

Auf der Suche nach dem besseren Weg

von Johannes Eichenthal - erschienen in der Litterata am Montag, November 21, 2016

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Wir kennen alle die Medien-Sensationsmeldungen von jahrelangen Verzögerungen oder Vervielfachung der Baukosten internationaler Großprojekte. Erfolgreiche Projekte finden dann oft keinen Platz in Medienberichten. Das ist bedauerlich, weil 99 Prozent aller Großprojekte in unserem Alltagsleben planmäßig, erfolgreich realisiert werden. Zum Alltag der Fachleute gehört schon immer die detaillierte Untersuchung der Projektabläufe.



Der erfahrene Hochschullehrer und Planer Prof. Dr.-Ing. Wilhelm Reismann (TU Wien/iC consulenten Wien, auf dem Foto 2. v. li.) präsentierte zur Buchmesse Wien, am 11. November, ein großformatiges

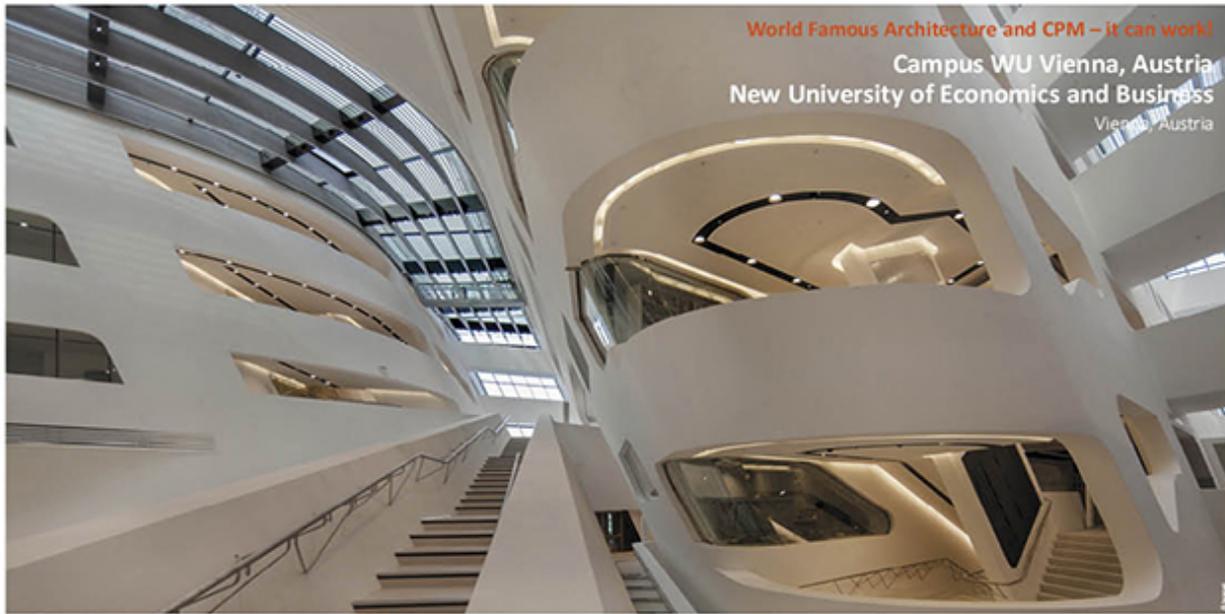
Buch mit dem lapidaren Titel »Yearbook 2016«. Hinter diesem Titel verbergen sich Dokumentationen internationale Bau-Großprojekte und deren systematische Analyse.

Das Buch erschien als Bd. 1 der Edition Leipzig – Wien, im mitteldeutschen Mironde-Verlag.

