Budgeting in Germany

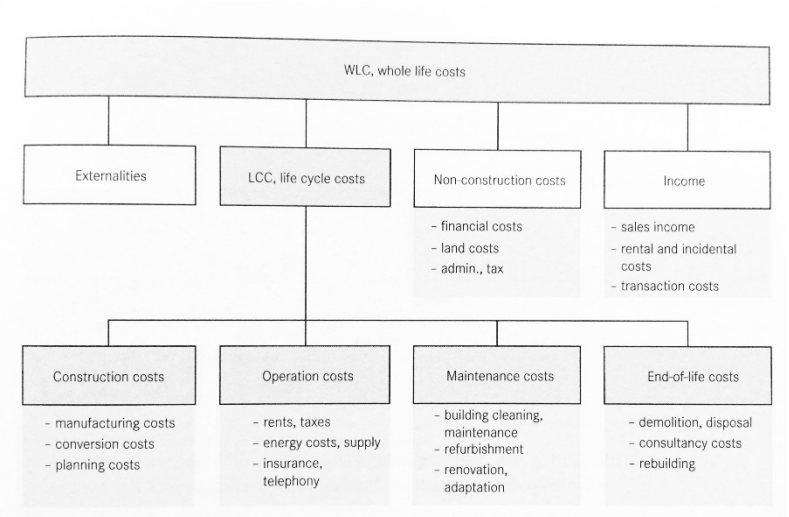
Speaker

Prof. Dr.-Ing. Architekt Bert Bielefeld

- CEO of *bertbielefeld&partner architects* in Dortmund
- Professorship für building economics and construction management, university of Siegen
- More than 40 books as author or editor
- Member of the standardisation committee DIN 276
- Member of the advisory board of BKI

Contact:

bielefeld@architektur.uni-siegen.de



regulations and standards for budgeting in Germany

building costs (investment):

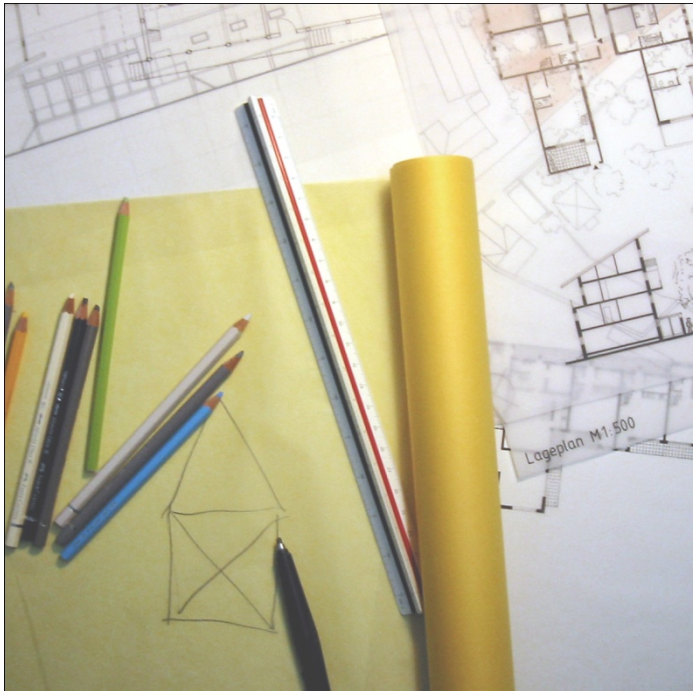
- **DIN 276** – Kosten im Hochbau

Operating costs:

- **BetrKV** – Betriebskostenverordnung
- **DIN 18960** – Nutzungkosten im Hochbau
- **GEFMA** – guidelines for Facility Management

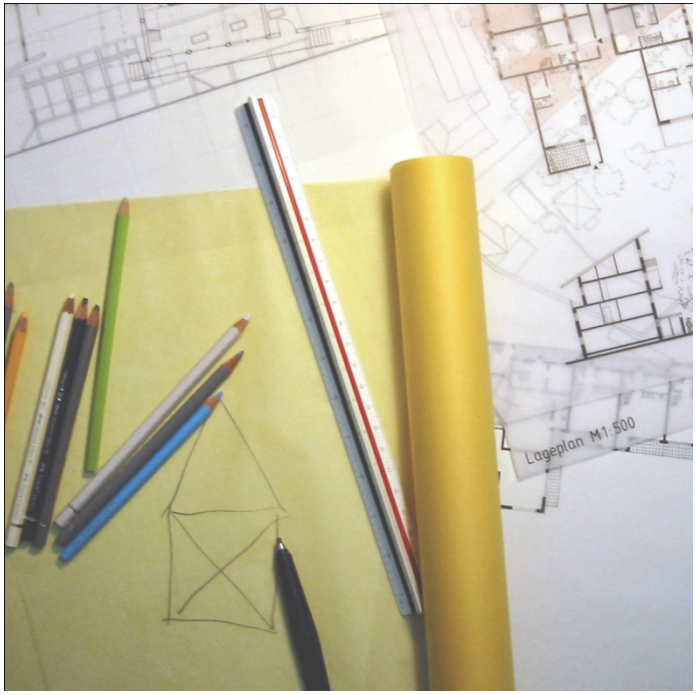
Scope of architects / engineers:

- **BGB** – legal base for contracts
- **HOAI** – legal base for planning fees, also base for scope of architects and engineers



Regulations of the DIN 276

1. Definitions
2. Elements of budgeting processes (incl. cost calculation, controlling and management)
3. completeness / presentation of costs
4. Steps for budgeting (along the scope of architects)
5. Structure of cost subdivison / specifying costs



Budgeting

Cost planning („Kostenplanung“) has 3 elements:

1. Cost calculation
2. Cost controlling / monitoring
3. Cost management

Component	Construction element	Quantity	Unit	Inclusive price (EUR/unit)	Total price
Ceiling					
	Stoneware tile 30 × 60 cm, anthracite, laid using the thin bed method, grouting in tile shade, skirting tiles	60	m²	80	EUR 4800.00
	Cement screed as floating hot screed, d = 6 cm, on 5 cm footfall sound insulation	60	m²	25	EUR 1500.00
	Reinforced concrete ceiling, in-situ concrete, d = 25 cm, shuttering, reinforcement, underbeams	60	m²	115	EUR 6900.00
	Sprayed ceiling rendering, gypsum rendering, d = 1.5 cm, pre-treatment of floor	60	m²	19	EUR 1140.00
	Indoor emulsion paint, ceiling, white	60	m²	4	EUR 240.00
				Total	**EUR 14,580.00**
Wall					
	Exterior paint for mineral substrates, white	40	m²	13	EUR 520.00
	Exterior wall rendering, lime cement plaster, d = 3.0 cm, pre-treatment of floor	40	m²	42	EUR 1680.00
	Masonry wall, porous concrete, d = 36.5 cm	40	m²	105	EUR 4200.00
	Interior wall rendering, gypsum plaster, d = 1.5 cm, pre-treatment of floor	40	m²	25	EUR 1000.00
	Interior emulsion paint, wall, light colour	40	m²	4	EUR 160.00
				Total	**EUR 7560.00**

Steps of cost calculation (276:2008)

- **Kostenrahmen („budget“):** feasibility of cost limits / budgets
- **Kostenschätzung („cost estimate“):** first estimation based on preliminary design
- **Kostenberechnung („cost calculation“):** calculation based on the approvable design
- **Kostenanschlag („quotation“):** detailled calculation based on the tendering documents before the contract awarding procedure
- **Kostenfeststellung („cost statement“):** proof of real costs after completion

Component	Construction element	Quantity	Unit	Inclusive price (EUR/unit)	Total price
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	Stoneware tile 30 × 60 cm, anthracite, laid using the thin bed method, grouting in tile shade, skirting tiles	60	m²	80	EUR 4800.00
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Steps of cost calculation (276:2018)

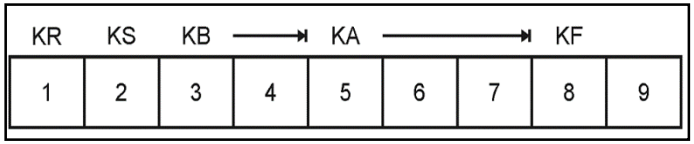
- **Kostenrahmen:** feasibility of cost limits / budgets
- **Kostenschätzung:** first estimation based on prelimanery design
- **Kostenberechnung:** calculation based on the approvable design
- **Kostenvoranschlag :** detailled calculation based on the tendering documents before the contract awarding procedure
- **Kostenanschlag:** updating the costs during the tendering and construction process in several steps
- **Kostenfeststellung:** proof of real costs after completion

Scope of work for architects in Germany

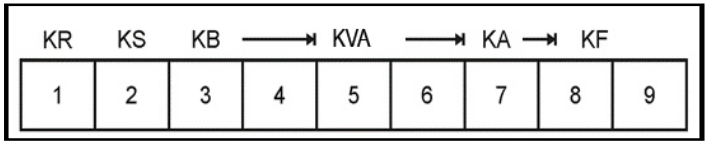
The scope is based on the HOAI, especially on the Leistungsphasen (LP):

