

**Resolving agency issues in client-contractor relationships:**

**The Merck Innovation Center**

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**ABSTRACT**

The management of relationships has been acknowledged as a crucial element of project success. However, agency related issues such as goal conflict, information asymmetry or opportunistic behavior can make this a real challenge. Steven and Mark – program managers for One Global Headquarters at Merck – developed their own way on how to deal with this challenge in a complex and uncertain environment. This case study will provide unique insights into their approach and motivation.

**KEYWORDS:** project management, agency theory, project success, principal agent relationship



Fig.1 Merck Innovation Center and Emmanuel-Merck-Platz in Darmstadt, Germany (reproduced with permission from Esch (2018))

## A FACELIFT FOR A 350-YEAR-OLD COMPANY

In 2015, after several large acquisitions transformed its businesses, Merck KGaA<sup>1</sup> underwent a re-branding into the single brand Merck. Merck is a diversified pharmaceutical, life sciences and chemicals group founded in 1668 and ever since headquartered in Darmstadt, Germany. The company employs approximately 52,000 people around the world, with 11,000 in North America and about the same number in Germany (Merck, 2019). The company invested US\$ 565m in Capex world-wide in 2015, including a large number of construction projects (Merck, 2016).

The new brand was designed to position the organization as an innovative science and technology company as prior analysis suggested that its culture had to undergo a transformative change. It was also recognized that architecture, in particular at the headquarters, conveys a strong message to customers, partners, the community, and employees and that the architecture needs to represent the transformative change as well. On this basis, the program One Global Headquarters (OGHQ) was initiated in 2014 with the aim of completion by 2018, when the company celebrated its 350-year anniversary. The program consisted of about 90 interdependent construction projects of various sizes, shapes and forms at the headquarters in Darmstadt with a total investment of more than US\$ 200m. The program was led by two internal managers – Steven and Mark – who mainly focused on strategy and governance issues and were supported by a program management team of internal and external experts to oversee the high number of projects. External experts were hired in all cases, in which internal resources were considered inadequate or insufficient to stay in control of architectural quality, schedule and budget, all of which were non-negotiable. At the heart of the program was the development of the Innovation Center and the adjacent Employee Restaurant (Figure 1 and 2), which was described by its architects Henn as follows (Henn, 2019):

*“The Innovation Center will be used to cooperate temporarily in interdisciplinary teams and to communicate both internally and externally. While the newly developed public square (...) orientates the company towards the city, the Innovation Center opens it to the interior. There are three levels which are set back from one another so that they are to a large extent visually linked. Levels can be changed using arched ramps. These connections, like the bridges joining the segments at individual levels, are highly frequented meeting places where the direct exchange of information among knowledge holders is encouraged. In passing, building users can be inspired by the work of their colleagues and prompted to engage in discussions. Different demands on the workplaces – concentration, communication, cooperation – find spatial expression in a flowing transition. Team communication takes place in the spacious internal area on each floor. Single-person office cells along the façade provide space for activities requiring concentration and intensive thought. The company restaurant is connected to the Innovation Center on several levels. It will assume essential functions on the currently decentralized staff canteens, some of*

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<sup>1</sup> Founded in 1668 in Darmstadt, Germany, Merck is the world's oldest pharmaceutical and chemical company. In the 19th century, the success of its export business to the United States led to the establishment of an office in New York in 1887, which gave rise to the establishment of a separate entity four years later. In 1917, during World War I it was expropriated. Ever since, there are two different, unaffiliated companies that use the name MERCK. Globally, except in the United States and Canada, Merck KGaA, and its affiliates are named simply “Merck”. In the United States and Canada, Merck KGaA uses its firm name “Merck KGaA, Darmstadt, Germany,” and its businesses operate under “EMD Serono” in biopharma, “MilliporeSigma” in life science and “EMD Performance Materials” in the materials business. The other company, Merck & Co., Inc., Kenilworth, NJ, US holds the rights in the trademark MERCK in the United States and Canada. All references to the name Merck in this case study refer exclusively to the former.

*which are to be decommissioned. The restaurant will become a meeting place for numerous employees from the various parts of the site.”*



Fig. 2 Typical floor space in the Merck Innovation Center (reproduced with permission from Esch (2018))

## EUROPE'S LEADING CONSTRUCTION MARKET

The context for this case study is Europe's leading construction market with the continent's largest building stock: Germany. The construction sector in general is one of the largest contributors to the world economy and a key industry in most countries. A recent global survey found that the productivity of the sector has by far trailed that of almost all other industrial sectors over the past decades, thus offering huge opportunities for improvement (Barbosa et al, 2017). While it was found that low productivity performance in construction is not uniformly distributed, with big variations between countries and subsectors, there are still common reasons for it. Among those reasons stands the observation, that

*“Construction is highly fragmented. Contracts have mismatches in risk allocation and rewards, and often inexperienced owners and buyers find it hard to navigate in an opaque marketplace. The result is poor project management and execution, insufficient skills, inadequate design processes, and underinvestment in skills development, R&D, and innovation.”* (Barbosa et al, 2017, p. 8)

The study concludes that market failures and external factors compromise how the industry functions and result in low productivity of firms of all sizes. Overall, low labor productivity, as

well as poor project management can be directly linked to project failures in terms of cost overruns and delays that are often observed in construction projects.

The German construction sector is a good representation of this situation. The above-mentioned study finds it to be almost average-ranking in terms of both construction labor productivity and its growth. In 2018 the industry's added value contributed US\$ 178bn or 5.3% to the German economy (Statistisches Bundesamt, 2019). During the past decade, after a cyclical downturn of the industry, many large national construction firms, whose core competence was the efficient execution of large turn-key construction projects, left the market and their place was taken by medium-sized, often family owned, companies specializing in particular trades such as concrete works, façade-works or interior fit out. Architects typically work in small- to medium-sized specialized practices and subcontract engineering design work to specialized engineering firms. Deliverables, their quality and, to some extent, the fees of architects and engineers are regulated by national legislation.