In seiner Einleitung formulierte Reismann die wichtige Frage der Untersuchung jedes einzelnen Projektes: »Wo finden wir Innovation in diesem speziellen Projekt? Welche Erfolgsfaktoren gab es? Was können wir alle aus diesem Projekt lernen?«

In der Wirtschaft ist es längst die Regel, einen permanenten Lernprozess anzuerkennen. Am schwierigsten ist es vielleicht im Fall von großen Erfolgen. Dann fällt Menschen das Lernen besonders schwer. Umgekehrt steigt die Lernbereitschaft bei Misserfolgen. Um diese emotionalen Schwankungen zu neutralisieren entwickelte die Mannschaft um Wilhelm Reismann einen strukturellen Lernprozess. In sieben Prinzipien werden Erfahrungen der Vergangenheit als Ausgangspunkt für neue Projekte am Anfang des Buches formuliert: 1. Menschen, die daran glauben, dass wir gemeinsam effektiver sind; 2. Prozesse, die Kooperation fördern, nicht Konfrontation; 3. Verträge, klar, fair und einfach, Vertragsabwicklung in gegenseitigem Respekt; 4. Kosten, transparent und wettbewerbsfähig, angemessener Gewinn für alle; 5. Qualität, unser oberstes Ziel, zu vertretbaren Preisen für alle; 6. Lebenszyklus, nachhaltige Projekte, bewusst über alle Phasen geplant; 7. Herausforderungen, erkannt und in gemeinsamer Verantwortung gelöst

Es folgen im Buch 41 Fallstudien. Großformatige Fotos. Übersichtliche Tabellen. Darunter sind spektakuläre Projekte, wie der neue Wiener Hauptbahnhof, der auch den Buchtitel ziert. Auf den Seiten 58–60 wird der Bau der neuen Wiener Wirtschaftsuniversität vorgestellt.



World Famous Architecture and CPM – it can work!
 Campus WU Vienna, Austria
 New University of Economics and Business
 Vienna, Austria

FACTS & FIGURES

Capacity
 Space for 25,000 students and 1,500 teachers, researchers and administrative staff
 Open campus, no barriers, no fences
 55,000m² of the total 300,000 m² of floor and surface area is open, publicly accessible space

LC, Library & Learning Center
 Total floor space approx. 45,000 m², 1,500 student workstations, cantilevered roof with monitor

EA, WU Executive Academy
 Total floor space approx. 6,000 m², six stories, reflective façade

DA, Departments and Administration
 Total floor space approx. 35,000 m², two-part complex with yellow-orange-red timber-clad facades

DC, Departments
 Total floor space approx. 36,000 m², "beige" façade

TC/DS Teaching Center and Departments
 Total floor space approx. 36,000 m², space for approx. 5,000 people, Auditorium Maximum with 650 seats

DS/SC Departments and Student Centre
 Total floor space approx. 21,000 m², two building segments, "facile/facile" façade

All buildings based on the same overall technical concept
 The building infrastructure is standardized in terms of construction, energy supply, ventilation and sanitary facilities

Energy
 The entire campus has been designed in accordance with "green building" principles, e.g. geothermal energy from groundwater

Barrier-free accessibility
 All areas are wheelchair accessible and there is a tactile guidance system for the visually impaired

EXPERTS & AUTHORS

Maximilian Perner
 Client
 BIG BundesimmoHolding Gesellschaft

Christoph Semmer
 Client
 WU Vienna University of Economics and Business

Innovate - Succeed - Learn

- Invest in a sound and clear project basis – the integrated masterplan prepares the ground
- Creating a landmark – world famous architects and their buildings on one campus
- Design and project management challenge – one project with several international design teams
- Cooperation and leadership as success factors
- Critical balance to be found between: public tender process, award to the best/cheapest, financial standing of the company and quality of the work
- Tangible differences between contractual behaviour of various contractors depending on the approach of the leading persons involved
- Successful concept joint implementation/contract between future user WU and owner BIG

World Famous Architecture and CPM – it can work!
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 Vienna, Austria

The interview, which followed the "Seven Principles", shows that cooperation during design and construction is even more important when international teams and renowned architects are involved.

