic discourse and professional practice by highlighting the contractual mechanisms necessary to foster integrated, performance-oriented project environments.

**Keywords:** Integrated Project Delivery; Project Alliance; relational contracts; construction management; project governance; construction law, qualitative content analysis

## 1 Introduction

Traditional project delivery models in the Swiss construction industry, as in many other countries, often prioritize the lowest-cost bid, a practice that frequently results in poor quality, increased change orders, construction claims, schedule delays, and heightened risks for project owners (Job & Ng, 2020; Love et al., 2013; Memon et al., 2010). Integrated Project Delivery (IPD), also known as Project Alliancing, has emerged internationally as a collaborative alternative capable of addressing these challenges more effectively (Ashcraft, 2022; Lahdenperä, 2012). Unlike traditional models, IPD fosters integrated collaboration among project stakeholders from the earliest project phases, promoting shared goals, risk sharing, and continuous communication to optimize overall project outcomes (Rahim et al., 2016; Simonsen et al., 2019).

According to the American Institute of Architects (2007), IPD integrates people, systems, and business structures through collaborative agreements to maximize efficiency, reduce waste, and increase value to the owner throughout all phases of design and construction. A growing body of international research supports the effectiveness of IPD in improving performance across multiple dimensions, including quality, schedule reliability, cost control, change reduction, communication, stakeholder satisfaction, and sustainability outcomes (El Asmar et al., 2013; Kent & Becerik-Gerber, 2010; Mesa et al., 2016).

Nevertheless, IPD's success is highly dependent on the underlying contractual framework that governs both transactional and relational dimensions of the project (Cheng et al., 2020; Lahdenperä, 2012). While traditional (transactional) contracts emphasize clearly defined deliverables and compensation, relational contracts focus on collaboration, mutual trust, and shared responsibilities (Macneil, 1985; Rahman & Kumaraswamy, 2008).

Although a recent Swiss legal analysis confirmed the compatibility of alliance-style IPD contracts with local law (Schurtenberger, 2021), there remains a gap regarding their operational and collaborative implementation—particularly how to regulate those aspects contractually.

This study addresses that gap by examining how contract contents influence the success of IPD projects, with a particular focus on operational execution and stakeholder collaboration. Using the Swiss context as a case study, it offers broader insights relevant to other countries exploring IPD adoption, especially within civil law systems. The paper compares traditional (transactional) and IPD-based (relational) contracts from Swiss and German practice to identify what should be

regulated, how these topics interrelate, and how roles and responsibilities shift under different contract structures.

Since the launch of the research project in 2022, interest in IPD has grown rapidly in Switzerland, evidenced by pilot projects, industry initiatives, and new institutional frameworks. The Swiss Society of Engineers and Architects (Schweizerischer Ingenieur- und Architektenverein – SIA) accelerated this development with the 2024 release of Guideline 2065 for Design and Construction in Project Alliances, which is inspired by international alliance models but tailored for the Swiss market (SIA 2065, 2024). However, the guideline primarily focuses on transactional content and does not fully address the implementation of relational principles critical to IPD’s success.

This paper responds to this implementation gap with a structured analysis of contractual practice in IPD-related projects. Although it is grounded in the Swiss context, the study aims to contribute to the international discourse on collaborative delivery models by offering an evidence-based framework and a transferable checklist for drafting IPD contracts to create a collaborative project environment.

To develop the framework the study is guided by four research questions:

- What should be regulated in a Swiss IPD contract?
- What key considerations should be made for these regulations?
- How does the regulatory focus differ in transactional versus relational contracts?
- How do the roles of the client and the contractor differ between these two contract types?

To answer these questions, the study is structured around five thematic research areas (two with two subtopics):

- (1) Contract formation, modification, and termination
- (2) Scope of work and performance expectations
- (3) Organization, leadership, and collaboration - Governance
- (4) Organization, leadership, and collaboration - Collaboration
- (5) Compensation and goal achievement – Remuneration
- (6) Compensation and goal achievement – Target Achievement Criteria
- (7) Liability and insurance

While legal validity is assumed, the research concentrates on process design, collaboration, and project governance. The working hypothesis is that IPD contracts emphasize cooperation and shared project success, whereas traditional contracts focus more on clearly defined obligations and remedies for non-performance. A qualitative content analysis was employed to test this hypothesis and identify actionable insights for both domestic and international construction contexts.

## **2 Characteristics of IPD in Switzerland**

Defining whether a project qualifies as Integrated Project Delivery (IPD) requires clear criteria. Different international frameworks emphasize varying core elements. Despite regional adaptations, IPD models worldwide share a common foundation in fostering early collaboration, shared goals, and mutual accountability among stakeholders.

According to *The American Institute of Architects* (AIA) IPD integrates people, systems, and practices to optimize project results, increasing value to the owner, reducing waste, and maximizing efficiency through all phases of design, fabrication, and construction (AIA, 2007). The AIA outlines the following principles as characteristics for IPD projects:

- Mutual Respect and Trust.
- Mutual Benefit, Risk and Reward
- Collaborative Innovation and Decision Making
- Early Involvement of Key Participants
- Early Goal Definition
- Intensified Planning
- Open Communication
- Appropriate Technology
- Organization and Leadership
- Compensation, where individual financial success relies on project success
- Multi-Party-Agreements

Based on the Guide by the AIA and German pilot projects the German *IPA Zentrum* (IPA = Integrierte Projektabwicklung), a cross-disciplinary of legal and construction professionals defined

eight characteristics for the IPA model. The eight characteristics are well accepted in Germany and by Swiss industry initiative *IPD Lab* (Boldt et al., 2022, IPD Lab, 2023):

- (1) Establishment of a multi-party system
- (2) Early involvement of key stakeholders through a competency competition
- (3) Joint risk management
- (4) Joint decision-making
- (5) Incentive system within a compensation model
- (6) Use of collaborative working methods
- (7) Solution-oriented conflict resolution
- (8) Cooperative attitude of the participants

