

A photograph of a modern, multi-story building with a light-colored, horizontally ribbed facade. The building has several windows of varying sizes. In the bottom right corner of the image, the text 'IZ - ROHSTOFFE' is visible. Overlaid on the left side of the image is a large, semi-transparent white text block containing the following text:

Management of an
open pit mine –
state of the art

Content

- Knowledge as a factor of production
- Business processes – ressources to product
- Enterprise and operational organisation
- Data management and data analysis
- Automation of business processes



1

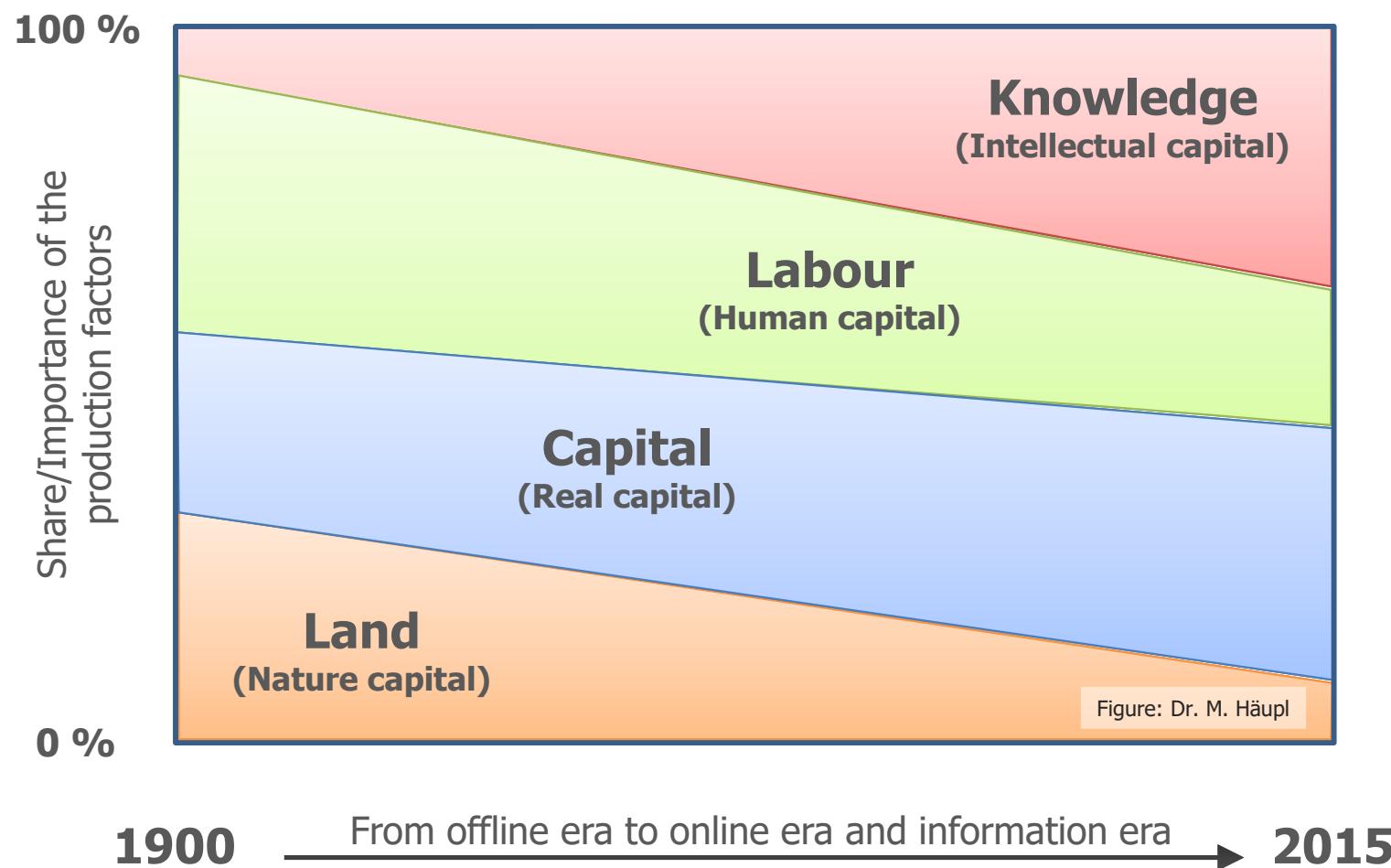


A photograph of a classical building with a light-colored facade, multiple windows with white frames, and decorative cornices. The building is illuminated from within, with warm light visible through the windows. The sky above is a deep blue, suggesting it is either dusk or dawn. In the foreground, the text 'Knowledge as a factor of production' is overlaid in a large, white, sans-serif font.

Knowledge as a
factor of production

Knowledge - factor of production

Change of economic production factors



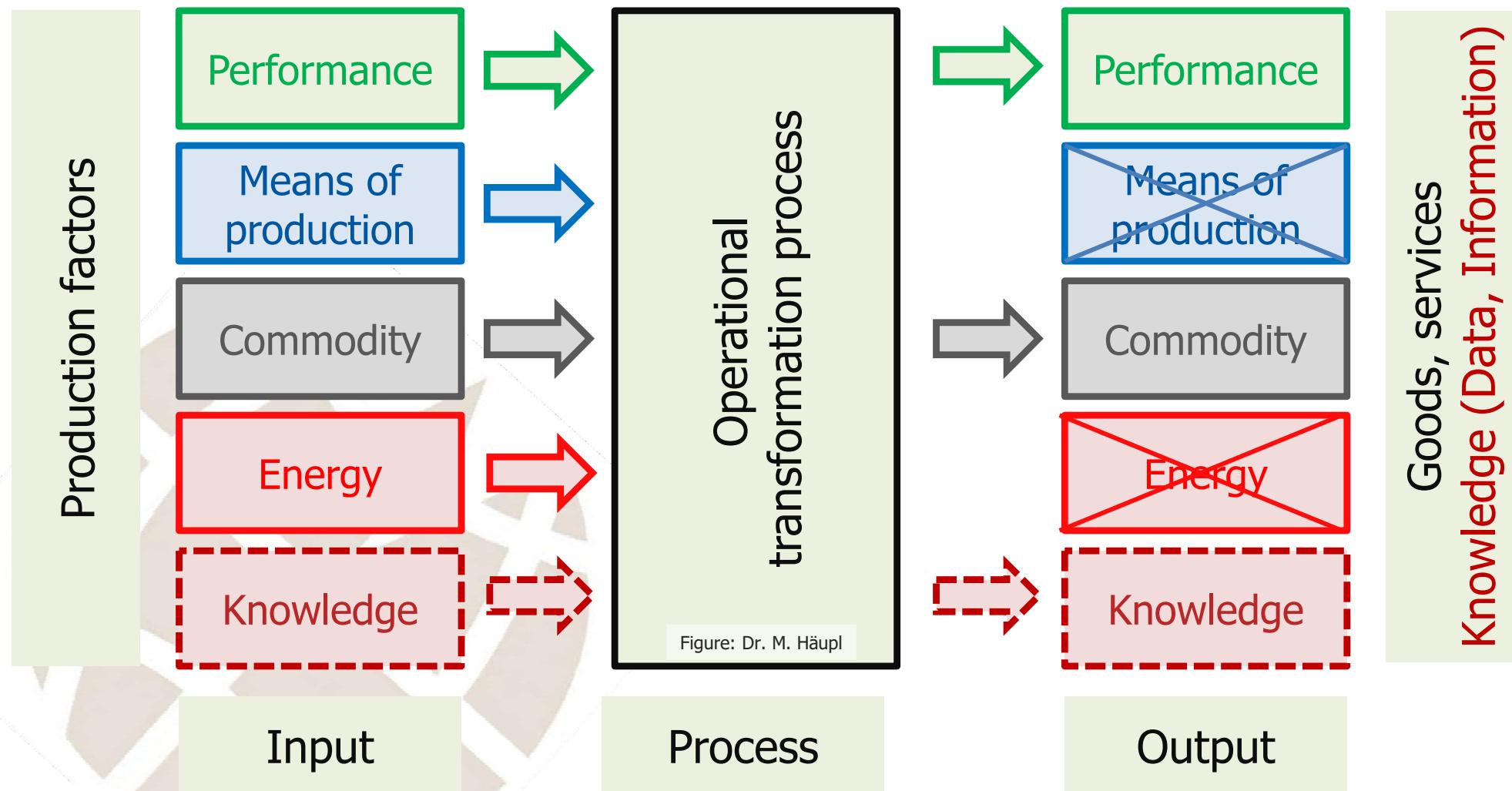
Business economic production factors

- Performance (Work of human / + machine)
- Means of production (machinery, facility site, supplies)
- Commodity (= deposit + products)
- Energy (more and more important – CO₂)

- Knowledge (from data, then information)

Knowledge within the production process

Combination of production factors → Business processes





2

Business processes
from resources to product



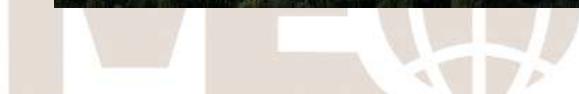
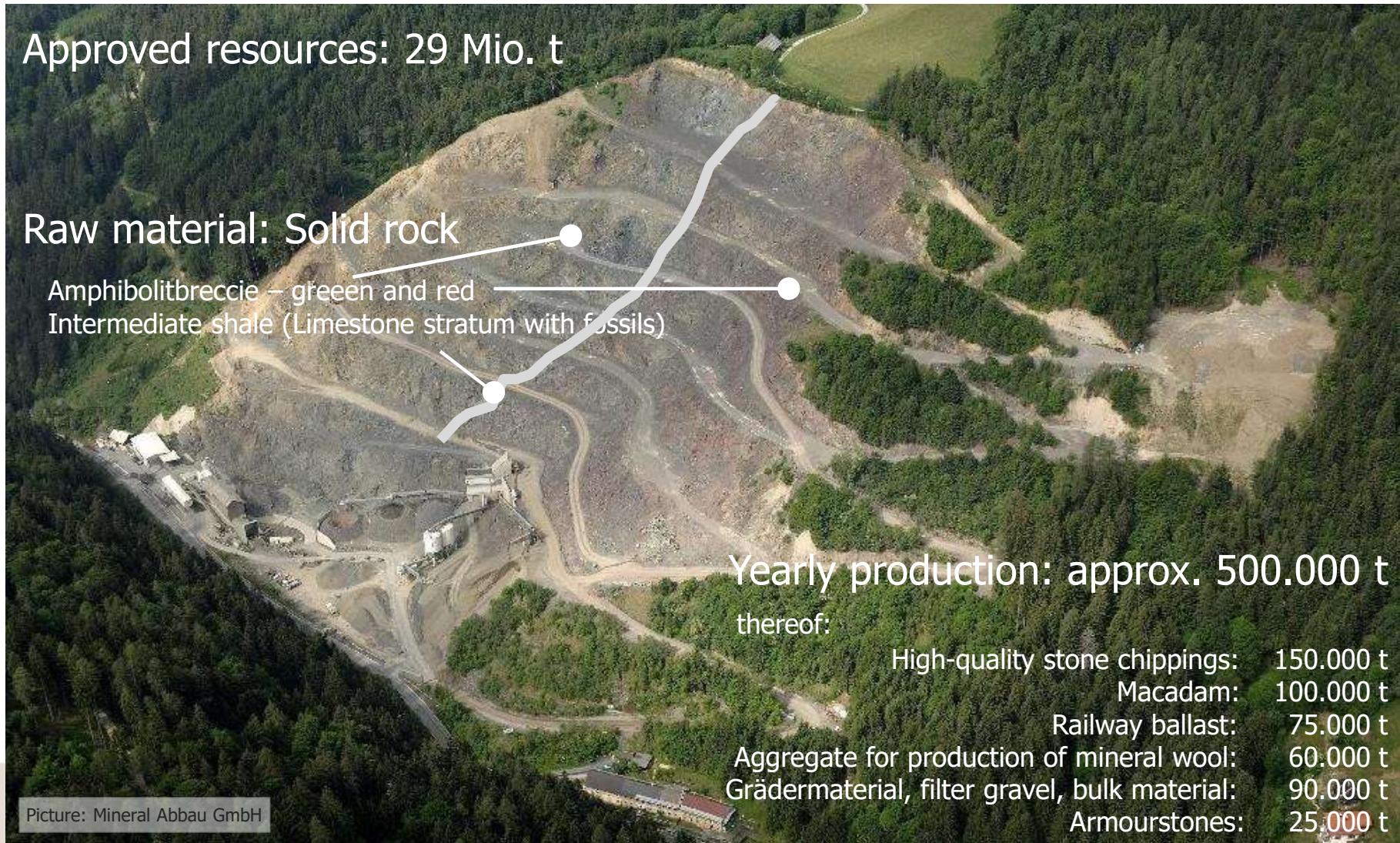
Processes: Preliminary inventory