It has been widely argued that contractors, like all other partners in a project, should become fully involved as early as possible in order to participate in the evolution of the final design by contributing their knowledge and expertise and become an integrated network partner. However, many public and private clients defer the final investment decision by means of their corporate governance until basic design is completed and cost estimates by the consultants become firmer. Hence, only after the final investment decision is made by the client, the architect and engineers start to prepare the tendering documents for all trades and procurement packages in order to avoid sunk costs in case the final investment decision is negative. Various different procurement models are available, whereas the traditional competitive tendering is still prevalent. More innovative methods like open book contracts are in its infancy in Germany and many clients and contractors do not know how to accommodate them in their corporate governance and are not familiar with the required changes in behavior and attitude.

Many spectacular project failures both in the public as well as in the private sector have been credited to an adversarial and fragmented project environment based on suboptimal contractual arrangements that often resulted in claims and litigation. Major customers and powerful players of the German construction industry have recognized the necessity of better collaboration and better contracts with their initiative TeamBuilding under the slogan "For a Better Collaboration in the Construction Industry", which was started in 2017 (Initiative Teambuilding, 2019).

## **ONE GLOBAL HEADQUARTERS – THE MAIN ACTORS**

As previously mentioned, the OGHQ program was led by Steven and Mark. Steven is a program and project manager with more than 30 years' experience. He is a chemical engineer with a PhD by training, however moved into the management of major projects within Merck several times during the past 20 years. Since then he has been responsible for R&D, construction and organizational projects ranging from tens to several hundred million US\$ with the OGHQ program being the largest and most important so far. His background gives him a very good understanding of the client's organization as well as project governance. Mark is a qualified architect and joined Merck only shortly before the program by direct initiative of Merck's CEO. He has a long career in the construction industry with vast experience as architectural lead for a major contractor in Germany. This gives him specific expertise in architecture as well as in the nuances of the German construction market. He likes to stress the need for a good start in any project and compares it to a 100m sprint that

is always lost, if the runner doesn't get a good start. This theme became a proverb in the program.

Steven and Mark are supported by a team of internal and external experts. Within the program, Claire is the project manager for the Innovation Center and Employee Restaurant. Claire is a qualified architect, who worked as an independent architect before joining Merck 20 years ago. She has been trusted with major and important construction projects since. Based upon her track record, Steven had lobbied hard to have her assigned to the program. Other key players were Peter, the architect's project leader who had the overall responsibility for the design of the buildings as well as the construction management, and John, the structural engineer, who had to find ways to make Peter's ambitious design feasible and affordable while also complying with building regulations. John heads the Berlin office of his structural engineering company, which is one of the best in the country with a vast experience in challenging designs. Peter led many ambitious construction projects for large corporate clients in Germany and China and is supported by Paul, a civil engineer by training, who successfully acted as a construction manager for various projects.

Worth mentioning here are also Frank, who is Merck's procurement manager for the program with an engineering background, and Lilian, a civil engineer and quantity surveyor, who is part of a team of external specialists from the project management consultancy Drees & Sommer. She and her team were specifically hired for the program to complement all required competences of the program management team.

## **CONCRETE AND STEEL WORKS – BACKGROUND**

Considering the general environment outlined earlier, Steven and Mark were faced with a dilemma: they either follow the traditional way of procurement through competitive tendering, which is likely to create the basis for an adversarial environment with all its negative consequences, or they use more innovative forms like open book contracts, which are difficult to accommodate within Merck's corporate governance and the industry isn't very familiar with them either. However, they did not want to adopt an only partially suitable solution and decided to explore new collaborative ways of selecting contractors. They were conscious of some of the issues often present in client-contractor relationships like goal conflict, information asymmetry, trust or opportunistic behavior and tried to identify ways to overcome these. They assumed that these issues contribute to the adversarial environment and hence, are inhibitors of project success. As the OGHQ program had very high strategic importance within Merck, Steven and Mark did not want to risk the project being late, over budget or of mediocre quality. Based on the procurement of concrete and steel works for the Innovation Center and Employee Restaurant their approach to collaborative procurement is explained in the following.

The tendering package for concrete and steel works was chosen for two reasons: Firstly, the intricate architectural design was highly challenging as it required complicated and fair-faced concrete surfaces, wide ceiling spreads, and floors resting on very few supporting pillars (see Figure 3a to d). To build such a complex concrete-cum-steel structure without flaws requires a tremendously high quality of craftsmanship in formwork, ironworks and concrete works, which only few contractors are able to deliver. In such a case it is paramount for the project's eventual success, that the bidding contractors do not under-estimate the complexity and difficulties of the required work and erroneously bid too low or beyond their capabilities. Hence, Steven and Mark concluded that in such a case tendering cannot be conducted based on price only, but that a collaboration based on trust needs to be developed with the contractor to manage the complexity of the project. Secondly, requirements the structural

design for the tendering documents was based upon, were exacerbated at a late stage during the procurement phase, rendering several requirements and material take-offs<sup>2</sup> obsolete in some parts. As the timely laying of foundations was imminent, certain structural design questions relevant to pricing had to be put to rest during the procurement process under the mutual understanding that they were to be sorted out fairly later on. Steve and Mark were confident that their collaborative approach would be able to accommodate this difficult situation. Otherwise an incomplete design basis would result in extensive claims or overpricing due to incalculable risks, which they obviously wanted to avoid.

