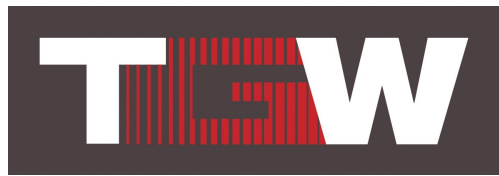


# Performance is rarely an accident

Martin Klier  
Lead / Senior Database Administrator

TGW Software Services GmbH  
Lindenweg 13  
92552 Teunz



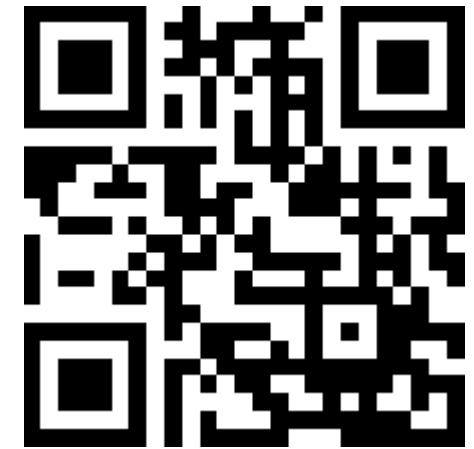


## Martin Klier

- Senior Database Administrator
- TGW Logistics Group
- Performing Databases GmbH
- Schwerpunkt Performance und Hochverfügbarkeit
- Linux seit 1997, Oracle seit 2003
- Email: [martin.klier@tgw-group.com](mailto:martin.klier@tgw-group.com)
- Weblog: <http://www.usn-it.de>



# TGW Logistics Group



<http://www.tgw-group.com>

- Führender Anbieter von Logistiklösungen  
Gesamtprojekte, IT/Software, SPS, Mechanik
- >1.800 Beschäftigte, >200 Azubis
- Niederlassungen in 14 Ländern weltweit  
Hauptsitz Wels, Österreich (nahe Linz)  
u.a. Deutschland, UK, USA, Brasilien ...



Basiert auf:  
„Thinking clearly about performance“  
von

**Cary Millsap**

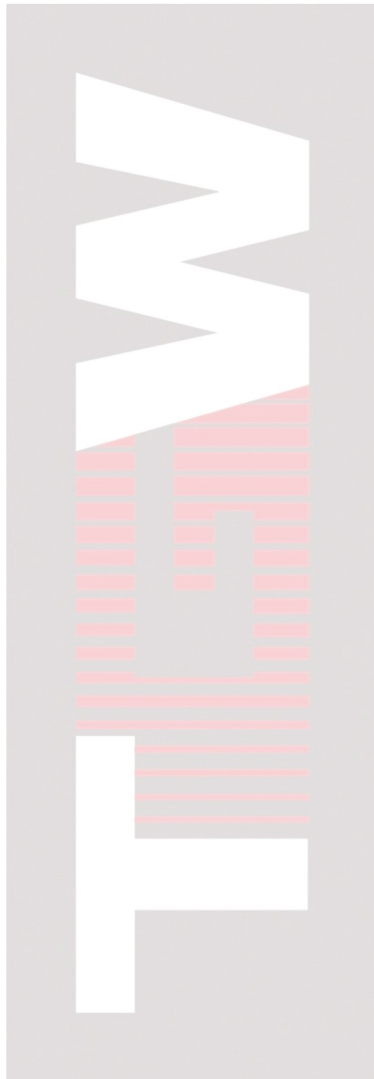


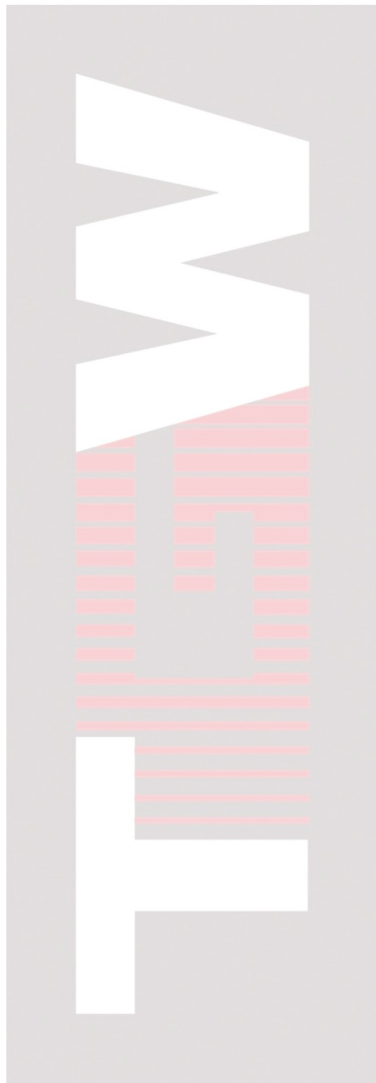
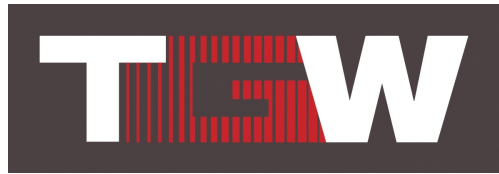
Gründer von

- Hotsos Inc.
- Method-R

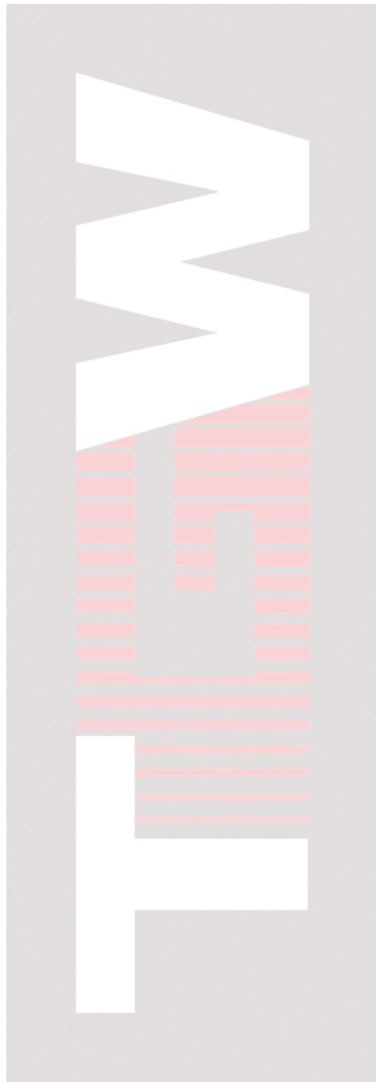
with VERY friendly permission....

**Thank you, Cary!**

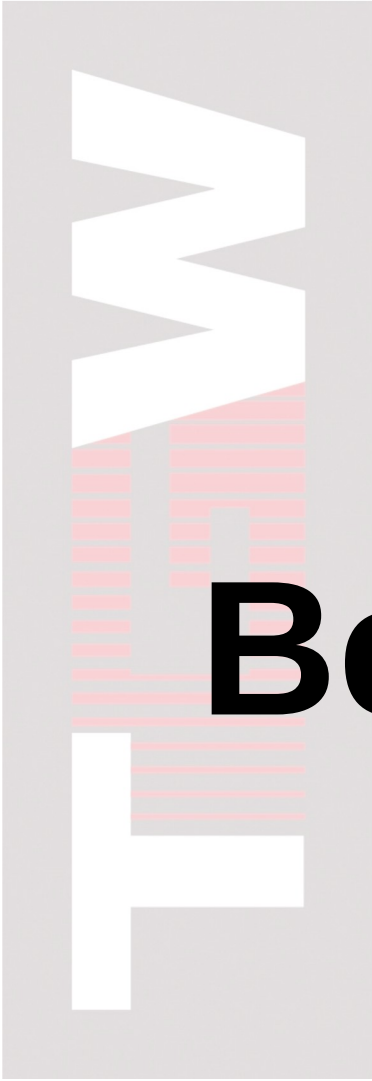




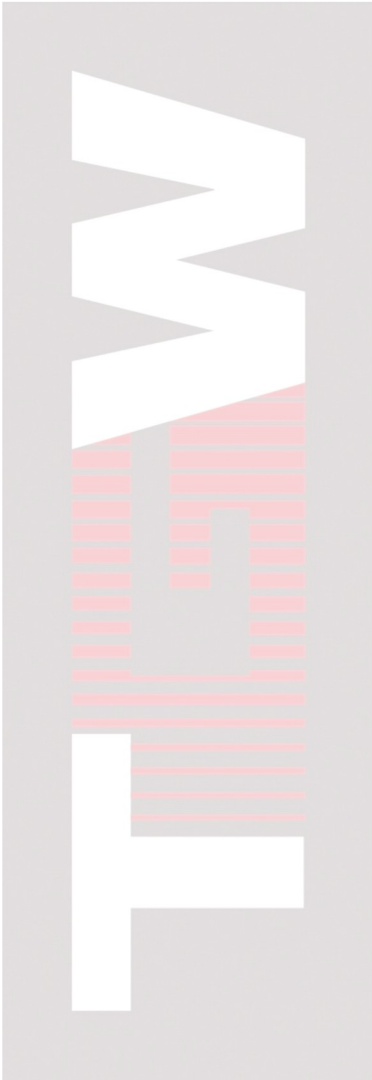
**Excellence**



**Performance**  
is rarely an accident

A large, semi-transparent version of the TEW logo is positioned on the left side of the slide. It is rendered in a light grey color, with the 'E' still featuring the red vertical lines. The logo is partially obscured by the main text.