Raw material and production plant: Operating company & site information



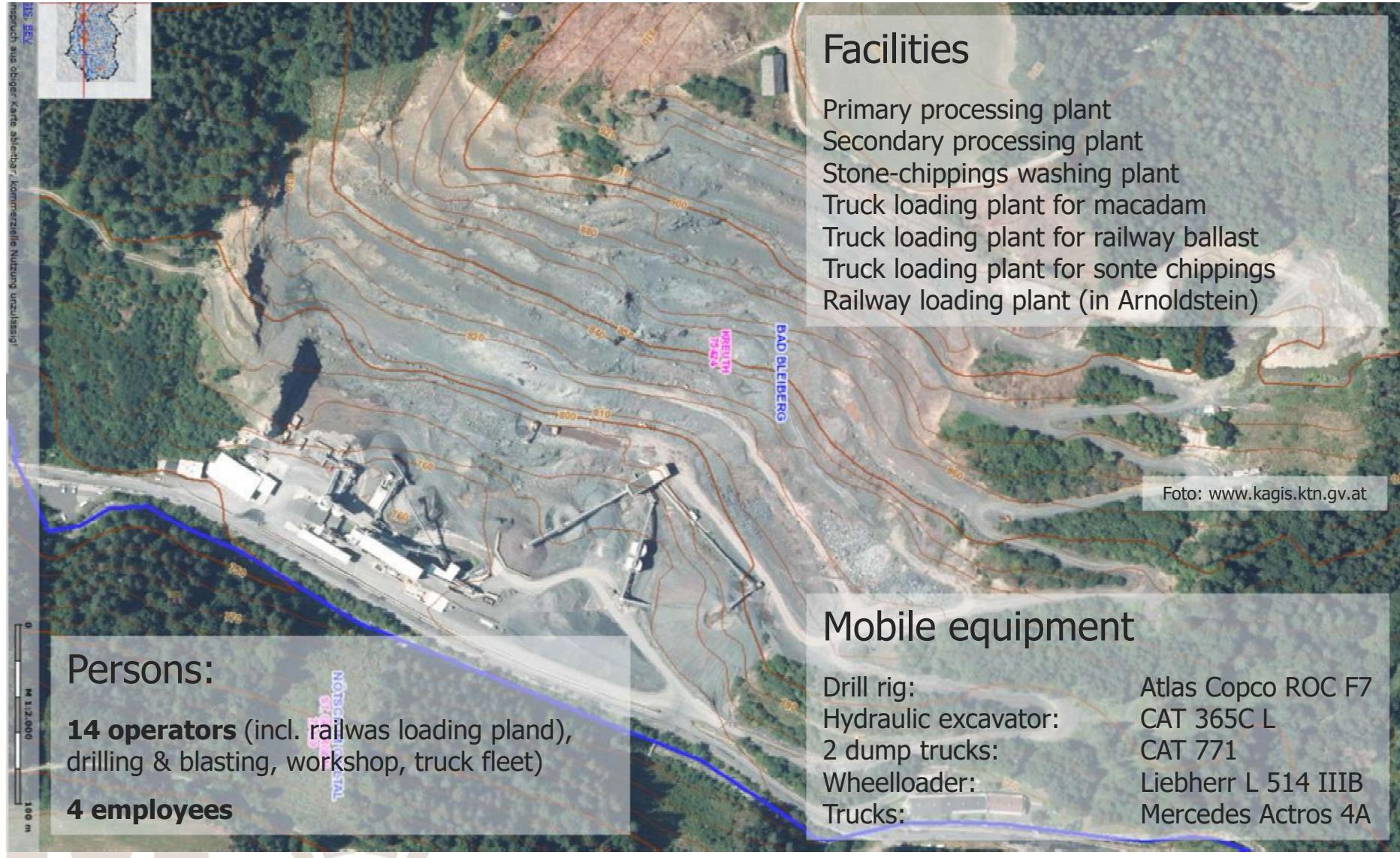
Processes: Preliminary inventory

Raw material and production plant: Resources & Products



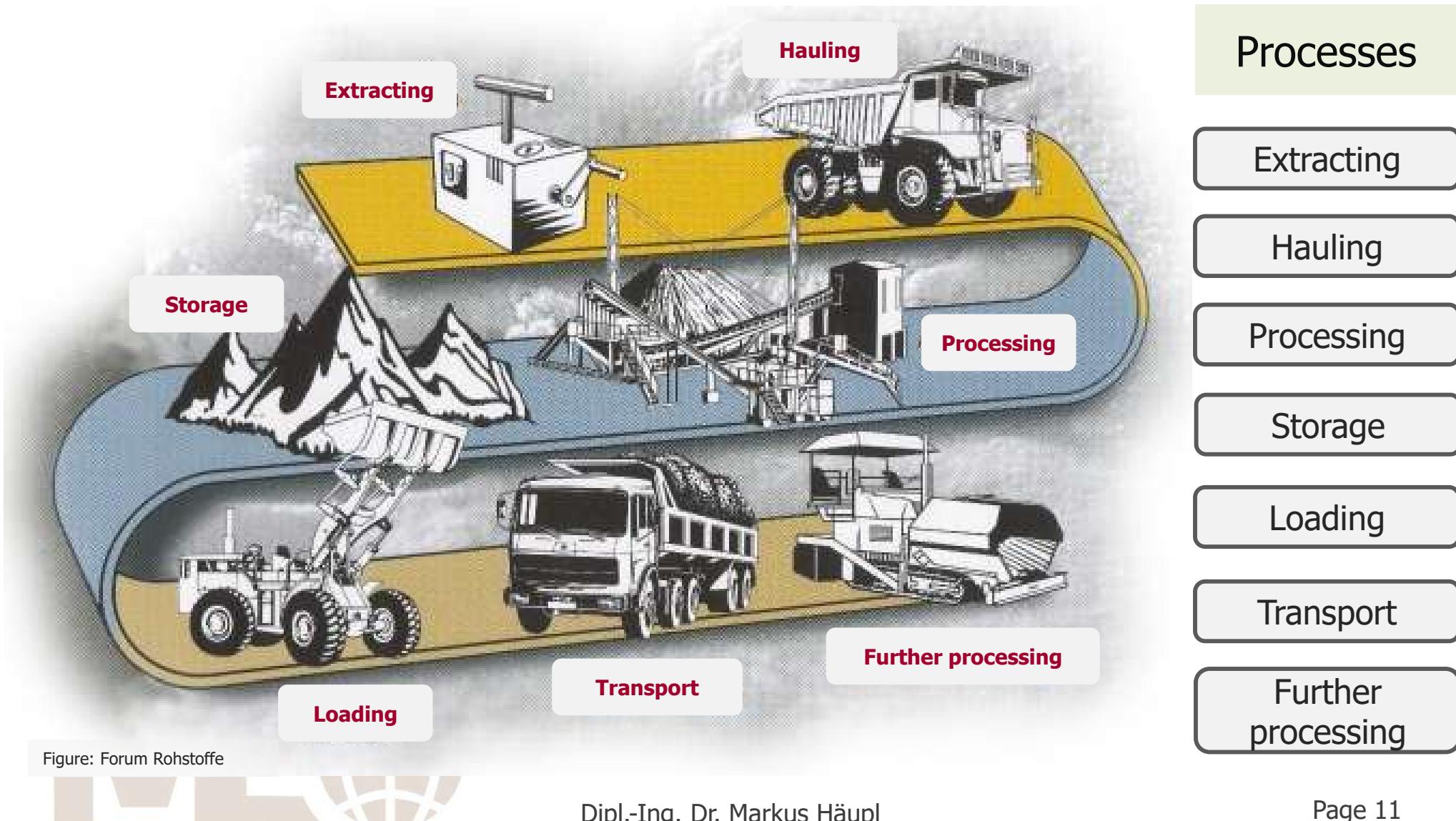
Processes: Preliminary inventory

Raw material and production plant: Persons, mobile units & facilities



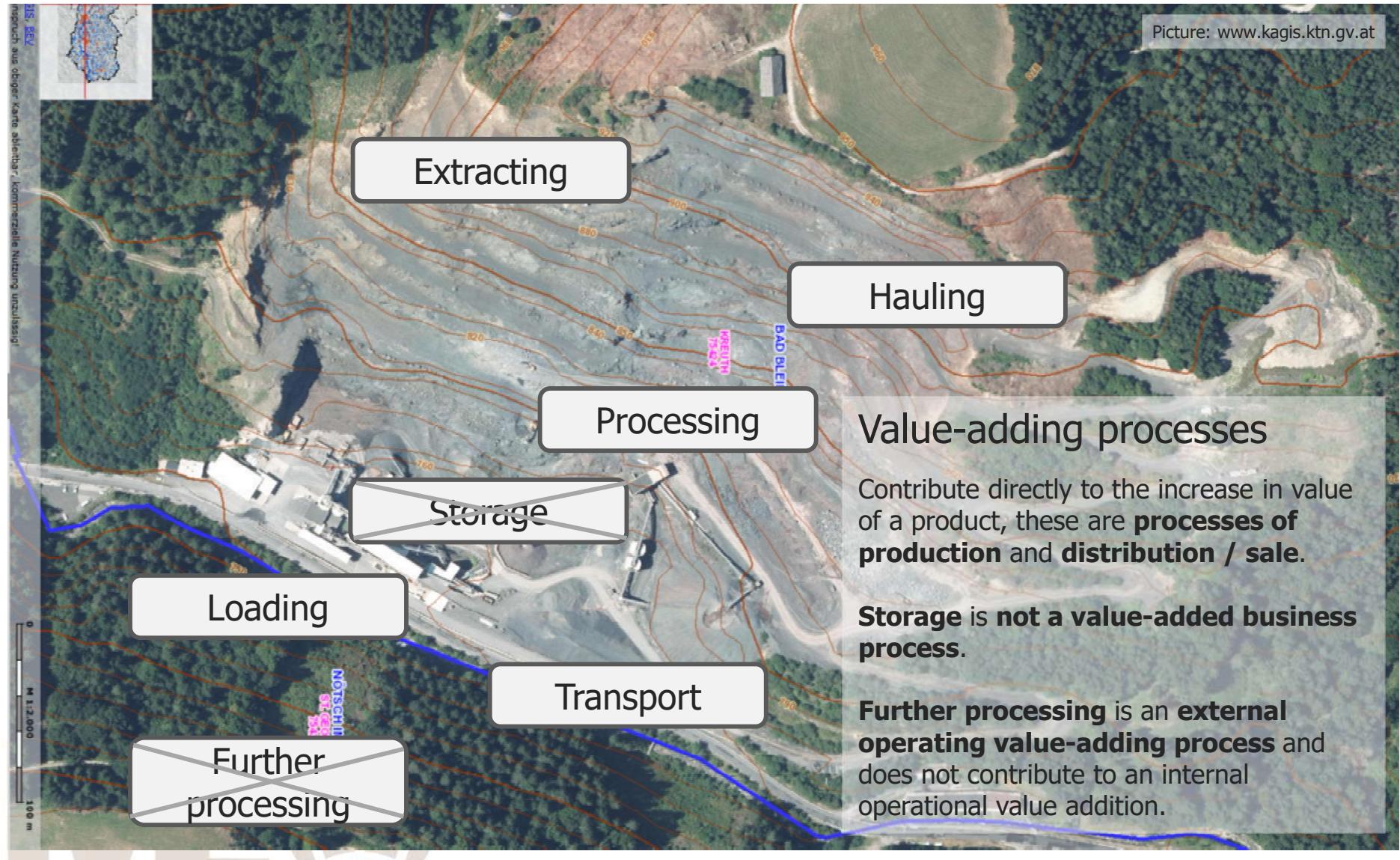
Processes: Structuring

Business processes: Typical description



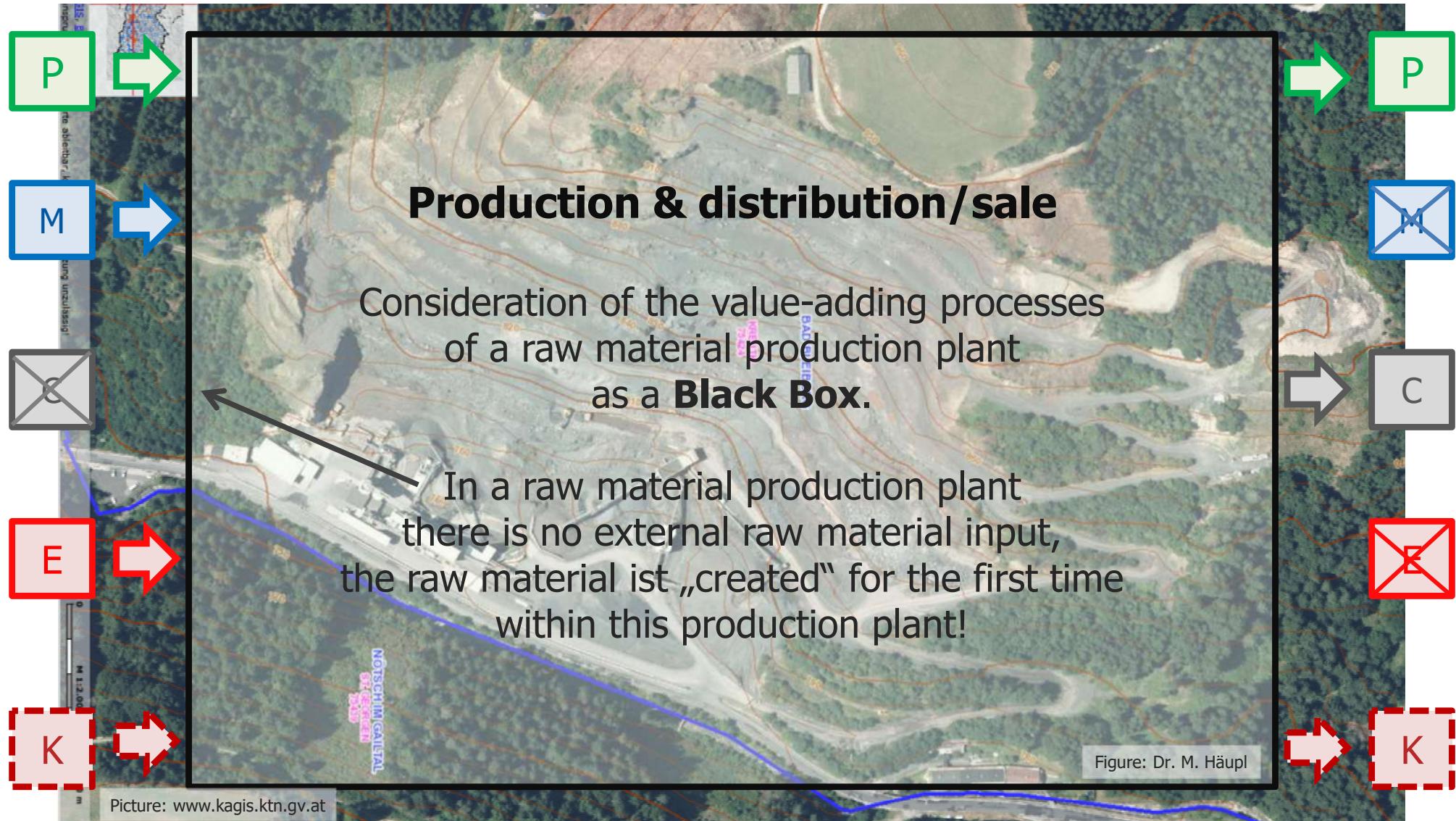
Prozesse: Strukturierung

Business processes: Processes in real operation



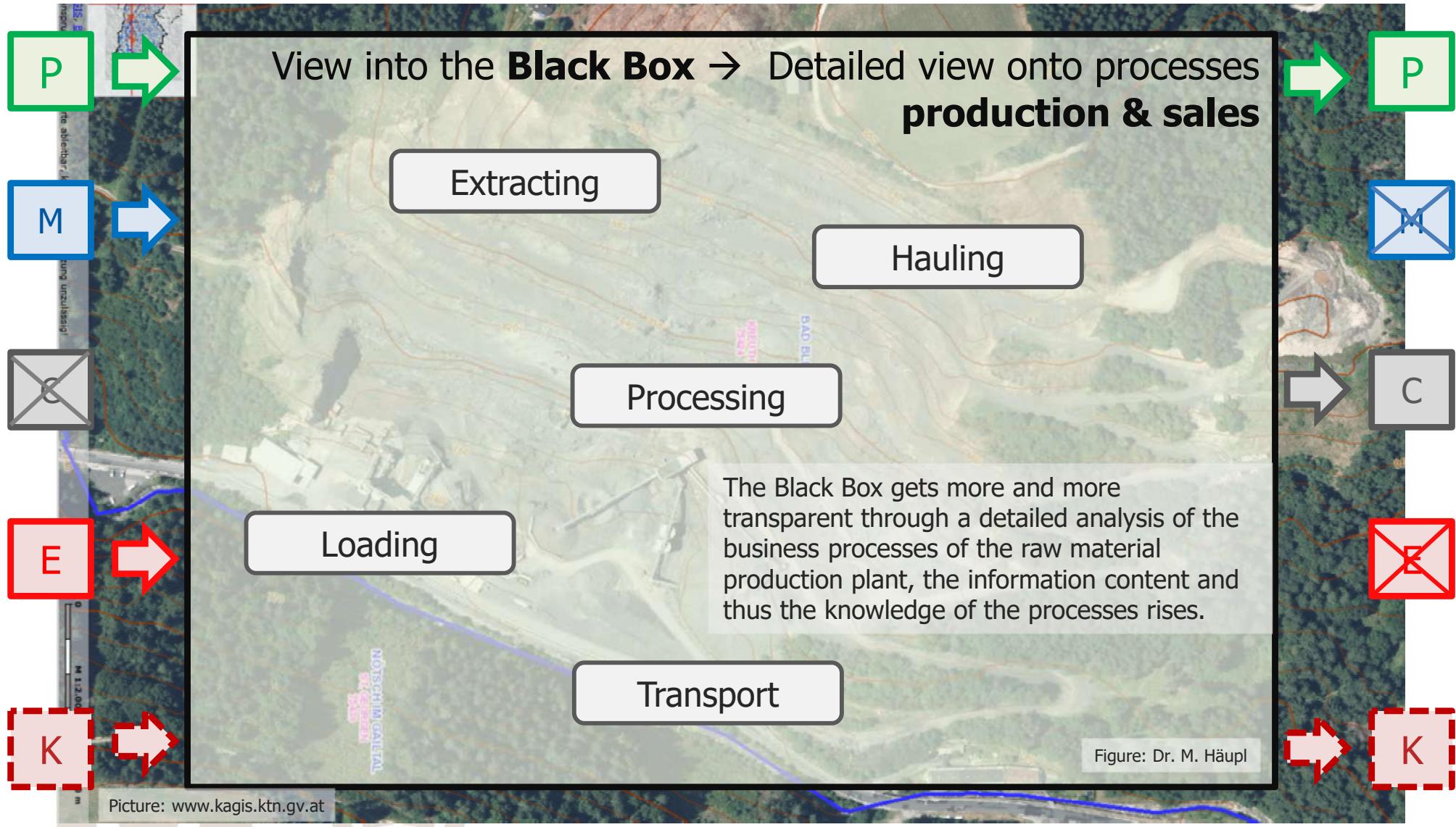
Processes: Structuring

Business processes: Value-adding processes & production factors



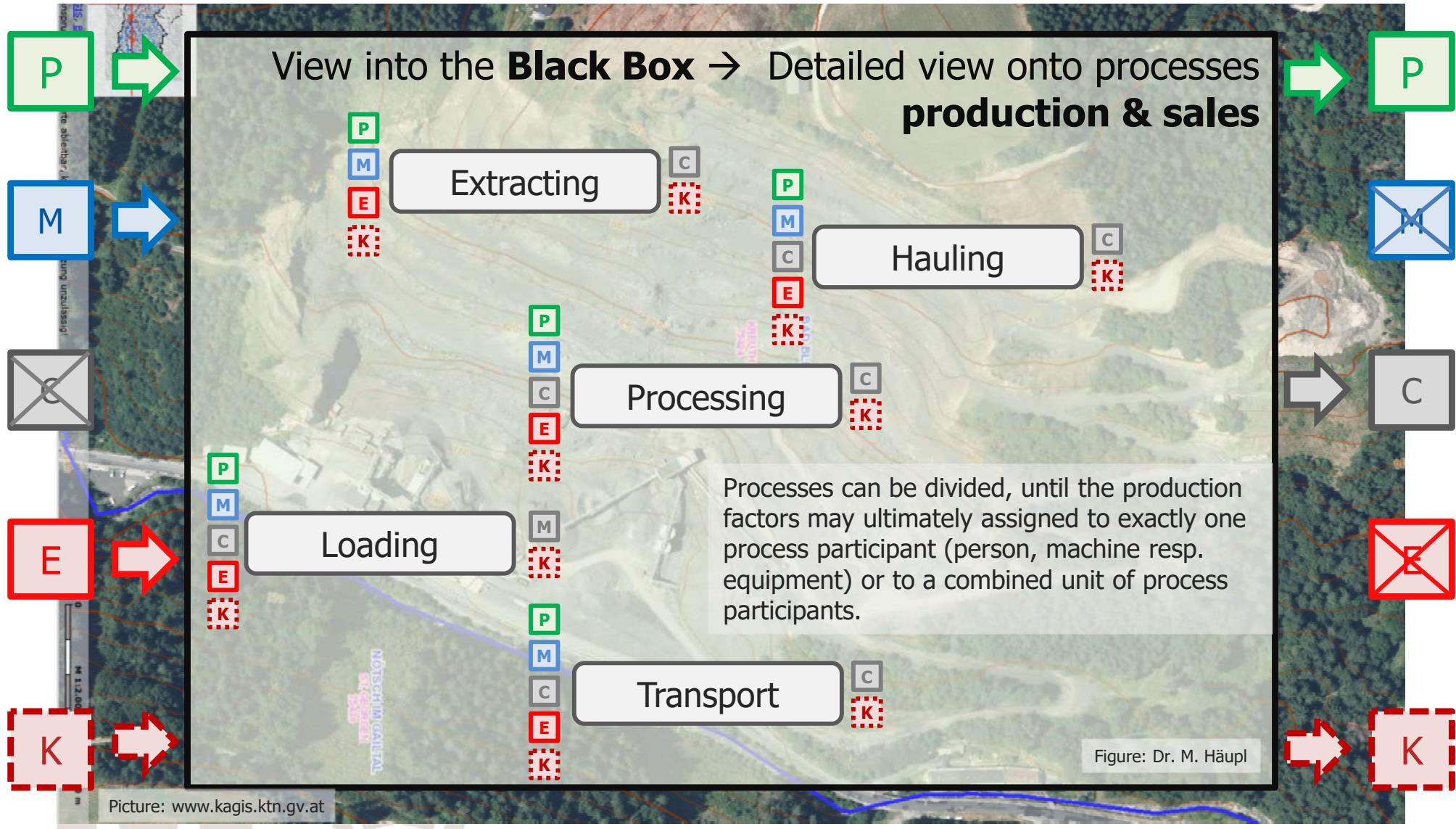
Processes: Structuring

Business processes: Value-adding processes & production factors



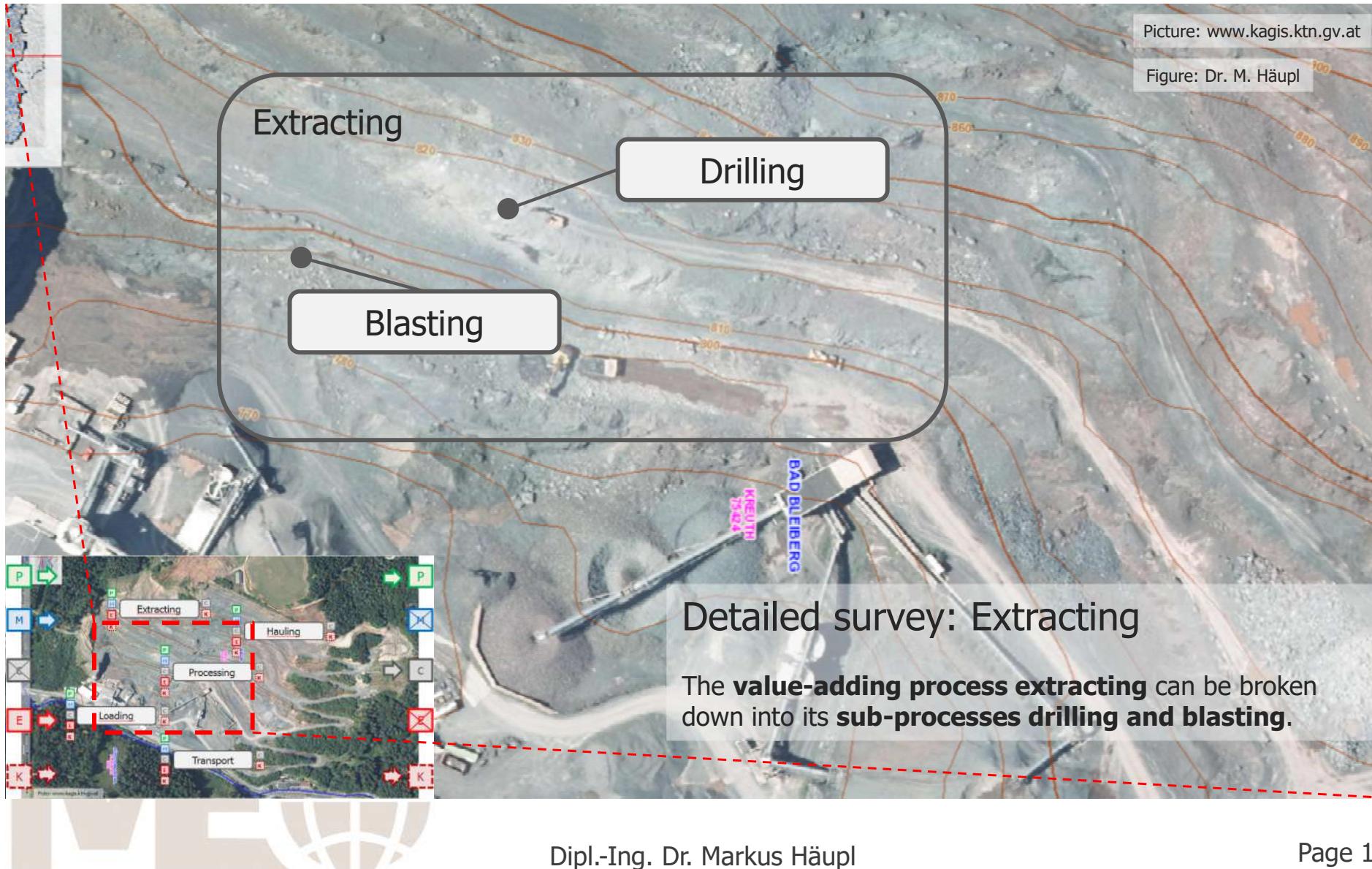
Processes: Structuring

Business processes: Value-adding processes & production factors



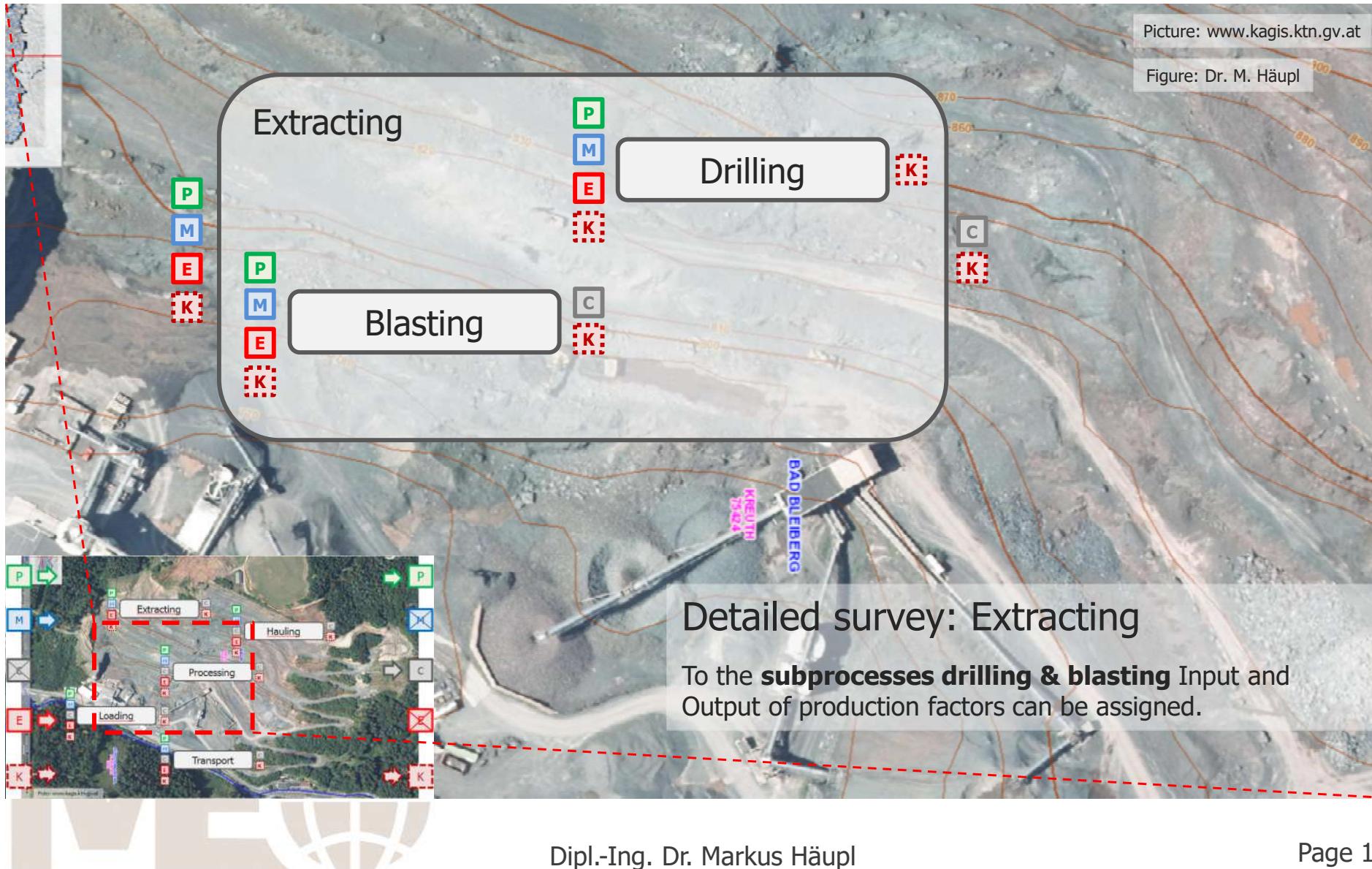
Processes: Structuring

Business processes: Value-adding processes & production factors



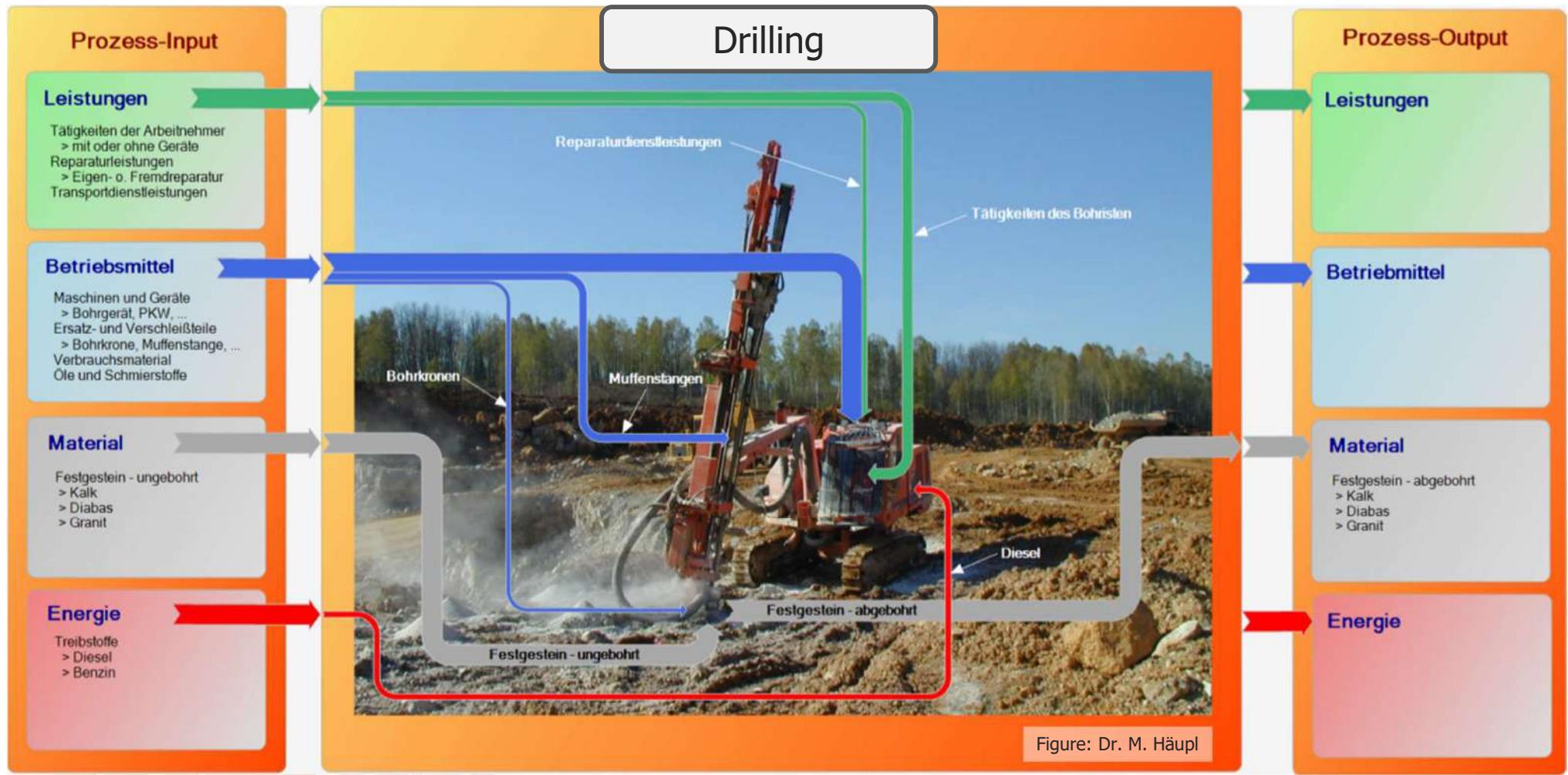
Processes: Structuring

Business processes: Value-adding processes & production factors



Processes: Structuring