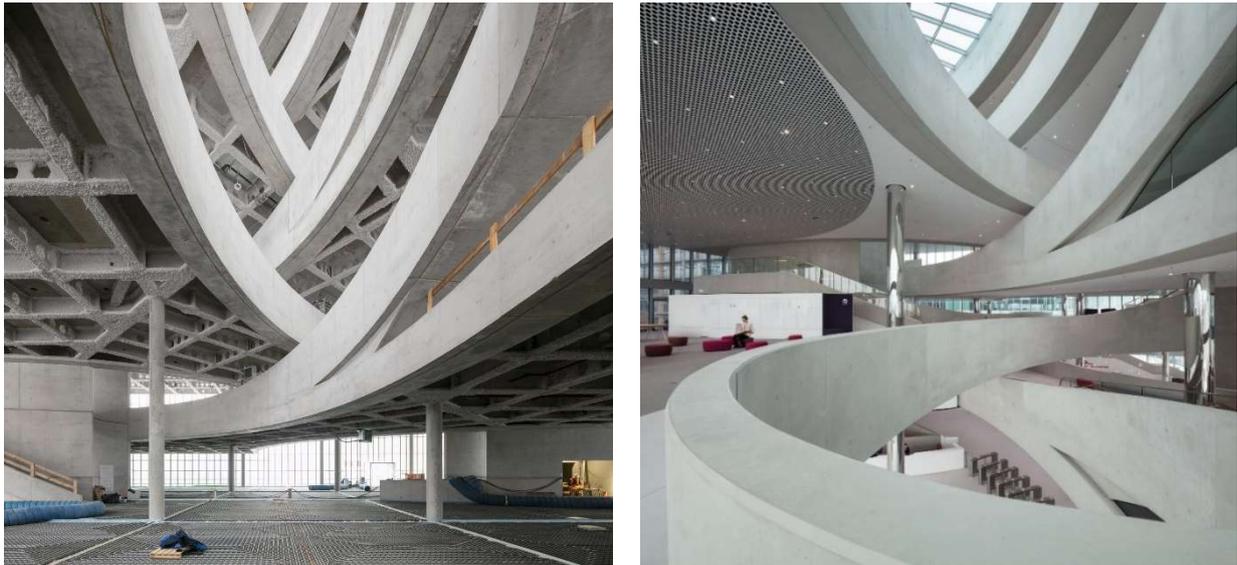


Fig. 3 a and b: Concrete ramps in the MIC during construction and upon completion (reproduced with permission from Esch (2018))



Fig. 3 c and d: View into a stair well during construction and upon completion (reproduced with permission from Esch (2018))

<sup>2</sup> Material take-offs are used in engineering and construction, and the term refers to a list of materials with quantities and types (such as specific grades of steel) that are required to build a designed structure or item. This list is generated by analysis of a blueprint or other design document.

## CONCRETE AND STEEL WORKS – PROCUREMENT PROCESS

During the pre-contract phase Steven, Mark and Claire put a high emphasis on the quick build-up of project knowledge with the potential contractors who were about to join the bidding process. Naturally, there is a big information asymmetry about the project and the nature of the task between the principal partners, i.e. client, architect, engineers – who have worked on the project for months or even years – and the incoming bidders – who are just familiarizing themselves with the material provided – which puts the latter at a disadvantage. Steven, Mark and Claire had planned to overcome this information asymmetry through a dedicated information exchange including discussions with all bidders on an individual basis throughout the procurement process, which is summarized in Table 1. This also allowed them early on to build a collaborative relationship based on trust with the bidders which they hoped would be carried through to the post-contract award phase of the project.

Stage	t	Tendering activity	Bidders	Calendar week 2015
1		Request for interest in bidding	23	4 – 12
2		Distribution of original tender documents	14	13
3		Individual workshops – workshop 1	8	16 – 17
4	(1)	Submission of quotes	5	22
5		Individual workshops – workshop 2	5	23
6	(2)	Revision of quotes #1	5	25
7		Amendment of tender documents based on new regulatory requirements and	2	27 – 29
8	(3)	Submission of indicative quote	2	30
9		Individual risk mitigation workshops – workshop 3	2	30
10	(4)	Revision of quotes #2	2	33
11		Contract negotiations	1	36
12		Contract signed	1	38

Table 1. Procurement process; disturbance symbol () represents changed requirements.

Steven, Mark and their team intended to achieve the following objectives with this approach:

- Build a mutual understanding of technical and qualitative building requirements.
- Familiarize bidders with the planning content of the previous design work as well as its limits and challenges.
- Clarification of technical issues and time schedules for both sides.
- Preparation of a common basis for realistic and comparable pricing.
- To become mutually acquainted with the acting persons and creation of a mutual base of understanding and trust.

Claire and Frank identified 23 pre-qualified contractors who they provided with a brief introduction to the project and asked for an expression of interest for inclusion in the bidding process (stage 1). They received 14 positive responses and sent the full tendering package to these contractors (stage 2). Upon closer inspection of the information provided, six contractors decided not to engage in the bidding process any further and the remaining eight were invited to individual day-long workshops (stage 3). During the workshops (workshop 1),

Claire explained rationale and situation of the project, in particular the challenging time-line that was given the highest priority by Merck, as well as the organization of the construction site; Peter explained building concept and design and presented examples and challenges in making the fair-faced concrete surfaces; John explained the structural design concept and Paul and Lilian captured feedback on a previously drafted schedule considering site logistics and interdependencies with other contractors. After this introduction, technical questions by the bidders were addressed and discussed extensively.

This workshop was specifically designed to establish a good working relationship and demonstrate the collaborative approach chosen for this project. However, discussions on pricing were completely excluded at this point and the bidders were asked to prepare their quotes under due consideration of the workshop results.

Three bidders refrained from submitting a quote after the workshops, whereas the remaining five submitted their quotes on time (stage 4). As shown in Figure 4, quoted prices were spread out significantly at this point (t=1) with a variance of more than 50%. After evaluation of the quotes the bidders were invited to another set of individual workshops (workshop 2), which were centered around the results of the Lilian's and Peter's check and individual items of the quotes, where pricing appeared to be off or inconsistent (stage 5). As a result, the two lowest priced bidders raised their price, whilst the most expensive one lowered his, and the spread in pricing of the now technically comparable quotes had fallen by half (t=2; stage 6). All these intensive discussions also provided interesting insights for Steven, Mark and their team into competence and general attitude of the bidder and their representatives, who were about to become future partners in the project. This allowed them to draw conclusions on the contractors' collaborative approach and how it developed over time, i.e. they could see if collaboration is really engrained in the contractors' thinking and doing or if it is just a marketing approach.