The project is an extraordinary one. After masterplanning and an international architectural competition world famous architects were commissioned to design the different buildings:

- Zaha Hadid Architects, Hamburg: LC Library & Learning Center
- NO MAD Arquitectos, Madrid: EA WU Executive Academy
- Sir Peter Cook and OMA studio, London: DA/AD Departments and Administration
- Estudio Carme Pinós, S. L., Barcelona: DS Departments
- BüroHohler ZT GmbH, Vienna: TC/DS Teaching Center and Departments
- Atelier Hiroshi Abe, Japan: DS/SC Departments and Student Center

The masterplan was drawn up by Luke Sponholz, B2U architect's. The architectural competition was directed by Wolfgang D. Fritz, Coop Himmelb(l)au.

1. People who believe that working together makes all of us more effective

The most important success factor and key responsibility in the early project phase is the selection of the client's core team, the consultants. Aside from all formal and legal requirements we also have to ensure that the human relationships in the expert team work well. Decisions have to be prepared and taken, responsibility has to be borne and, as mistakes cannot be 100% avoided, these have to be corrected. A project team cannot be afraid of such failures. Rather, it must be able to openly discuss and correct them. This is an important attitude which the client must also adopt.

This also brings the main challenge to the client. Only strong clients can handle complex projects. Their team can never be their excuse. Trust and mutual respect must be maintained in the most difficult situations – and at the other consultants and contractors

Involved in the project must follow the same principles. If one leaves this sphere of trust, it does not work anymore. Guaranteeing this completeness and consistency in the project team is a key responsibility of the client.

The project had a double lead:

- BIG – the Austrian Republic's official real estate company which owns universities and other public buildings and is experienced in development, design, construction and operation and
- WU – Vienna University of Economics and Business – the future user of the campus with its 25,000 students.

This double lead was a success. It allowed for redundancy and mutual correction. All decisions had to be taken unanimously. This may not always be easy between two leaders, but here it worked well until the very end of the project. Sometimes informal meetings ... a little beer and wine ... helped. This should be seen as a valuable tip in CPM and leadership in general!

Prepare delicate matters informally. Talk before you start writing and receive the written format for the conclusions, the agreement, the documentation and the to-do list. Writing too early produces paper, claims and a defensive instinct rather than solutions.

It is always the empathy between people which makes things happen ... or not. Hence, the question is: how can one create and maintain empathy in the key project team? The weekly Wednesday "working breakfast" between client, controlling and CPM was one of the secrets behind the high level of empathy in the project team and, of course, produced no minutes.

One remark in the box "Innovate - Succeed - Learn - it may need exploration. Two contractors with very similar contracts and almost the same scope of work in two neighbouring buildings behaved completely differently in terms of performance, claims and agreements. This can only be explained by the different leading persons involved.

2. Processes: Fostering cooperation instead of cost-cutting

Today's CPM processes are in danger of becoming overwhelming. Too much communication, too little construction. We drown in workforces, meetings, emails, reports, IT-tools ... and too often in disputes. Some practical measures to create and direct efficient processes:

- Do not write too early, solve, agree informally, personally, responsibly (see above).
- Organize decisions properly, clearly (see below).
- Keep minutes short, focused on results and to-do lists.

For this project, specific "decision documents" were developed: short summaries of decisions, signed by client, CPM and controlling. The agreement-finding process behind the decision was noted in the appendix. This simple and efficient process for informing and recording was followed consistently.

3. Contracts: fast, clear and simple, contract management in mutual respect

Although our contracts tend to be too long and too complicated we find this difficult to avoid. However, we agree that contracts – especially for consultants, intellectual services – should be as short as possible and leave room for "positive interpretation" in line with the needs of the project.

We must simply accept that we cannot precisely predict construction projects. This fact has many practical consequences for our organization, processes and contracts.

One key success factor is always the "strong client". Weakness at the top has many negative consequences. Strong clients also ensure the necessary "climate" in the project team – contractually and beyond.