Business processes: Sub processes and production factors



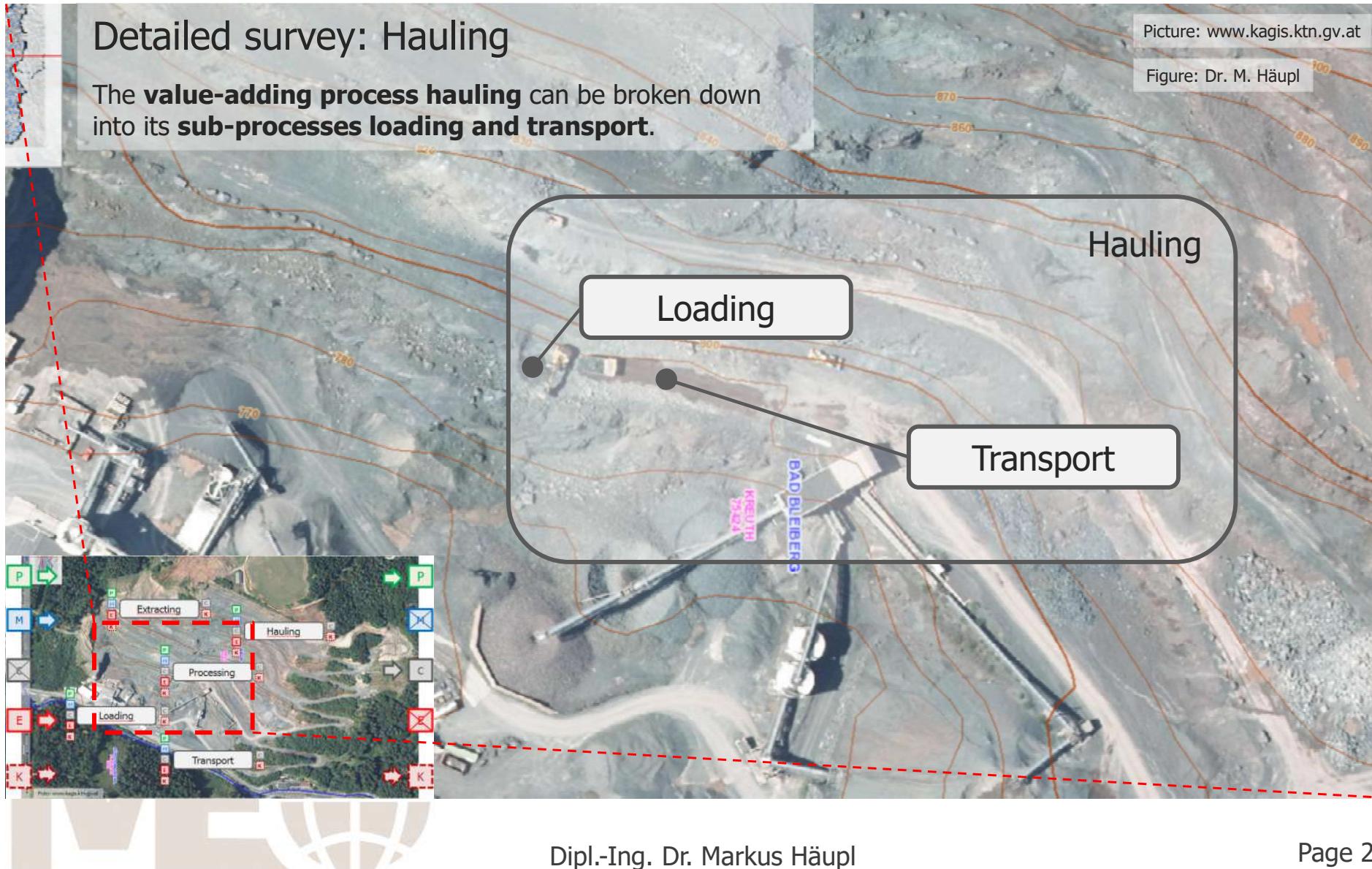
Processes: Structuring

Business processes: Sub processes and production factors



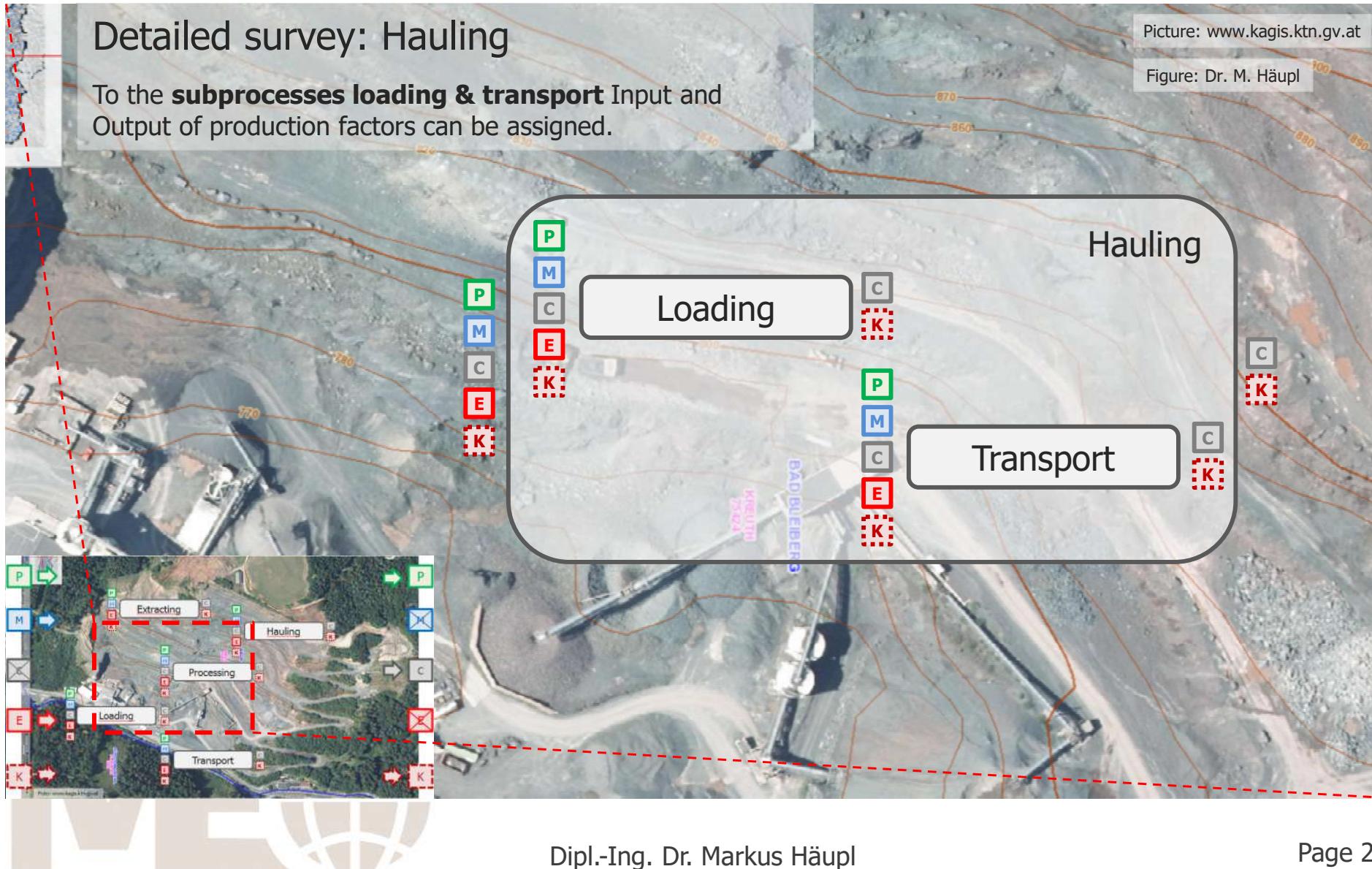
Processes: Structuring

Business processes: Value-adding processes & production factors



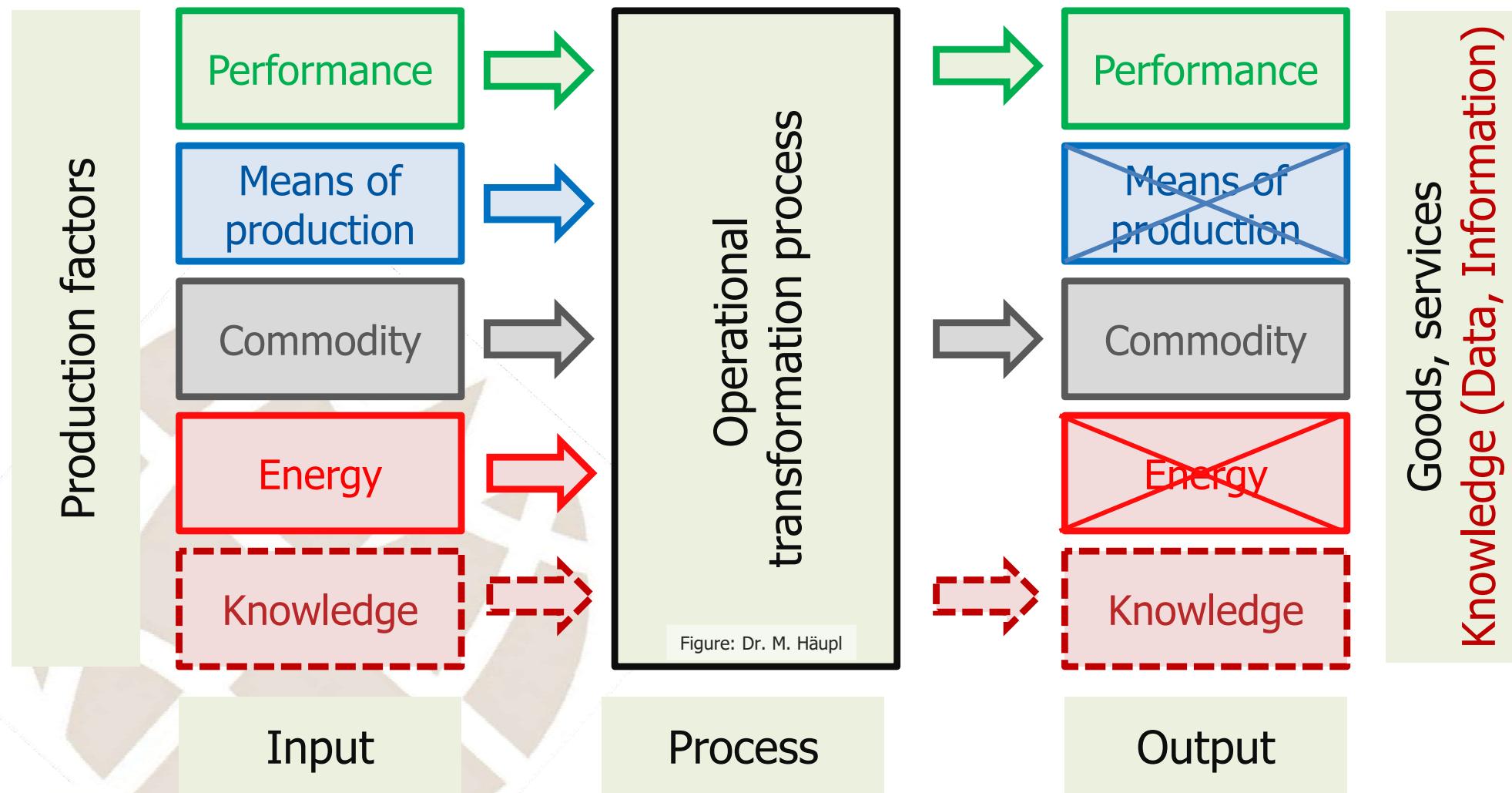
Processes: Structuring

Business processes: Value-adding processes & production factors



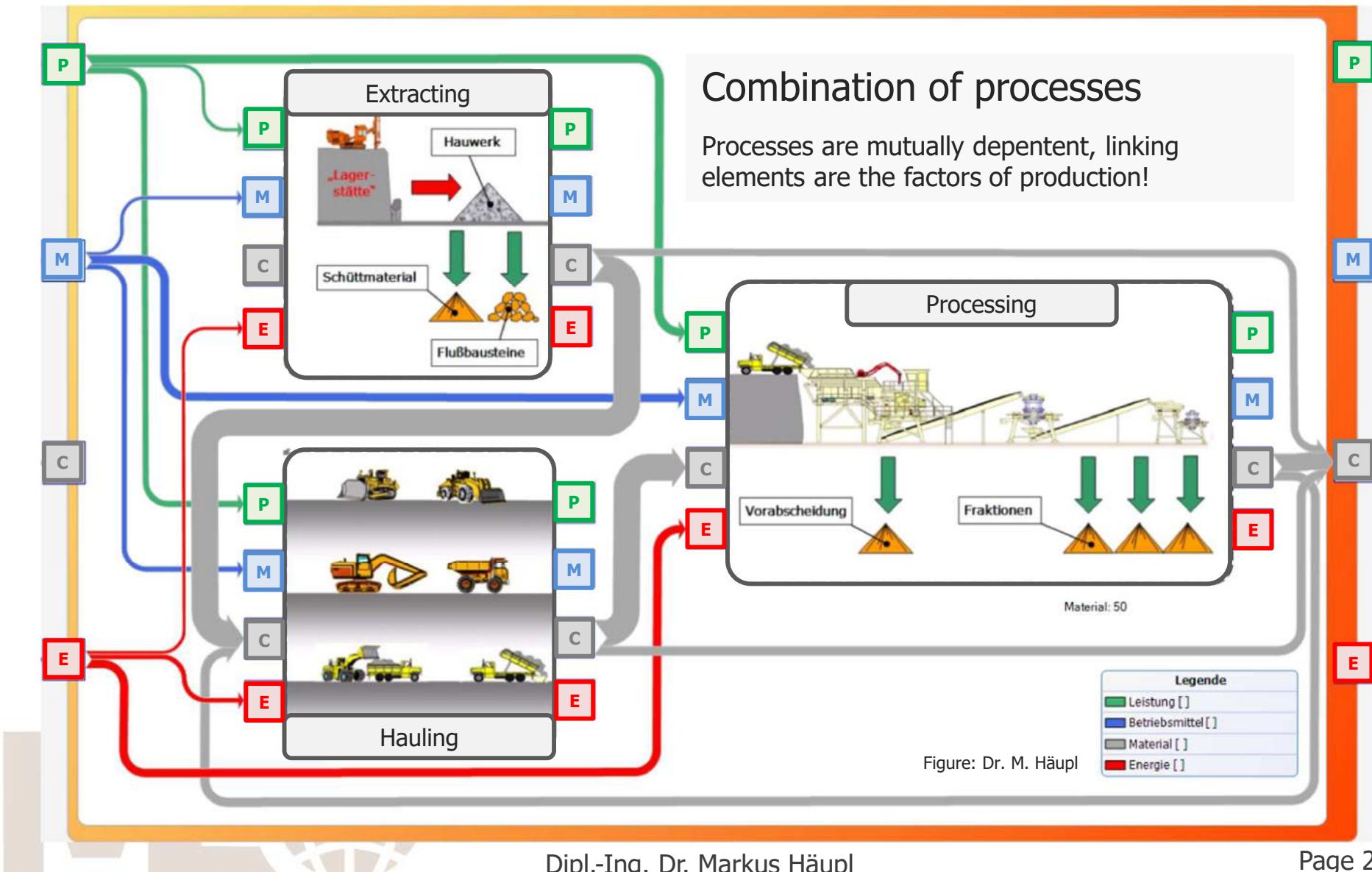
Knowledge within the production process

Combination of production factors → Business processes



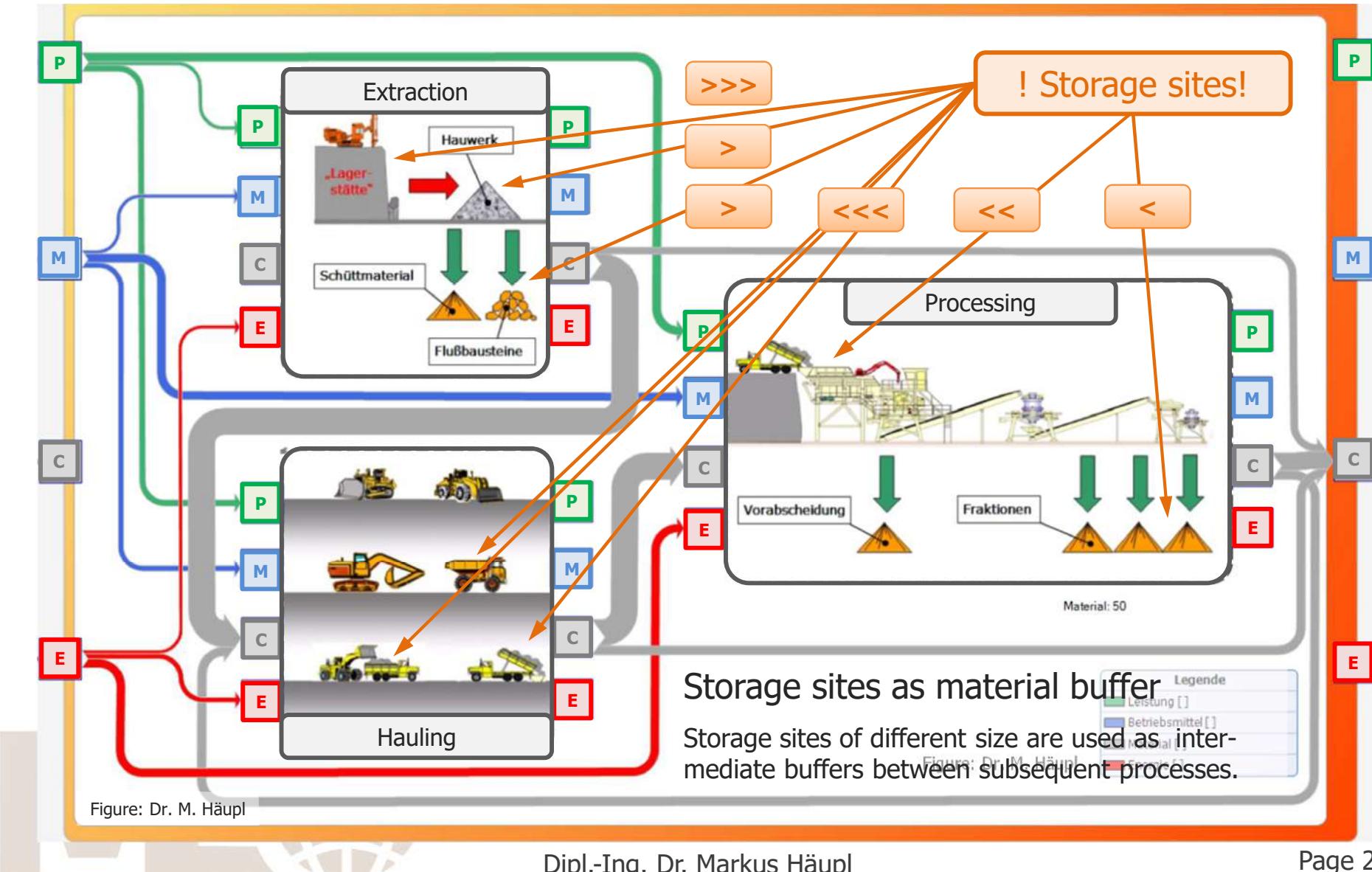
Processes: Combination

Business processes: Combination through production factors



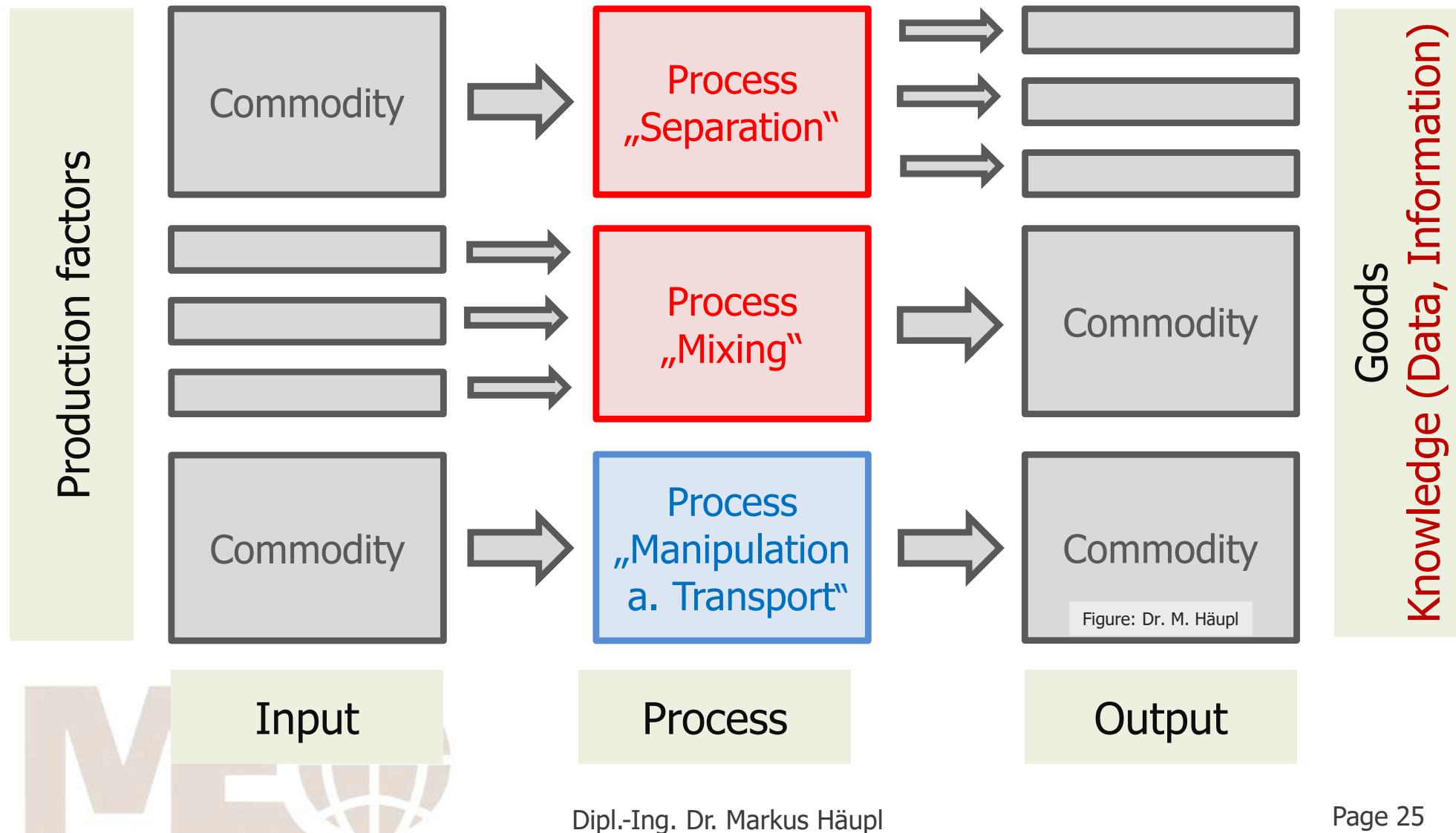
Processes: Storage sites

Business processes: Value-adding processes & production factors



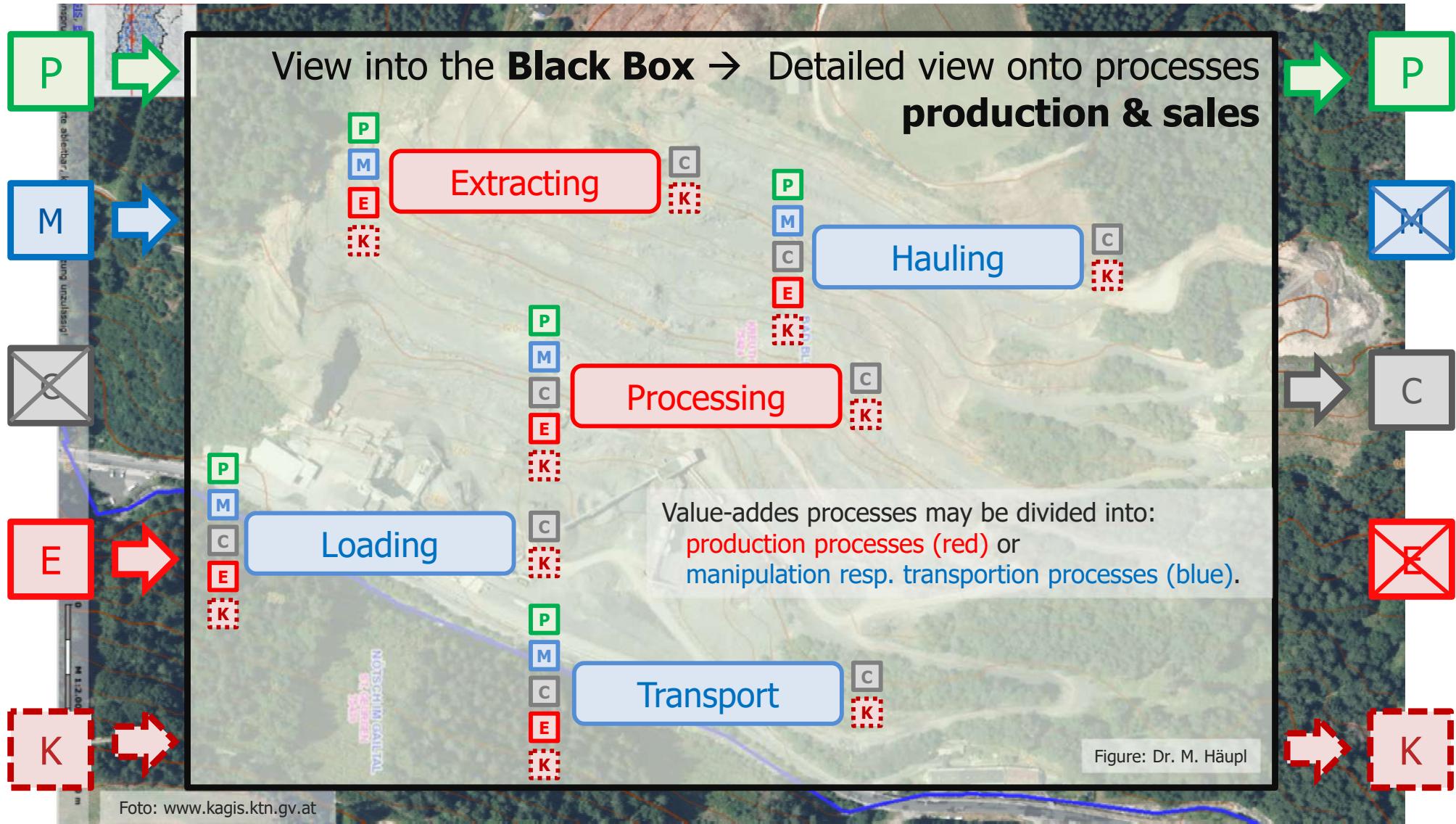
Processes: Types of processes

Production processes vs. Manipulation- resp. transportation processes



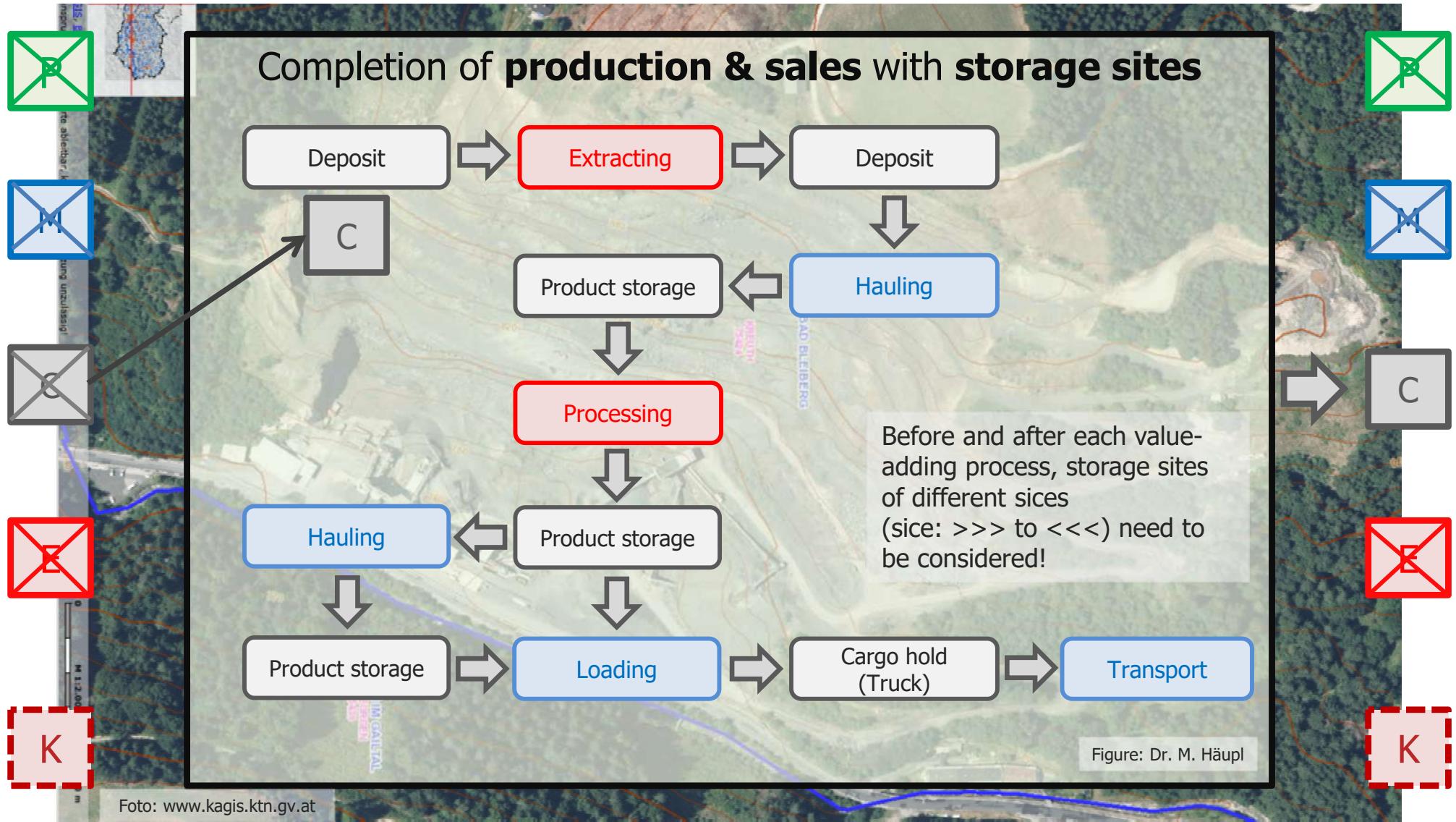
Processes: Types of processes

Business processes: Types of processes & production factors



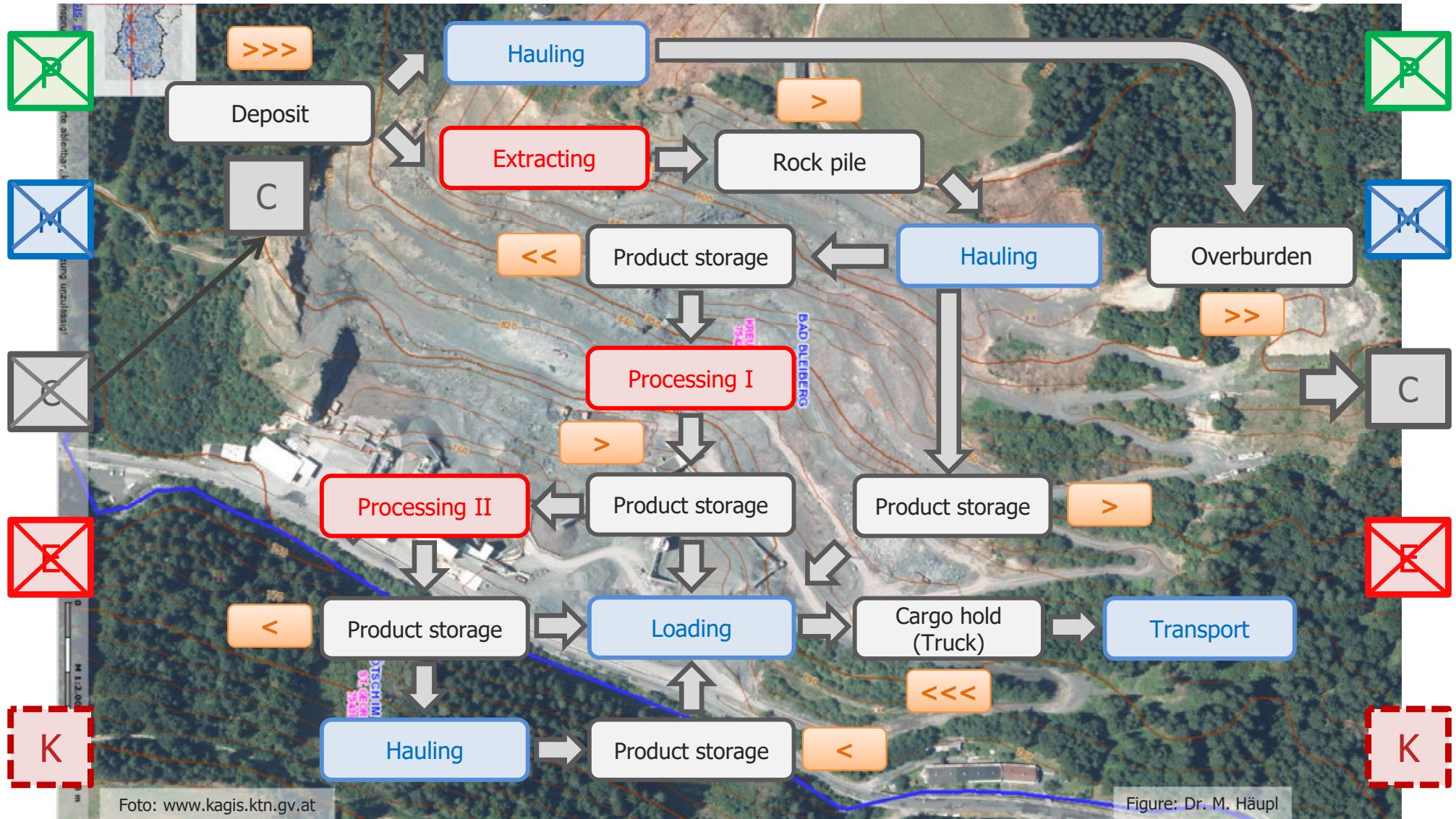
Processes: Addition of storage sites

Business processes: Value-adding processes & storage sites



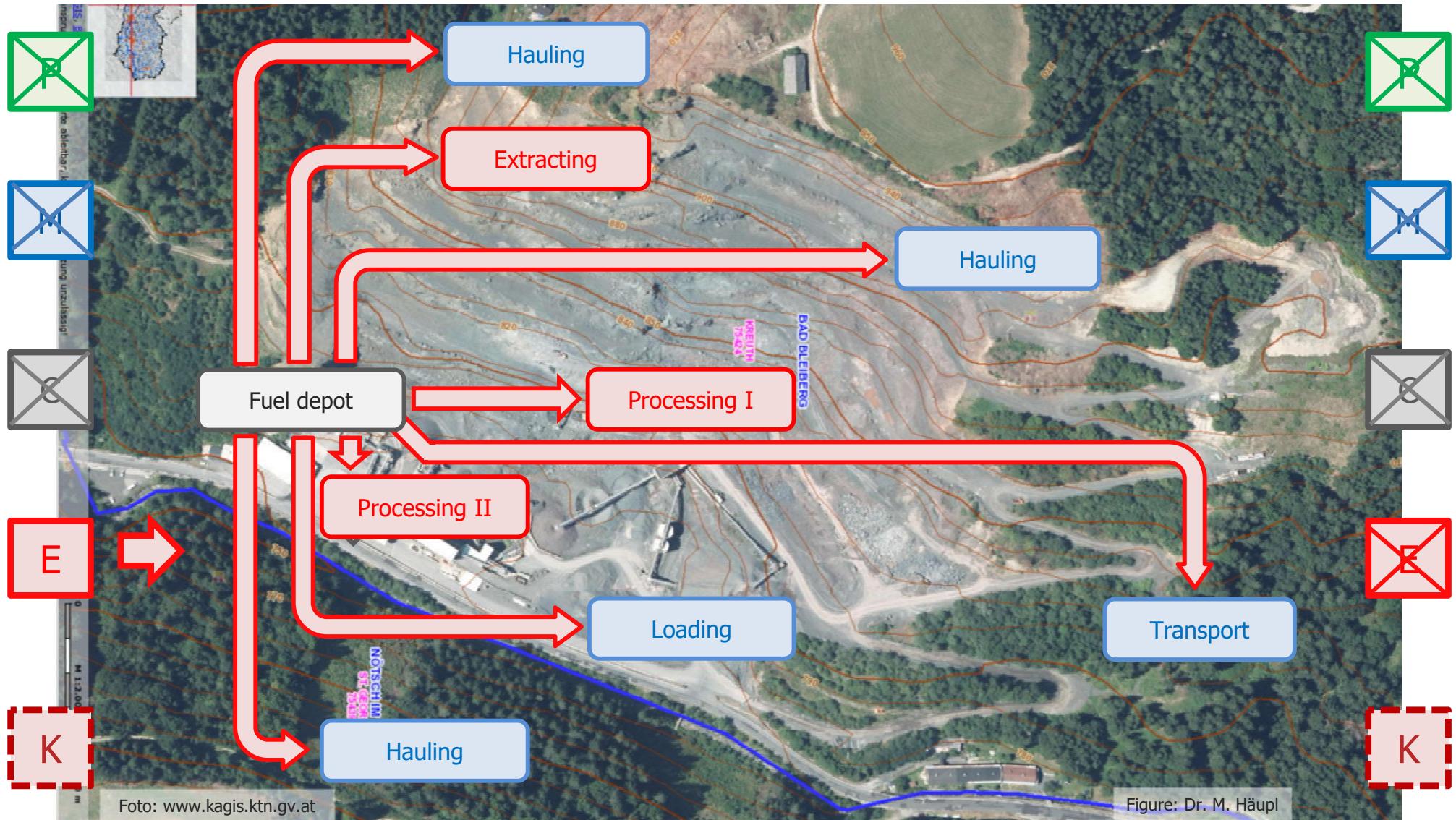