In an effort to provide a consistent national reference, the Swiss Society of Engineers and Architects (SIA) recently published *Guideline 2065: Planning and Building in Project Alliances* (SIA 2065, 2024): While building on international IPD and alliance frameworks, the guideline adapts core principles for the Swiss legal and institutional context. It outlines six essential characteristics for alliance-based delivery in Switzerland:

- Joint definition of the scope of work
- Alliance project team – decisions based on project objectives
- Agreement on target costs and performance-based compensation
- Joint risk management
- Additional incentives
- Mutual liability limitations

Although the guideline recommends the use of multi-party contracts over aligned individual agreements, it remains flexible in its contractual implementation. Its primary focus is on transactional elements—such as scope, compensation, and risk-sharing—while offering limited direction on the relational dynamics that underpin effective collaboration.

Given that Integrated Project Delivery (IPD) is a relatively new project delivery model in Switzerland, many initial pilot projects do not fully encompass all of its defining characteristics. While these projects frequently adopt collaborative work methods, they often lack critical contractual elements especially in the field of remuneration, positioning them as ‘near-IPD projects’ (Hanna, 2016). Nevertheless, the contracts of IPD projects focus on the relationship between the parties, promoting collaboration, shared risk, and mutual benefits (Budau, 2023). This classifies

them as **relational contracts**. In contrast **transactional contracts** focus on the on the exchange of services for compensation, with clearly defined obligations and limited collaboration (Schurtenberger, 2021, Abs. 54).

By positioning Switzerland's evolving IPD framework within the broader international discourse, this paper contributes to understanding how collaborative delivery models are adapted across jurisdictions. The findings are not only relevant to Swiss practice but also offer transferable insights for other countries considering the implementation of IPD within construction delivery.

### 3 Data Sampling

The data sampling process defines the selection criteria for contracts analyzed in this study. To enable a structured comparison, two main categories of contracts were identified: **relational contracts**, representing collaborative models aligned with IPD principles, and **transactional contracts**, reflecting conventional delivery approaches focused on predefined deliverables and remuneration.

A total of twelve contracts were included in the study, comprising eight relational and four transactional contracts. These contracts were selected based on their alignment with either traditional delivery frameworks or IPD-related principles such as early collaboration, shared risk, shared goals, and incentive-based remuneration. The overview of the sampled documents is presented in *Table 1: Data sampling for contract analysis*.

type	Nr.	country	Contracting parties	Contractor type	Client type
relational	D.01	CH	Single contractor	Builder	private
	D.02	CH	Single contractor	Builder	private
	D.03	CH	Single contractor + multiparty frame agreement	Designer and builder	private
	D.04	CH	Multiparty contract	Designer and builder	private
	D.05	DE	Multiparty contract	Designer and builder	public
	D.06	DE	Multiparty contract (excluded; D.05 is refined version)	Designer and builder	public
	D.07	CH	Multiparty contract	Designer and builder	private
	D.08	CH	Single contractor	builder	private
	D.09	CH	Multiparty contract	Designer and builder	public
transactional	S.01	CH	Single contractor	SIA 1001/1 (2020) designer- / construction supervision (SIA 1001/1, 2020)	public and private
	S.02	CH	Single contractor	SIA 1023 (2013) work contract builder (SIA 1023, 2013)	public and private
	K.01	CH	Single contractor	KBOB 30 (2023) designer (KBOB 30, 2023)	public
	K.02	CH	Single contractor	KBOB 34 (2023) work contract builder (KBOB 34, 2023)	public

Table 1: overview of contracts included in the analysis

### 3.1 Criteria for Selecting Relational Contracts

Relational contracts were selected using an exploratory approach due to the limited availability of IPD-related agreements in Switzerland. The selection criteria included:

- **Language:** Only German-language contracts were included, reflecting linguistic consistency and legal relevance to the Swiss context.
- **Content:** Documents classified as relational contracts had to show clear alignment with IPD or alliance principles. This included multiparty agreements or single-party contracts supplemented with annexes or collaboration agreements indicating joint governance, shared incentives, or cooperative working methods. Design-build contracts were excluded due to their distinct logic and legal structure.
- **Client Type:** Contracts involving private clients were included where available. At the time of sampling, no completed public sector IPD contracts from Switzerland were accessible. However, one public contract from Germany was included due to the structural and legal similarities between German and Swiss procurement frameworks. As the project progressed, drafts of the first Swiss public IPD contracts were published and included in the analysis.
- **Usage and Maturity:** Both executed contracts and complete, formally negotiated drafts were included. Template documents and model contracts (e.g., standard forms without negotiation) were excluded as they do not reflect actual agreements between parties.

This selection provides a representative snapshot of the current state of IPD and near-IPD contractual practice in Switzerland. It also reflects the challenges of accessing sensitive contract data due to confidentiality constraints. While two additional projects with IPD contracts were identified, they were excluded from the study because the parties declined to share anonymized versions. Notably, two of the analyzed contracts were based on early drafts of the SIA 2065 guideline, offering insight into how IPD principles are being interpreted in emerging practice.

### ***3.2 Criteria for Selecting Transactional Contracts***

To provide a meaningful comparison, the study included widely used traditional contracts in the Swiss construction sector. The selected transactional contracts were derived from two recognized public institutions:

- **SIA (Swiss Society of Engineers and Architects):** Represents the perspective of the design and engineering community. Contracts analyzed included both planning and building agreements.

- **KBOB (Coordination Group for Federal Construction Agencies):** Represents the client side in Swiss public procurement. Its contracts reflect standard public-sector practices in Switzerland.

Each organization contributes one design and one construction contract to the dataset. Including both SIA and KBOB documents ensured that the study captured the perspectives and standard practices of both contractors and clients. This balanced view supports a robust comparison between relational and transactional contracting approaches, focusing not only on structural differences but also on the implications for stakeholder collaboration and project governance.