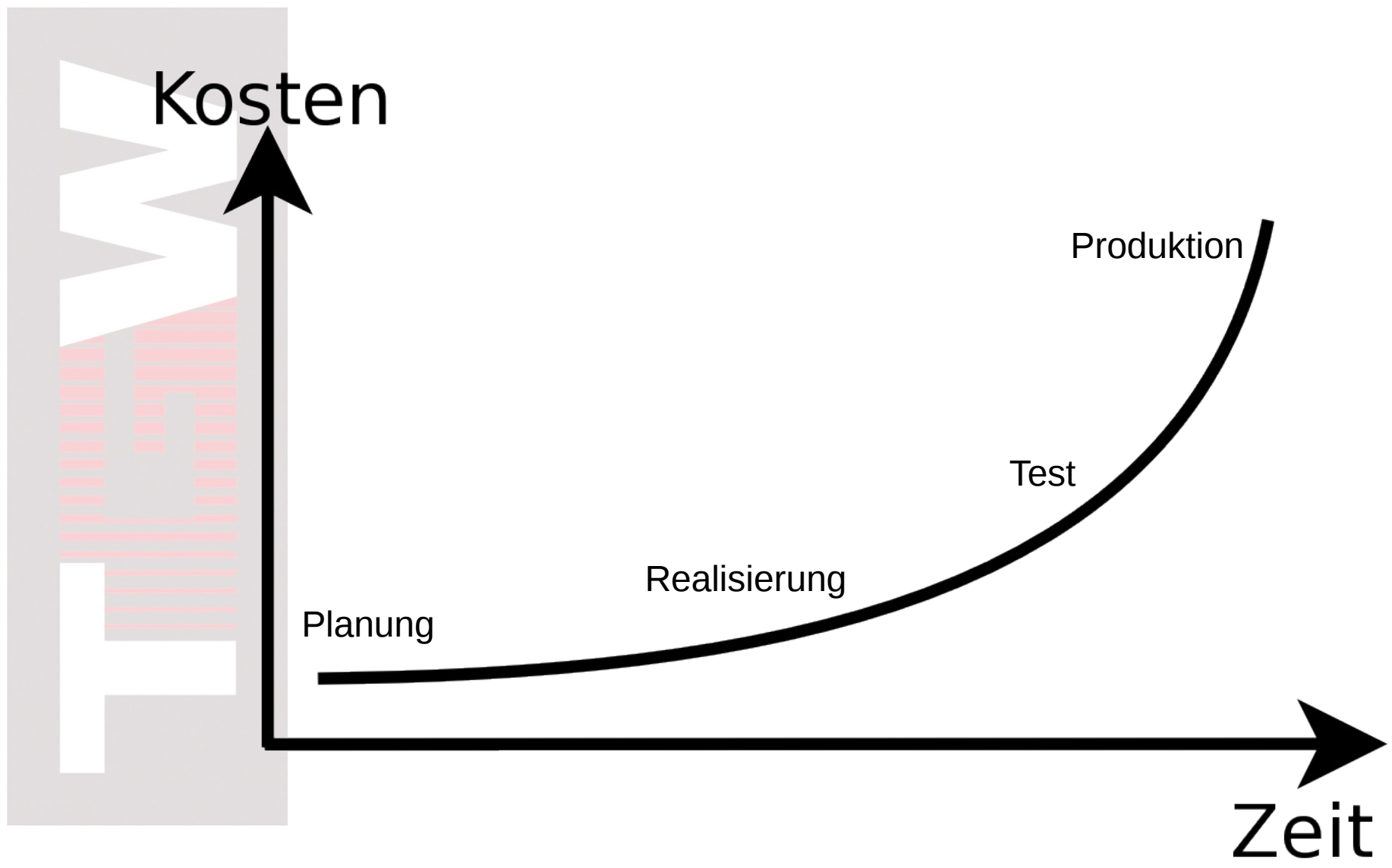
**Wissen zählt  
Beweis zählt mehr**



# Boehm

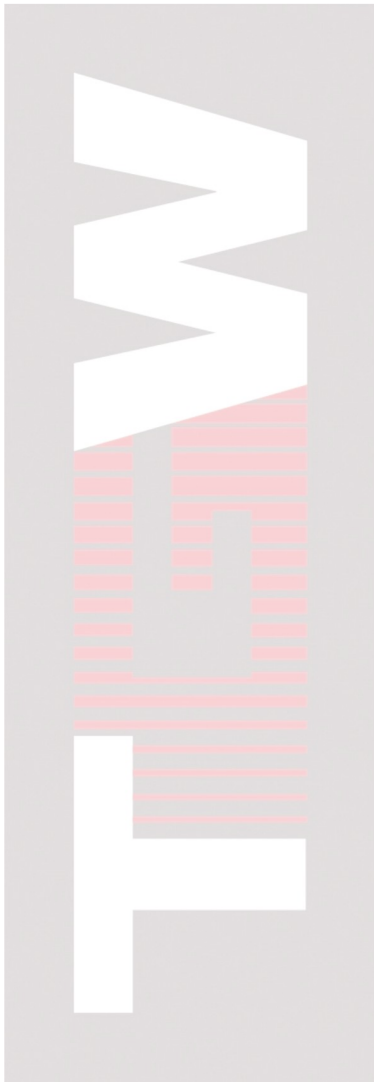


# Kosten von Änderungen



A large, vertical, semi-transparent version of the TEW logo on the left side of the slide. It features the same stylized 'E' with red vertical lines and the letters 'T' and 'W' in white, all contained within a light grey rectangular frame.

# Wir brauchen einen Plan ...



# Performance

# Performance



A large, vertical graphic on the left side of the slide. It features a white 'W' shape at the top, a red and white striped area in the middle, and a white 'F' shape at the bottom, all set against a grey background.

## Arbeit pro Zeit

Kilometer pro Stunde, Tonnen pro Monat ...

## Zeit je Arbeit

Sekunden pro Buchung, Tage pro Projekt

Durchsatz:

$$p = \frac{\textit{task}}{\textit{time}}$$

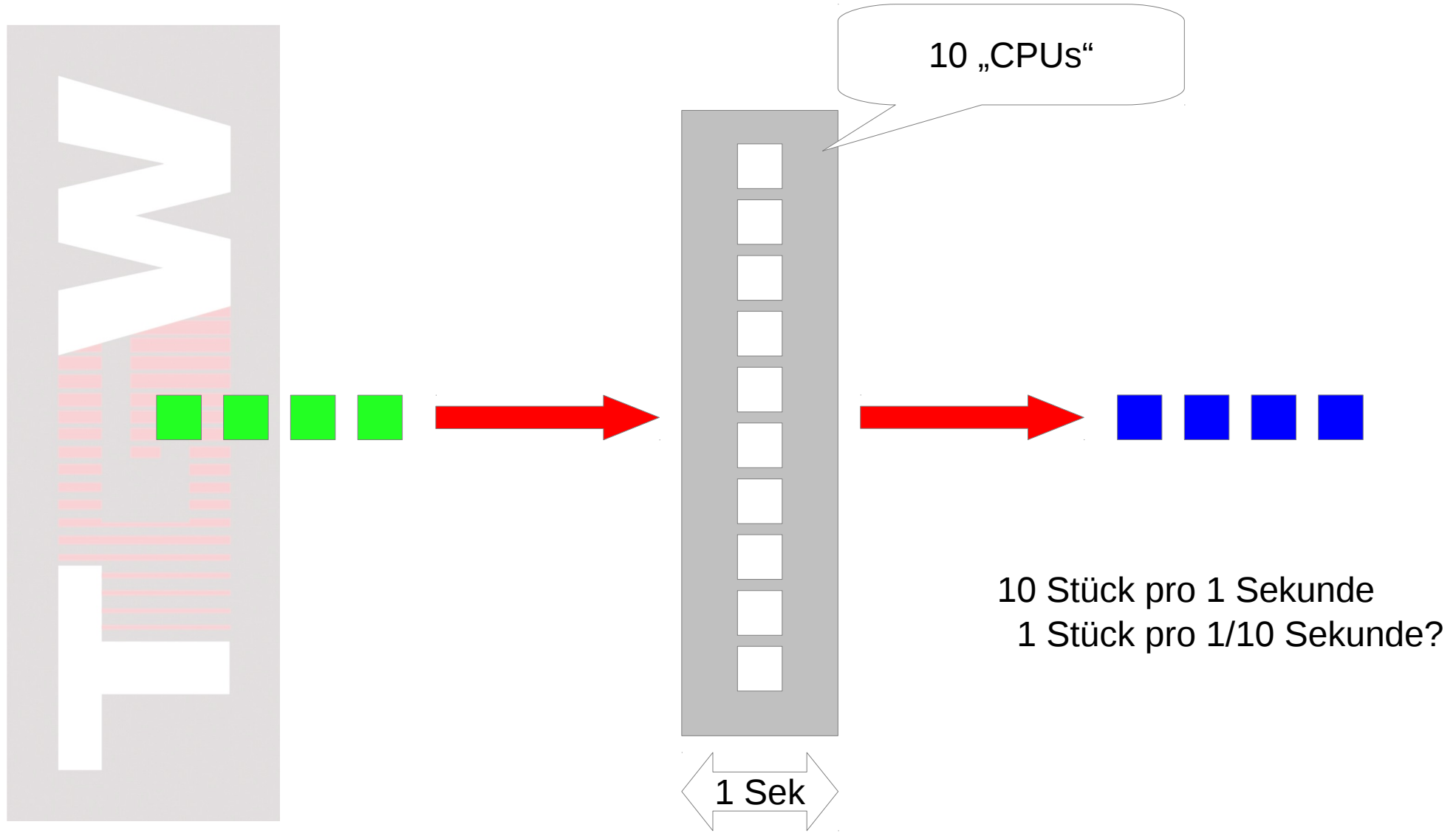
Antwortzeit:

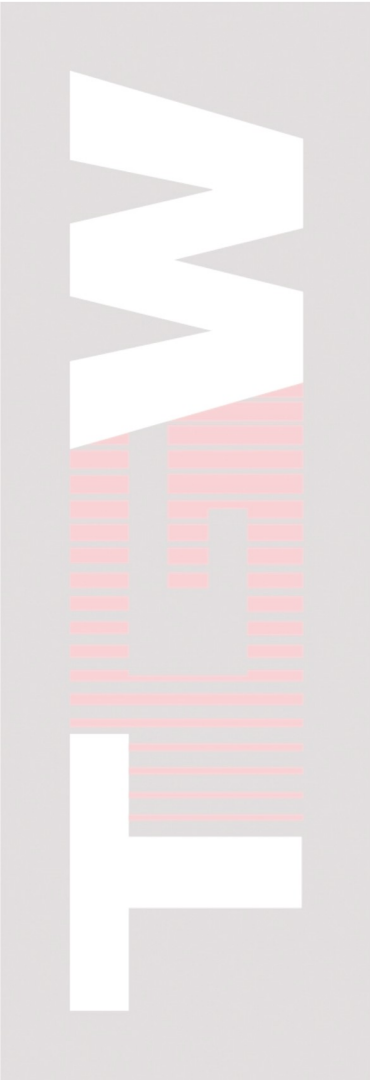
$$R = \frac{\textit{time}}{\textit{task}}$$

Aber:

$$R \neq \frac{1}{p}$$

# Kehrwertspiele

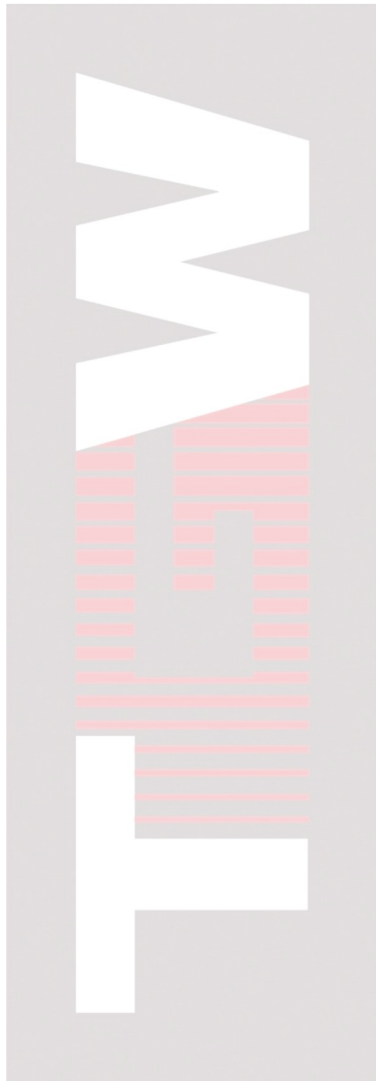




# Der Mittelwert



# Vom Mittelwert



0,9; 1,3; 0,9; 0,9;