Processes: Commodity flow

Raw material to product: Processes & storage sites in real operation



Processes: Energy flow

Raw material to product: Processes & storage sites in real operation



Commodity delivery chain – from raw material to construction site

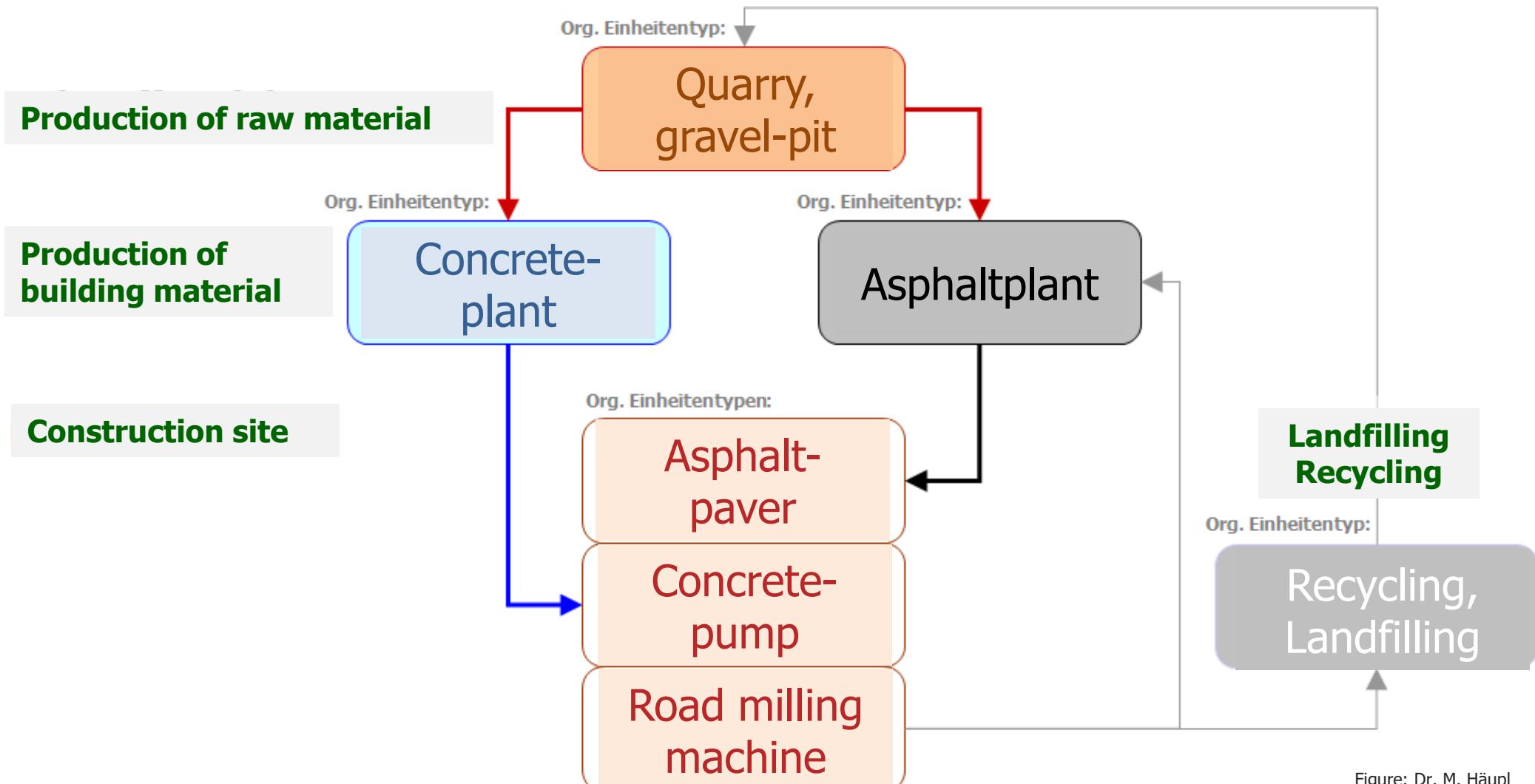


Figure: Dr. M. Häupl



Processes: Value chain

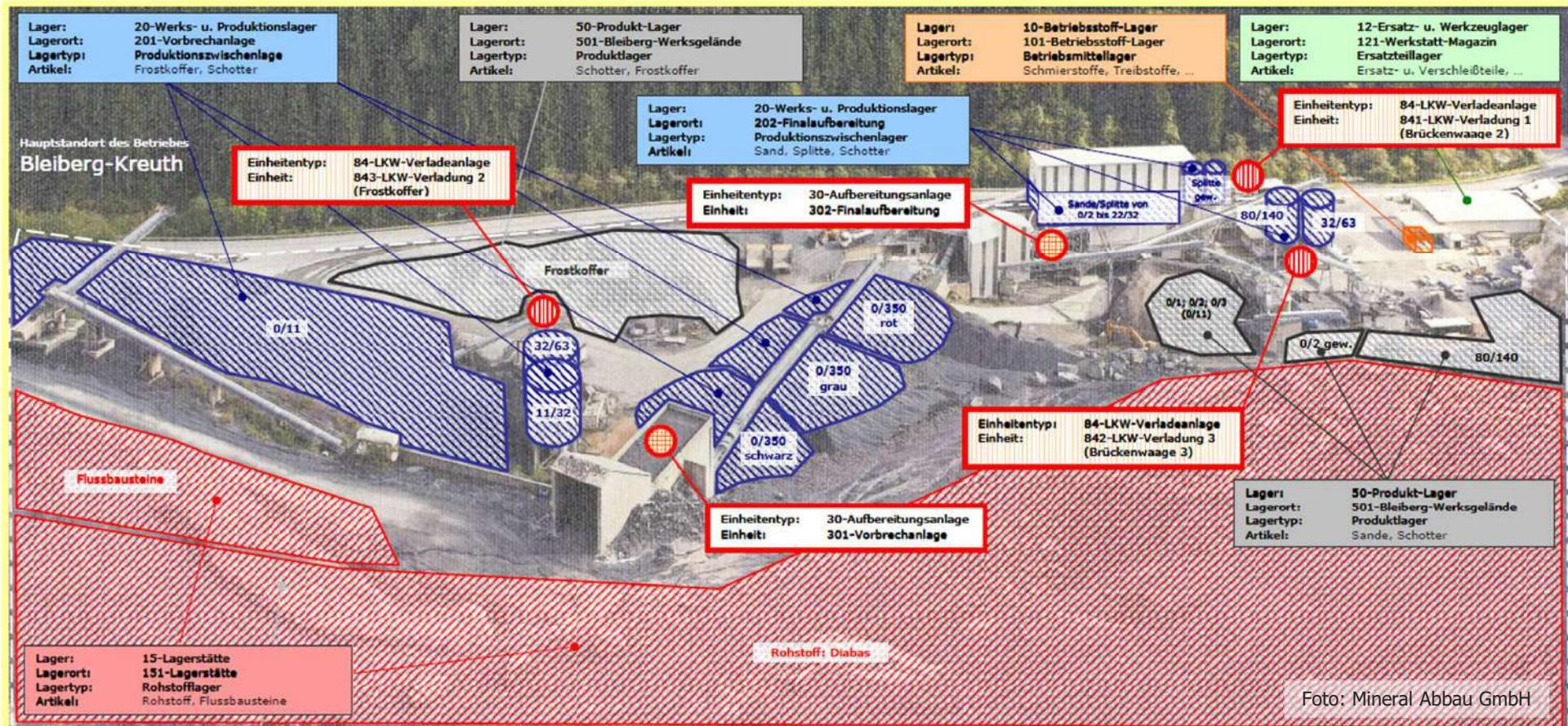
Value chain within raw material and construction industries:

Sequence of

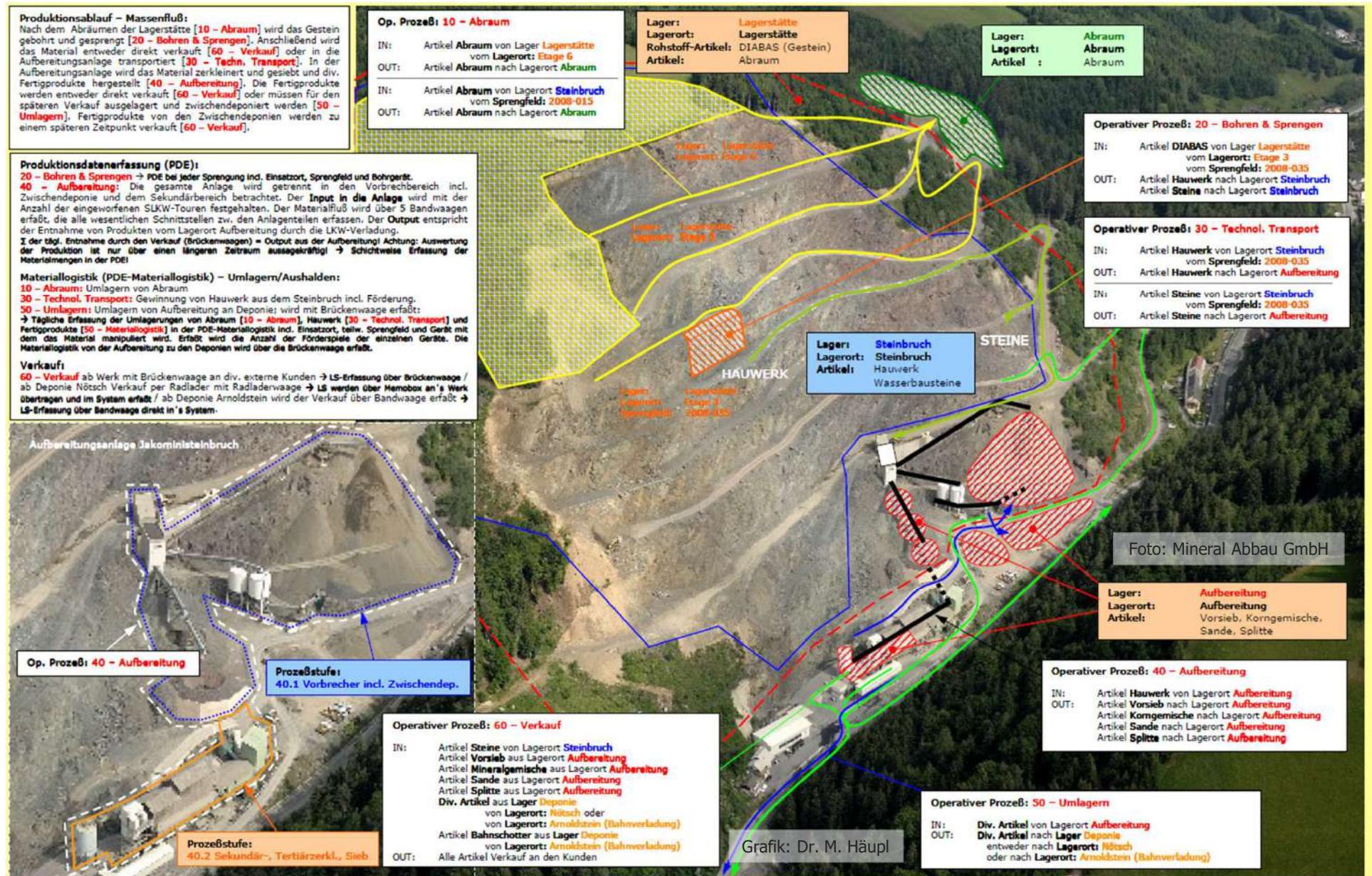
Production processes
as well as
Manipulation- resp.
transportation processes

- **Production** of raw material
- **Transport** to material production
- **Production** of building material
- **Transport** to the customer
- **Use** of building material / **Waste**
- **Transport** to Recycling / Landfill
- **Recycling / Landfilling**

Processes: Example



Processes: Example





3

Enterprise and operational organisation

Organisation

Enterprise and operational organisation



Organisation of resources of

Person & Knowledge

Machine / plant & Energy,

Commodity (= deposit + products)

and their interaction within the business processes
(process organisation) as well as their conditions, which are
determined by the organizational structure.