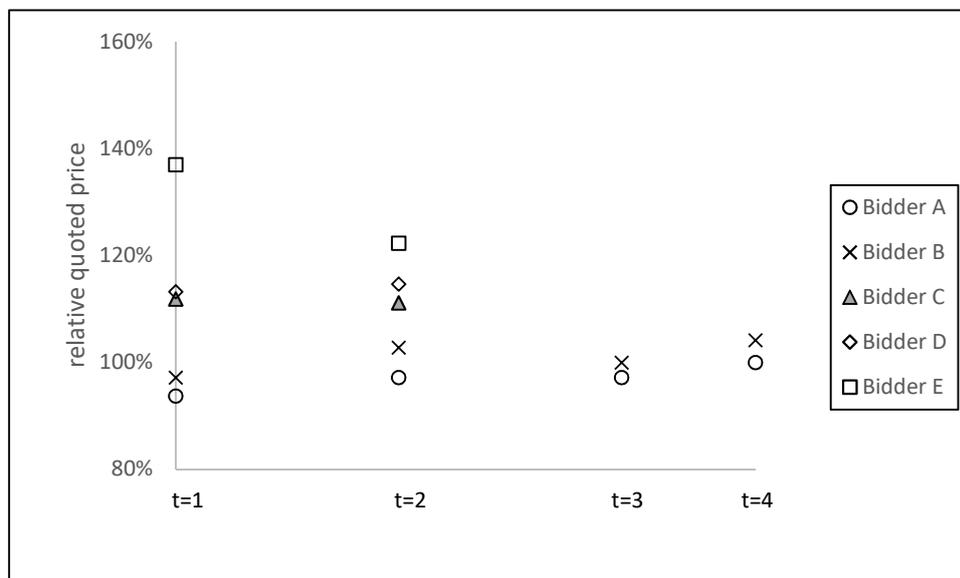


Fig. 4 Pre-Contract phase: Development of quoted prices for the concrete and steel works package (normalized with the final contract price = 100%) over the year 2015.

Shortly after the project had reached this stage, additional regulatory requirements were issued by the building authority in terms of unexpected explosion events<sup>3</sup>. These requirements had not been known earlier and several parts of the tendering package had to be re-worked by the planners (stage 7). This was a major issue for Steven and Mark as they were aware that Merck would not accept any delay of the set completion date due to the celebrations planned for the company's 350-year anniversary. Work on foundations had to start soon, and hence, they decided together with Peter and John that further talks should concentrate on the two most promising bidders – namely Construct (A) and Build (B).

Construct and Build were asked for indicative quotes based on some initial information (t=3; stage 8). Afterwards, both were invited to individual risk mitigation meetings in order to explore the most suitable way forward to minimize negative consequences of the re-design in a collaborative spirit (stage 9). These face-to-face meetings were centered around:

- Full disclosure of the regulatory situation and their influence on the building structure
- Request for ideas and optimization potentials with respect to works preparation and sequences in order to accelerate construction.
- Options to bring materials purchases forward on the basis of draft material takeoffs and fair allocation of corresponding risks as well as shift work on site.

During the workshop the bidders were also provided with the revised material take-offs and other documents that had changed. Based upon all available information, the final quotes were submitted by Construct and Build (stage 10). As indicated in Figure 4, the final quotes were higher than the previous, indicative ones because quantities and qualities of steel and concrete had increased due to higher design loads (t=4).

In parallel, Peter, Lilian, and Paul adjusted the time schedule accordingly under inclusion of optimization proposals by the bidders in order to evaluate the consequences on other contractors. Steven, Mark and their team then evaluated the two quotes with Construct offering the best value. They visited an example project of Construct and decided to move to technical contract negotiations with them. During these negotiations they agreed the following:

- Planned delivery and contract dates
- Concept for organization and sequence of construction
- Site organization
- Contingencies in case of adverse weather conditions
- Secondary offers for optimizations

Only after these conditions were fixed, the price was negotiated, as per Merck's corporate governance under Frank's lead, and subsequently the contract signed. These negotiations were conducted in a constructive atmosphere of mutual respect and fairness. After signing the contract, Merck offered Construct unilaterally additional bonus payments, if certain milestones were met. The idea was to motivate them to achieve targets and to demonstrate goodwill and good intentions for further collaboration by offering a bonus which could not be interpreted as a withheld portion of the earned payment for services. The bonus arrangement gave Claire a lever to directly influence Construct's management with regard to directing

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<sup>3</sup> For these particular buildings, an additional regulatory requirement was imposed by the local building authorities owing to the fact that the buildings are placed close to chemical plants that pose a potential danger from industrial accidents. One such scenario required the buildings to withstand blasts of defined strength, which constitutes a highly unusual load case for buildings in engineering terms and had to be investigated thoroughly by highly specialized expert engineers before the tangible consequences for sizing façade and structural work became entirely clear.

extra effort towards meeting important and evolving milestones at her discretion, which is otherwise difficult to do under German law.

## **CONCRETE AND STEEL WORKS – EXECUTION**

During execution of the contract Claire, Lilian and Paul regularly met with Construct's project management and monitored the work done on site. Technical and organizational issues were discussed as were progress, obstructions, safety and order on site, as well as logistics. Solutions to problems were sought jointly, and if unavoidable, intermediate milestones were adjusted and individual bonus payments offered, whilst keeping the project end date fixed. Additional work requests were regularly negotiated in a mutually fair manner.

The contractual work had been delegated to the Construct team who remained fully responsible for execution and output. John regularly supervised critical stages of structural work and Mark, Claire and Peter checked the critical fair-faced concrete surfaces. Steven kept loose contact to the senior management team of Construct and got slightly more involved in rare cases of dissent between the two project teams. He chose this approach to keep both parties focused on work execution, rather than on questions of accountability or individual contractual interpretations.

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Resolving agency issues in client-contractor relationships: The Merck Innovation Center

**Instructor's guide for teaching case**

**ABSTRACT**

This teaching case focuses on agency issues in project management using a large corporate construction project as empirical context. It is mainly focused on the procurement strategy and process of one specific work package through a collaborative approach which aims to build trusting relationships between the principal – the client – and the agent – the contractor. The project faced a multitude of challenges which will be discussed. It will enable students to gain an in-depth understanding of agency related issues and to develop the skills to design appropriate procurement strategies considering agency issues in complex project environments.

**INTENDED AUDIENCE**

The intended audience for this case is participants of executive education programs or short courses as well as professionals who attend in-house training. Hence, it is assumed that participants who have a certain amount of work experience and who can relate the case to their experience will use the case. Examples of courses this case is suitable for are modules on project organization or governance on MSc project management programs, which require prior work experience or short courses for practitioners, which address topics like collaborative working, procurement strategies for projects or project organization/governance. The case is designed to be one element of 90 minutes to support the delivery of the course, but it should not be used as case for the entire course.

**LEARNING OBJECTIVES**

After analyzing this case, students should be able to:

1. Evaluate the presence of agency related issues in client-contractor relationships
2. Develop methods to overcome agency related issues in client-contractor relationships
3. Operate appropriate procurement strategies for complex projects
4. Assess benefits and weaknesses of collaborative approaches in projects

**TEACHING STRATEGY**

**Case preparation**

As outlined earlier, this case can be used on programs and modules related to post experience education in project management. Students working on this case should be familiar with different procurement methods for projects including contracting/outsourcing as well as project organization and project governance. No detailed knowledge in these areas is required, but they should be familiar with the related terms and processes.