#### 4 Methodology

This study applies a **qualitative content analysis (QCA)** approach to systematically examine and compare twelve construction contracts, using the software MAXQDA for data management and coding. The sample includes eight relational contracts – aligned with Integrated Project Delivery (IPD) principles – and four transactional contracts reflecting conventional project delivery models. The aim is to uncover the regulatory themes embedded in each contract type and assess how they reflect, support, or hinder collaborative project delivery.

Qualitative content analysis is a widely established method for the systematic examination of textual material. It enables the identification of manifest and latent content, thematic structures, and recurring patterns while remaining context-sensitive and interpretive (Mayring, 2000). It is well-suited for the analysis of legal and organizational documents, as demonstrated in related studies on contract standardization in Building Information Modelling (Manderson et al., 2015). In this research, QCA was applied to assess how different contracts articulate responsibilities, collaboration mechanisms, and incentive structures—critical components of successful IPD implementation.

Each paragraph of the contracts was coded to reflect specific contractually regulated topics. The initial coding framework was developed through a **semi-exploratory process** informed by the study's research questions and further refined during a co-creation workshop with interdisciplinary experts. This workshop involved seven researchers from three Swiss universities of applied sciences, with backgrounds in architecture, civil engineering, and psychology. The research team collaboratively formulated **sub-questions** for the five thematic research areas mentioned in the introduction, which served as interpretive guides for the coding process.

The coding was done paragraph by paragraph, as the logic of the contract regulations operates in paragraphs. Since the regulations describe (complex) interrelationships of various topics, multi-coding was applied to the paragraphs.

The coding process involved several systematic steps:

- (1) **Formulating Sub-Questions:** Sub-questions were developed collaboratively to clarify interpretive boundaries and ensure consistent understanding of each research field.
- (2) **Establishing Primary Codes:** These sub-questions informed the creation of five primary code categories in MAXQDA, aligned with the above research fields. These categories served as the backbone of the coding structure.
- (3) **Initial Contract Analysis:** Each contract was examined linearly, with each paragraph assigned to one or more relevant codes. New codes and subcodes were inductively added as thematic patterns emerged. This step ensured that the coding captured both pre-defined themes and emergent issues.
- (4) **Refining the Coding Framework:** After the initial round of coding, all contracts were reviewed again to refine the code system. Frequently occurring codes (more than 105 references) were divided into sub-codes to increase granularity and allow for more precise analysis.
- (5) **Code-Relation Analysis:** The code co-occurrence matrix in MAXQDA was used to identify interdependencies between topics. This step provided insights into how certain contractual elements are typically regulated together, addressing the question: *What key considerations should be made for those regulations?*
- (6) **Top 10 Code Mentions Analysis:** To examine how the regulatory focus differs between contract types, the most frequently mentioned codes were compared across relational and transactional contracts. This helped identify core emphases in each delivery model and answered the research question: *How does the focus in the regulations differ in transactional and relational contracts?*
- (7) **Word Tree Analysis:** A keyword-in-context (KWIC) approach was used to explore how clients and contractors are framed within the contracts. Word trees were generated to illustrate recurring structures and language patterns, enabling a nuanced analysis of role expectations in each contract type. This analysis addressed the question: *How do the roles of the client and contractor differ in transactional and relational contracts?*

Throughout the process, all contracts were coded by a single researcher to ensure consistency and interpretive coherence. Multi-coding was applied where paragraphs addressed multiple topics – reflecting the often interlinked nature of legal clauses in construction contracts.

The methodology enabled a fine-grained comparison of contractual structures and their implications for collaborative project delivery. While focused on the Swiss and German contexts, the approach is transferable to international studies of contractual frameworks supporting IPD and other emerging delivery models.

## 5 Results

The structured qualitative content analysis of twelve construction contracts enabled a detailed comparison of regulatory content and contractual focus. A total of 61 distinct regulatory themes (codes) were identified and assigned 2,490 times across 463 paragraphs. *Figure 1*: The cross-tabulation matrix of the coding system illustrates the identified codes in transactional and relational contracts. These codes represent specific topics that, according to the analysis, should be considered for regulation in an IPD contract. The results are presented in relation to the study's core research questions and structured along the five thematic fields of investigation.

### 5.1 *What Should Be Regulated in a Swiss IPD Contract?*

The comparative analysis reveals that, relational contracts – characteristic of IPD models – regulate nearly twice as many topics as transactional contracts. Specifically, relational contracts averaged 46 codes per document, while transactional contracts averaged only 24. This substantial difference suggests that IPD-oriented contracts engage more comprehensively with aspects of governance, collaboration, and joint accountability. These findings support prior research indicating that pre-regulation of collaborative mechanisms can reduce conflict potential during project execution (Mesa et al., 2016).

#### **(1) Contract Formation, Modification, and Termination**

Topics such as termination and change of project parties were regulated in all eight relational contracts and in seven out of eight, respectively. In contrast, only two of the four transactional contracts addressed these topics. This gap suggests that transactional contracts often rely on general legal provisions, whereas relational contracts anticipate operational transitions and proactively manage them.

Stepwise commissioning aligned with project phases was also consistently regulated in relational contracts. This flexibility supports iterative collaboration and reflects the IPD principle of jointly defining the scope of work based on evolving project needs.

## **(2) Scope of Work and Performance Expectations**

Relational contracts explicitly include provisions for further training, supporting the continuous development of stakeholders and the effective adoption of innovations – elements entirely absent from transactional contracts. This inclusion acknowledges that the implementation of novel project methods often requires additional training efforts and capacity building, which relational contracts actively facilitate. Moreover, joint responsibility between client and contractor is regulated in 7 of the 8 relational contracts, with 6 also addressing shared responsibility among contractors. These clauses reflect key IPD principles such as shared accountability and joint risk-bearing, which stand in contrast to the strictly individualized obligations typically found in transactional models. Additionally, all relational contracts provide mechanisms for regulating changes in the scope of work, enabling flexible project adaptation through collaborative decision-making. Only half of the transactional contracts include such provisions, again underscoring the absence of collective responsibility and adaptability that defines traditional delivery models. Together, these findings highlight how relational contracts operationalize the core values of IPD.