0,3; 0,3; 0,3; 0,3; 0,3; 1,3; 0,3; 0,3; 0,3; 0,3;

**1**

## Vom Mittelwert

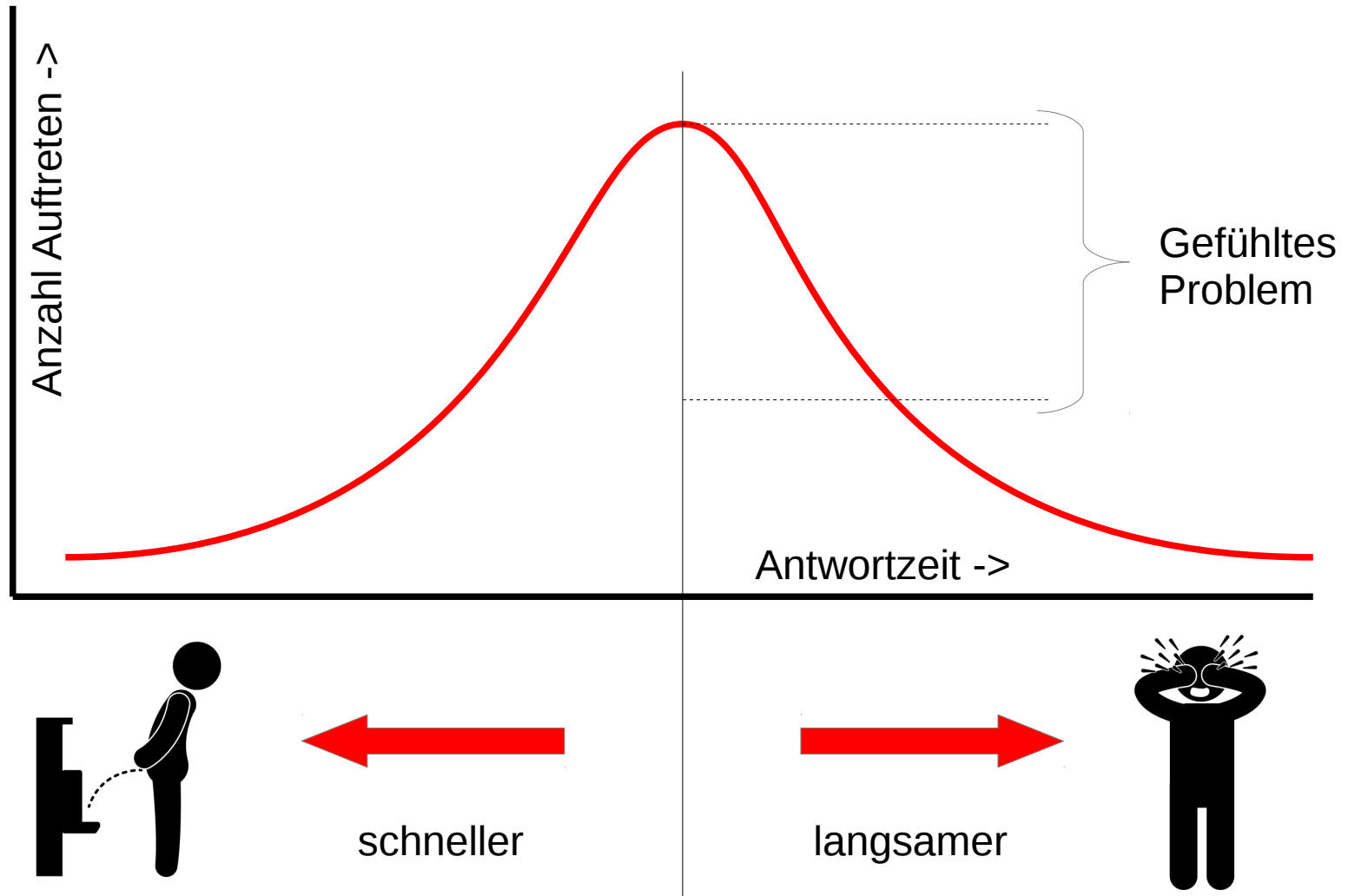
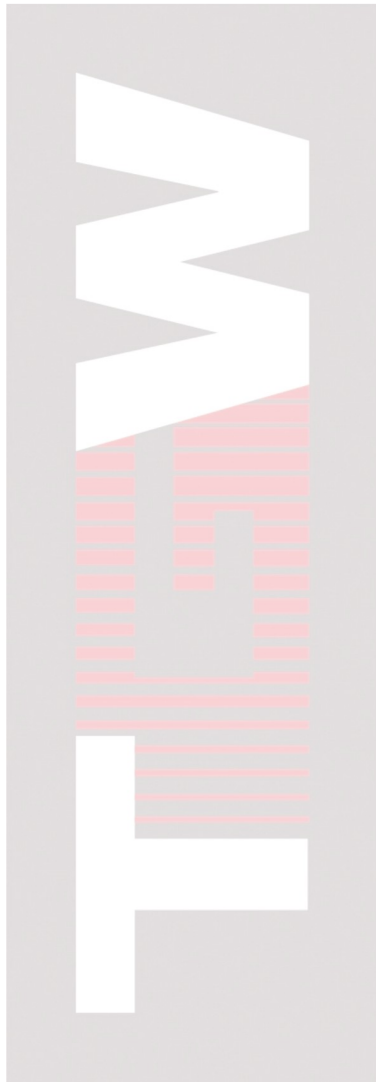
A large, vertical, stylized graphic of the letter 'W' on the left side of the slide. The 'W' is white and set against a grey background. The bottom portion of the 'W' is filled with horizontal red lines, similar to the 'E' in the TEW logo.

Vorgabe Antwortzeit:  
1s in 99% der Fälle

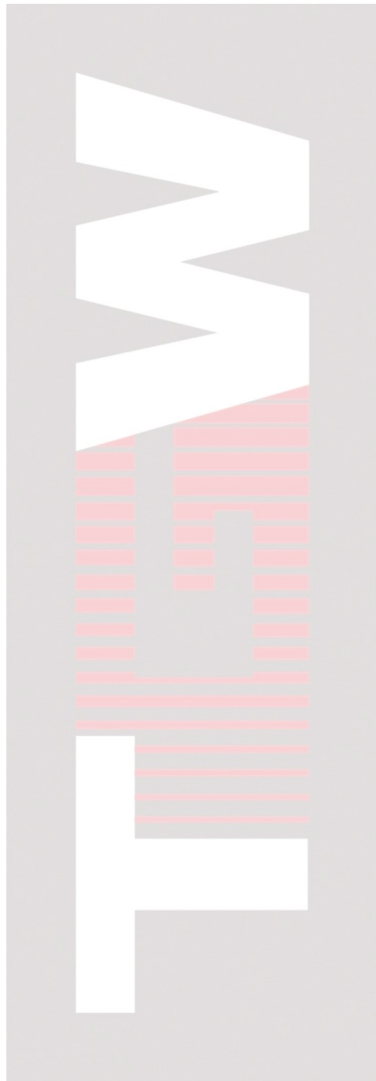
Das ist schon mal etwas....

.... aber

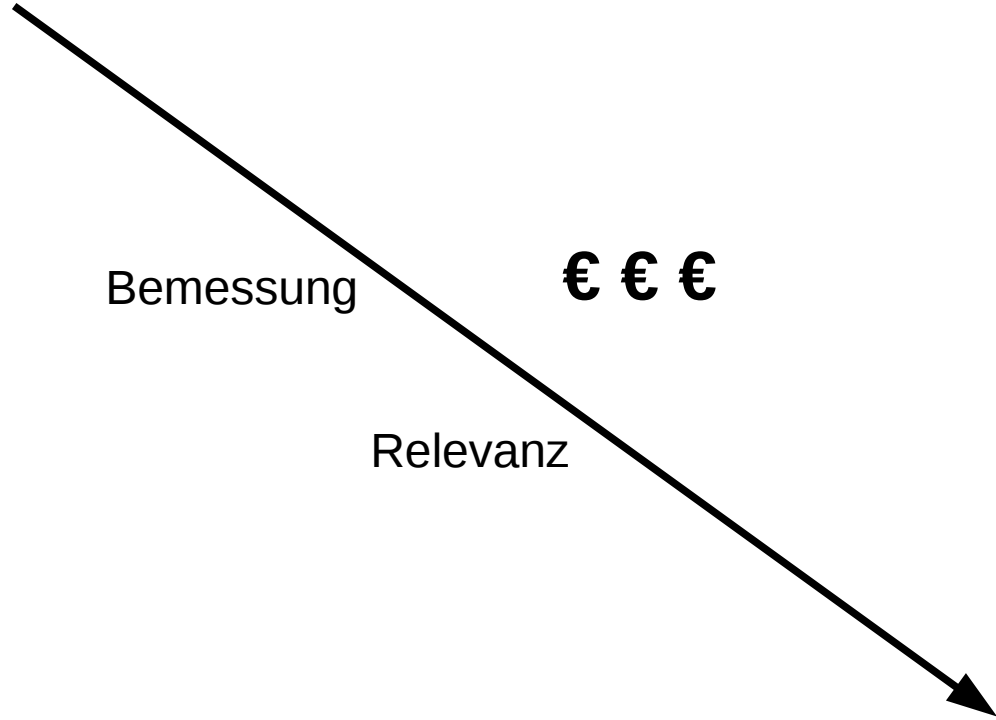
# User spüren die Abweichung - und nicht den Mittelwert!