To prepare the students for this particular case it is recommended that they read the following paper prior to working on the case to provide them with the required theoretical background on agency theory:

Bryde, D., Unterhitzberger, C. and Joby, R. (in press) Resolving agency issues in client-contractor relationship. *Production Planning & Control*

For further information about the project in relation to architecture, photography and innovation, it is recommended to read the following book as it offers many visual and intellectual insights into the project (in German and English). It is not a requirement to read this book in order to understand and work with the case.

Esch, H. G. (2018) *Merck Innovation Center*, Wasmuth Verlag, Tübingen.

The students should be given the case prior to the teaching session to read in depth, so that the time in the classroom can be used for discussions.

### Teaching methods

This case enables lecturers/tutors to use a problem-based approach to learning in a small group teaching environment. Due to the nature of the intended audience – executive education and post-experience students – small group teaching is recommended. It will allow the students to use their knowledge and experience in the small group discussions, to build on others' existing work and to think creatively and originally in order to solve the problem they are presented with. The teaching case and its discussion questions provide the problem for the students which they are required to solve through these small group discussions. They need to work out themselves how to solve this problem, which enables them to develop transferable skills, improve team working and communication and enhance debating and analytical skills.

Ideally, the use of this case should be structured as follows (duration 90 minutes):

10 minutes	Re-cap on agency theory and agency-related issues
5 minutes	Summary of the case by the students
2 minutes	Forming of small groups (2 – 4 students per group)
3 minutes	Handing out of discussion questions
30 minutes	Small group discussions on discussion questions 1 – 10
30 minutes	Discussion of the answers with the full cohort
5 minutes	Presentation of the epilog
5 minutes	Open Q&A around the case and the epilog

### LITERATURE REVIEW, THEORY AND RECOMMENDED READING

Agency theory has its origins in economics of the 1960s and 1970s where researchers explored how individuals and groups share risks and how it creates problems when the involved parties have different attitudes towards risks (e.g. Arrow, 1971; Wilson, 1968). It was then developed further to incorporate issues such as diverging goals of cooperating parties and division of labor, which created what is now known as the 'agency-problem' (Jensen and Meckling, 1976). In essence, agency theory focuses on the dyadic relationship between two cooperating parties: the principal, who delegates work to the agent, who performs the work, whereas the relationship is defined through a contract (Eisenhardt, 1989). This type of relationship is omnipresent in many multi-organizational projects where a client

(the principal) engages external consultants or contractors (the agents) to execute work, usually due to a lack of expertise or resources in-house. It has been recognized as a useful and realistic theory for exploring cooperative relationships (Eisenhardt, 1989) and has been applied as a theoretical lens for project governance research (Turner and Müller, 2003).

Agency theory is interested in solving two main problems: the adverse selection problem and the moral hazard problem. The adverse selection problem refers to the information asymmetry between the principal and the agent (Akerlof, 1970), as one party usually has more or better information than the other party. An example situated in the project context is, that it is often the case that the agent, i.e. the contractor, has significantly more detailed information about how the project is performing than the principal, i.e. the client, who might also be not in the position to verify the information provided by the agent (Wiseman et al, 2012). This can subsequently lead to the moral hazard problem where the agent engages in actions, which put a specific risk on the principal, knowing that the principal will have to incur the consequences (Eisenhardt, 1989).

Common issues related to the adverse selection and the moral hazard problem are (Bryde et al, in press):

- Goal conflict – Each party will follow their own interests and not act in a way, which is mutually beneficial if the goals of the cooperative relationship are not aligned or not known.
- Opportunistic behavior – One of the parties operates in an opportunistic way, i.e. they exploit a situation by aiming to maximize their economic self-interest accepting that this might lead to the loss of a partner.
- Information asymmetry – The principal and the agent do not have access to the same information and/or are not willing to share their information.
- Trust – The two parties trust each other if they have a firm belief in the reliability, truth and ability of each other. Principal-agent relationships are often characterized by a high level of mistrust.
- Verification of contractor performance – The principal does not have any means of verifying the contractor's performance and hence, cannot validate if the information provided is correct or not and if the project is on track or not.
- Concealment of negative outcomes – One of the parties withholds or suppresses negative outcomes of their work. Either the principal or the agent do not share problems and failure and do not give the other party the opportunity to contribute to the rectification.

These issues are all inter-related and cannot be isolated from each other, as e.g. information asymmetry can lead to mistrust and opportunistic behavior or goal conflict can lead to opportunistic behavior or concealment of negative outcomes. Many principals, i.e. clients, attempt to solve these problems through contractual arrangements, incentives or the appropriate governance, which should reduce the agency problems (Joslin and Müller, 2016). Agency theory differentiates between two types of contracts (Florical and Lampel, 1998): the outcome-based contract, of which a fixed-price contract is a typical example, and the behavior-based contract, of which a fee-for-service contract is a typical example. Agency theory argues, that the agent will be more likely to act in the interest of the principal if the contract is outcome-based as the reward for both depends on the same actions and hence, the goal conflict and likelihood of opportunistic behavior are reduced (Eisenhardt, 1989). However, if appropriate information systems are in place, which put the principal in the position to verify the contractor's performance and behavior, behavior-based contracts can be appropriate (ibid). Next to the type of contract, the contractual completeness is another factor, which can contribute to the reduction of agency-related issues, whereas contractual

completeness relates to the extent the contract is fit for purpose (Handley and Benton Jr, 2009).

This teaching case sheds light on some important aspects of agency theory including agency-related issues and their potential resolutions – especially during the procurement process – for a large-scale construction project.

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### DISCUSSION QUESTIONS

1. Which agency related issues can you identify in the case?
2. How were the different issues addressed by Steven and Mark?
3. Do you think the way Steven and Mark addressed the agency related issues was appropriate and effective? Why?
4. Can you relate mechanisms to resolve agency related issues in this case to some of the mechanisms identified in the CURED framework (see Bryde et al, in press)? What does this tell us about Steven's and Mark's approach?