## **(3) Organization, Leadership, and Collaboration – Governance**

While transactional contracts did include some governance-related provisions – such as basic communication protocols – these were regulated in significantly fewer paragraphs (an average of 4) compared to relational contracts, which dedicated an average of 11 paragraphs to these topics. This substantial difference highlights the greater emphasis relational contracts place on project governance. In terms of conflict resolution, transactional contracts typically relied on external legal remedies, with disputes referred to jurisdictional procedures. By contrast, relational contracts proactively addressed conflict resolution through jointly developed mechanisms, including waiver-of-action clauses found in 5 of the 8 analyzed contracts. Furthermore, the principle of joint decision-making was nearly absent in transactional contracts – mentioned only once – whereas it was extensively regulated in 7 relational contracts across a total of 111 paragraphs. This demonstrates the centrality of collaborative governance structures in relational contracts and underscores their alignment with core IPD principles such as solution-oriented conflict resolution, mutual liability limitations, and shared project leadership.

#### **(4) Organization, Leadership, and Collaboration – Cooperation**

Transactional contracts largely omit meaningful collaboration strategies, limiting cooperative provisions to minimal clauses on copyright and data sharing, which appear in only one or two contracts. Methods of collaboration are mentioned in just a single transactional contract, and even then, only briefly within one paragraph. In contrast, all relational contracts explicitly address methods of collaboration, with an average of eight paragraphs dedicated to this topic, aligning clearly with the IPD principle of using collaborative working methods. Moreover, transactional contracts tend to focus on compliance-related values such as gender equality, tax obligations, and workplace safety, whereas relational contracts consistently codify broader, value-based principles. These include “best for project” (8 contracts), “mutual respect and appreciation” (6), “transparency and open book” (8), “together instead of against each other” (7), and “trust and open communication” (8). Such formulations reflect a deliberate effort to foster a cooperative project culture and align closely with the IPD principles of a cooperative team attitude and alliance-based decision-making centered on shared project goals.

#### **(5) Compensation and Goal Achievement – Remuneration**

Both contract types addressed fundamental aspects of remuneration, including payment modalities, pricing methods, volume-based and expense-based remuneration, as well as lump sums—underlining their nature as exchange contracts. However, only relational contracts systematically regulated price verification procedures, suggesting a greater emphasis on financial transparency. Bonus and profit-sharing provisions were present in all relational contracts, averaging 12 mentions per contract, whereas only one transactional contract included such provisions. Conversely, malus or penalty clauses appeared more frequently in transactional contracts (in two cases, averaging four paragraphs), while also being regulated in relational contracts (average of five paragraphs). This pattern points to a stronger focus on punitive measures in transactional contracts and a more balanced risk-reward structure in relational contracts. These findings demonstrate the implementation of key IPD principles, including the agreement on target costs, performance-based compensation, and incentive-driven collaboration aimed at shared financial success.

#### **(6) Compensation and Goal Achievement – Target Achievement Criteria**

Target achievement criteria – specifically cost compliance, quality standards, deadlines, and cooperative behavior – are addressed far more comprehensively in relational contracts than in transactional ones. In the transactional models, these elements are either missing or regulated inconsistently: structural quality appears in 3 contracts, deadlines in 4, and cost compliance in only

2, with each criterion typically covered in just 4 paragraphs on average. Moreover, cooperation as a performance factor is rarely addressed. In contrast, all relational contracts include detailed provisions for cost, quality, and time compliance, and 7 out of 8 explicitly regulate cooperation, with each topic averaging 10 paragraphs. This extensive regulation highlights a fundamental shift in focus: from isolated deliverables to integrated, outcome-driven project success. These findings align with the IPD principles, which emphasize clear performance expectations, proactive collaboration, and shared responsibility as essential components of value creation and goal achievement.

### **(7) Liability and Insurance**

Liability and insurance provisions are addressed in both relational and transactional contracts, but with differing emphasis and scope. In transactional contracts, the focus is primarily on compensation for damages, typically covered in an average of four paragraphs. Relational contracts also include damage compensation (6 out of 8 contracts, averaging five paragraphs), but go further by systematically regulating performance and product-related warranties, which are nearly absent in transactional models.

A notable distinction lies in the treatment of risk. While joint risk-bearing is entirely absent from transactional contracts, it is regulated in 7 out of 8 relational contracts, with an average of 10 dedicated paragraphs. This reflects a core IPD principle: distributing project risks collaboratively among parties. Individual risk-bearing is addressed in all relational contracts (average of 7 paragraphs) and in three of the four transactional ones (average of 5 paragraphs), indicating that IPD does not negate individual accountability but integrates it into a broader framework of shared responsibility.

Relational contracts also demonstrate a more comprehensive approach to financial safeguards. Payment guarantees are included in 7 of the 8 relational contracts, and completion guarantees in all of them, whereas such clauses appear in only one transactional contract. This disparity is significant given the financial implications of construction service delivery.

Both contract types consistently address liability insurance. However, liability limitations – critical for managing exposure – are regulated in 7 relational contracts but only once in the transactional set. This asymmetry underscores the IPD model's proactive and structured approach to risk allocation and mitigation.