# Lösungsweg



Stand heute



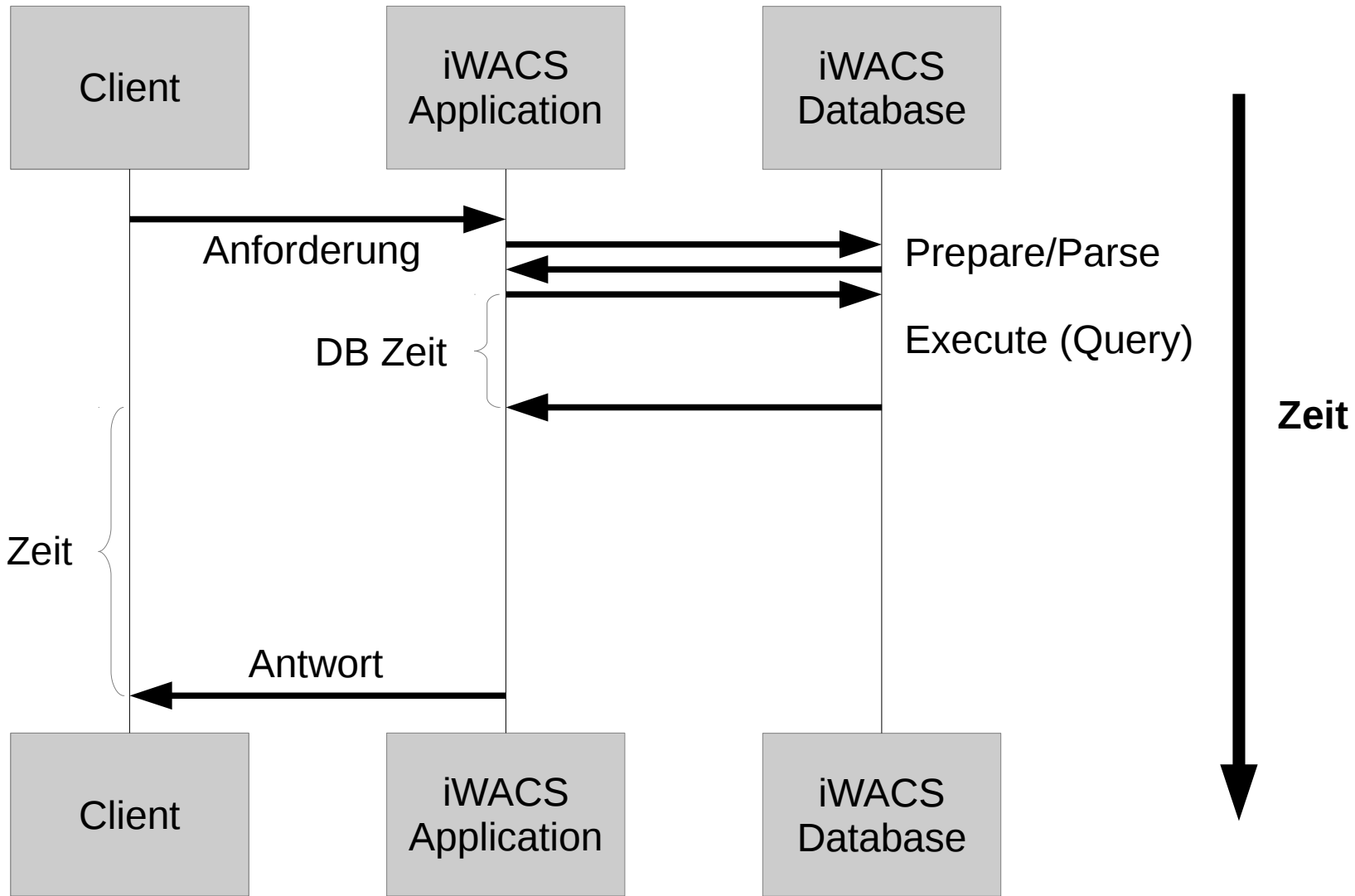
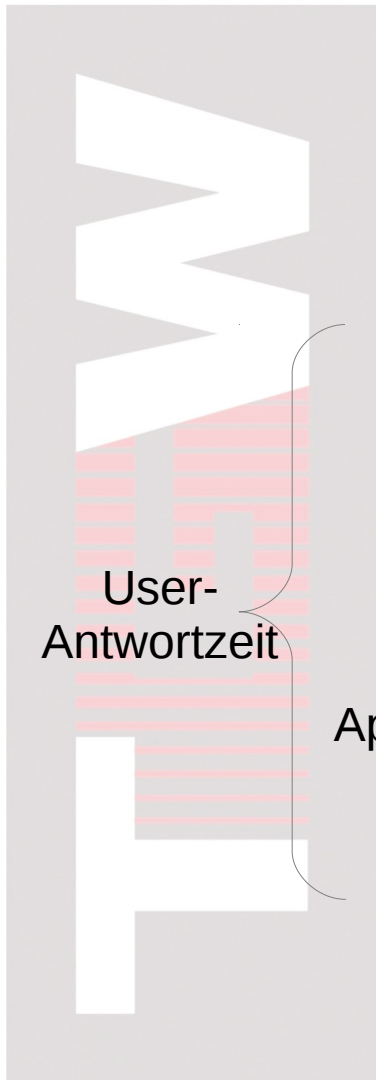
Ziel