5. Steven and Mark decided to develop their own collaborative way of procuring concrete and steel works. Do you think their model should be recommended for replication for other projects? Why?
6. Due to the introduction of additional requirements by the building authorities a major disruption of the procurement process occurred. Do you think Steven's and Mark's strategy to postpone this issue post-contract award is suitable? Why?
7. Post-contract award the client offered bonus payments to Construct. Why did they choose to spend extra money if they are not contractually obliged to do so? Do you think it paid off?
8. Bryde et al (in press) point to another area, where agency problems arise, namely in the allocation of benefits and risks in uncertain situations. Which instance in the case study addresses this particular concern of Steven and Mark? Did they adopt a value or a risk sharing perspective? Why?
9. Would you have done anything differently to Steven and Mark? Why?
10. In your opinion, is it likely that Steven's and Mark's approach contributes to the success/failure of the project? Why?

## **ANSWERS TO DISCUSSION QUESTIONS**

### *1. Which agency related issues can you identify in the case?*

Agency issues emerge due to the phenomena of adverse selection and moral hazard. Adverse selection relates to the information imbalance between the agent – in our case the bidders – and the principal – in our case Merck as the client and the consultants – mainly during the pre-contractual procurement process; whereas moral hazard relates to situations where the principal has difficulties directing the agents actions because they are unobservable or cannot be contractually agreed and hence, occurs in the post-contract phase. Our case is situated during the pre-contractual procurement process, so the focus is on the adverse selection problem and more specifically on the following issues:

- Degree of goal conflict – It is highlighted in the text that “many spectacular project failures both in the public as well as in the private sector have been credited to an adversarial and fragmented project environment based on suboptimal contractual arrangements that often resulted in claims and in litigation”. This is related to the degree of goal conflict as an adversarial environment often develops when the involved parties have opposing or non-aligned goals. This can typically occur in two different situations: a) when contractors are either predominantly interested in maximizing their own profit and hence, do not necessarily act in the interest of the project/client or when the contractor representative follows his/her own agenda in terms of e.g. building a promotion case; and b) when clients are not interested in a sustainable and fair relationship with their contractors, but either aim to deploy the project with minimal budget and effort disregarding the impact this might have on the contractors or also follow their personal interests like securing a bonus for achieving certain not-project related KPIs.
- Degree of opportunistic behavior – This can also be observed in the adversarial and fragmented project environment as it relates to the maximization of economic self-interest in particular when a situation occurs which can be exploited. This is often the case when one party is in a difficult situation and requires support and the other party tries to get the most out of the situation for themselves, e.g. if the project is delayed, but the client requires a certain completion date, the contractor might overprice acceleration measures and hence exploit the client.

- Degree of information asymmetry – Our case focuses strongly on the degree of information asymmetry during the procurement process which is a crucial project stage in terms of information asymmetry. It is emphasized that there is big information asymmetry at the beginning of the procurement process as the client, architect, engineers and consultants have worked on the project for many months or even years and hence are very familiar with the project. They have developed the project, went through multiple iterations, they know why decision were made in a certain way and what the potential problems with the project are at that point of time. The bidders however, who are asked to submit a price for delivering the project, know basically nothing about the project. They have a limited set of information in the form of briefing documents and later on the tender package. During the workshops they are provided with further in-depth information.
- Level of trust – Steven's and Mark's intention is to build a collaboration with the contractor which is built on trust. They allow time in the procurement process to get to know the different bidders and to give the bidders the opportunity to get to know them. They also communicate openly and honestly, allow for questions and treat the bidders with respect.
- Level of concealment of negative outcomes – As our case is positioned during the procurement phase the project outcomes of the contractor are limited. However, there is a major incident on the client side – the change of requirements by the building authority – which shows how Steve and Mark handle a negative event during the project. They communicate the incident openly to the bidders and share all the information they have available at that point in time.

## *2. How were the different issues addressed by Steven and Mark?*

Steven and Mark tried to close the pre-contractual information in-balance with their contractor as quickly as possible through an intense process involving several workshops with a number of bidders. More specifically they undertook the following actions:

- Degree of goal conflict – They communicated openly and honestly with the bidders on what the client's and their personal goal with the project is, why this goal is in place and what they plan to achieve with the project. This was clearly addressed in the workshops in order to avoid a high degree of goal conflict emerging during the post-contract phase.
- Degree of opportunistic behavior – Again, Steven and Mark were open and honest with their bidders during the workshops and explained their intentions for the project. Through this process they could investigate how the different bidders reacted to and behaved in various situations and find out if they have a tendency to exploit a weaker position or not.
- Degree of information asymmetry – The minimization of information asymmetry was at the core of Steven's and Mark's actions. Through the carefully prepared procurement process with various briefings and workshops they were able to bring the bidders up to speed very quickly and demonstrated their openness to make all information they had available to the bidder. The process of building up knowledge for the bidders and hence, minimizing information asymmetry is shown in Figure 5.

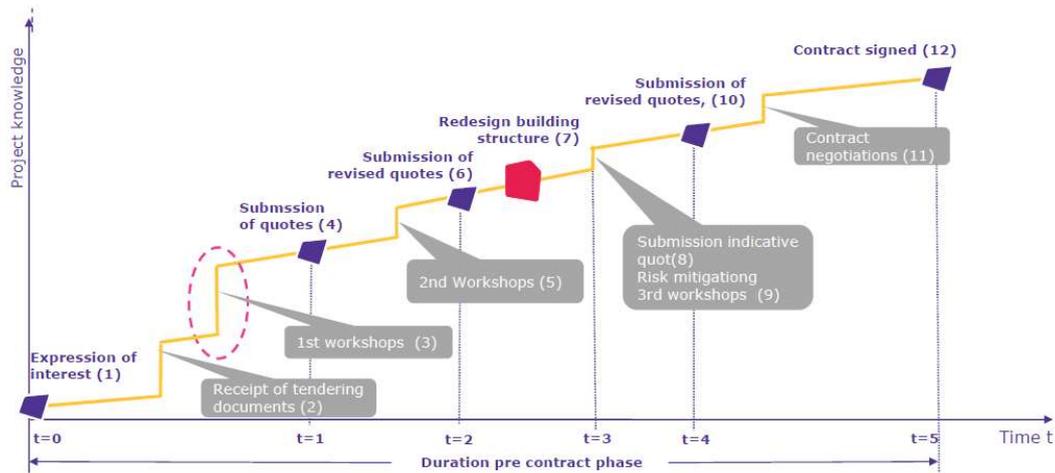


Fig. 5. Schematic account of build-up of project knowledge on behalf of the bidders during the pre-contract phase in order to reduce information asymmetry