Codes	How many contracts contain these codes?			How many codes were found in the contracts?		
	Transactional	Relational	Total	Transactional	Relational	Total
<b>I. Commissioning</b>						
Change of parties	2	7	9	8	39	47
Commission of changes	3	6	9	8	19	27
Overall commissioning	1	3	4	1	4	5
Step-by-step commissioning	1	5	6	3	22	25
Termination	2	8	10	6	56	62
<b>II. Scope of service/ performance profile</b>						
Further training as a service	0	2	2	0	7	7
Performance and project phases	1	6	7	1	28	29
<b>Competence, responsibility</b>						
Joint responsibility of contractor and client	0	7	7	0	71	71
Joint responsibility of contractors	0	6	6	0	19	19
individual responsibility of client	2	5	7	3	16	19
individual responsibility of contractor	4	8	12	25	43	68
Change in the scope of services	2	8	10	4	40	44
Release of services	1	5	6	4	43	47
<b>III. Governance</b>						
Organization/ leadership/ hierarchy	3	8	11	14	75	89
Communication structure/ organization	3	8	11	11	91	102
<b>Regulation in case of conflict</b>						
Suspension of benefits, refusal of benefits	1	2	3	1	2	3
Waiver of action	0	5	5	0	8	8
Unilateral regulation by client	1	3	4	1	6	7
Regulation jointly by client and contractor	2	7	9	4	24	28
Legal regulation e.g. place of jurisdiction, mediation, arbitration	4	7	11	12	20	32
<b>Decision-making process</b>						
Joint decision by client and contractor	1	7	8	1	111	112
Unilateral decision by client	2	7	9	11	53	64
Unilateral decision by contractor	0	3	3	0	3	3
<b>III. Cooperation in the contract</b>						
Copyright and intellectual property	1	6	7	6	21	27
Data sharing	2	8	10	5	59	64
Methods of collaboration	1	8	9	1	62	63
<b>Values/ Principles</b>						
Best for Project	0	8	8	0	29	29
Mutual respect and appreciation	0	6	6	0	19	19
Loyalty and "to the best of our knowledge and belief"	1	5	6	1	11	12
Transparency and open book	0	8	8	0	27	27
Together instead of against each other	0	7	7	0	26	26
Trust and open communication	0	8	8	0	16	16
Equal treatment regardless of gender	2	3	5	4	4	8
Environmental protection	1	4	5	1	8	9
Compliance with taxes, social benefits, collectively agreed wages	2	2	4	4	2	6
Integrity and compliance instead of corruption	2	5	7	4	12	16
Confidentiality	1	5	6	2	15	17
construction site safety	2	6	8	7	20	27
Win-Win	0	1	1	0	1	1
<b>IV. Remuneration in the contract</b>						
Price check	0	4	4	0	28	28
Payment modalities	4	7	11	18	83	101
Price changes	4	6	10	7	24	31
Bonus and profit	1	8	9	1	99	100
Malus and contractual penalty	2	7	9	9	43	52
Volume-based remuneration	3	7	10	4	25	29
Expense-based remuneration	3	8	11	12	104	116
lump-sum agreement	4	6	10	9	38	47
<b>IV. Target achievement criteria</b>						
Compliance to agreed collaboration	0	7	7	0	27	27
Compliance to structural qualities	3	8	11	16	87	103
Compliance with deadlines	4	8	12	10	61	71
Cost compliance	2	8	10	7	129	136
<b>V. Liability and insurance</b>						
Compensation for damages	4	6	10	14	28	42
Warranty and guarantee Performance-related	1	6	7	1	39	40
Warranty and guarantee Product-related	0	4	4	0	18	18
Joint risk-bearing	0	7	7	0	72	72
Individual risk-bearing	3	8	11	15	57	72
Payment guarantee	0	4	4	0	8	8
Completion guarantees	1	7	8	6	32	38
Project insurance, Building site insurance	1	6	7	1	24	25
Liability insurance	4	5	9	10	20	30
Limitation of liability	1	7	8	4	15	19
<b>TOTAL</b>	<b>96</b>	<b>367</b>	<b>463</b>	<b>297</b>	<b>2193</b>	<b>2490</b>
<b>N = Documents</b>	<b>4</b>	<b>8</b>	<b>12</b>	<b>4</b>	<b>8</b>	<b>12</b>

Figure 1: The cross-tabulation matrix of the coding system illustrates the identified codes in transactional and relational contracts.

## 5.2 What Key Considerations Should Be Made for These Regulations?

Beyond identifying which topics are regulated in Swiss IPD and traditional contracts, this study also examined **how different regulatory themes interact** within individual contract clauses. Using MAXQDA's code-relation analysis tool, interdependencies between codes were assessed by identifying instances where multiple codes were applied to the same paragraph. The result is a **code co-occurrence matrix**, in which the numerical values indicate how often two topics were regulated together across the analyzed documents, see in *Figure 2: Example of Code-Relations-Browser* (Screenshot in German).

Code relationships with a frequency greater than zero suggest that these topics are either **logically interlinked** in the contract's structure or should be considered **simultaneously during contract drafting**. The higher the value, the stronger the observed relationship between two regulatory elements. This approach enables a more nuanced understanding of the **relational architecture** of contracts and identifies key thematic clusters.

These relationships were used to develop a **practical checklist** of considerations for each of the 61 regulatory topics identified. For each code, related topics (i.e. codes with at least one co-occurrence) were listed to guide practitioners and contract drafters. While the checklist does not prescribe how to regulate a topic, it encourages a holistic approach by highlighting **which other provisions are frequently addressed in conjunction**. This structure leaves interpretive flexibility to the contracting parties while supporting comprehensive and integrated contract design. Below, the five strongest thematic relationships for each research field are presented. Each entry includes the number of co-occurrences (in parentheses), indicating its relative significance. Where multiple items had the same count, all were retained to reflect their equivalent analytical weight. The complete checklist (in German) is available from the corresponding author upon request.