**Definition nötig!!**

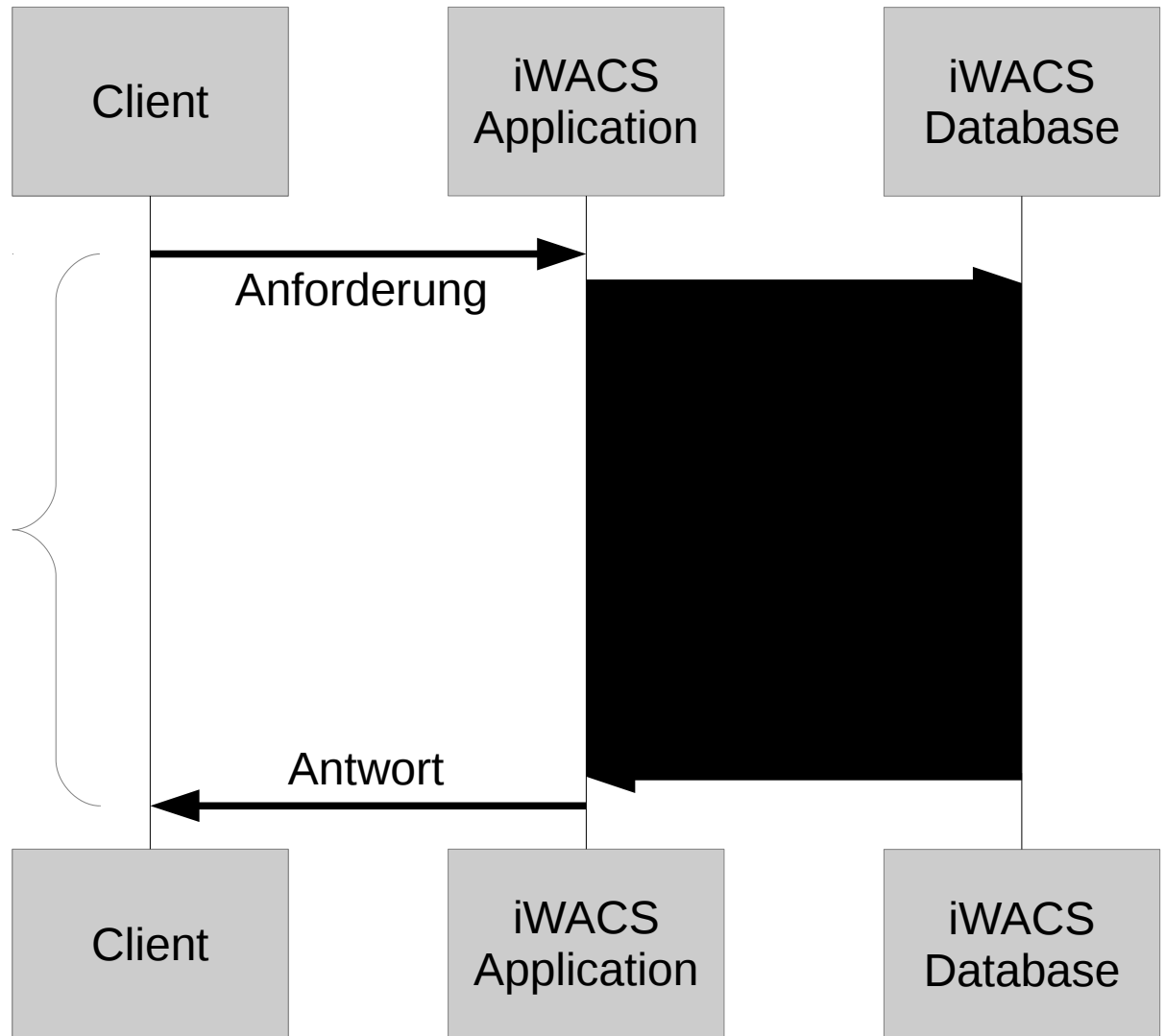


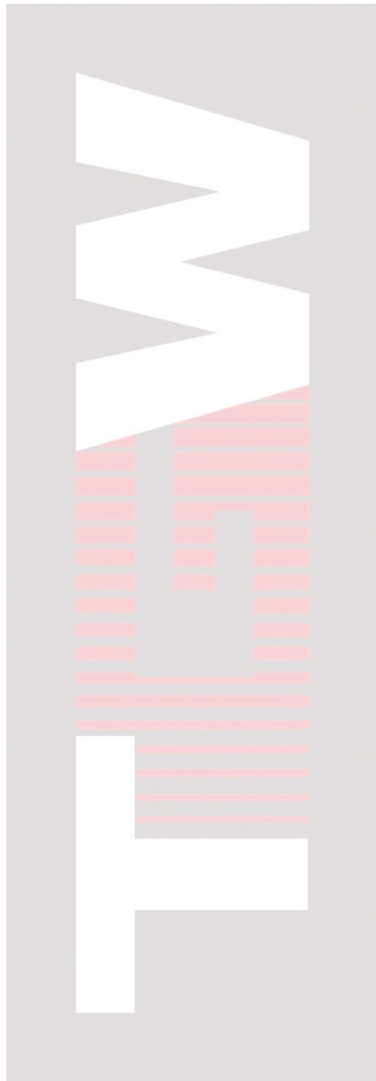
# Analyse

# Sequenzdiagramm (UML)



# Sequenzdiagramm (UML)

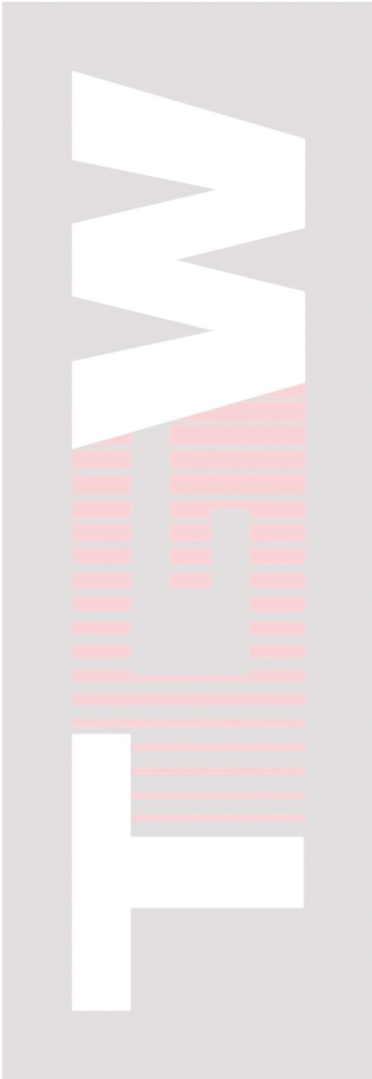




# Profiling



# Profil



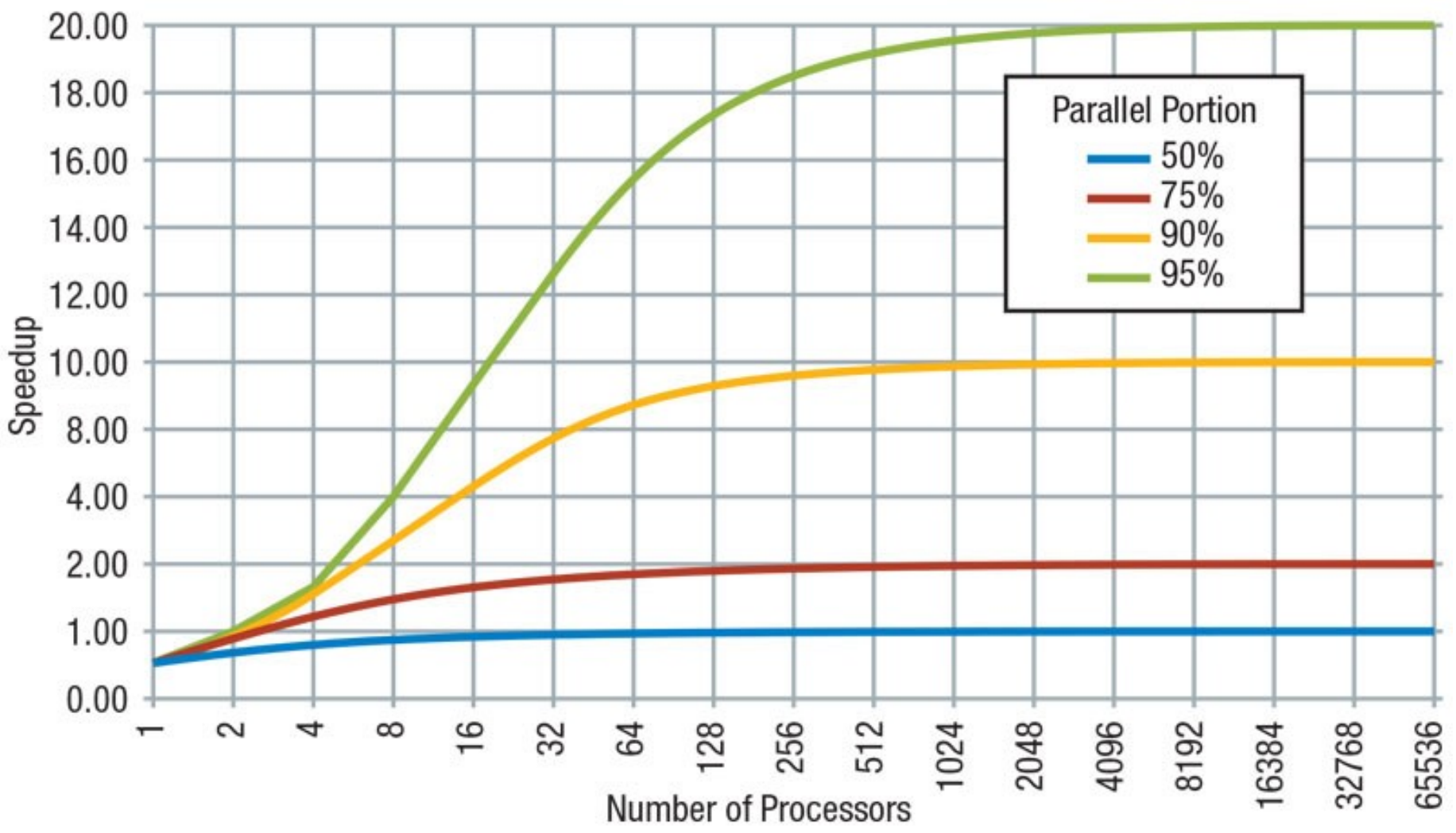
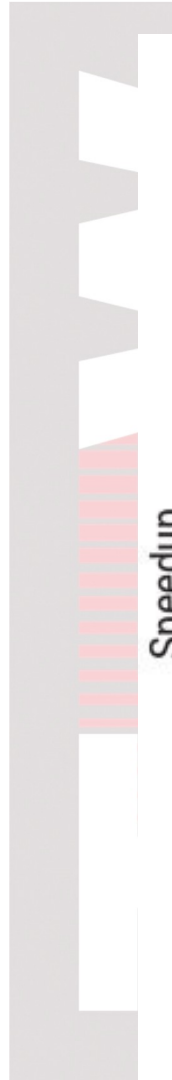
Funktion	R	Anzahl
Dialog-Frontend Seitenaufbau	1700s	35.000
Dialog-Frontend DB-Zugriff	300s	2.500.000
Hintergrund- Prozess XML- Verarbeitung	100s	100.000
Hintergrund- Prozess DB Zugriff	97s	34.000

**Zielzeit erreichbar??**

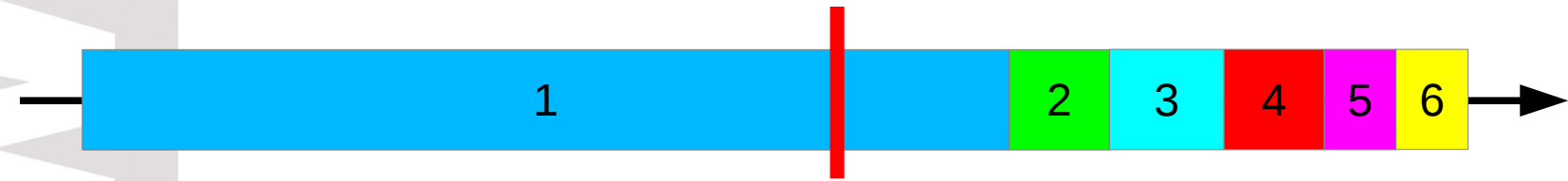
A large, vertical, semi-transparent version of the TEW logo is positioned on the left side of the slide. It features the same stylized 'E' with red vertical lines and the letters 'T' and 'W' in white, all within a light grey rectangular frame.

# Amdahlsches Gesetz

# Amdahlsches Gesetz - Speziell

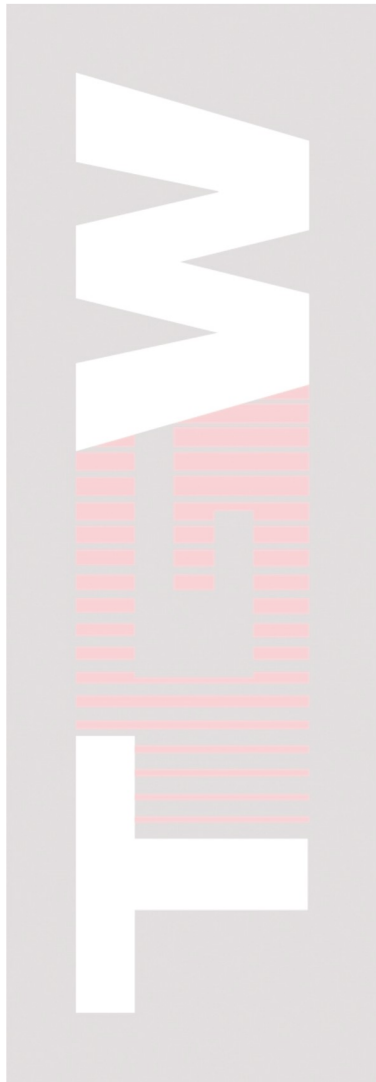


# Amdahlsches Gesetz - Allgemein



#	Mögl. Verbesserung	Kosten	R	R%
1	34%	€€€€	1.700s	70%
2	12 %	€	300s	13%
3	keine	-	100s	6%
4	4 %	€	97s	4%
5	0,1%	€€€€	58s	3%
6	1,6%	€	48s	2%
...	...	...	...	...

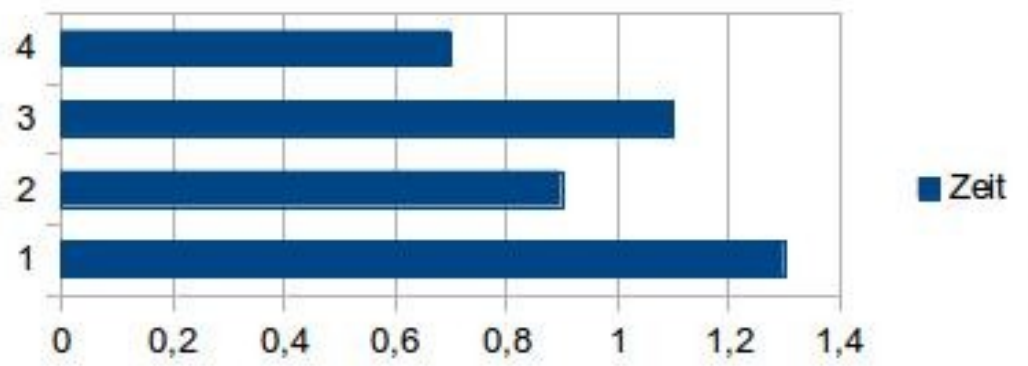
# Ausreißer (Skew)