HOAI-Phase 1:	Grundlagenermittlung	evaluation of the frame conditions
HOAI-Phase 2:	Vorplanung	preliminary design
HOAI-Phase 3:	Entwurfsplanung	approvable design
HOAI-Phase 4:	Genehmigungsplanung	approval process (building permission)
HOAI-Phase 5:	Ausführungsplanung	detailed design
HOAI-Phase 6:	Vorbereiten der Vergabe	preparation of tendering (performance description)
HOAI-Phase 7:	Mitwirken der Vergabe	contract awarding procedure
HOAI-Phase 8:	Objektüberwachung	site supervision
HOAI-Phase 9:	Objektbetreuung	documentation

existing DIN 276:2008



new DIN 276:2018



KR Kostenrahmen	KVA Kostenvoranschlag
KS Kostenschätzung	KA Kostenanschlag
KB Kostenberechnung	KF Kostenfeststellung

Connection between cost calculation and scope of architects

Steps of cost calculations are docked on the scope at the points where the client has to make important decisions:

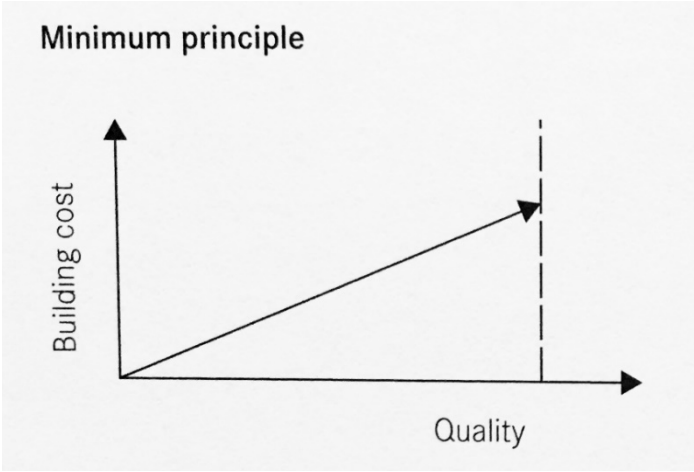
- LP 1: feasibility of the project framework / conditions
- LP 2: decision for the design idea to continue
- LP 3: decision for obtain the building permission (fixed design)
- LP 5/6: decision to seek construction partners with fixed scope of service in a contract
- LP 8: retrospective view for documentation and proof

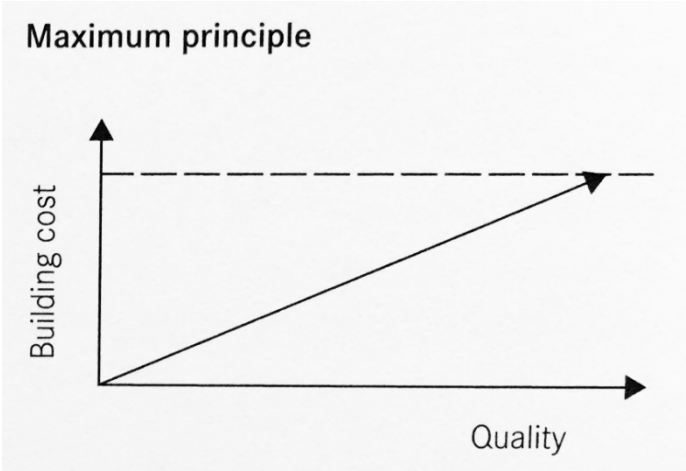
If the client has to make a important decision he has to know every parameter incl. costs.

Cost controlling / monitoring

1. At the beginning of every project the client define a budget / cost limit
2. In the context of cost calculations the architect has to check the estimation against the budget and the last step of cost calculation
3. Necessity for documentation of changes, modification of qualities or quantities etc.
4. Proof of the developement of costs and budgets

No.	Date	Decision/change	Approved/ rejected	Affects costs	Costs increased (+) Costs reduced (–)
1	10.03.14	Patterning on the tile product by client	yes	yes	EUR –1535.00
2	20.03.14	Change of tile colour	yes	no	0.00 EUR
3	25.04.14	Amendment 01 for compensating for the uneven ground	no	yes	EUR +2670.00
...	...	...	...	...	...