Operational organisation

Supply chain within the company: General consideration in the literature

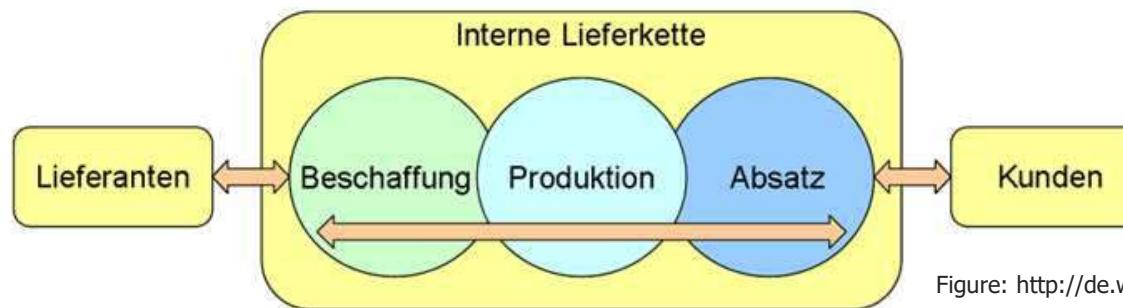
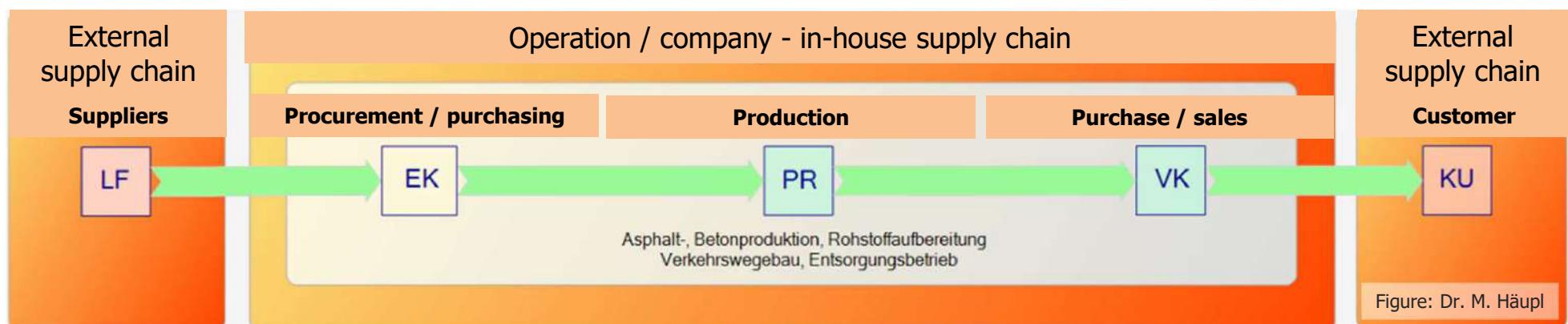


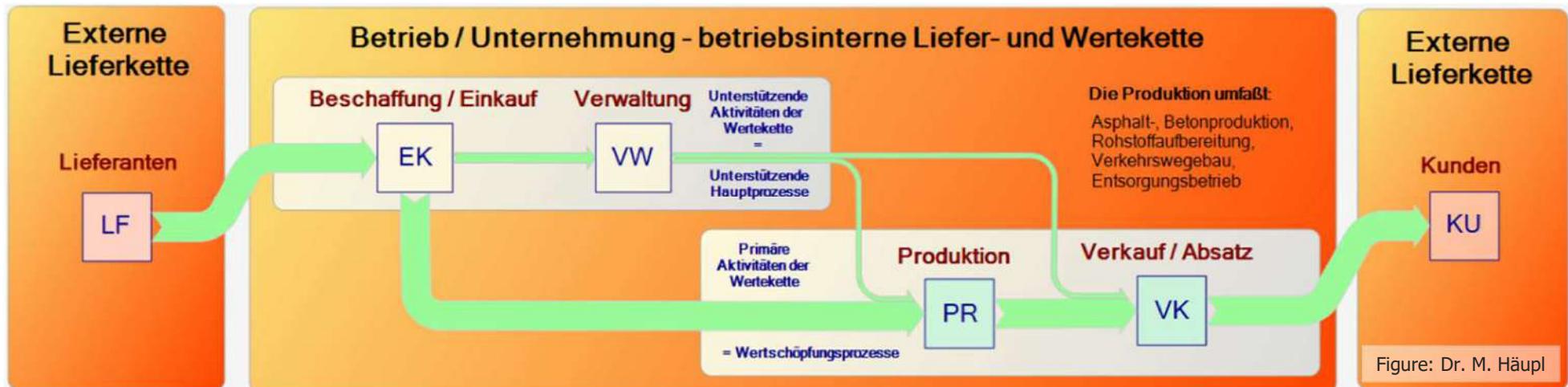
Figure: http://de.wikipedia.org/wiki/Supply_Chain_Management

Supply chain within the company: Modified and extended display



Operational organisation

Supply chain: Value-adding processes & supporting processes

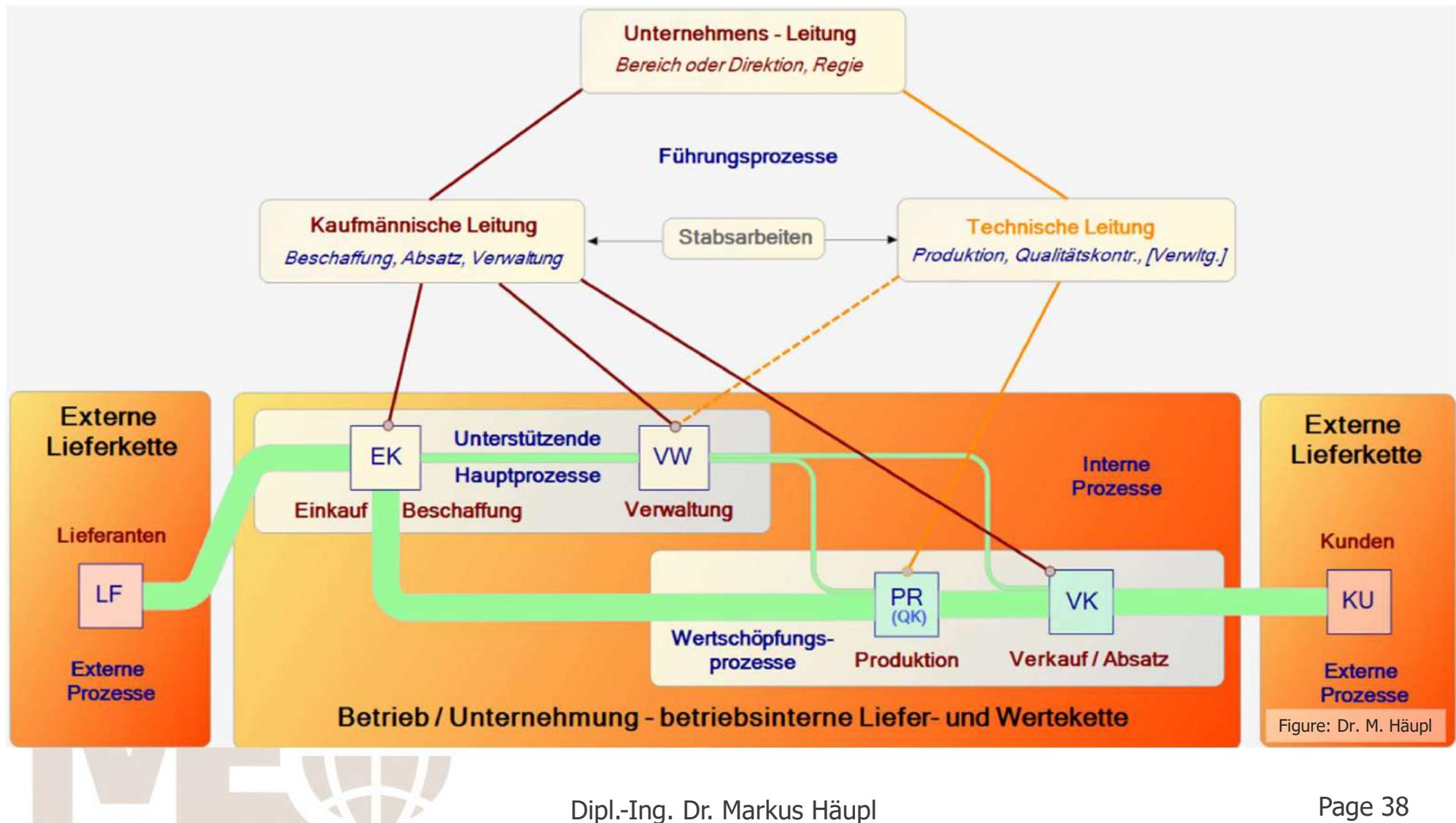


Value chain: Illustration by Michael E. Porter



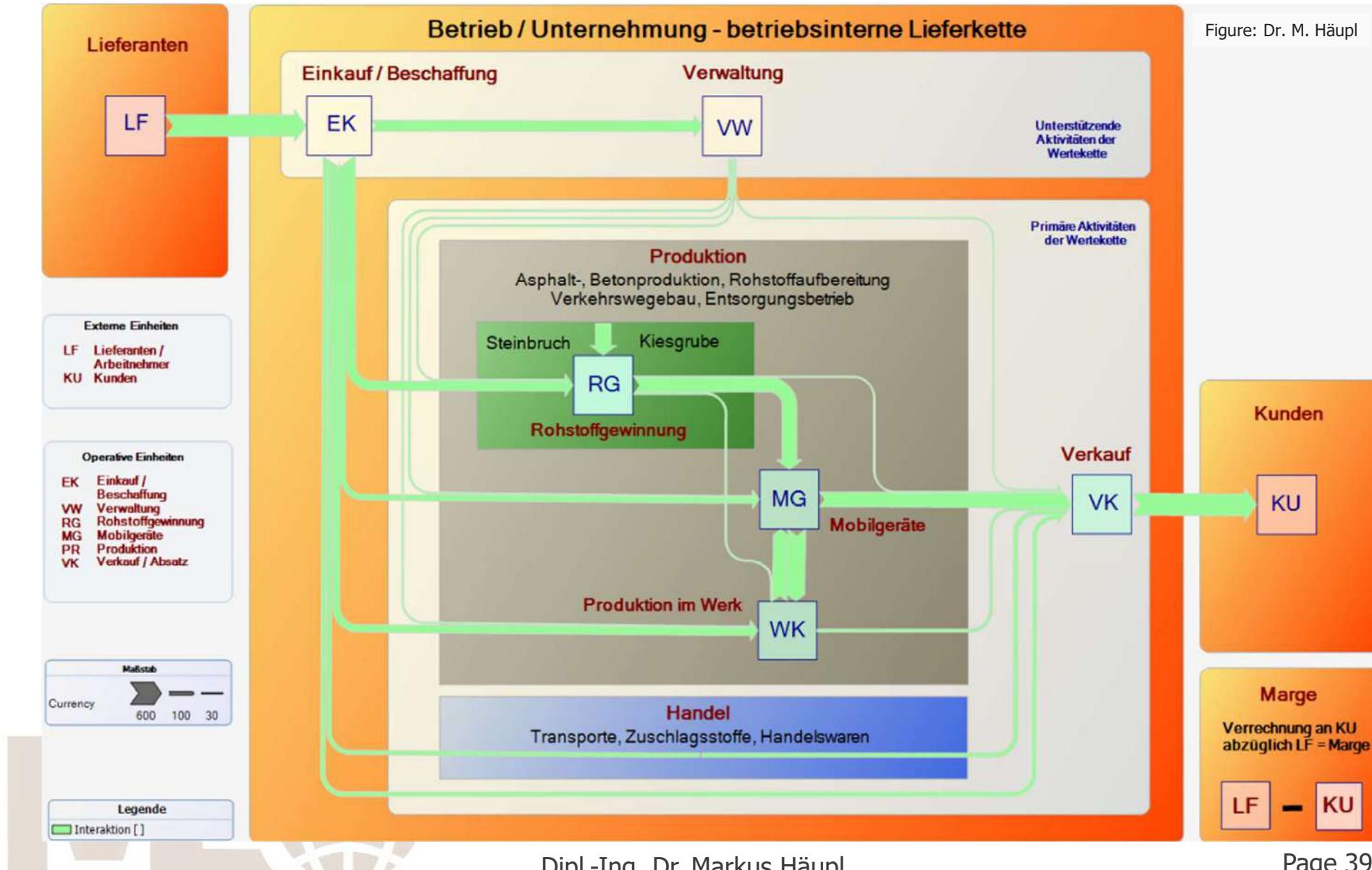
Operational organisation

Organisational structure: Extension with management processes



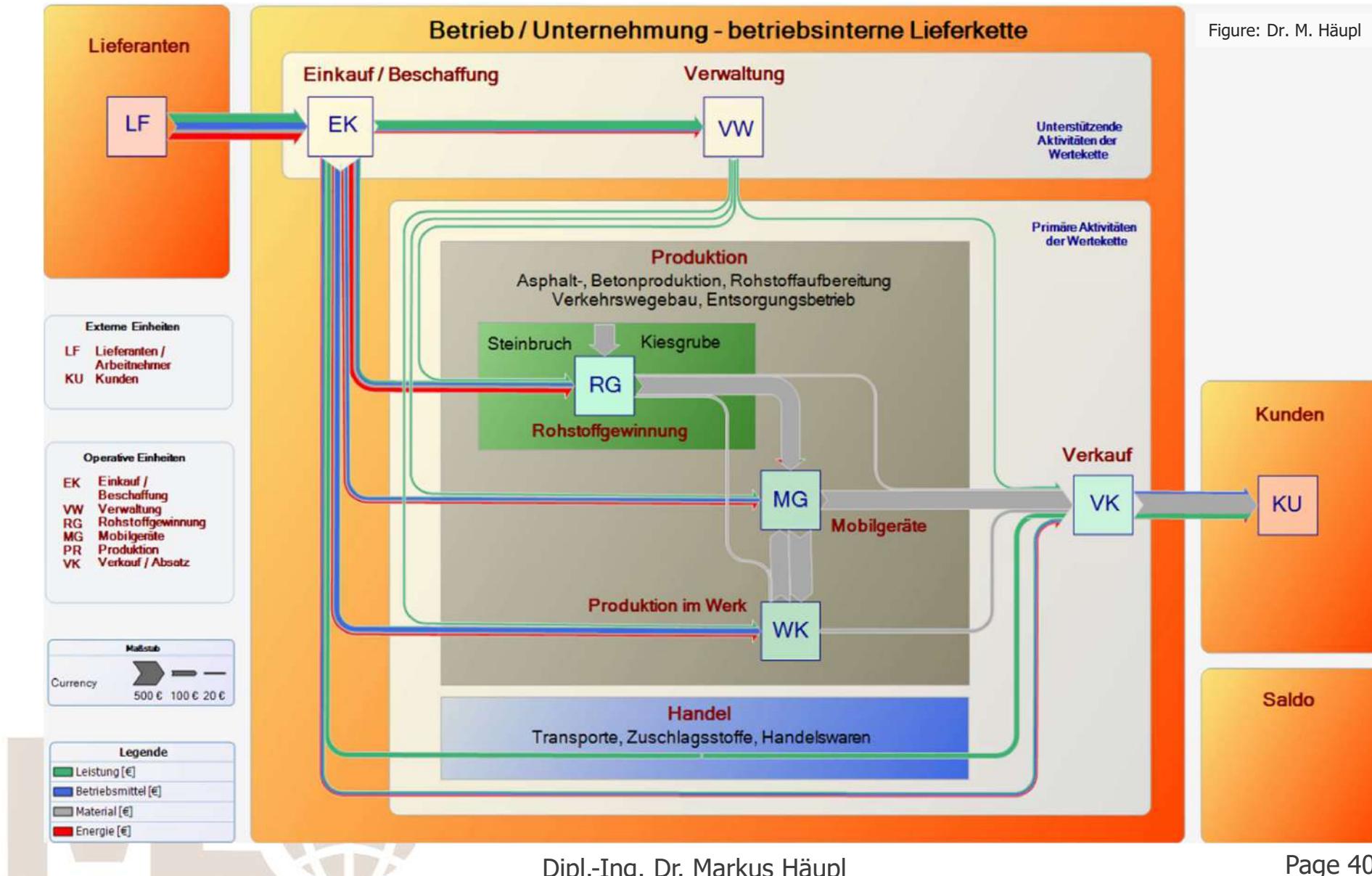
Operational organisation

Main processes: Structure with interaction



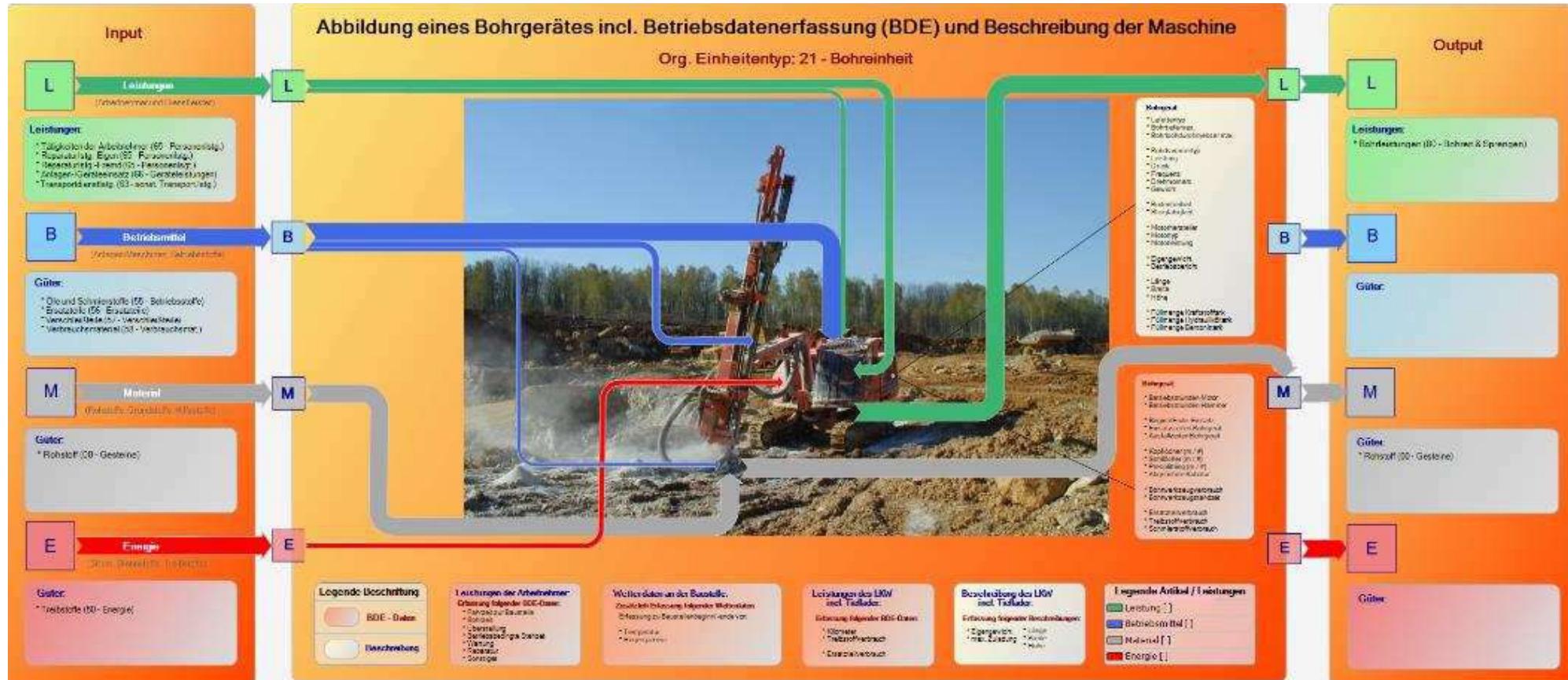
Operational organisation

Main processes: Structure with interaction of production factors



Operational organisation

Business processes: Definition of process participants / information needs



Personen- und Gerätegruppen einer Bohrseinheit

(1) Personen
1.1 Bohrmit

(2) Geräte
2.1 Bohrgerät 2.2 Kettbagger
2.3 Pkw 2.4 LKW
2.5 Tiefbohrer

Der Tiefbohrer wird in Einsatzzonen
nur der Tiefbohrfacharbeiter darf
diesen zugeteilt werden. Eine BDE-Erfassung
ist jedoch keine BDE-Erfassung.
Nur Erfassung von Reparaturen.

Grafik: Dr. M. Häupl

In- und Output von Leistungen bzw. Artikeln und Produkten in/von einer Bohrseinheit

(I) Leistungen:

Input:

- Tätigkeiten des Arbeitnehmers (00 - Personaleig.)
- Reparatur (01 - Fertigung)
- Betriebsmittel (02 - Personaleig.)
- Zeiterfassung (03 - Dienstleistung)
- Transportdienstleist. (03 - sonst. Transportdienst.)