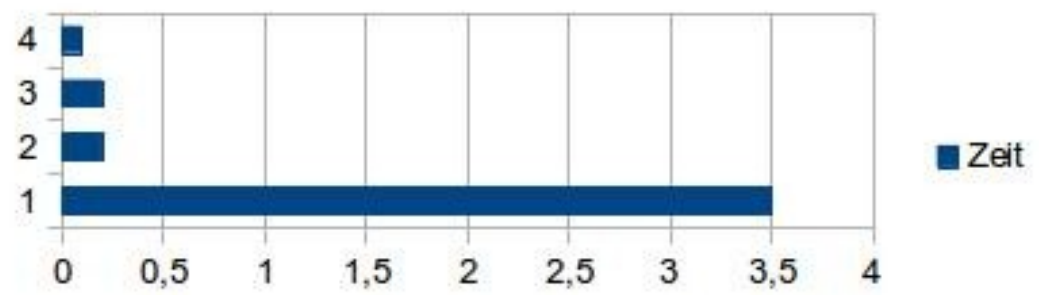
# Ausreißer einfangen

4 calls = 4 sek  
 2 calls = ? sek

Ereignis	Dauer in Sekunden
1	1,3
2	0,9
3	1,1
4	0,7



Ereignis	Dauer in Sekunden
1	3,5
2	0,2
3	0,2
4	0,1



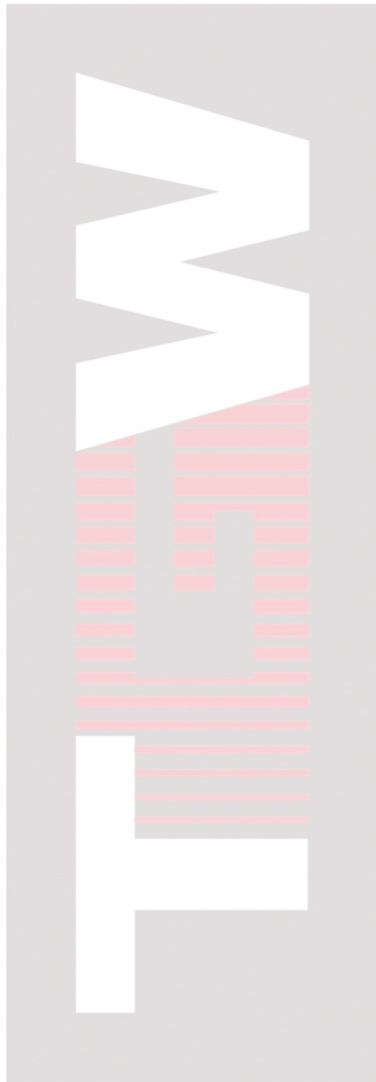
A large, vertical, semi-transparent version of the TEW logo on the left side of the slide. It features the letters 'T', 'E', and 'W' in white, with the 'E' containing red horizontal lines. The background of the logo is a light grey gradient.

# Risiko- Minimierung

## Einschub: Risikominimierung bei Eingriffen

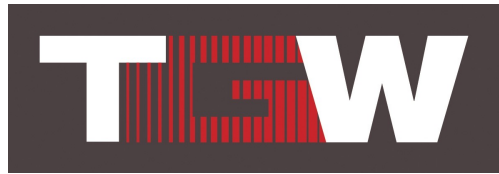
Wenn alle außer Dir zufrieden sind  
bringe Deinen Stall lokal in Ordnung  
bevor Du globale „Problemlösungen“ einbaust  
die alle anderen auch beeinträchtigen



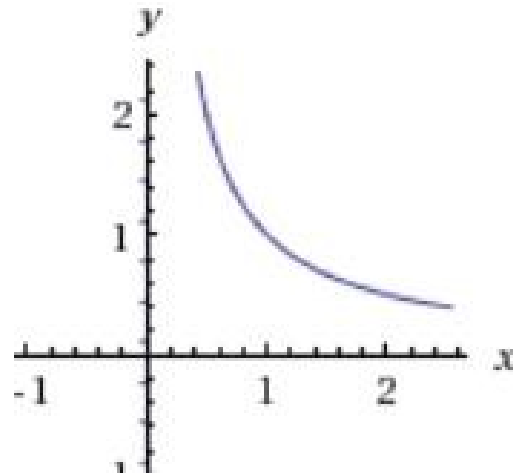


# Effizienz

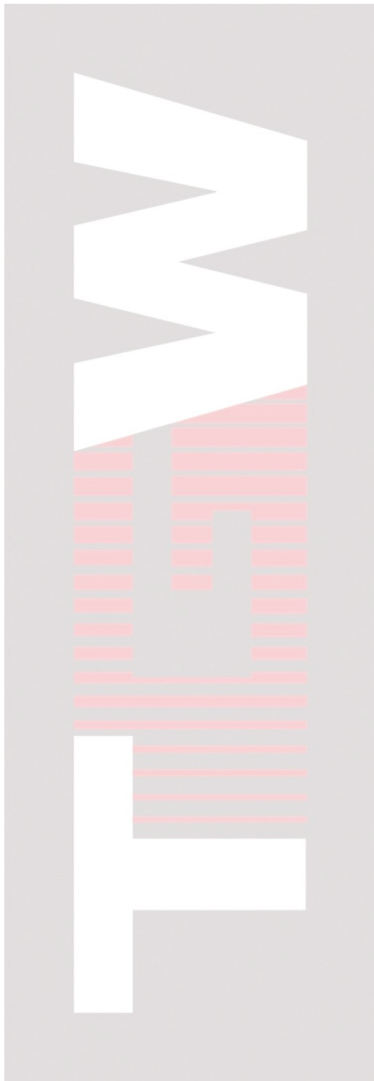
# Effizienz



$$\textit{Effizienz} = \frac{1}{\textit{Verschwendung}}$$

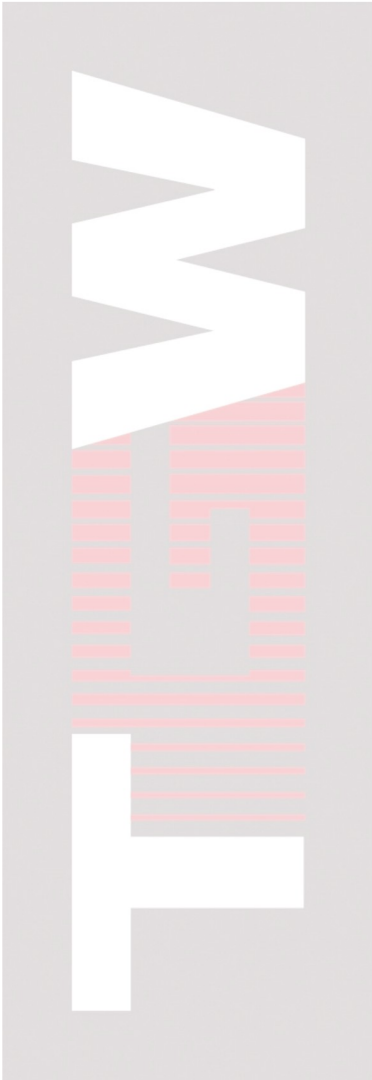


# Effizienz



Obviously, the highest type of efficiency is that which can utilize existing material to the best advantage

-- Jawaharlal Nehru

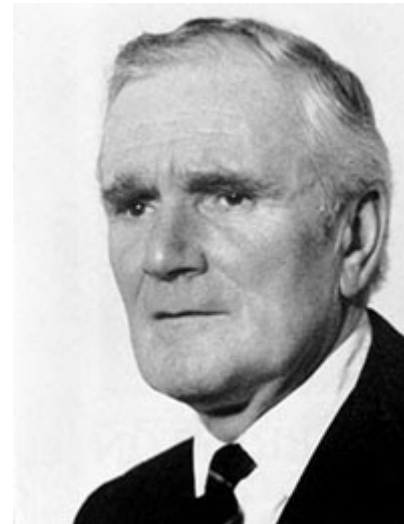


**Last**

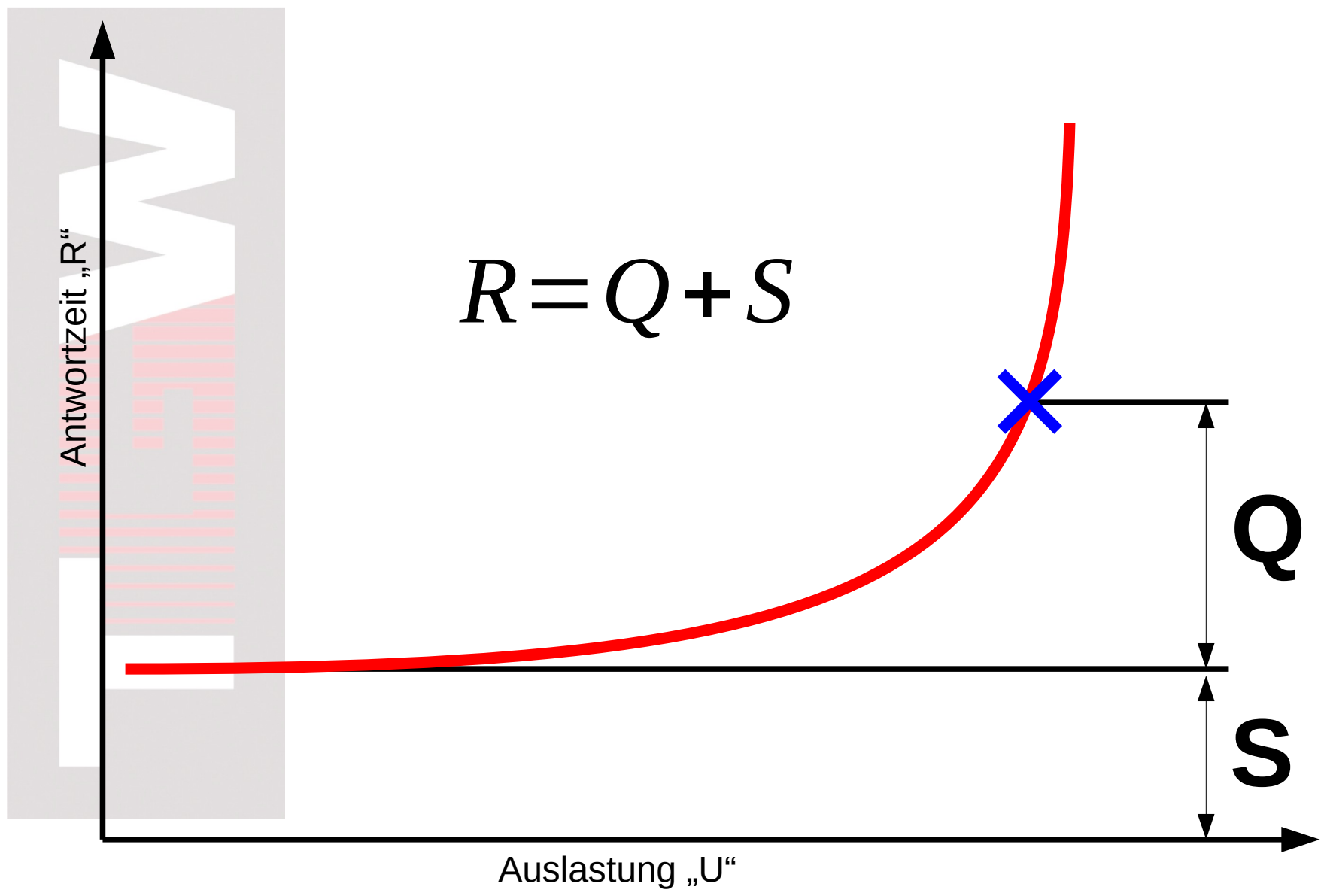
# Verzögerung durch „Q“

Funktion	R	Anzahl	Typ
Anstellen	0s - 600s	1	Q
McMenü in Kasse inkl. Rückfragen	30s	2	S
Pommes holen	45s	2	S
Getränk fertigen	45s	2	S
Burger warten	0s-120s	1	Q
Burger holen	10s	2	S
...	...	...	...