We discussed the pros and cons of different project delivery methods. This client still favours the "traditional" Central European way of separate contracts for each trade.

Strong clients are not afraid of interfaces, they use them to save money (avoid surcharges) and direct the project. There are interfaces in the project anyway, and these create problems. But this is good. You can see them and influence the problems instead of dealing with a "black box".

Another question: does detailed design during construction influence the construction process positively or negatively? Accepting that construction projects develop until the very end (permanent prototyping and compromising) the client sees this positively. One can correct and react until very late on in the construction phase.

An alternative would be to complete the "thinking, discussing and deciding" process earlier and benefit from a less disturbed construction phase. BM and other development in my support! In this view, when we build the complete project virtually, we must concentrate all our thoughts, discussions and decisions in this earlier phase.



Excellence in Architecture and Energy Efficiency
Sheikh Zayed Desert Learning Centre

Al Ain, U.A.E.

FACTS & FIGURES

Building and functions
 Desert museum with exhibition area, library, research centre and theatre/ cinema

Landmark Architecture
Architects
 Chalabi Architekten and Partner ZT GmbH

Structural
 Arne Hoffmann, B. Singer and Grotmann GmbH

MEP
 CES clean energy solutions GmbH

Implementation
 Dirk Letzig, Robert Krashofer, Zöblin Abu Dhabi, a subsidiary of STRABAG International GmbH

Energy concept
 High sustainability by using solar cooling and photovoltaics, enormous reduction in lifecycle costs and environmental impact

Building certification
 Highest building certification level for LEED TM (Platinum) and Estidama (5 Pearl)

Peak visitor numbers
 2,750 persons per hour

Investment
 Volume approx. EUR 60 million

Area
 Gross floor area 20,000 m²



Innovate . Succeed . Learn

- One must be able to afford such projects
- Challenges breed success
- Challenges are a driving force behind new human solutions
- At the end of the day, problems are only solved by people
- Contract, costs and timetables are peripheral issues which people must deal with
- If innovation and quality are paramount then new benchmarks apply
- Those who do not recognise this should not attempt such projects
- This statement is principally directed at our "loyal client"

EXPERTS & AUTHORS

- Talk Chalabi**
 Architect
Jusuf Chalabi
 Architect
Arne Hoff
 Innovative Building Services
 CES clean energy solutions GmbH
Klaus Riegler
 Innovative Building Services
 CES clean energy solutions GmbH



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Excellence in Architecture and Energy Efficiency
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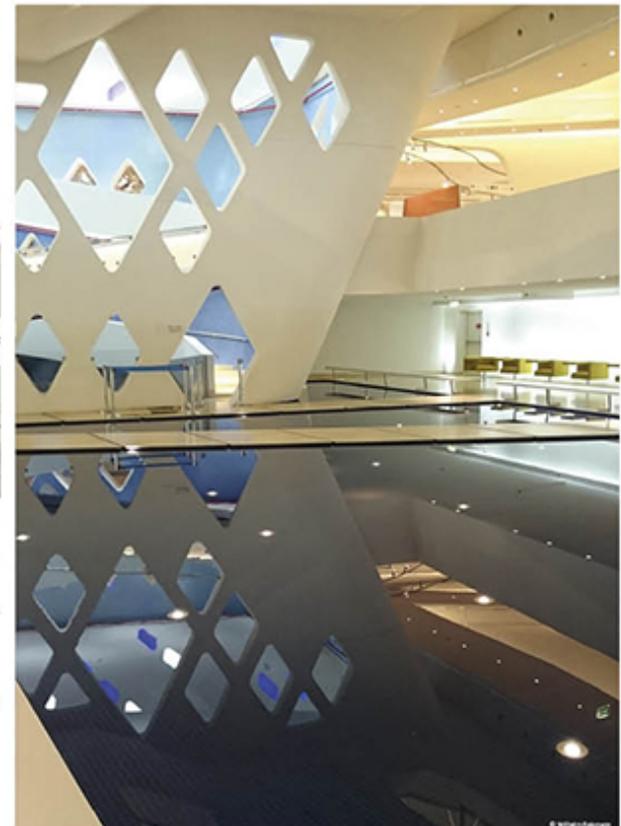