Output:

- Bohrleistungen (00 - Bohren & Sprengen)

(U) Betriebsmittel:

Input:

- Öl und Schmierstoffe (00 - Betriebsstoff)
- Betriebsstoff (00 - Betriebsstoff)
- Werkzeuge/Arbeitsmittel - Verbrauchsmittel
- Verbrauchsmittel (00 - Verbrauchsmittel)

Output:

- Gesteine

(M) Material Artikel:

Input:

- Rohstoff (00 - Gesteine)

Output:

- Bohrseinheit (00 - Gesteine)

(E) Energie-Artikel:

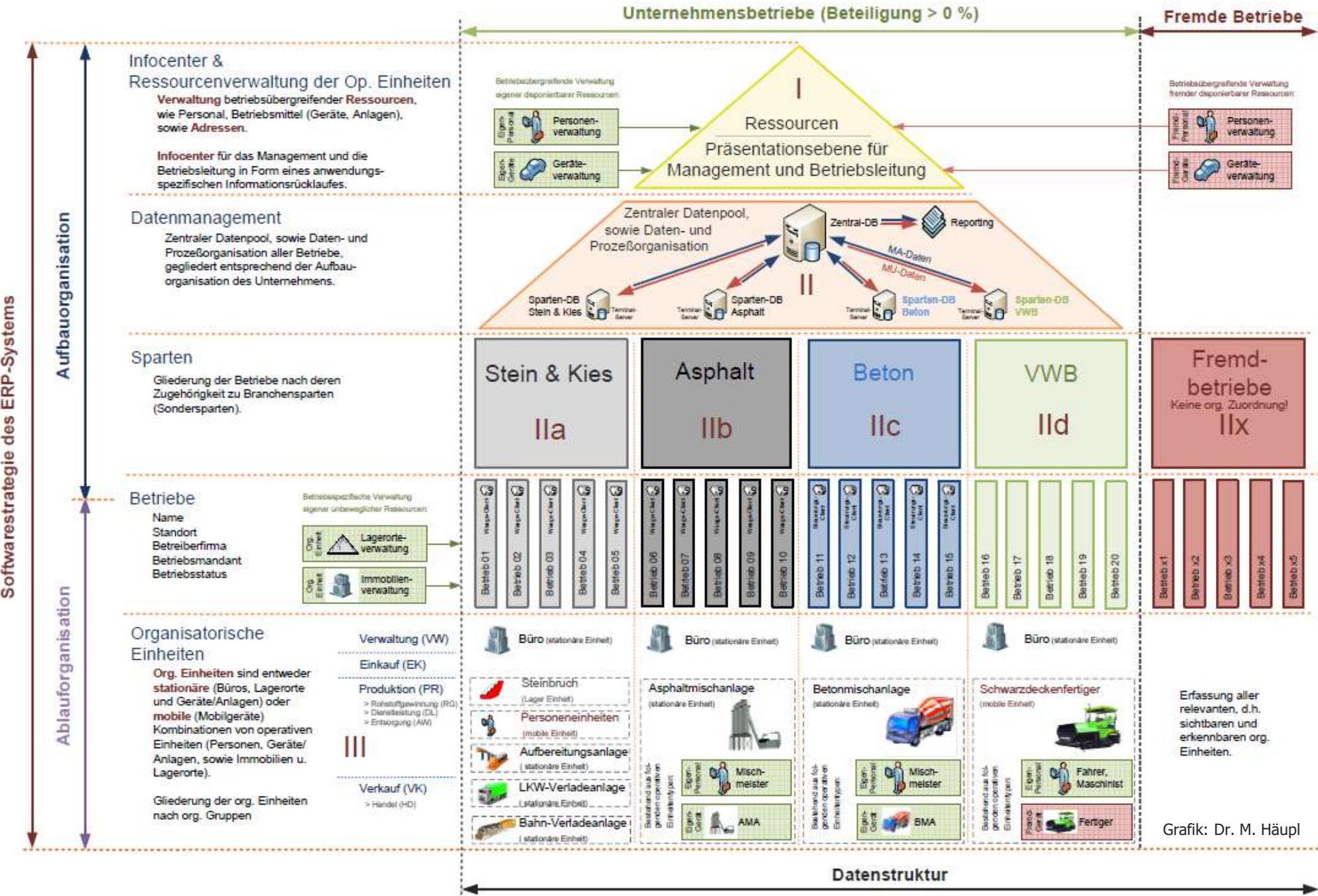
Input:

- Energie (00 - Energie)

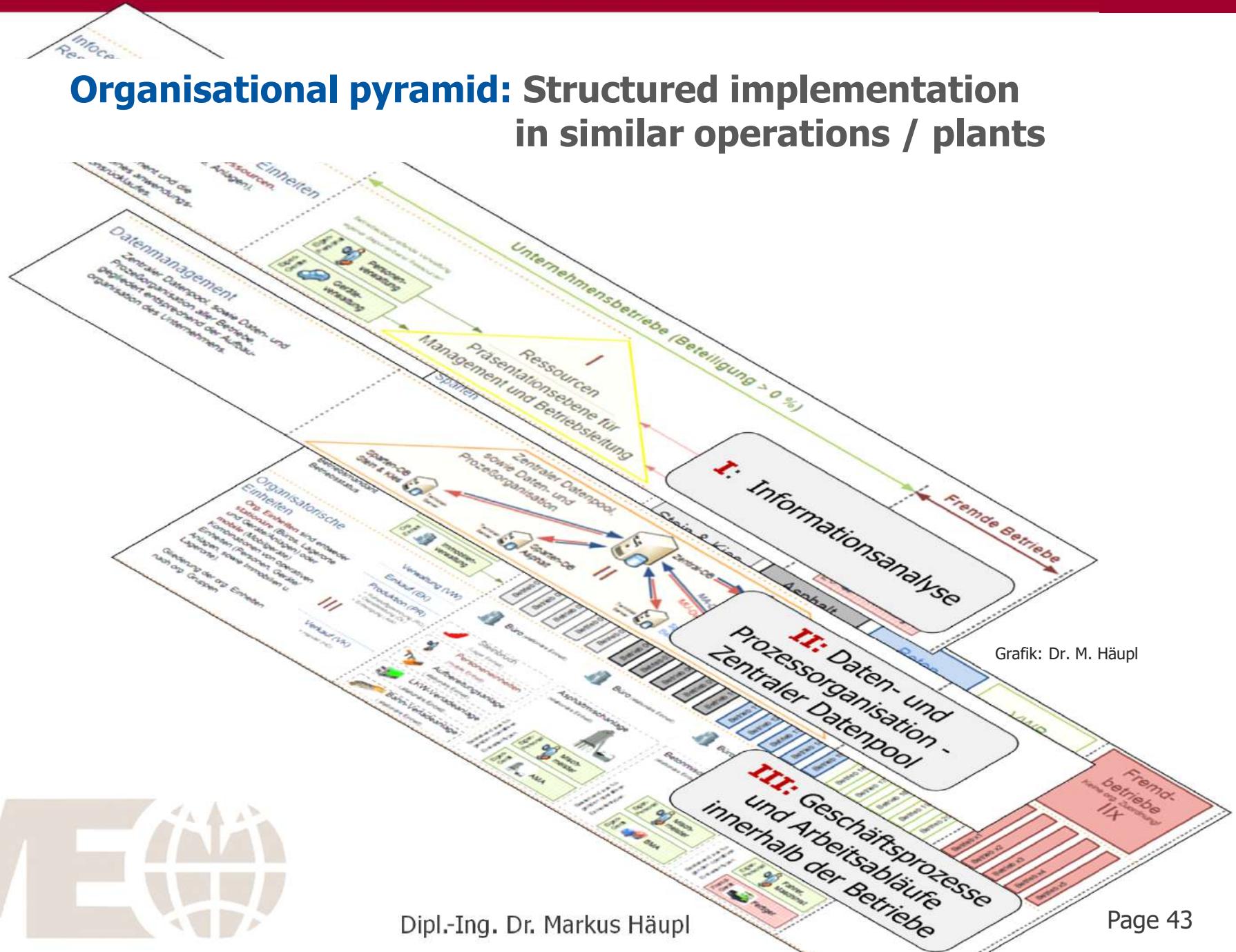
Output:

- Gesteine

Organisational pyramid



Organisational pyramid



Grafik: Dr. M. Häupl



4

Data management and
data analysis

Information and analysis

Data management and –analysis (Knowledge)



Management of all accumulated data and structured assignment to the process participants

Person

Machine / plant & Energy,

Commodity (= deposit + products)

and their analysis in the context of their interaction within the business processes (process organisation) as well as their conditions, which are determined by the organisational structure.

Data structure: According of company structure resp. Business processes

Strukturing of the data by **Master Data References** in terms of

- ※ the **organisational structure** through **organisational groups** (= divisions / business units)
- ※ the **organisational departments resp. plants / storage sites** in **org. unit types**
- ※ the **process organisation** by mapping of **business processes** (= functionality of software)
- ※ the **process participants** (**operational types**) on business processes / work flows
 - > People, grouped by **functions**
 - > Equipment, grouped by **device groups** and **-tys** (= **reference devices**)
- ※ the **factors of production**, that are consumed / produced within the business processes
 - > **Services** – from people excl./incl. devices (**reference services**)
 - > **Goods** – Commodity, supplies, energy (**reference article**)
- ※ the **storage** of goods, referenced by **reference storage sites** and **storage types**
- ※ many other defined **references** within the system (vehicle types, addresses, ...)



Master data references



Virtual Data Layer – Data References

Establishment of an industry-specific, cross-company, international (multi-lingualism!) and especially physically distinct (observable) operating and corporate data structure. These structure already represents an operational business process model itself.

Physical data layer:

An assignment of all real operational data towards the virtual data layer must be possible, the operational data is referenced.

Information processing

Master data references: Example of reference articles for stone & gravel

Referenzartikel Stein & Kies incl. Verrechnungsarten

- > in Anlehnung an die Normen EN 12620, EN 13043, EN 13242, EN 13265, EN 13383-1 und EN 13450.
- > alle **Produktgruppen in roter Farbe** sind als **Produktgruppen** auf dem **BAB** (Betriebsabrechnungsbogen) anzuführen.

Produktgruppen	Verrechnungsart	Korngröße		Zusätzliche Bezeichnung der Korngruppen						
		Obere	Untere	natürlich (nicht gebrochen)		gebrochene Gesteinskörnung		rezykliert		
				Definition	Referenzartikel	Definition	Referenzartikel	Definition	Referenzartikel	
Füller ¹⁾	KS	0,063 mm	0 mm	---	Füller	---	Füller			
Sande	NA	$\leq 2 \text{ bis } \leq 6,3 \text{ mm}$		0 mm	Sand	Natursand 0/1	Brechsand	Brechsand 0/1	Asphaltbrechsand	
						Natursand 0/2	Brechsand 0/2	Betonbrechsand		
						Natursand 0/3	Brechsand 0/3	Bauwerksbrechsand		
						Natursand 0/4	Brechsand 0/4			
Kiese, Splitte	NB	$\leq 32 \text{ mm}$		$\geq 2 \text{ bis } \geq 4 \text{ mm}$	Kies	Kies 2/4	Splitt	Splitt 2/4	Asphaltsplitt	
					(Rundkies)	Kies 2/5		Splitt 2/5	Betonplatt	
						Kies 4/8		Splitt 4/8	Bauwerksplatt	
						Kies 5/8		Splitt 5/8		
						Kies 8/11		Splitt 8/11		
						Kies 8/16		Splitt 8/16		
						Kies 11/16		Splitt 11/16		
						Kies 16/22		Splitt 16/22		
						Kies 16/32		Splitt 16/32		
						Kies 22/32		Splitt 22/32		
Kiese, Splitte veredelt	NC	$\leq 32 \text{ mm}$		$\geq 2 \text{ bis } \geq 4 \text{ mm}$	Kies erh. Anf.	Kies veredelt 2/4	Splitt erh. Anf.	Splitt veredelt 2/4	Asphaltsplitt	
					(gebr. Rundkies)	Kies veredelt 2/5	(Edelsplitt)	Splitt veredelt 2/5	Betonplatt	
						Kies veredelt 4/8		Splitt veredelt 4/8	Bauwerksplatt	
						Kies veredelt 5/8		Splitt veredelt 5/8		
						Kies veredelt 6/11		Splitt veredelt 6/11		
						Kies veredelt 8/16		Splitt veredelt 8/16		
						Kies veredelt 11/16		Splitt veredelt 11/16		
						Kies veredelt 16/22		Splitt veredelt 16/22		
						Kies veredelt 16/32		Splitt veredelt 16/32		
						Kies veredelt 22/32		Splitt veredelt 22/32		
Schotter	ND	$\leq 45 \text{ mm}$		$\geq 32 \text{ mm}$	Grobkies	Grobkies 32/45	Schotter	Schotter 22/50		
						Grobkies 32/X		Schotter 22/63		
						Grobkies 50/X		Schotter 32/45		
						Grobkies 63/X		Schotter 32/50		
								Schotter 32/63		
Tabelle: Dr. M. Häupl								Schotter 32/80		
								Schotter 50/63		
								Schotter 22/X		



Information analyses

Business processes: Analysis by means of Sankey-Diagramms

- ▶ Analysis with Sankey-Diagrams
- ▶ Predestined for mass fluxes, as the connection arrows are shown quantities-proportional,
 - > thick arrow → large amount,
 - > thin arrow → small amount
- ▶ Energy waste may be recognized easily, as large consumers will have thick red arrows.
- ▶ Requirement is a process-oriented definition of the operational processes.

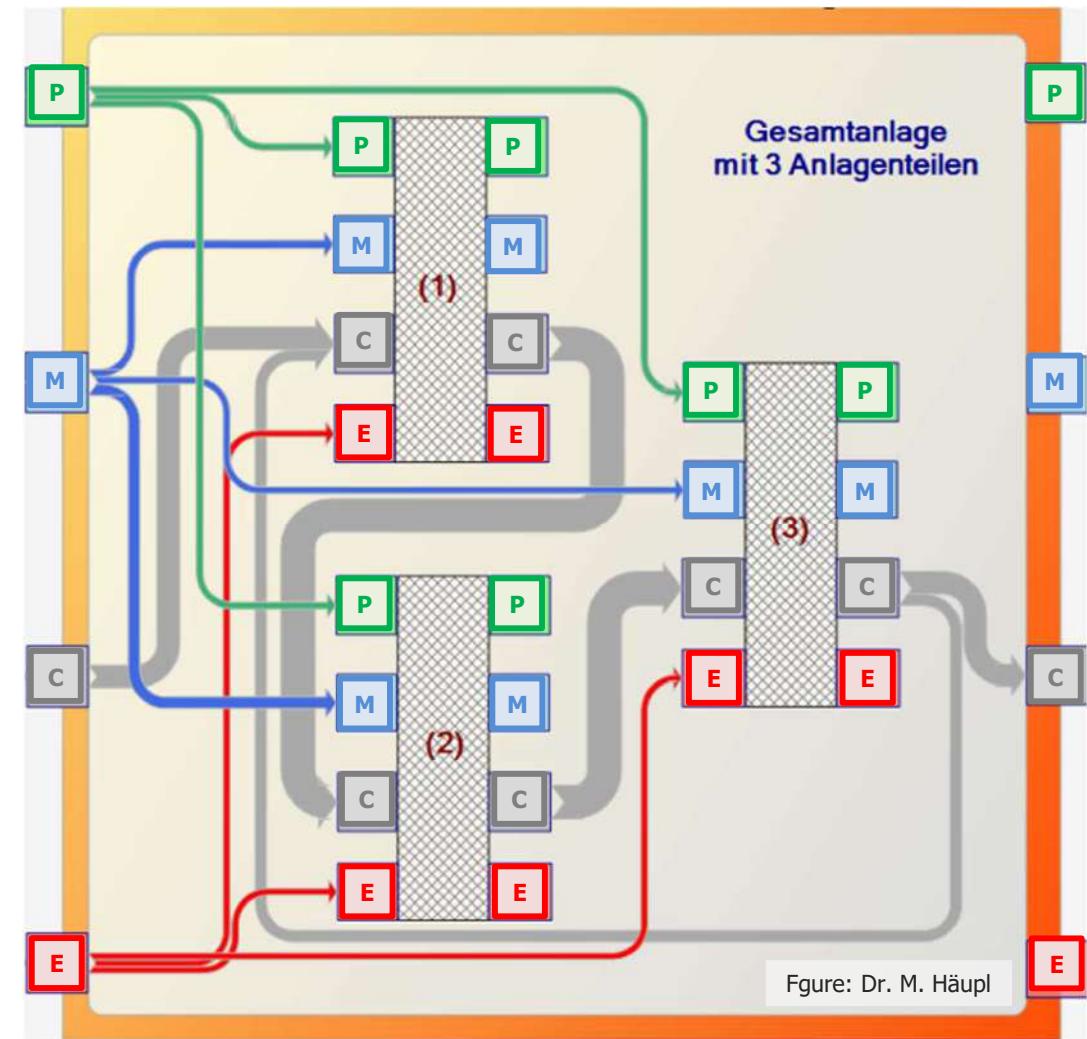


Figure: Dr. M. Häupl

Reporting system: Pre-definition of the required analyses

Pre-definition of standardized analyses (main processes!)

- Sales, Procurement / Purchasing
- Inventory management, Inventory
- Production and operating data
- Commercial evaluations

Other requirements of the analyses (System)

- Adaption to hierarchy (reporting level)
- Multilingual Design

Interactive and flexible reporting

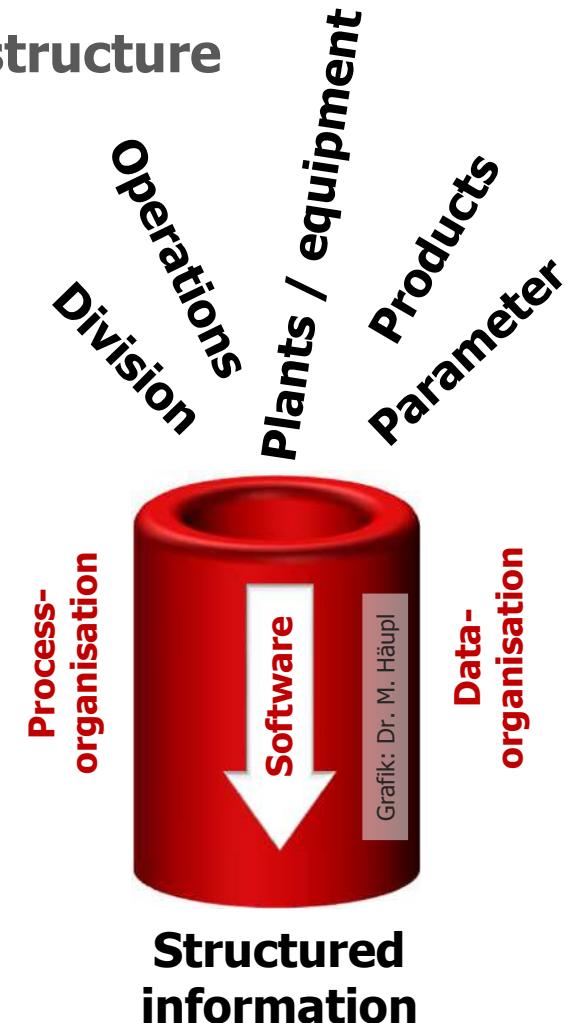
- Interactive reporting can be done by business intelligence tools (BI-Tools)
- A well-structured database is required (Data references!)



Data & Processes: advantages of a transparent structure

Transparent structuring of the company by

- ※ an extensive **process organisation** by
 - > a homogeneous / comparable business process landscape
 - > enforcement of an uniform working method of employees
 - > comparable and transparent work flows
 - > simple dissemination of well-functioning processes
- ※ a sophisticated **data organisation** through
 - > extensive **master data references** under
 - > compliance of physical laws and
 - > compliance of the organisational enterprise framework
- ※ a flexible **software strategy** in terms of
 - > operational complexity,
 - > company size and
 - > information needs



Structured data and processes: advantages for the management

Advantages for the management in the following respects:

- ※ Company-wide **standard** for all types of operations
- ※ Uniform **transnational** and **inter-enterprise information**
- ※ Design of an inter-enterprise indicator system
- ※ Measures to increase productivity are verifiable
- ※ Technical and commercial controlling grow together
- ※ An **efficient controlling of operations** is ensured





5

Automation of business processes



Automation of business processes are shown on the basis of the following examples:

- Sales and dispatching (of commodities)
- Truck-Selfservice-Terminal
(Inbound and outbound deliveries)
- Fully automated truck-loading plant
- Wheelloader-Terminal
(Outbound deliveries / internal manipulation of commodities)

6.1 Sales and Dispatching

Sales & Dispatching

Commodity delivery chain – from raw material to construction site

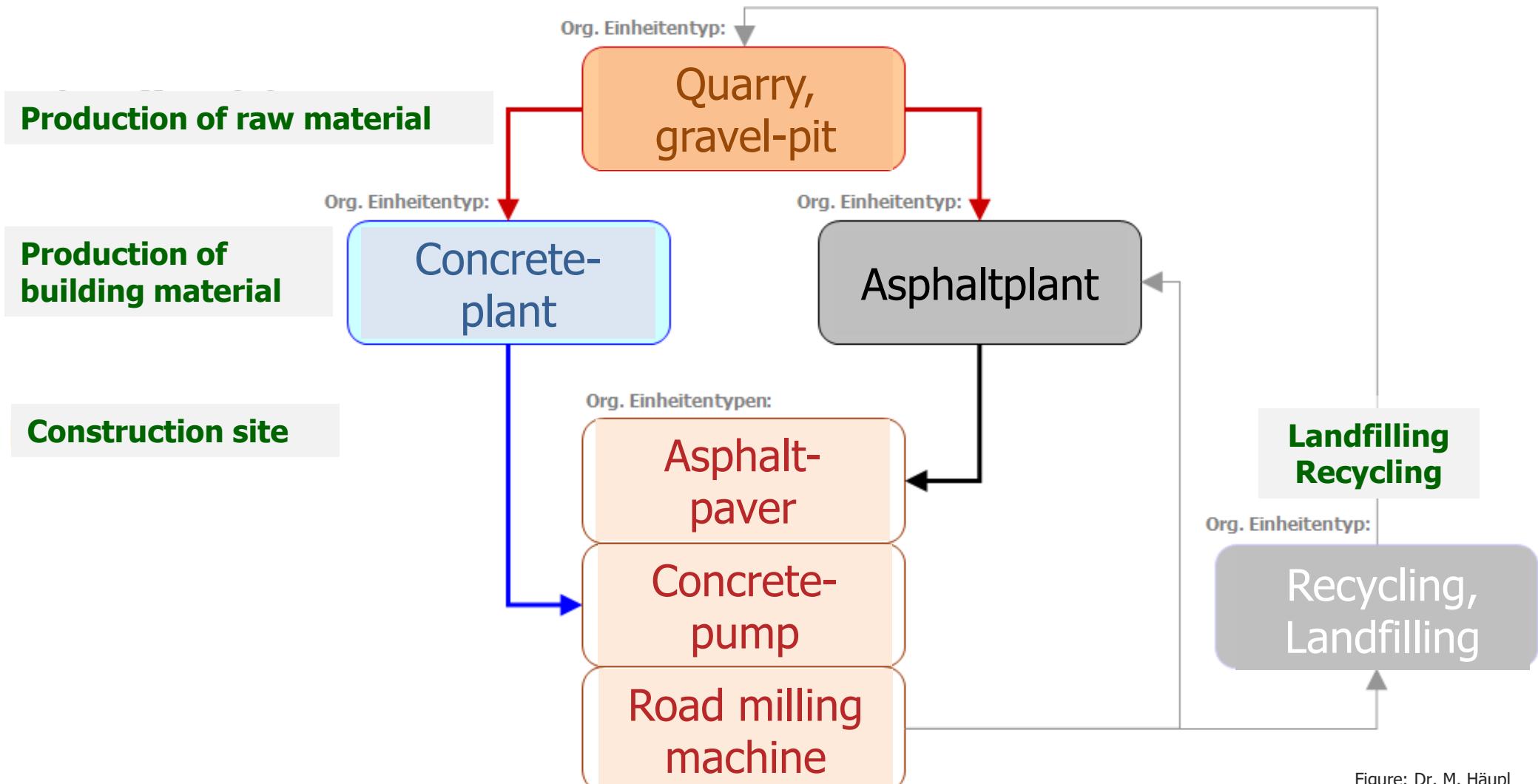


Figure: Dr. M. Häupl



Sales & Dispatching

Sales: Creating of offers / processing of contracts

matDOC Stein & Kies Terminal Admin 2.0

Datei Bearbeiten Optionen Verkauf Verriegelung Logistik Einsatzplanung Beschaffung Inventur Betriebsdaten Stammdaten QM Statistik Datenanalyse System DFÜ Hilfe

Mineral Sachsen/Thüringen
DE4254

Auftrag
5253
Auftrag Nr **27241** Angebot Nr **17574** Modify

Datum **11-11-2013** Leistungszeitraum **01-11-2013 bis 30-05-2014**

Optionen
 Preise inkl. Transport
 Aufträge nacherr.