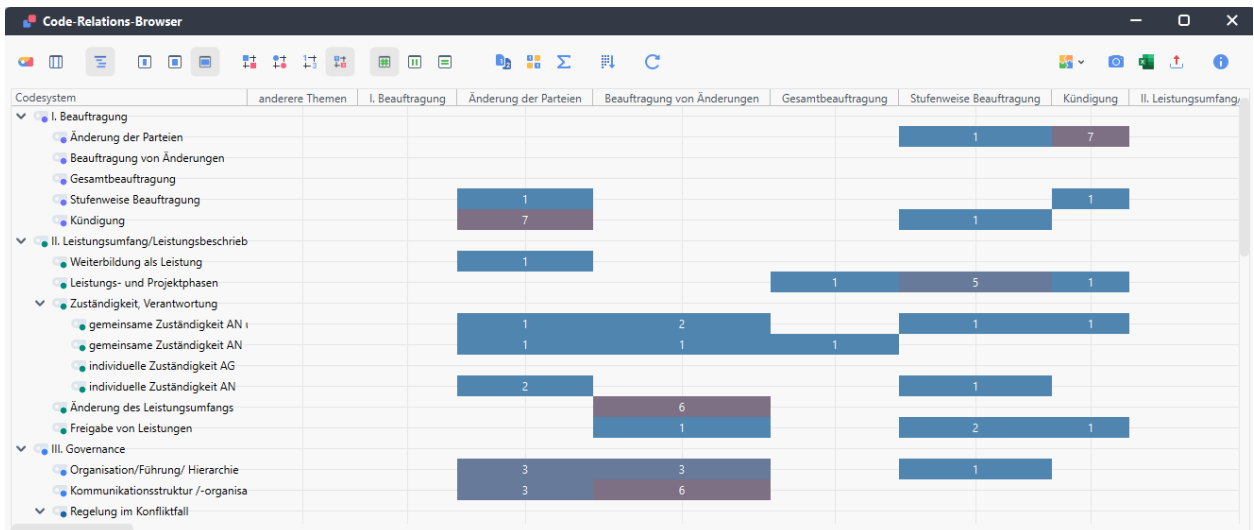


Figure 2: Example of Code-Relations-Browser (Screenshot in German)

### (1) Contract formation, modification, and termination

1. When regulating change of parties, consider joint decision by client and contractor. (13)
2. When regulating termination, consider expense-based remuneration. (9)
3. When regulating termination, consider the unilateral decision by the client. (8)
4. When regulating termination, consider change of parties. (7)
5. When regulating change of parties, consider termination. (7)

These results indicate that termination and party changes are frequently intertwined and should be jointly addressed, particularly where remuneration and decision authority are involved.

### (2) Scope of work and performance expectations

1. When regulating joint responsibility of contractor and client, consider joint decision by client and contractor. (14)
2. When regulating joint responsibility of contractor and client, consider cost compliance. (14)
3. When regulating Change in the scope of services, consider Joint decision by client and contractor. (11)
4. When regulating joint responsibility of contractor and client, consider compliance with structural qualities. (10)

5. When regulating joint responsibility of contractor and client, consider organization/management/hierarchy. (10)

These interdependencies highlight the centrality of shared responsibility and performance expectations in defining a collaborative project structure.

### **(3) Organization, leadership, and collaboration – Governance**

1. When regulating joint decisions by client and contractor, consider cost compliance. (17)
2. When regulating joint decisions by client and contractor, consider regulating joint responsibility of contractor and client. (14)
3. When regulating joint decisions by client and contractor, consider change of parties. (13)
4. When regulating joint decisions by client and contractor, consider change in the scope of services. (11)
5. When regulating communication structure/organization, consider data sharing. (11)

Here, joint decision-making emerges as a critical hub, linking governance with cost, responsibility, and flexibility in project execution.

### **(4) Organization, leadership, and collaboration – Collaboration**

1. When regulating copyright and intellectual property, consider data sharing. (12)
2. When regulating data sharing, consider copyright and intellectual property. (12)
3. When regulating data sharing, consider communication structure/organization. (11)
4. When regulating methods of collaboration, consider communication structure/organization. (8)
5. When regulating methods of collaboration, consider compliance with deadlines. (8)
6. When regulating Best for Project, consider together instead of against each other. (8)
7. When regulating Together instead of against each other, consider Best for Project. (8)

These results reflect that technical and ethical aspects of collaboration are interconnected, and that the principles behind collaborative culture should be addressed alongside operational strategies.

## **(5) Compensation and goal achievement – Remuneration**

1. When regulating bonus and profit, consider cost compliance. (24)
2. When regulating bonus and profit, consider malus and contractual penalty. (21)
3. When regulating malus and contractual penalty, consider bonus and profit. (21)
4. When regulating expense-based remuneration, consider lump-sum. (15)
5. When regulating lump-sum, consider expense-based remuneration. (15)

This reveals a complex interplay between incentive structures, cost control, and risk allocation—a cornerstone of performance-based contracting in IPD.

## **(6) Compensation and goal achievement – Target Achievement Criteria**

1. When regulating compliance with structural qualities, consider cost compliance. (25)
2. When regulating cost compliance, consider compliance with structural qualities. (25)
3. When regulating cost compliance, consider compliance with deadlines. (24)
4. When regulating compliance with deadlines, consider cost compliance. (24)
5. When regulating cost compliance, consider bonus and profit. (24)

These strong bidirectional relationships confirm that cost, quality, and time compliance are tightly interwoven and should not be treated in isolation when drafting performance-related clauses.

## **(7) Liability and insurance**

1. When regulating compensation for damages, consider individual risk-bearing. (13)
2. When regulating joint risk-bearing, consider compliance with costs. (13)
3. When regulating individual risk-bearing, consider compensation for damages. (13)
4. When regulating liability insurance, consider compensation for damages. (11)
5. When regulating compensation for damages, consider liability insurance. (11)

This analysis shows that liability, insurance, and risk-bearing provisions are conceptually entangled, and effective contract drafting should consider their mutual impact.