- Level of trust – Trust can only be built over time. In the absence of a long-standing relationship with any of the bidders, Steven and Mark invested time during the pre-contractual phase to get to know the bidders and to give the bidders an opportunity to get to know them. Again, this enabled them to observe the bidders and make a judgement if they can potentially work trustfully with them in the future.
- Level of concealment of negative outcomes – Steven and Mark openly admitted in the midst of the procurement process, that new requirements from the building authorities meant a major change to some of the structural elements of the building. This could have potentially been exploited by one or more bidders, but as Steven and Mark approached it in a collaborative way by – again – sharing all the information they had and communicating openly about the challenge, they found support from the bidders. They did not neglect the problem and they did not try to force the bidders to provide a price for a – at this point in time – undefined work which the bidders would be hold accountable to later on. This showed the bidders that the client does not have the intention to exploit a situation, but to work collaboratively on issues that occur during the project.

For Steven and Mark, the additional effort and cost of having this multi-stage procurement process with various workshops were seen as a necessary, but valuable investment. It allowed them to build trust in the absence of a long-standing relationship and thus mitigate the risks emanating from the moral hazard problem in the post-contractual phase. They also wanted to make sure, that the selected contractor was the best fit in terms of competencies and behavior.

### 3. Do you think the way Steven and Mark addressed the agency related issues was appropriate and effective? Why?

This should be an open discussion amongst the participants. They might contribute various points of view and justifications which we are unable to comprehensively cover here. In summary, we suggest that Steven's and Mark's way to address the agency issues was appropriate because in the end they led to a successful project. This can be judged on the following facts:

- Foundation work started on time.

- Concrete and steel works were completed in a timely fashion and with high quality.
- Construct was motivated through incentives and actively engaged in resolving day-to-day problems on site in order to meet the client's intermediate milestones.

Steven and Mark had demonstrated in the pre-contractual phase, that uncertainties and problems were shared openly and solutions were not sought at the expense of Construct. Reciprocal behavior was evident in the post-contractual phase, which was supported by Claire and her team, who remained constantly involved and engaged in day-to-day operations of Construct, without interfering or micro-managing.

4. *Can you relate mechanisms to resolve agency related issues in this case to some of the mechanisms identified in the CURED framework (see Bryde et al, in press)? What does this tell us about Steven's and Mark's approach?*

The mechanisms to resolve agency issues identified in the CURED framework are Contract, Understanding, Resources, Education and Delegation. These mechanisms were used by Steven and Mark as follows:

- Contract – Steven and Mark very consciously ensured contractual completeness in terms of fit for purpose and employed formal and informal mechanisms to do so. They decided that the voluntary bonus is not a formal element of the contract, but an informal instrument for Claire to manage the progress of work.
- Understanding – Steven and Mark have the goal to develop a shared understanding with the contractor right from the outset of the project. They utilize the briefing documents, but also the specifically designed workshops during the procurement process to create this shared understanding between the principal and the agent. They also put a strong emphasis on communicating adequately, openly and honestly with bidders/contractors to ensure that the shared understanding is not only developed, but also maintained throughout the project.
- Resources – Steven and Mark were aware of the importance of appropriate resources for the project. They recognized that they do not have the expertise or capacity required for certain aspects of the project and ensured that they employ external experts wherever necessary. Furthermore, they wanted the bidders to understand the project in-depth before submitting the final quote to ensure they had the appropriate resources in place as well. This was important as they wanted to prevent the project from suffering due to insufficient funding of one of its key contractors.
- Education – Steven, Mark and their team did not conduct or incorporate any formal training. Nevertheless, some form of informal training or education took place during the initial workshops as they enabled the participants to gain an understanding of ways of working, critical issues in the project and relationships amongst the different parties involved.
- Delegation – Steven and Mark delegated the execution of the concrete and steel works to Construct. They had to trust Construct to execute the work as specified as they were only able to keep a control certain aspects of the work themselves. They even delegated some of the control to internal and external experts like Claire, Lilian, Paul or John who again could not control every single aspect of the work, but acted more as quality assurance while allowing Construct to actually do their job.

This shows that Steven and Mark utilized most of the measures to resolve agency related issues which subsequently enabled them to deliver a successful project.

5. *Steven and Mark decided to develop their own collaborative way of procuring concrete and steel works. Do you think their model should be recommended for replication for other projects? Why?*

This should be an open discussion amongst the participants. They might contribute various points of view and justifications which we are unable to cover comprehensively here. Overall, we suggest that this model can be transferred to the procurement of other work packages and indeed, should be replicated for other projects. A reason for this is that issues related to agency theory are not project or industry specific – they are present in any type of project and in any industry as suggested by Bryde et al (in press). The model employed by Steven and Mark can and should therefore be adopted by other projects in order to set the foundations for a collaborative and trustful way of working on the project and – most importantly – completing it successfully. Depending on the industry and volume of the tender package, the process might require adaption and/or modification in terms of number of workshops, bidders involved and timeframe, but we are convinced that the process developed by Steven and Mark offers a good and valuable guidance for other work packages or projects and we expect that the same benefits can be realized in other work packages and projects. Indeed, all major tender packages in the OGHQ program followed the lead of concrete and steel works and it proved successful for the other work packages as well.

However, the additional effort and cost need to be considered. We suggest that they are warranted in those cases, where agency theory clearly indicates risks that need to be controlled by the principal. In certain other institutional settings, where trust among actors plays no role, projects may also be conducted at arms-length.

6. *Due to the introduction of additional requirements by the building authorities a major disruption of the procurement process occurred. Do you think Steven's and Mark's strategy to postpone this issue post-contract award is suitable? Why?*

This should be an open discussion amongst the participants. They might contribute various points of view and justifications which we are unable to cover comprehensively here. We suggest, that Steven's and Mark's approach to postpone the issue post-contract was suitable, especially against the background that they wanted to build a collaborative and trustful relationship with the contractor. They demonstrated through their behavior pre-contract, that they were willing to discuss and resolve all open issues in a collaborative and fair manner. Through their intensive pre-contract discussions with all bidders, the team could form an educated opinion about the bidders' behavior and likely response to issues and eventually selected Construct as the best fit. Furthermore, the laying of foundations was imminent according to the original schedule and further delays would endanger the completion date in an unacceptable way.