Artikel Auftrag Nr. 27241

Pos	Dtl	Alt. zu	Code	Produkt	Richtung	Termin Knd. Referenz	Standort	Menge Lademittel	Mindestmenge Gesamtmenge	Menge geliefert Menge offen	Preis Durchschnitt	Rab Skt	Rabatt Rabatt %	MwSt	AW Pa	ID Dd	AB	st
1			240045 45172	BG f. FSS 0/45-UF 5 TL SoB-StB (1)	Auslieferung	prompt	G Gutendorf	1.170,000 t	t	t	1.170,000 t	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2			241045 45177	BG f. FSS 0/45-UF 5 TL SoB-StB m.NS(1)	Auslieferung	prompt	G Gutendorf	25,000 t	t	t	25,000 t	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3			204016 42129	Mineralgemisch 0/16 (2)	Auslieferung	prompt	G Gutendorf	60,000 t	t	t	60,000 t	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4			203016 40129	Vorabsiebung 0/16 (2)	Auslieferung	prompt	G Gutendorf	25,000 t	t	t	25,000 t	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5			0/16 42139	Sand-Splitt-Gemisch 0-16	Auslieferung	prompt	G Gutendorf	25,000 t	t	t	25,000 t	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6			40179 40179	Vorabsiebung 0/45 (2)	Auslieferung	prompt	G Gutendorf	250,000 t	t	t	250,000 t	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7			40/80 40409	GK 40/80 (2)	Auslieferung	prompt	G Gutendorf	150,000 t	t	t	150,000 t	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

S t Text Transport Staffelpreise Abrufaufträge Schließen

A 27253 Verwendung/Norm
A 27234
A 27233
Artikel Verkäufer **ELENDTMIK** Mike Elendt
Artikel Preisgrp.Rabatte Transport Ok Abbrechen
Preisgrp.Rabatte AB erstellen Abrufaufträge erstellen Lieferungen Schließen

Mineral Sachsen/Thüringen [DE4254] SUPERVISOR Modifiz. Ein

Sales & Dispatching

Dispatch: Processing of call orders

Abrufauftrag

Abrufauftrag Nr	TKB12953	Status	<input type="checkbox"/> erledigt	<input type="checkbox"/> gestrichen	<input type="checkbox"/> gebucht	<input type="checkbox"/> gedruckt		
Datum	06-04-2013 21:57							
Knd. Bestellung Nr		Knd. Referenz						
Lieferung von	07-04-2013 06:00	bis	08-04-2013 16:00					
Kunde	GALABAU & ERDEN	Galabau & Erden Tuschke GmbH, D-03226 Vetschau, Lobendorfer Weg 24						
Ansprechpartner								
Lieferadresse		,						
Ansprechpartner								
Baustelle	VETSCHAU	Vetschau						
Artikel	BIT13GWROT	bit. Abstreusplitt 1/3 70/100 Grauwacke + Bayferro						
Richtung	Auslieferung	Bereitstellung						
Zuordnung zu Auftrag								
Auftrag Nr						
gültig von		bis						
<input type="checkbox"/> manuell zugeordnet								
Lieferbedingungen								
Ab Werk								
Info								
Optionen	Auftrag	Lieferungen	F6 Empfänger	Ok	Abbrechen			

Sales & Dispatching

matDOC matDOC Entwicklung Material-Disposition 2.0

Datei Bearbeiten Optionen Verkauf Verwiegung Logistik Einsatzplanung Beschaffung Inventur Betriebsdaten Stammdaten QM Statistik Datenanalyse System DFÜ Hilfe



Dispatch: Dispatching of trucks (vehicles)

matDOC Logistik Center

○ Hofliste ○ Abrufaufträge ○ Disposition 220448510040786240

Disoplan Fahrzeuge Disoplan Baustellen

Alle Offen Erledigt Storniert

	Datum	beladen	entladen	Fzg Nr	Fahrzeugart	Menge	Artikel	Bezeichnung	Kunde	Baustelle/Lieferadresse	st
●	08-10-2013	15:45	16:25	ZE343AJ(S)	Sattelschlepper	39.984,550 t	110002	Edelbrechsand 0/2 GS	AMA SIGGERWIES	AMA Siggerwiesen Asphaltmischanlage, A-5101 Bergheim bei Salzburg	
●	09-10-2013	08:05	08:45	ZE823GK	LKW 4-Achser	0,000 t	550408	Filterkies 4/8	STRABAG ZELL	Aufschliessung Högmoos, A-5660 Taxenbach	
●	10-10-2013	11:07	12:00	KB120CB	Sattelschlepper	10.000 t	710070	Frostknoffer 0/63114	SCHFRNTHA BRUIC	Salzburn AG Mastenlauer Bruck, A-5671 Bruck an der Großlocknerstr	
●	10-10-2013	14:11	15:04	KB120CB							
●	10-10-2013	17:43	18:38	ZE700HP(
●	10-10-2013	11:40	12:35	ZE142GC(
●	10-10-2013	05:07	06:00	ZE142GC(
●	10-10-2013	16:32	17:25	ZEOTT1							
●	11-10-2013	12:10	12:50	ZE963FC(
●	11-10-2013	14:00	14:53	ZE162ID							
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●	11-10-2013	15:36	16:29	ZE162ID							
●	11-10-2013	15:36	16:29	ZE823GK							
●	11-10-2013	14:00	14:53	ZE823GK							
●	11-10-2013	12:23	13:16	ZE823GK							
●	11-10-2013	14:45	15:38	ZE825GP							
●	11-10-2013	17:10	18:03	ZE825GP							
●	11-10-2013	10:14	11:07	ZE671EK							
●	11-10-2013	13:58	14:51	ZE671EK							
●	11-10-2013	17:13	18:06	ZE671EK							
●	11-10-2013	15:35	16:28	ZE671EK							
●	11-10-2013	13:54	14:47	ZE142GC(
●	11-10-2013	12:15	13:08	ZE142GC(
●	11-10-2013	12:11	13:04	ZE716FC							

matDOC Transportplanung (Fahrzeuge)

Fahrzeug hinzufügen 11.10.2013 Wochenansicht Gesamtansicht

Fahrzeuge

LKW 4-Achser 40

JO265FZ

ZE825GP

ZE162ID

ZE671EK

ZE716FC

FR 11.10

05:00 - 06:00 06:00 - 07:00 07:00 - 08:00 08:00 - 09:00 09:00 - 10:00 10:00 - 11:00 11:00 - 12:00 12:00 - 13:00 13:00 - 14:00 14:00 - 15:00 15:00 - 16:00 16:00 - 17:00 17:00 - 18:00 18:00 - 19:00 19:00 - 20:00

05:05 - 06:00 Frostkoffer 16, 2 Unionweg/Krapfs

07:01 - 08:38 Frostkoffer 09:3 Frostkoffer 11:0 Frostkoffer 12:19 Frostkoffer 13:1 Frostkoffer 14:45 Frostkoffer 15:3 Frostkoffer 16:2 Frostkoffer 17:10 Frostkoffer 18:0 Frostkoffer 18:3 Frostkoffer 19:0 Frostkoffer 19:3 Frostkoffer 20:0 Frostkoffer

07:15 Frostkoffer ** 09:3 Frostkoffer ** 11:0 Frostkoffer ** 12:19 Frostkoffer ** 13:1 Frostkoffer ** 14:45 Frostkoffer ** 15:3 Frostkoffer ** 16:2 Frostkoffer ** 17:10 Frostkoffer ** 18:0 Frostkoffer ** 18:3 Frostkoffer ** 19:0 Frostkoffer ** 19:3 Frostkoffer ** 20:0 Frostkoffer **

5 Salzburg AG 5 Salzburg AG 4 Salzburg AG 5 Salzburg AG

07:03 - 08:42 Frostkoffer 09:3 Frostkoffer 10:20 Frostkoffer 12:21 Frostkoffer 13:1 Frostkoffer 14:00 Frostkoffer 15:36 Frostkoffer 16:2 Frostkoffer 17:14 Frostkoffer 18:0 Frostkoffer 18:3 Frostkoffer 19:0 Frostkoffer 19:3 Frostkoffer 20:0 Frostkoffer

07:15 Frostkoffer ** 09:3 Frostkoffer ** 11:1 Frostkoffer ** 12:21 Frostkoffer ** 13:1 Frostkoffer ** 14:5 Frostkoffer ** 15:36 Frostkoffer ** 16:2 Frostkoffer ** 17:14 Frostkoffer ** 18:0 Frostkoffer ** 18:3 Frostkoffer ** 19:0 Frostkoffer ** 19:3 Frostkoffer ** 20:0 Frostkoffer **

3 Salzburg AG 4 Salzburg AG 3 Salzburg AG

07:00 - 08:36 Frostkoffer 09:2 Frostkoffer 10:14 Frostkoffer 12:21 Frostkoffer 13:1 Frostkoffer 13:58 Frostkoffer 15:35 Frostkoffer 16:2 Frostkoffer 17:13 Frostkoffer 18:0 Frostkoffer 18:3 Frostkoffer 19:0 Frostkoffer 19:3 Frostkoffer 20:0 Frostkoffer

07:15 Frostkoffer ** 09:2 Frostkoffer ** 11:0 Frostkoffer ** 12:21 Frostkoffer ** 13:1 Frostkoffer ** 14:5 Frostkoffer ** 15:35 Frostkoffer ** 16:2 Frostkoffer ** 17:13 Frostkoffer ** 18:0 Frostkoffer ** 18:3 Frostkoffer ** 19:0 Frostkoffer ** 19:3 Frostkoffer ** 20:0 Frostkoffer **

5 Salzburg AG 6 Salzburg AG

08:48 - 10:30 Frostkoffer 11:2 Frostkoffer 12:11 Frostkoffer 13:47 Frostkoffer 14:4 Frostkoffer 15:24 Frostkoffer

09:4 Frostkoffer ** 11:2 Frostkoffer ** 12:11 Frostkoffer ** 13:47 Frostkoffer ** 14:4 Frostkoffer ** 15:24 Frostkoffer

7 Salzburg AG 7 Salzburg AG

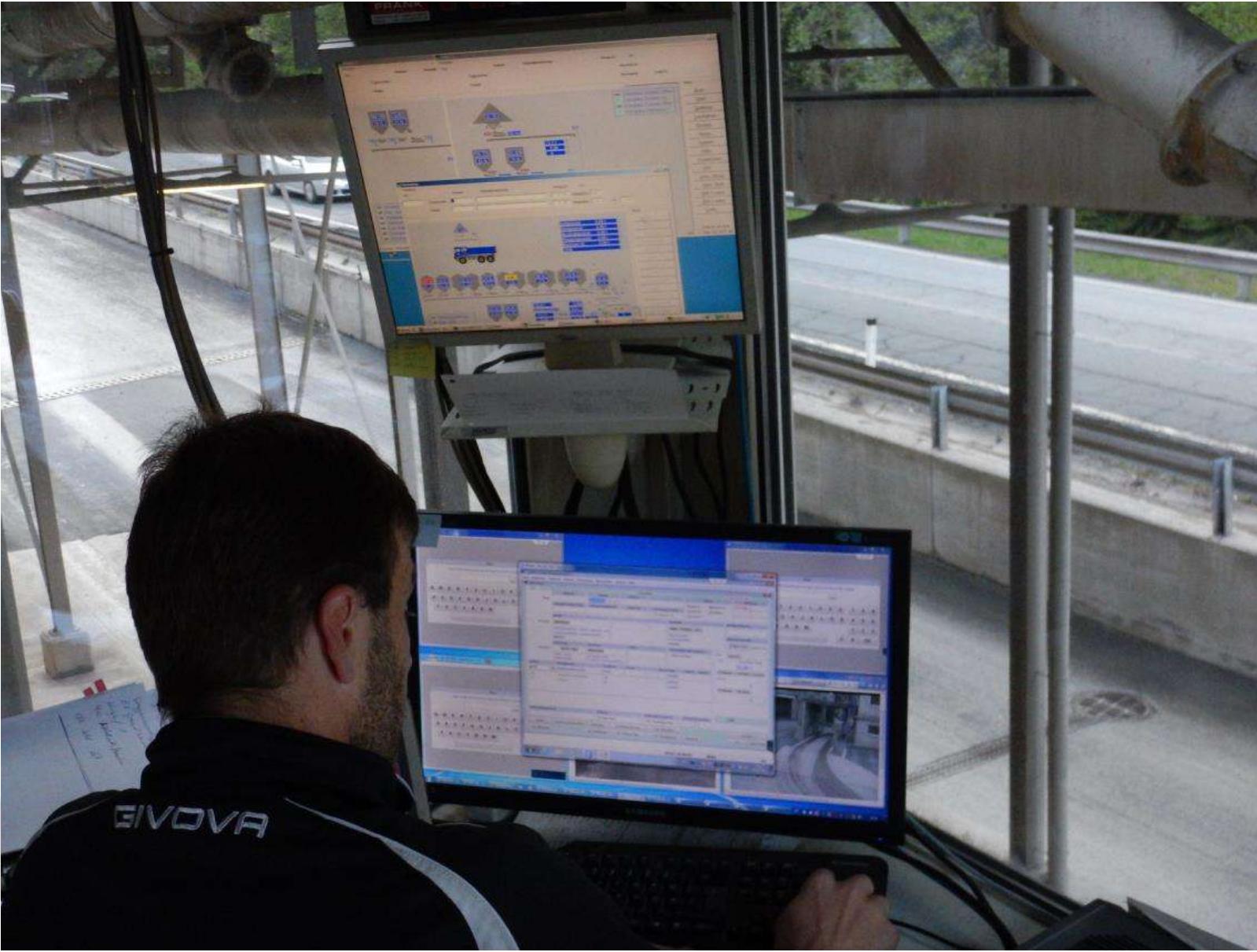
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12:1 Frostkoffer ** 13:5 Frostkoffer ** 15:3 Frostkoffer ** 16:1 Frostkoffer ** 17:0 Frostkoffer ** 18:4 Frostkoffer **

7 Salzburg AG 7 Salzburg AG

Sales & Dispatching

Workplace sales & dispatch



Truck-Selfservice-Terminal: Registration of truck

Start

[2] Geben Sie bitte das Kennzeichen ein!

VL363CM

Q	W	E	R	T	Z	U	I	O	P	Ü	7	8	9
A	S	D	F	G	H	J	K	L	Ö	Ä	4	5	6
Y	X	C	V	B	N	M					1	2	3
											<input type="button" value="X"/>	0	Ok

Truck-Selfservice-Terminal: Choice of planned deliveries

Aktuelle Fuhrte 3.3

Kunde **STRABAG AG**
A-9800 SPITTAL/DRAU, ORTENBURGERSTRASSE 27

Baustelle **Villach Seebach Außenanlage GPS Ausbildungszentrum**

Artikel **Edelbrechkorn 11/16**

Nächste Fuhrten (2)

Kunde	Baustelle	Artikel	Ladestelle	Art
STRABAG AG	Villach Seebach	Edelbrechkorn 11/16	Autoverladu	
STRABAG AG	Villach Seebach	Edelbrechkorn 11/16	Autoverladu	

< Zurück

Anmelden >

Sales & Dispatching

Truck-Selfservice-Terminal: Confirmation of delivery and start of loading

Verladung

VL363CM

Beleg Nr	LS	2	1
Kunde	STRABAG AG A-9800 SPITTAL/DRAU, ORTENBURGERSTRASSE		
Baustelle	Villach Seebach Außenanlage GPS Ausbildungsze		
Referenz			
Artikel	Edelbrechkorn 11/16 ZB05		
Tara	23,820 t		
Brutto	27,480 t	Netto	3.660 t

Abbrechen **Verladung starten**

Verladung

VL363CM

Beleg Nr	LS	2	1
Kunde	STRABAG AG A-9800 SPITTAL/DRAU, ORTENBURGERSTRASSE		

Verladung **TOUCH**

Tara	Verladegewicht NETTO	Gesamtgewicht BRUTTO	
14,42	0,00	0,00	STOP
	2,80	17,22	

Tara	14,420 t
Brutto	t
Netto	t

Abbrechen **Verladung starten**



Truck-Selfservice-Terminal: Closure of dispatch and loading process

- Display of data of delivery notes
- Sign at Touchscreen / Sign-pad
- Printing of the delivery note for truck driver
- Filing of electronical delivery note within the archiv of documents via Adobe pfd-file
- As an option pictures of the loading process may be made (loading area, licence plate, ...)



Dispatch: Observation of delivery – Statusinfos & map view

mat doc Logistik Center

○ Hofliste ○ Abrufaufträge ○ Disposition

220448510040786240

Dispoplan Fahrzeuge Dispoplan Baustellen

Alle Offen Erledigt Storniert

	Datum	beladen	entladen	Fzg Nr	Fahrzeugart	Menge	Artikel	Bezeichnung	Kunde	Baustelle/Lieferadresse	st
●	08-10-2013	15:45	16:25	ZE343AJ(S)	Sattelschlepper	39.984,550 t	110002	Edelbrechsand 0/2 GS	AMA SIGGERWIES	AMA Siggerwiesen Asphaltmisch'anlage, A-5101 Bergheim bei Salzburg	
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●	10-10-2013	11:07	12:00	KB120CB	Sattelschlepper	10.000 t	710070	Frostkoffer 0/63114	SCHFRNTHA BRUIC	Salzburn AG Mastenlager Bruck, A-5671 Bruck an der Großlocknerns	
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●	10-10-2013	17:43	18:38	ZE700HP(
●	10-10-2013	11:40	12:35	ZE142GC(
●	10-10-2013	05:07	06:00	ZE142GC(
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●	11-10-2013	14:00	14:53	ZE162ID							
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●	11-10-2013	15:35	16:28	ZE671EK							
●	11-10-2013	13:54	14:47	ZE142GC(
●	11-10-2013	12:15	13:08	ZE142GC(
●	11-10-2013	12:11	13:04	ZE716FC							

doc Transportplanung (Fahrzeuge)

Fahrzeug hinzufügen 11.10.2013 Wochenansicht Gesamtansicht

Fahrzeuge

FR 11.10

LKW 4-Achser 40

JO265FZ

ZE825GP

ZE162ID

ZE671EK

ZE716FC

05:05 - 06:0 Frostkoffe 16, 2 Unionweg/Krapfs

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07:03 - 08:42 - 07:5 Frostkoffe ** 09:3 Frostkoffe ** 10:20 - 11:1 Frostkoffe ** 12:21 - 13:1 Frostkoffe ** 14:00 - 14:5 Frostkoffe ** 15:36 - 16:2 Frostkoffe ** 17:14 - 18:0 Frostkoffe ** 3 Salzburg AG 3 Salzburg AG 3 Salzburg AG

07:00 - 08:36 - 07:5 Frostkoffe ** 09:2 Frostkoffe ** 10:14 - 11:0 Frostkoffe ** 12:21 - 13:1 Frostkoffe ** 13:58 - 14:5 Frostkoffe ** 15:35 - 16:2 Frostkoffe ** 17:13 - 18:0 Frostkoffe ** 5 Salzburg AG 5 Salzburg AG 6 Salzburg AG

08:48 - 10:30 - 09:4 Frostkoffe ** 11:2 Frostkoffe ** 12:11 - 13:0 Frostkoffe ** 13:47 - 14:4 Frostkoffe ** 15:24 - 16:1 Frostkoffe ** 16:16 - 17:2 Frostkoffe ** 17:52 - 18:4 Frostkoffe ** 1 Unionweg/Krapfs 7 Salzburg AG 7 Salzburg AG 6 Salzburg AG 7 Salzburg AG