The Arab Emirates are setting global standards for sustainable construction. Their investment in both financial and intellectual resources is enormous. The SDLC is an outstanding example of this, with a total investment of around 50 million euros, was planned to achieve LEED Platinum and Estidama 5 Pearl certification. And the team has succeeded. The result is an excellent building in terms of aesthetics, function, technology and sustainability. Its design and execution stretched all experts to their limits: architects, structural and building services engineers and the contractors. The images say more than words ever could or would want to. The challenge was met with a more or less integrated process involving participants from Europe and Arabia. In addition to the complex spatial structure, extreme but justified future-oriented demands were made of the building services, particularly in the area of cooling, ventilation, energy supply and water efficiency.

In addition to the LEED Platinum and Estidama 5 Pearl certification, the technical highlights of this project include as "firsts" the first implementation of earth pre-cooling for ventilation in the United Arab Emirates, the first use of concrete core cooling over 100 m² and the first use of adiabatic cooling towers. Water savings adding up to 80 per cent are achieved by a 170 m³ stormwater storage, a vacuum toilet system, greywater recycling, adiabatic cooling towers and TSE irrigation. The ventilation system uses solar pre-cooling for a total air volume of up to 63,000 m³ per hour. Optimal adaptation to the local climate is provided by smart cooling strategies. The cooling load is minimised by passive means, e.g. an insulated building envelope and a high thermal mass, whereas efficiency is maximised by division of temperature levels (space and temperature levels for dehumidification and sensible cooling), waste-heat recovery and solar absorption cooling.

For energy supply the building has a photovoltaic system producing more than 200 MWh per year via a gross area of circa 1,500 m² of temperature-glass located on the roof. The sharing of information during the design process, the adherence to the dynamic requirements of the architects and the clients and the organisation of the international team implementation required enormous personal and technological commitment. The tender-award-contract-award process may have proceeded in a largely traditional manner but not without a number of individual and pragmatic steps resulting from the special needs of the project and its participants.

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Am Ende der Einleitung geht Wilhelm Reismann auch auf die Herausforderung der digitalen Prozesssteuerung in der Bauwirtschaft ein. Ein Stichwort ist hier die Abkürzung BIM (Building Information Modeling). Es ist dem Anschein nach kein Zufall, dass sich der letzte Artikel des Bandes mit dieser Problematik befasst. Christoph Eichler informiert darüber, wie das Wissen über Bauwerke strukturiert und in einer gemeinsamen Sprache formuliert wie auch transportiert werden kann. Mit dem Beitrag Eichlers wird deutlich, dass BIM in der Praxis bereits in den strukturellen Lernprozess der Planer integriert ist. Gleichzeitig können wir ahnen, dass sich die neue Technologie außerhalb der traditionellen Architekturausbildung, in der Planungspraxis selbst stürmisch entwickelt. Ist es das Symptom für einen tiefgreifenden Wandel? Dann wäre es »langsam« an der Zeit für eine Ausbildungsreform der Hochschulen.

Wie dem auch sei. Charakteristisch für die Denkweise des Autors ist, dass Wilhelm Reismann darauf verweist, dass es am Ende immer die Menschen sind, die die Projekte zum Erfolg bringen.