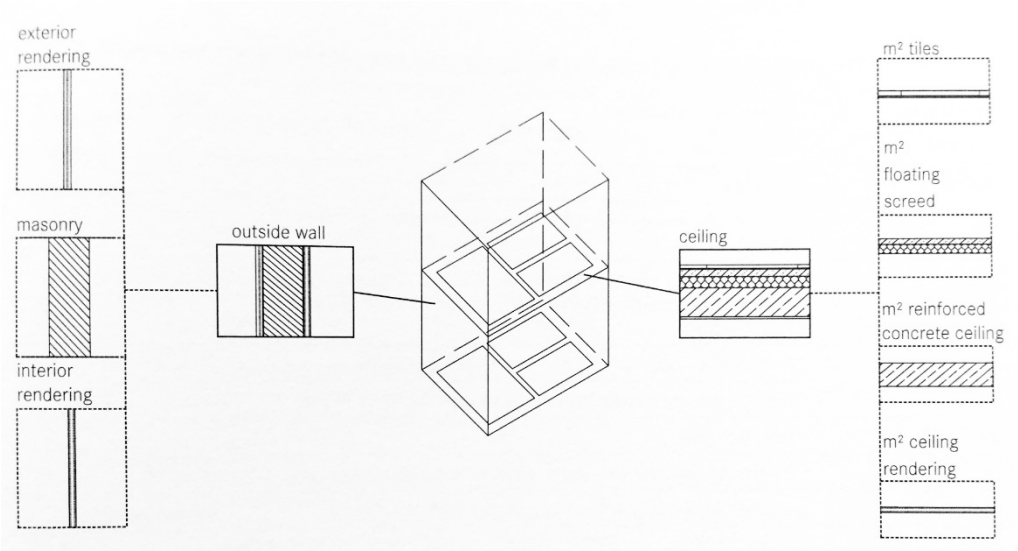
Cost management

- Means the intervention and steering the project in a certain way to keep the budget
- Maybe it is necessary to adjust the qualities, quantities or the budget
- There are two ways:
  1. **Minimum principle**: fixed quantities/qualities and minimized costs
  2. **Maximum principle**: fixed budget und optimized quantities/qualities
- The architect has to prepare the decisions of the client in accordance to the project management

Structure of cost detailling

There are two ways to break down costs:

1. structure in accordance to the part of the building
2. structure in accordance to the building contracts



DIN 276: 1. level of cost devision / structure (in accordance to the part of the building)

KG 100	Grundstück	plot of land
KG 200	Herrichten und Erschließen	development / explotation of the plot
KG 300	Bauwerk – Baukonstruktion	structural and finishing elements of the building
KG 400	Bauwerk – Technische Anlagen	technical elements of the building
KG 500	Außenanlagen	outdoor space / facilities
KG 600	Ausstattung und Kunstwerke	equipment / furnishing
KG 700	Baunebenkosten	ancillary building costs (planning costs)
KG 800	Finanzierung	financing costs (new DIN 2076:2018)