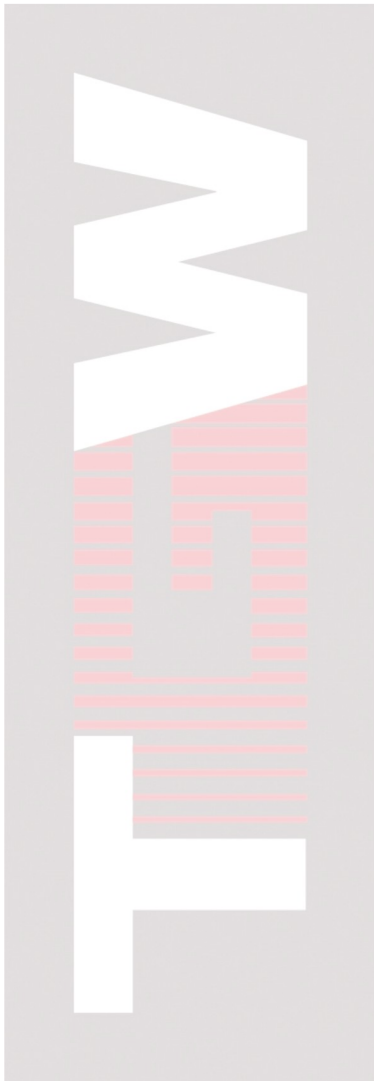
# „Q“ - Diagramm



# „Q“ - Diagramm



# Das Knie oder Der Knick

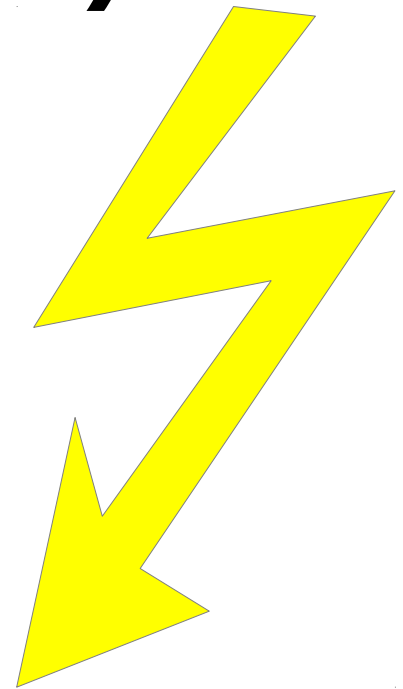




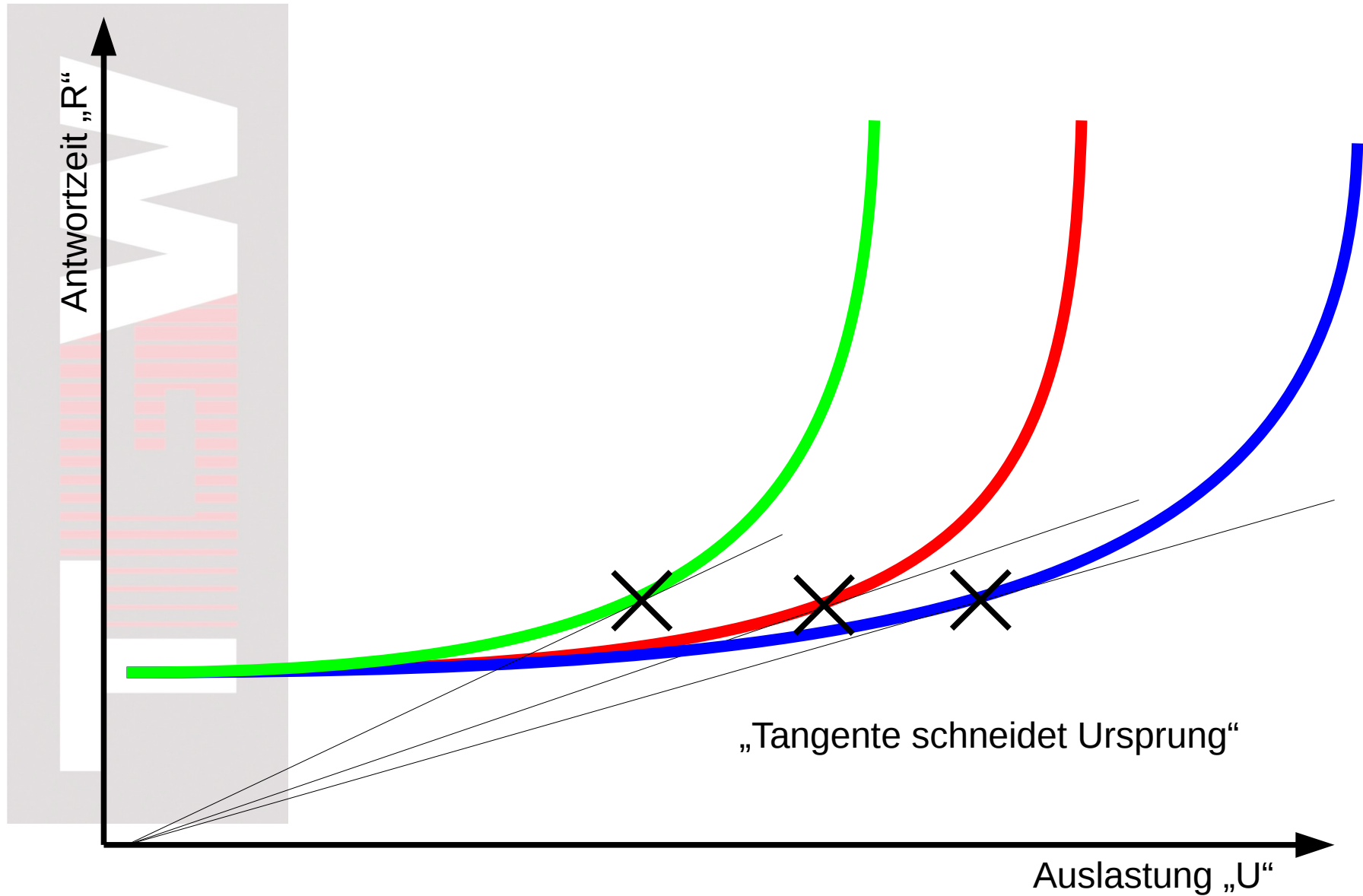
**Schnelle Antwortzeit (R)**

**vs.**

**Hoher Durchsatz**



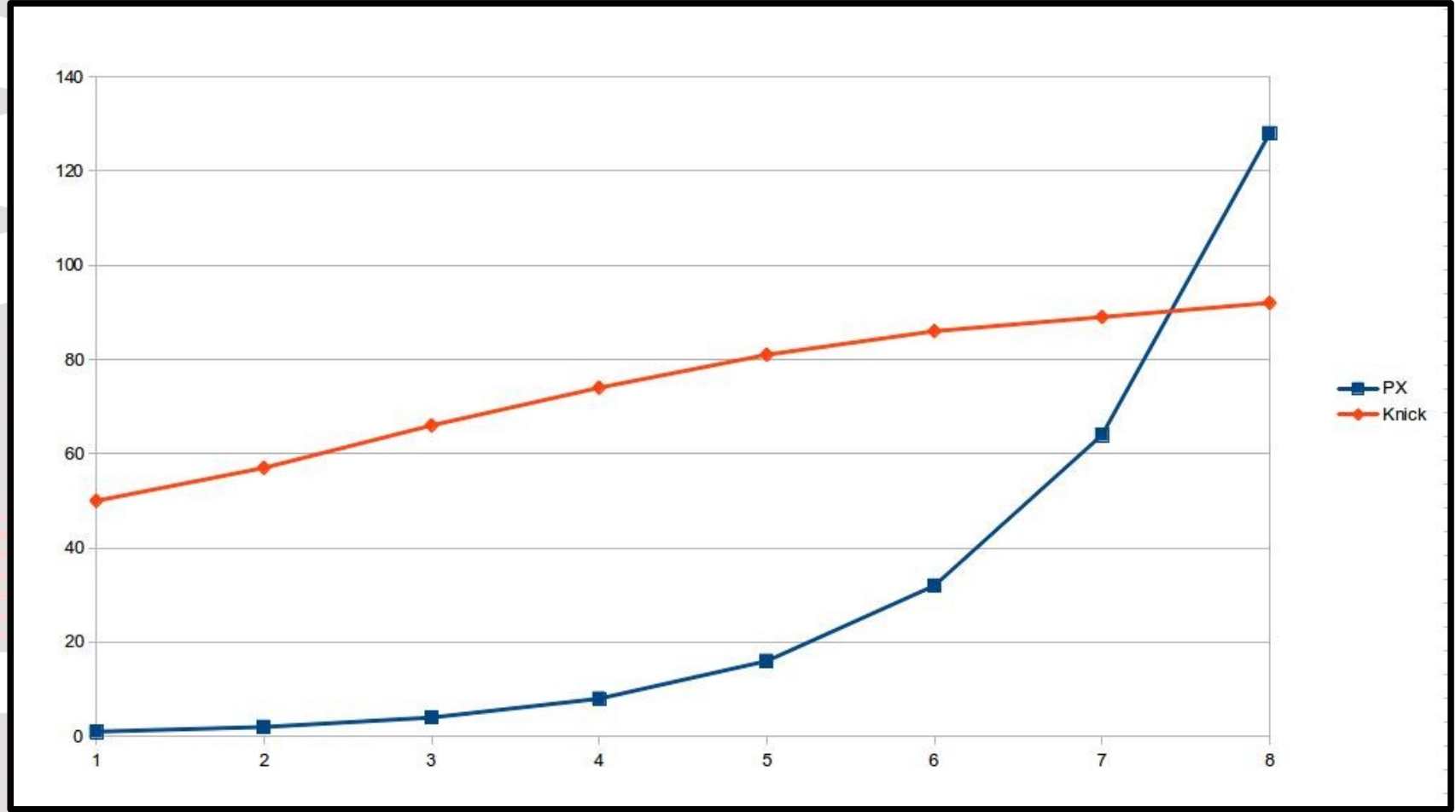
# Der Knick



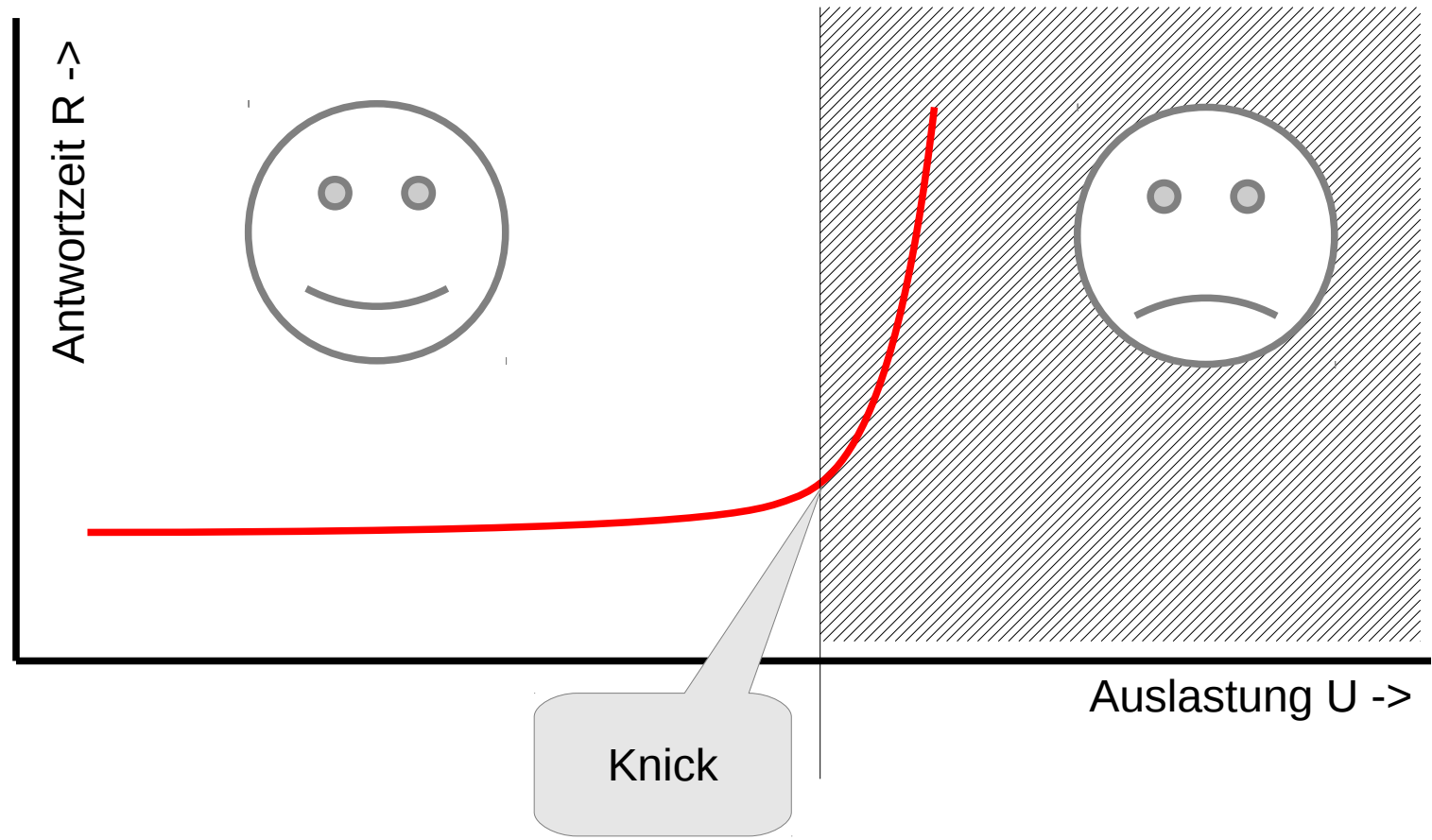