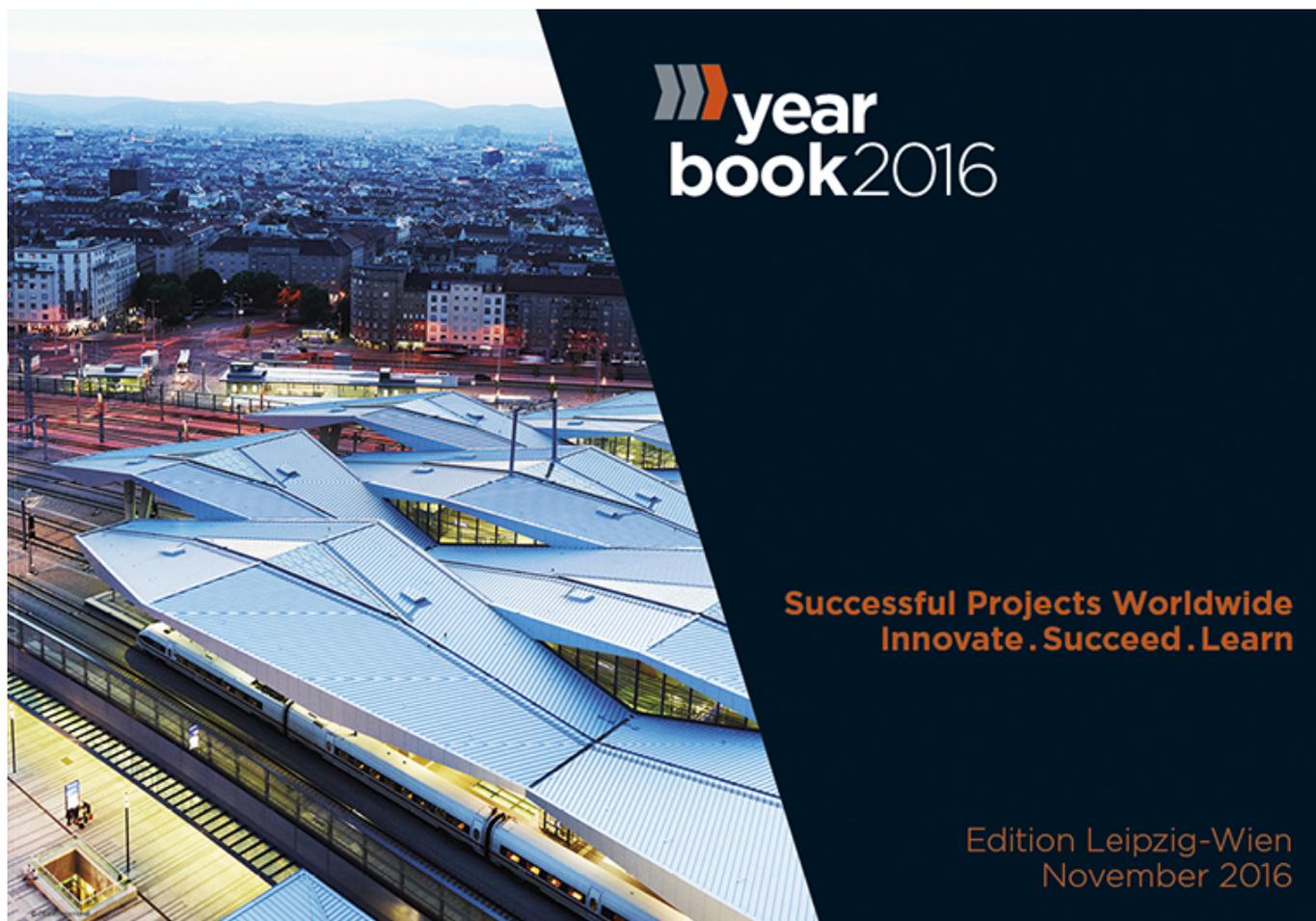
Das ist der Punkt. Darum geht es. Auch im größten technologischen Wandel müssen die Menschen die Entscheidungskompetenz behalten. Das vorliegend »Yearbook 2016« kann Architekten, Planern und Ingenieuren auf anschauliche, reflexive Weise helfen, auf der Höhe der Entwicklung zu bleiben und die Kompetenz zu behalten.

Johannes Eichenthal

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