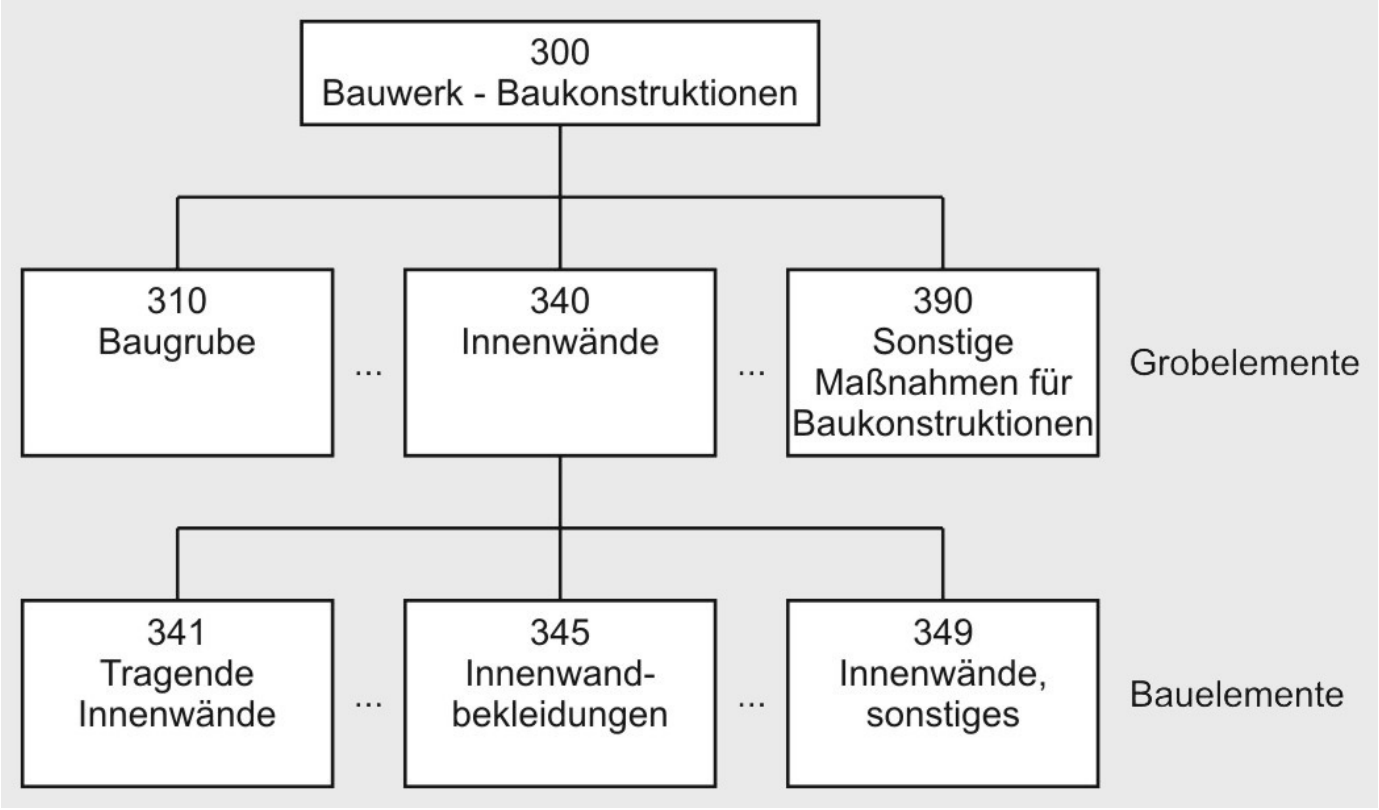
KG = Kostengruppe (cost category)

Devision / structure of costs according to DIN 276 (level of detailling)

1. level

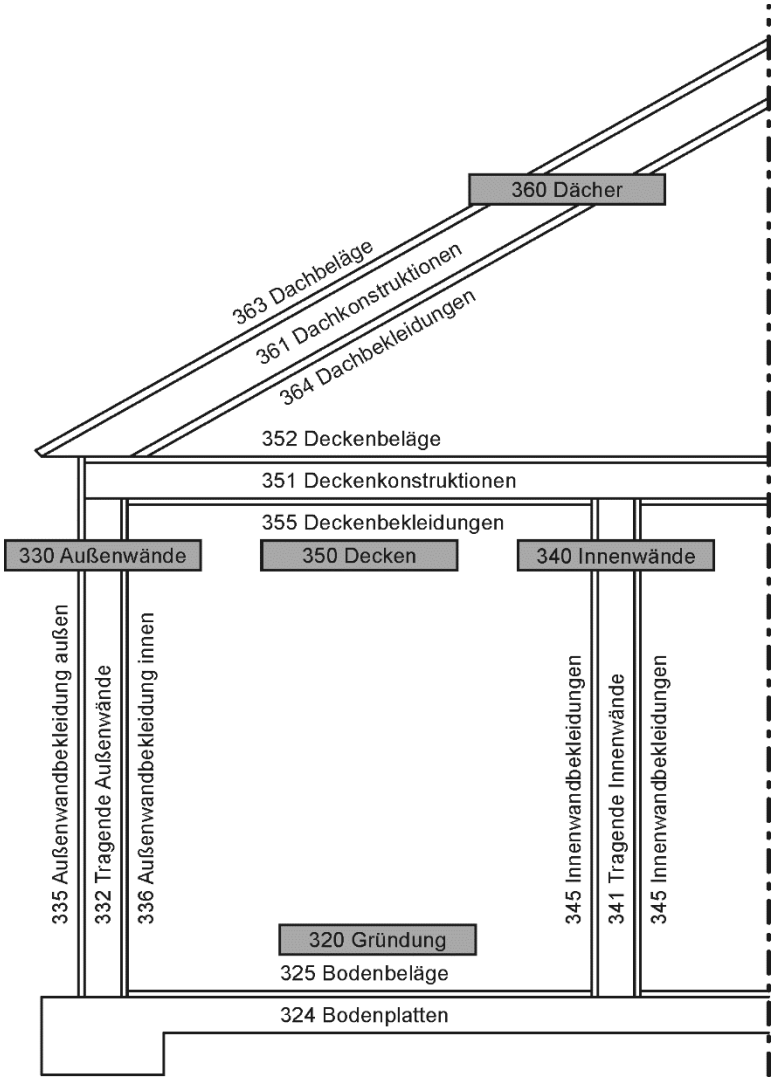
2. level

3. level



Devision / structure of costs according to DIN 276 (level of detailling)