Truck-Selfservice-Terminal



6.2
Truck-
Selfservice-
Terminal

Truck-Selfservice-Terminal

„Office-workplace“ **Sales, dispatching, delivery notes, accounting**

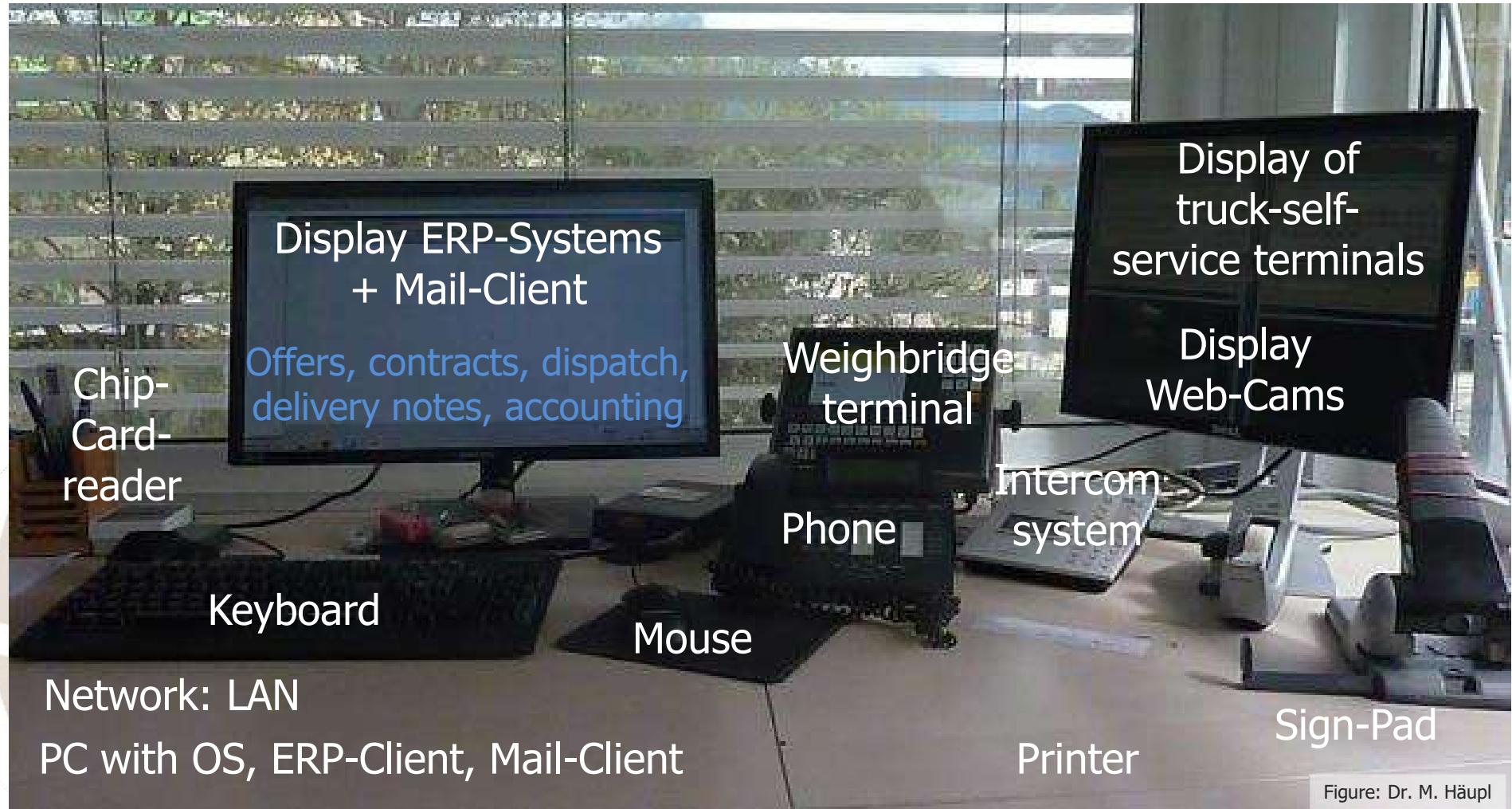


Figure: Dr. M. Häupl

Truck-Selfservice-Terminal

Workplace Truck Selfservice Terminal vs. „Office-workplace“

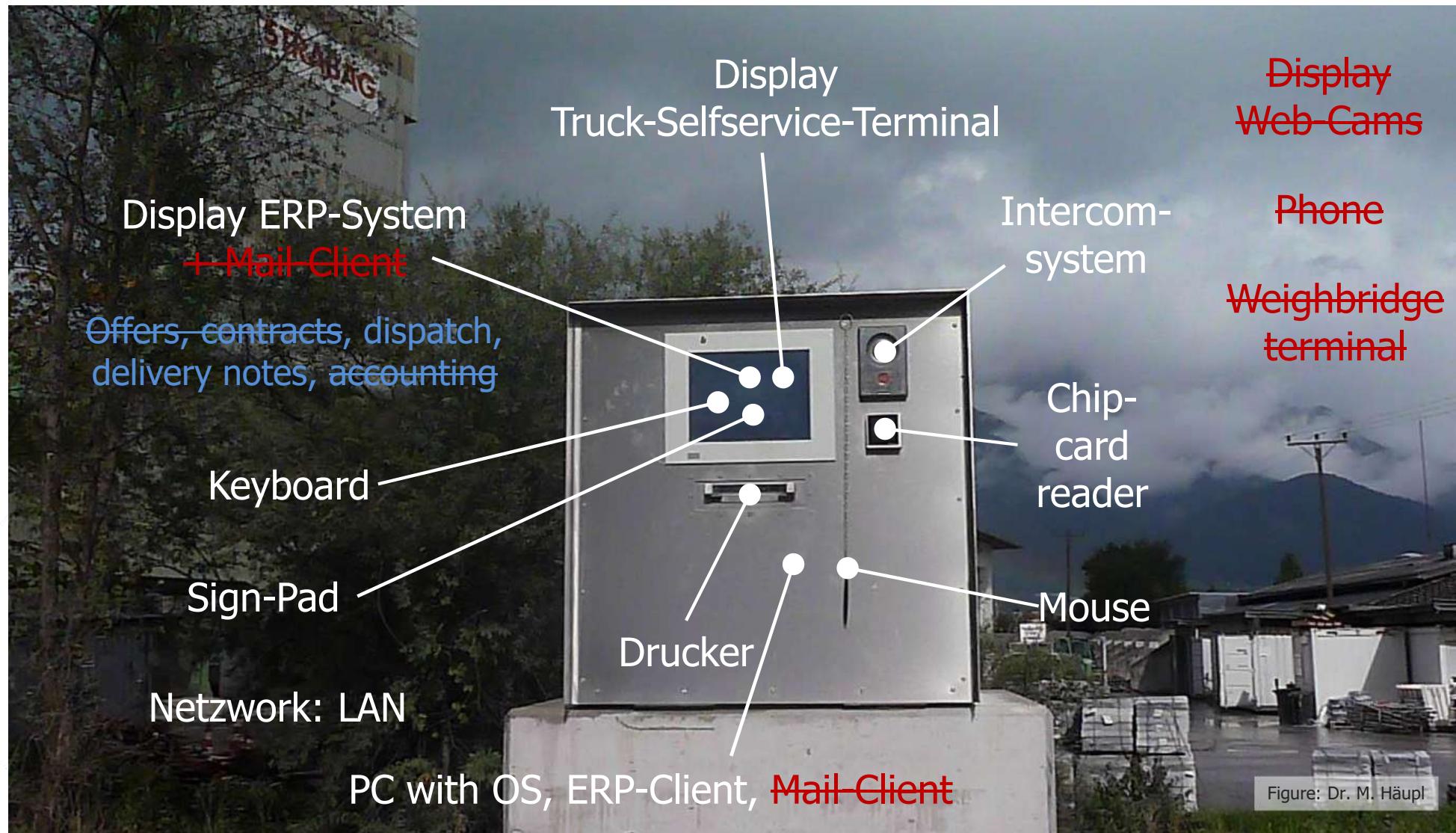


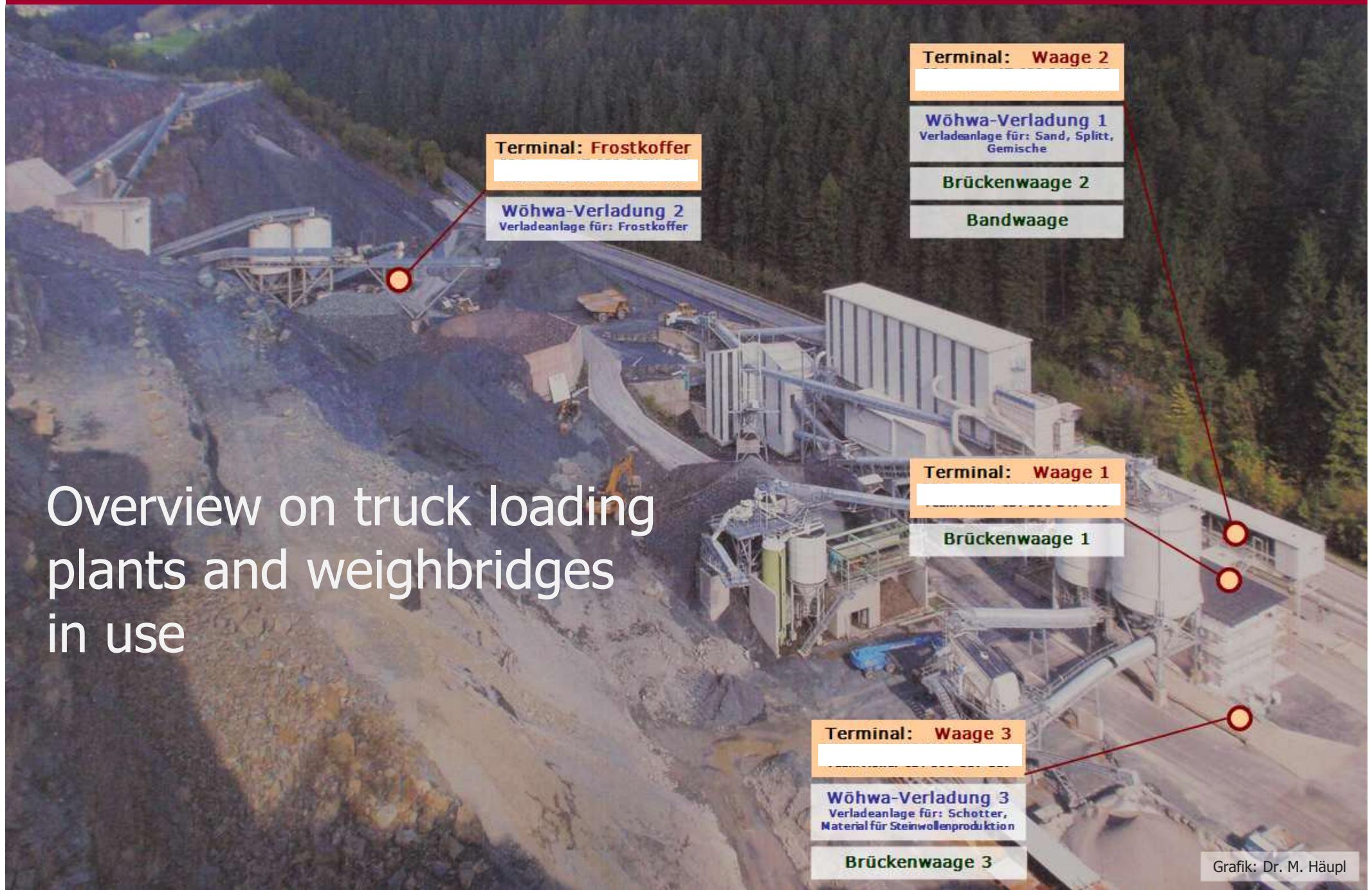
Figure: Dr. M. Häupl

Truck-loading plant

6.3
Fully automated
truck-loading plant



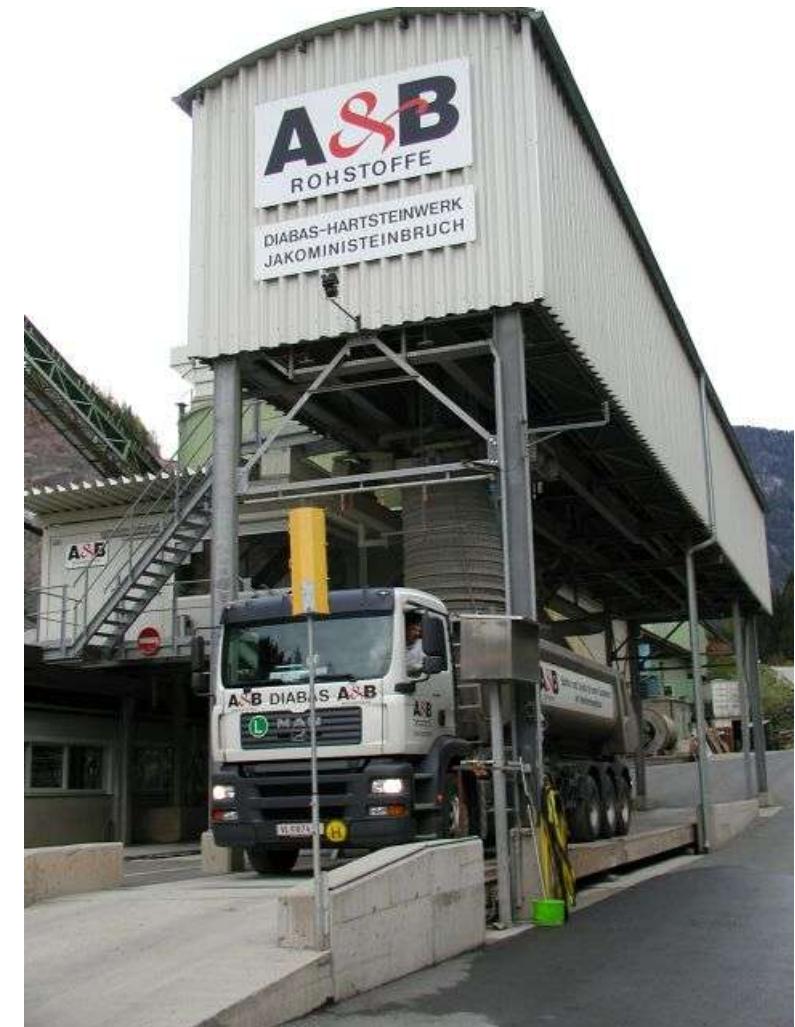
Truck-loading plant



Truck-loading plant

A loading plant has been
fully automated:

- Weighbridge (Truck-Targetweight)
- Conveyor scale (material-targetweight)
- Movable Conveyor belt
- Loading nozzle (Minimizing emissions)
- Loadout system
- Truck-Selfservice-Terminal
- Traffic light (Truck-positioncontrol)
- Connection to ERP-System



Truck-loading plant

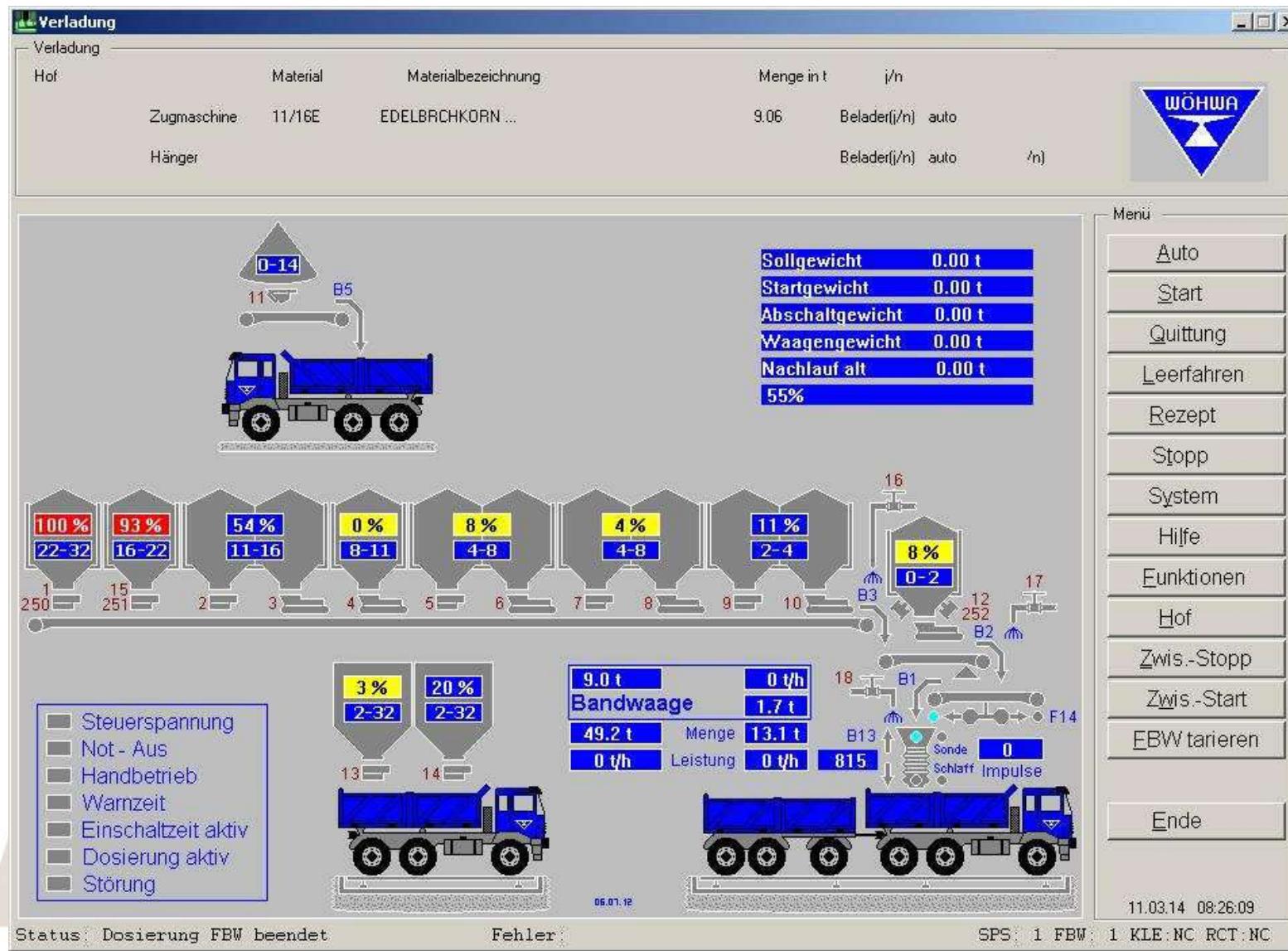
Overbuilt and movable
conveyor belt:

- Truck stands still during the whole loading process
- Conveyor belt moves to truck-specific loading position
- Loading nozzle rises and lowers
- Control of material weight via belt scale
- Control of truck weight via weighbridge



Truck-loading plant

Loadout system: Delivers chosen material(-recipe) und controls the loading belt + loading nozzle acc. maindata out of ERP-System

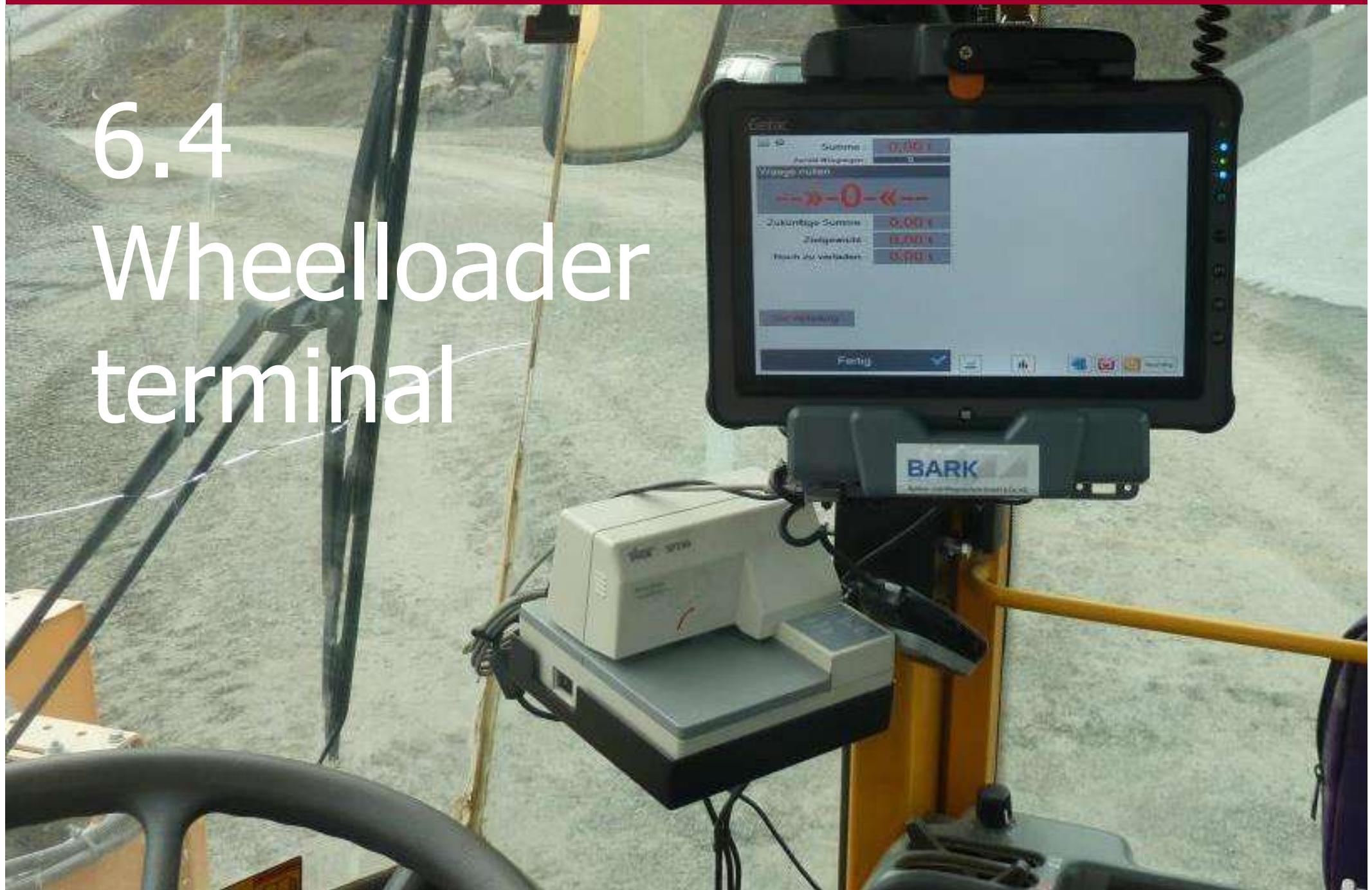


Truck-loading plant

Loading belt + nozzle: Loading happens fully automated



6.4 Wheelloader terminal



Wheelloader-Terminal

„Office-workplace“ **Sales, dispatching, delivery notes, accounting**

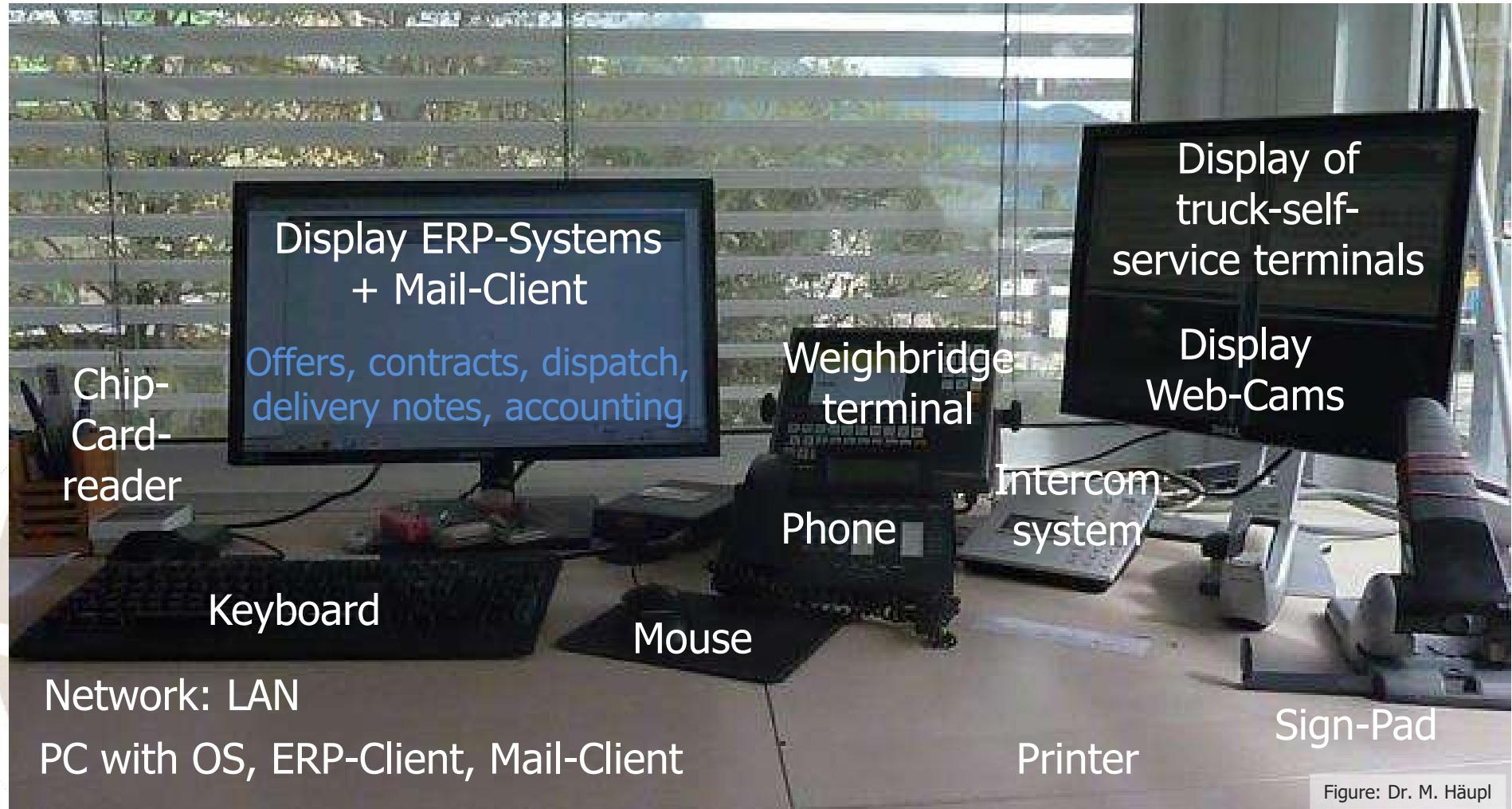
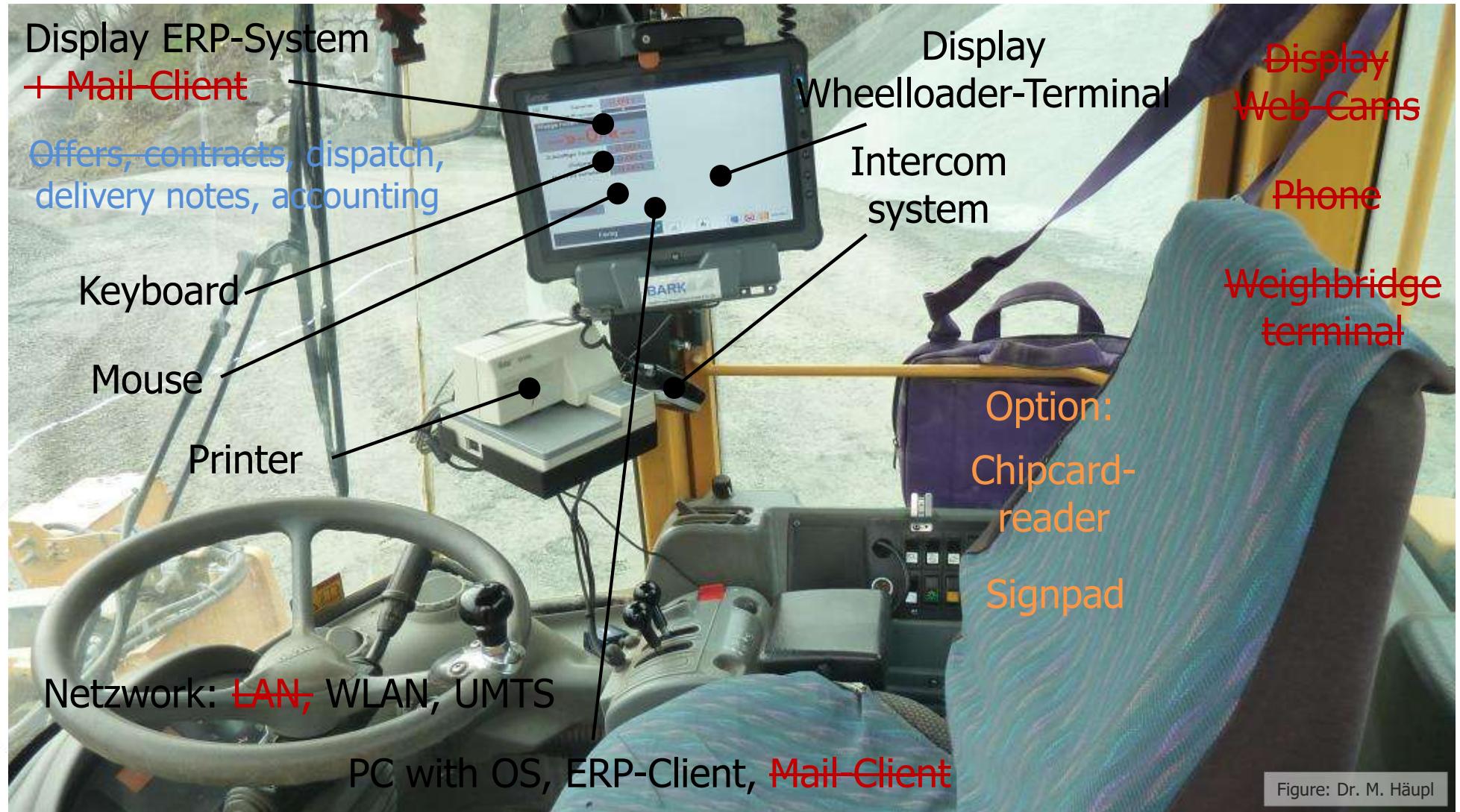


Figure: Dr. M. Häupl

Wheelloader-Terminal

Workplace Wheelloader-Terminal vs. „office-workplace“



Management of an open pit mine



Thank you for your attention!