Taken together, the checklist demonstrates that contractual themes in IPD agreements are not discrete, but part of a wider systemic architecture. Particularly within the compensation and governance fields, cross-references are dense, confirming that relational contracts depend on integrating

multiple perspectives—performance, risk, collaboration, and values—within a unified framework.

Although certain relationships appear symmetrically (e.g. “A → B” and “B → A”), this redundancy is intentional and practical. The checklist is designed for entry via any code, so reciprocal relationships must be visible from both directions. This duality can also reveal subtle differences in interpretation depending on the entry point, helping contract drafters build mutually reinforcing provisions that integrate diverse project perspectives.

### ***5.3 How Does the Focus of the Regulations Differ in Transactional and Relational Contracts?***

To assess the differing emphases of traditional and IPD-aligned contracts, the ten most frequently coded topics were identified for each group. The comparison of **top code frequencies** reveals core thematic priorities in transactional versus relational contracting, highlighting the contrasting underlying logics of conventional and collaborative project delivery.

#### **Transactional Contracts**

As shown in *Table 2: Top 10 most mentioned codes in transactional contracts*, transactional contracts emphasize the **exchange of services for remuneration**. Key regulatory themes include payment modalities (rank 2), compliance with structural qualities (rank 3), and expense-based remuneration (rank 8). The top-ranked code—individual responsibility of the contractor—along with individual risk-bearing (rank 4) and compensation for damages (rank 6), points to a **risk-allocation paradigm**, where liability is clearly assigned and contractor accountability is emphasized.

The presence of unilateral decision-making by the client (rank 10) and limited attention to communication structures (also rank 10) indicates a **hierarchical project governance model** in which the client maintains decision authority and disputes are expected to be resolved through legal provisions (legal regulations rank 8). These patterns are consistent with adversarial or transactional contracting models commonly found in low-bid procurement frameworks.

Rank	Code	mentions
1	Individual responsibility of contractor	25
2	Payment modalities	18
3	Compliance to structural qualities	16
4	Individual risk-bearing	15
6	Organization/leadership/hierarchy	14
6	Compensation for damages	14
8	Expense-based remuneration	12
8	Legal regulation e.g. place of jurisdiction, arbitration, court of arbitration	12
10	Communication structure / organization	11
10	Unilateral decision by client	11

Table 2: Top 10 most mentioned codes in transactional contracts

### Relational Contracts

In contrast, relational contracts reflect the **core tenets of Integrated Project Delivery**, emphasizing shared goals, aligned incentives, and collaborative processes. As presented in (*Table 3: Top 10 most mentioned codes in relational*), cost compliance emerges as the top code, followed by joint decision-making and performance-linked remuneration (bonus and profit). These contracts devote significant attention to expense-based remuneration, payment modalities, and joint risk-bearing—demonstrating an intentional alignment of **economic performance with collective project success**.

Moreover, enhanced governance mechanisms are evident through extensive regulation of communication structures (rank 5), leadership arrangements (rank 8), and joint responsibility between client and contractor (rank 10). These features reflect a **collaborative project environment** designed to foster trust, mutual accountability, and proactive issue resolution.

Rank	Code	mentions
1	Cost compliance	129
2	Joint decision by client and contractor	111
3	Expense-based remuneration	104
4	Bonus and profit	99
5	Communication structure / organization	91
6	Compliance with structural qualities	87
7	Payment modalities	83
8	Organization/leadership/hierarchy	75
9	Joint risk-bearing	72
10	Joint responsibility of client and contractor	71

Table 3: Top 10 most mentioned codes in relational contracts

### Comparative Insights

The results indicate that **both contract types regulate service provision and remuneration**, underscoring their shared identity as exchange contracts. Indeed, five codes appear in the top 10 of both groups: payment modalities, compliance with structural qualities, expense-based remuneration, organization/leadership/hierarchy, and communication structure/organization. These overlapping elements reflect the foundational needs of any construction contract: clearly defined deliverables, performance expectations, and basic governance mechanisms.

However, the divergence in emphasis is critical. Transactional contracts regulate from a position of **risk transfer and control**, with minimal attention to collaboration or joint accountability. Conversely, relational contracts emphasize **alignment, integration, and cooperation**, focusing on incentive structures, shared decision-making, and cost control – central characteristics of IPD.

This contrast suggests that the **regulatory architecture of contracts plays a central role in shaping project dynamics**. Where transactional contracts reinforce separateness and self-protection, relational contracts cultivate collective responsibility and performance alignment. These findings support prior international literature on the transformative impact of contractual design on project behavior and outcomes (El Asmar et al., 2013; Lahdenperä, 2012).

In sum, the character of project delivery is not only defined by process models but also embedded in the regulatory system of the contracts themselves.

#### ***5.4 How Do the Roles of the Client and the Contractor Differ in Transactional and Relational Contracts?***

The Word Tree Analysis allows for visual exploration and analysis of words and word combinations in their contexts, highlighting frequently occurring terms, and providing interactive navigation through ‘branches’ and linkage to original texts for a visually supported Keyword-in-Context (KWIC) analysis. A KWIC analysis allows to understand the meaning of a word by analyzing the words that appear before and after it. (VERBI – Software. Consult. Sozialforschung. GmbH, 2025). Using the Word Tree Analysis for the contract analysis, the roles of the client and the contractor can be examined by analyzing the words connected to ‘client’ and ‘contractor’.

##### **Transactional Contracts: Client as Passive Financier, Contractor as Risk Bearer**

In traditional transactional contracts, the contractor (referred to in German as *Beauftragte*) is consistently framed as the **active, accountable, and risk-bearing party**. Typical word sequences include:

- ‘the contractor is liable for...’
- ‘the contractor informs the client...’
- ‘the contractor is obliged to...’
- ‘the contractor takes on...’

These expressions emphasize **unilateral obligations** imposed on the contractor, highlighting a legalistic and hierarchical relationship. Duties typically revolve around performance guarantees, timely delivery, and communication of status updates to the client.