Cost group	Construction element	Work type	Room groups	Quantity	Inclusive price	Total price
DIN 276	Description		Room numbers	Quantity unit	EUR/unit	EUR
350	**Decken**					**19,800.00**
351	Reinforced concrete ceiling 20 cm, no requirements for under side of ceilings	Shell	Offices and corridors	120 m²	87.00	10,440.00
352	Floating cement screed ZE20, thickness 50 mm on footfall sound insulation 20 mm. Rest of structure in thermal insulation PS 20 WLG 035, total height 150 mm.	Screed work	Offices and corridors	120 m²	16.00	1920.00
352	Parquet, wide oak planking, 22 mm, surface oiled in white	Parquet work	Offices and corridors	120 m²	47.00	5640.00
353	Gypsum rendering under the ceiling, average thickness 15 mm	Rendering work	Offices and corridors	120 m²	15.00	1800.00
340	**Interior walls**					**12,000.00**
341	Reinforced concrete wall 15 cm, no surface requirements	Shell	Staircase	80 m²	120.00	9600.00
345	Inner rendering on both sides, average thickness 15 mm	Rendering work	Staircase	160 m²	15.00	2400.00

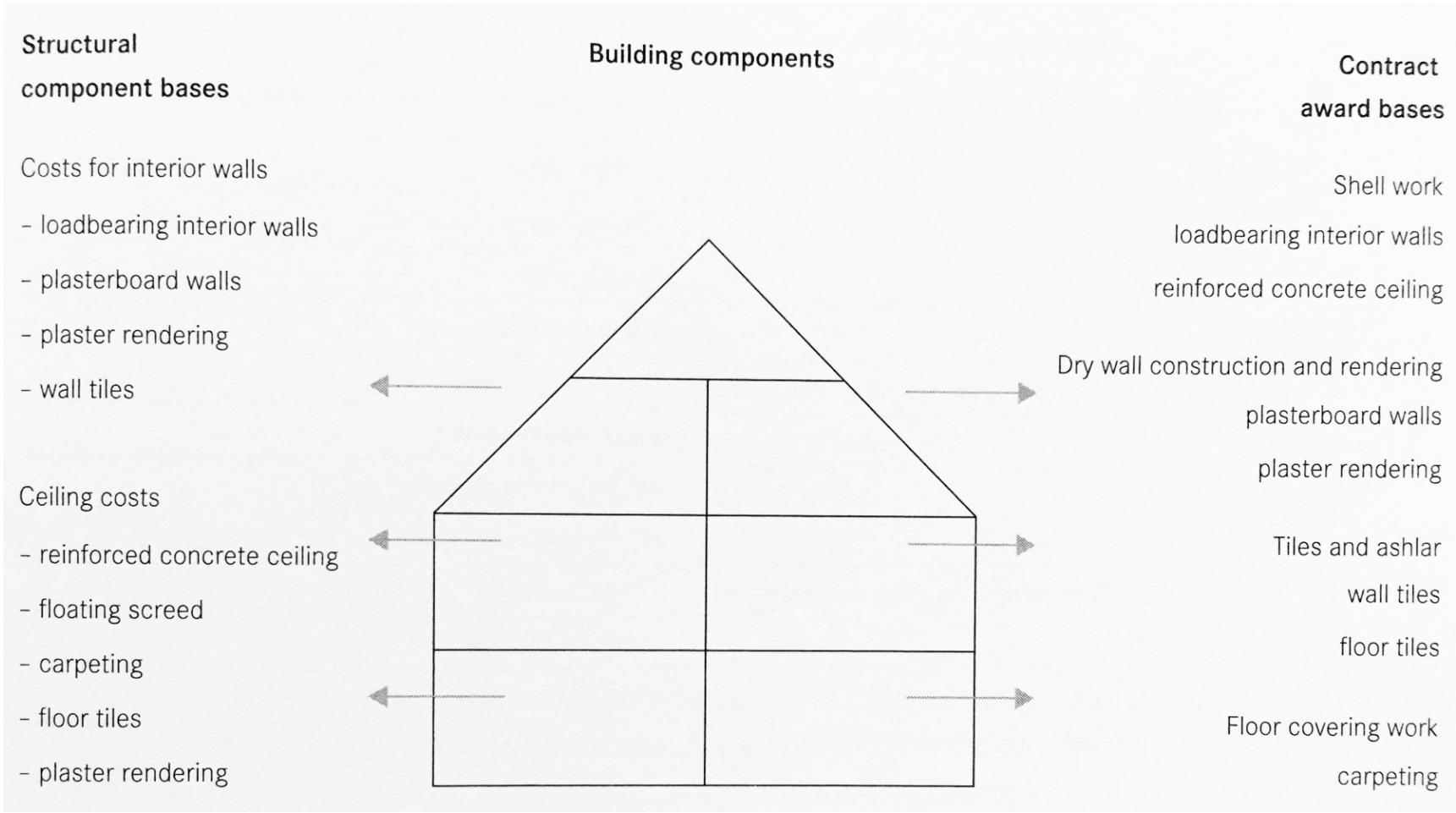


requirements DIN 276: 2018 for detailling the costs

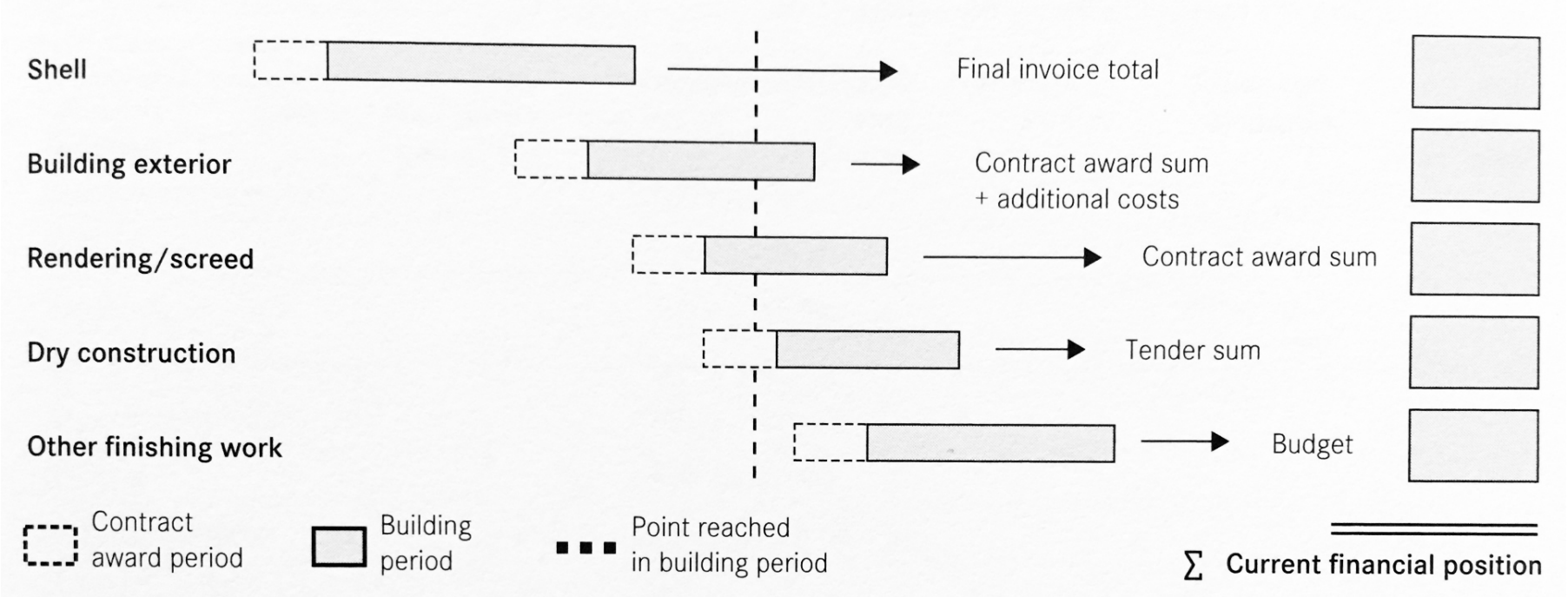
- LP 1: Kostenrahmen 1. level
- LP 2: Kostenschätzung 2. level
- LP 3: Kostenberechnung 3. level
- LP 5/6: Kostenvoranschlag 3. level + contracts
- LP 7/8: Kostenanschlag contracts
- LP 8: Kostenfeststellung contracts / 3. level