7. *Post-contract award the client offered bonus payments to Construct. Why did they choose to spend extra money if they are not contractually obliged to do so? Do you think it paid off?*

Steven and Mark offered the bonus to Construct post-contract in order to clearly separate this voluntary award from all contractual obligations. Their thoughts behind this were, that Construct would view it as a real bonus award, that was fairly paid out in case of success and not paid if the milestones were not achieved. They hoped that in the case of non-payment due to missing the milestone, Construct would not view it as reduced income.

Therefore there was only “gain” and no “pain” in this arrangement<sup>4</sup>. Claire, the project manager, could allocate the bonus payments at her discretion for intermediate milestones without getting into contractual negotiations or conflict with Construct or German contract law.

8. *Bryde et al (in press) point to another area, where agency problems arise, namely in the allocation of benefits and risks in uncertain situations. Which instance in the case study addresses this particular concern of Steven and Mark? Did they adopt a value or risk sharing perspective? Why?*

OGHQ faced a major instance during the procurement of concrete and steel works which was the issuing of new requirements by the building authority (see stage 7 in Table 1): The remaining two bidders were invited to risk mitigation talks, where the causes and consequences of the disturbance were shared and both asked for ideas and proposals to reduce risk. Both were given the opportunity to adjust their quotes accordingly and it can be taken from Figure 4 that there were some price adjustments. Hence, Steve and Mark adopted a risk sharing perspective in order to motivate the agent – in our case the two remaining bidders Build and Construct – to cooperate.

9. *Would you have done anything differently to Steven and Mark? Why?*

This should be an open discussion amongst the participants. They might contribute various points of view and justifications which we are unable to cover comprehensively here. There are various instances where Steven and Mark had options on how to design the procurement process for the concrete and steel works. As outlined initially, they could have chosen the traditional way of competitive tendering with a sole focus on price, they could have explored using open book contracts or they could have employed a general contractor instead of procuring by work packages. We don't know what the outcome of the project would have been if a different procurement method was chosen. However, we know that the chosen method was highly successful and hence, we assume that it was the best and most appropriate solution for this project.

Steven and Mark could also have handled the instance of the changed requirements from the building authority differently. They could have provided the bidders with the information they had and requested to include it in their quote; they could have hidden the information and only provided it after contract award trying to pretend it was already included; they could have paused the procurement process in order to update the design – again, there are many different options and we don't know what would have been the outcome if a different way of dealing with this instance was chosen, but Steven's and Mark's approach proved once more successful and hence, we conclude that they acted appropriately.

10. *In your opinion, is it likely that Steven's and Mark's approach contributes to the success/failure of the project? Why?*

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<sup>4</sup> Recent psychological research indicates, that teams are motivated by monetary incentives to perform non-routine tasks quicker than in their absence. We assume that penalties have a detrimental effect on performance. See also Engelmaier F., Grimm S., Schindler D., Schudy S. (2018), *The Effect of Incentives in non-routine analytical Team Tasks – Evidence from a Field Experiment*, CESifo Working Paper No.6903, Category 13. Behavioural Economics

This should be an open discussion amongst the participants. They might contribute various points of view and justifications which we are unable to cover comprehensively here. Based on our analysis, we conclude that Steven's and Mark's approach had an impact on the overwhelmingly successful completion of the project. They put in place the appropriate measures to overcome agency related issues and tried to build trust between the client organization and its representatives, the principal, and Construct, the agent. This allowed them to manage a complex project with a reasonably high degree of uncertainty collaboratively without losing Construct's commitment. They decided to reward positive contributions to the project which facilitated the achievement of critical milestones without establishing a blame culture if these milestones were not met. They achieved that Construct acknowledged and recognized the importance of the project and that Construct adopted their goal of delivering a successful project.

## EPILOG

Throughout the post contract award phase of project execution, Steven, Mark and their team noticed that the positive attitude and collaboration with Construct persisted despite all difficulties and problems that inevitably occur in most largescale, complex projects. Construct met certain milestones and hence, bonus payments were made, whereas milestones which were not met, were redefined towards new goals. In total bonus payments worth 1.5% of Construct's contract value were paid. However, several change orders were issued and acceleration measures were commissioned which led to an increase of the contract value of 11%. Finally, adjustments in actual quantities added another 5% to that sum, so that Construct's contract was closed at 117.5% of its original value. This amount was within Merck's budget including risk provisions and hence, Steven and Mark were very pleased with the overall result of the tendering package concrete and steel works. Especially, as the quality of the work was outstanding which was recognized through an honorary mention at the European Concrete Award 2019<sup>5</sup> by the European Concrete Societies Network (ECSN). Eventually, the project was finished on time and in budget to the full satisfaction of Merck and all other stakeholders. The Innovation Center was inaugurated by the German chancellor Angela Merkel, a representative of the owner family of Merck and Merck's CEO on 3<sup>rd</sup> May 2018 during the celebratory event for the 350-year anniversary. The buildings and the public square were critically acclaimed in architectural critiques and selected as a finalist for several important awards. This again made Steven and Mark as well as their team very happy and provided a confirmation for them that the chosen collaborative approach was appropriate and necessary. Steven and Mark are convinced that with a traditional procurement process they would have never achieved this result.

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<sup>5</sup> See <http://ecsn.net/> Excerpt from ECSN award brochure: "Ed. Züblin AG realised the Merck Innovation Center, located in Darmstadt, which will be a best practice example for fairfaced concrete in perfection. Both the building as an example for a complex structure using a high amount of reinforcement, rounded geometry and fairfaced concrete requirements, as well as the supersurface as a place of representation for Merck, built using a white, burnished and polished concrete surface in a three-dimensional geometry, required a big effort of concrete structural knowledge, concrete technology knowledge and a manufacturing experience."



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To  
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Project Management Institute 2019 Instructional Case Writing competition

Release

Dear Sir, dear Madam

We hereby confirm our release of the following teaching case

**Resolving agency issues in client-contractor relationships: The Merck Innovation Center**

by [REDACTED]  
[REDACTED], for participation in your case writing competition.

Yours sincerely



ppa. Dietmar Möller



ppa. Klaus Schwab



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