In contrast, the role of the client (*Auftraggeber*) is often confined to financial obligations, such as:

- ‘the client transfers the payment due...’
- ‘the client shall pay the agreed fee...’

This limited set of responsibilities constructs the client as a **passive financier** rather than an active contributor to project execution. The resulting dynamic places project success disproportionately on the contractor, both in operational and risk terms. The absence of joint language in transactional contracts reinforces the traditional procurement model, where collaboration is minimal and accountability is individualized.



## Comparative Interpretation

The contrast in language use confirms that **contractual roles are more than legal artifacts – they encode project culture and governance logic**. Transactional contracts construct a clearly delineated boundary between parties, placing operational responsibility on the contractor and preserving a reactive, oversight role for the client. In relational contracts, these boundaries are deliberately softened. The client becomes a co-actor in shaping decisions, goals, and outcomes, consistent with the IPD philosophy of **integrated and goal-aligned project teams**.

This difference is not merely semantic: it reflects the transformation of the client's identity from purchaser to **collaborative agent**. The results affirm that achieving IPD's collaborative potential depends not only on behavioral intentions, but also on how responsibilities and relationships are structured in the written contract.

## 6 Discussion

This study investigated the regulatory architecture of Integrated Project Delivery (IPD) contracts in Switzerland, with a particular focus on how contract content supports or hinders collaboration and project success. Through a comparative qualitative content analysis of twelve contracts, the research offers novel insights into the thematic structure and functional orientation of transactional versus relational contracts.

The following key findings emerged:

- **Relational contracts regulate nearly twice as many topics** on average as transactional contracts, suggesting a broader and more proactive regulatory scope aimed at fostering collaboration.
- Thematic priorities in relational contracts cluster around **performance-for-remuneration exchanges, client-contractor relationships, and joint decision-making and responsibility**, particularly concerning scope definition and project governance.
- While both contract types qualify as exchange contracts, their **underlying logics diverge**: transactional contracts emphasize risk segregation and role delineation, whereas relational contracts aim to construct a shared project narrative grounded in communication and mutual accountability.
- The client's role in transactional contracts is predominantly passive and financial, whereas in relational contracts, the client assumes an **active, operational role**, reinforcing their function as a project-integrated actor rather than a distant authority.

These findings have significant implications for both theory and practice. They confirm that the **design of contract content is not merely administrative but strategic**, shaping interorganizational behavior and project outcomes. In line with prior research, this study demonstrates that collaborative models such as IPD depend heavily on the contractual foundation upon which the relational dynamics are built.

Moreover, the results reinforce the importance of **comprehensive pre-regulation** in relational contracts—not only to clarify expectations but also to reduce ambiguity during project execution. In this context, joint responsibilities, cost incentives, and cooperative decision-making mechanisms are not incidental but **structurally embedded drivers of collaboration**.

By identifying 61 contractually relevant themes and mapping their interdependencies, the study provides a grounded framework for **IPD contract design**. The checklist derived from code co-occurrence analysis offers both scholars and practitioners a diagnostic tool to guide the creation or evaluation of IPD-aligned agreements.

Importantly, although the empirical focus is Switzerland, the findings resonate with international IPD discourse. Many jurisdictions face similar challenges when adapting collaborative delivery models to local legal, cultural, and procurement contexts (Ashcraft, 2022; Cheng et al., 2020). The analytical approach and insights presented here can inform global efforts to **translate IPD principles into actionable contract structures**, particularly in early-stage adoption contexts. Overall, this study contributes to the growing body of literature recognizing contracts as **critical levers of project integration and performance**. It bridges the gap between legal form and collaborative function, emphasizing that the success of IPD is not only about stakeholder intent but also about the **deliberate codification of relational dynamics** in the contract itself.

## 7 Conclusion

This study examined how contract content influences the successful implementation of IPD in the Swiss construction sector. Through a structured comparative analysis of transactional and relational contracts, the research identified the regulatory elements that facilitate operational project execution and effective stakeholder collaboration. The resulting recommendations offer a practical and theoretically grounded foundation for drafting IPD-aligned contracts, thereby contributing to the development of the Swiss IPD/alliancing model. By addressing the question of *what* should be regulated and *how*, the study helps close the current gap in guidance on applying IPD principles through contractual means. A key contribution is the development of a topic-

based checklist, derived from a systematic code-relation analysis, which outlines the considerations necessary for coherent and comprehensive IPD contract design.

However, this study also acknowledges its limitations. The analysis is based on existing contracts, which reflect the experience and priorities of their drafters. As such, the absence of certain topics in the data may not necessarily indicate irrelevance but could suggest blind spots in practice. To complement this perspective, future research should investigate disputes, project audits, or lessons learned to uncover *what is not* included in contracts but arguably should be.

The findings suggest that contracts with a high degree of specificity in regulating performance, remuneration, cost and quality compliance, and collaborative procedures are more likely to support a conflict-averse and outcome-oriented project delivery environment. While these findings align with established theory on relational contracting and collaborative delivery models, longitudinal studies are needed to assess the long-term effects of such contractual arrangements on project performance.

Methodologically, the study confirms that **qualitative content analysis is a robust tool** for examining the structure and function of construction contracts. The approach enabled deep insights into both the thematic composition of different contract types and the relational dynamics they support. Moreover, the analysis underscores the central role of the client in IPD settings—not merely as a financial sponsor but as an actively engaged project partner.

By linking contract content to project culture and outcomes, this study contributes to a more nuanced understanding of how collaborative delivery models like IPD can be operationalized in both Swiss and international contexts. The proposed framework and checklist offer a valuable starting point for jurisdictions seeking to adapt IPD principles to their own legal and institutional settings.

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### Use of AI

ChatGPT-4o was utilized to support the formulation and language refinement of the text.

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