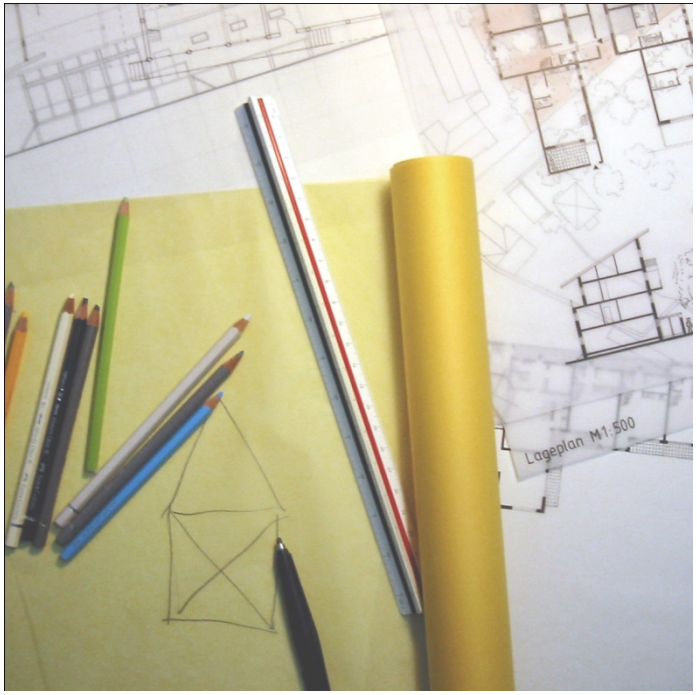
Building in existing has other requirements: budgeting maybe directly 3. level or contracts

Switching between part of the building and the contract



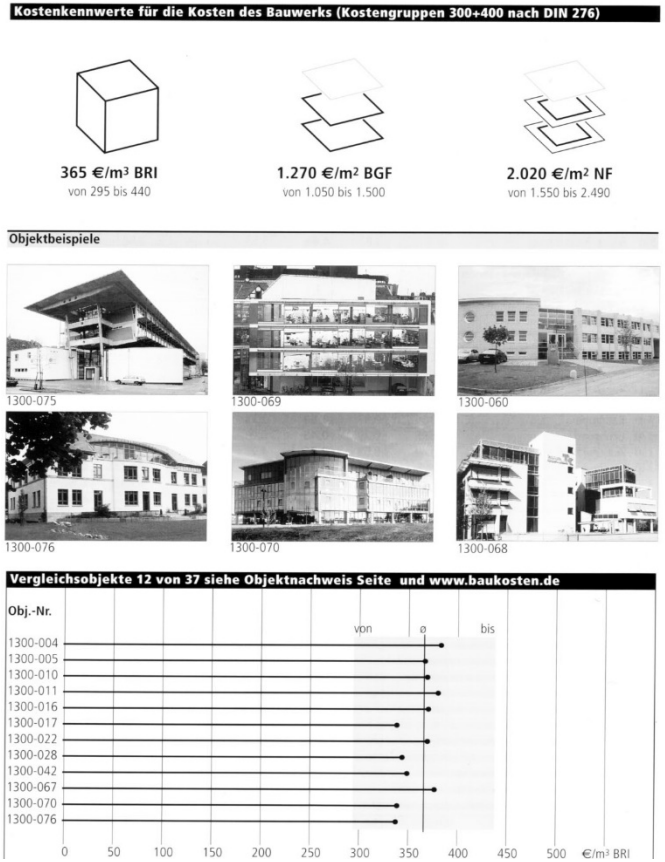
Scope „Kostenanschlag“ during the construction process





Presentation of costs

1. Costs has to be presentated completly with all elements. So the client has an complete overview to the buildings costs.
2. Point in time of every cost calculation – no forecast for future development of markets, maybe as a separate estimation
3. Documentation of changes in costs / sources of values
4. Separation of costs for stages of construction / one‘s own work / demolition – new elements etc.



Methods of cost calculation

The DIN 276 defines no methods or way to estimate the costs, it defines the level of quality for the results.

There are some useful methods to calculate the costs:

- Volume, floor area or rental space (1. level)
- Part of building like roof, wall etc. (2. level)
- Components (Bauelemente) (3. level + contracts)
- Specification elements / description (contracts)

There are statistic database like BKI or STLB Bau.

Methode	Leistungsphase								
	1	2	3	4	5	6	7	8	9
Bruttorauminhalt	✓	✓							
BGF / NF	✓	✓							
Grobelemente		✓	✓						
Bauelemente			✓	✓	✓	✓	✓	✓	✓

✓ = geeignet

Thank you very much!