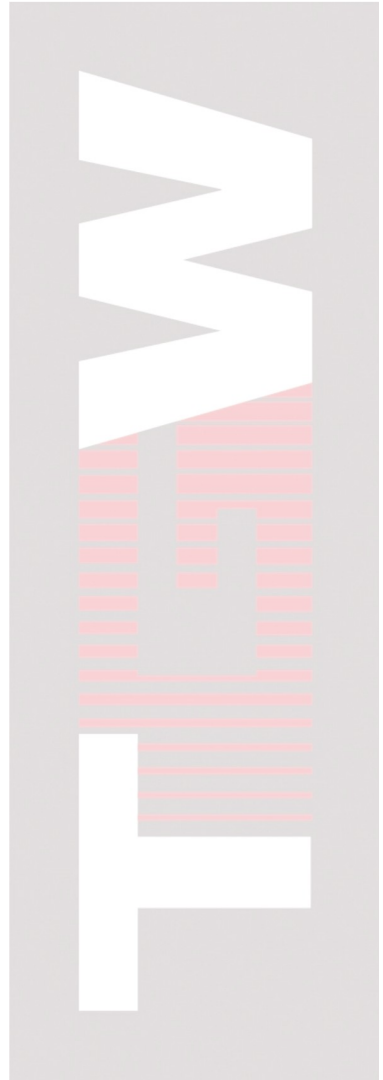
# Skalierung: Knick folgt verzögert

Service-Kanäle / Parallelität	Knie / Knickpunkt der Auslastung
1	50%
2	57%
4	66%
8	74%
16	81%
32	86%
64	89%
128	92%

# Skalierung: Knick folgt verzögert



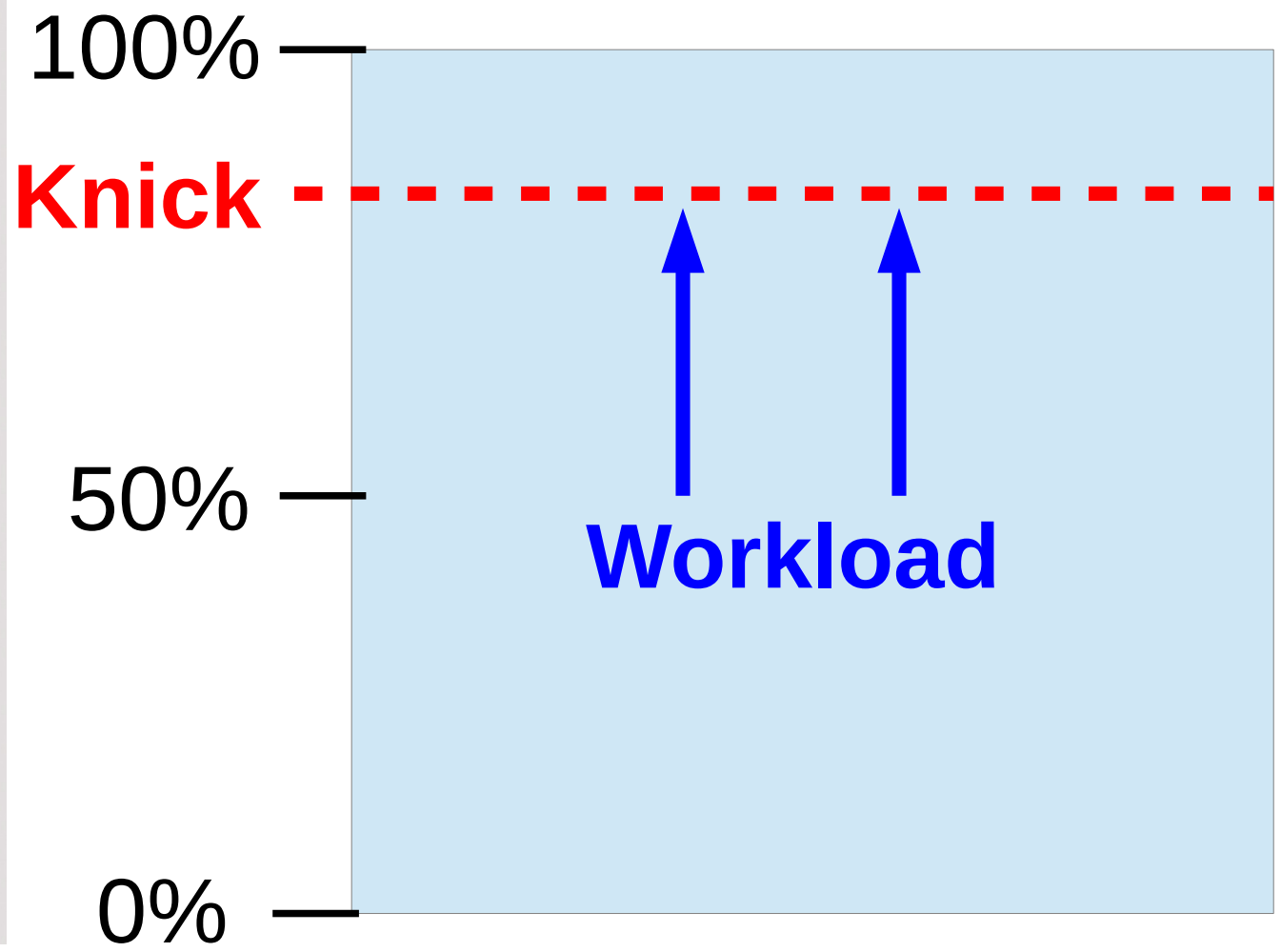
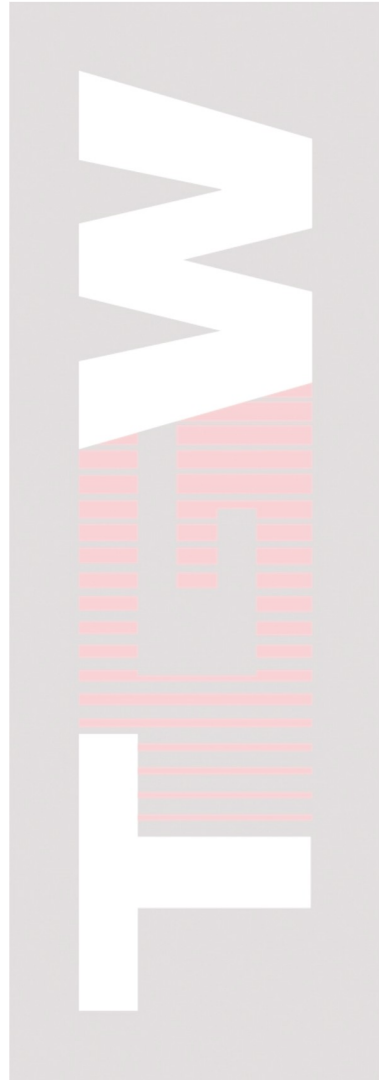
# Relevanz des Knicks



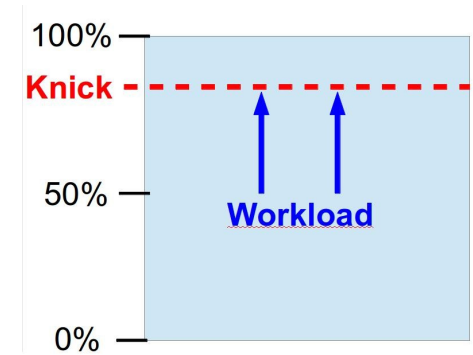
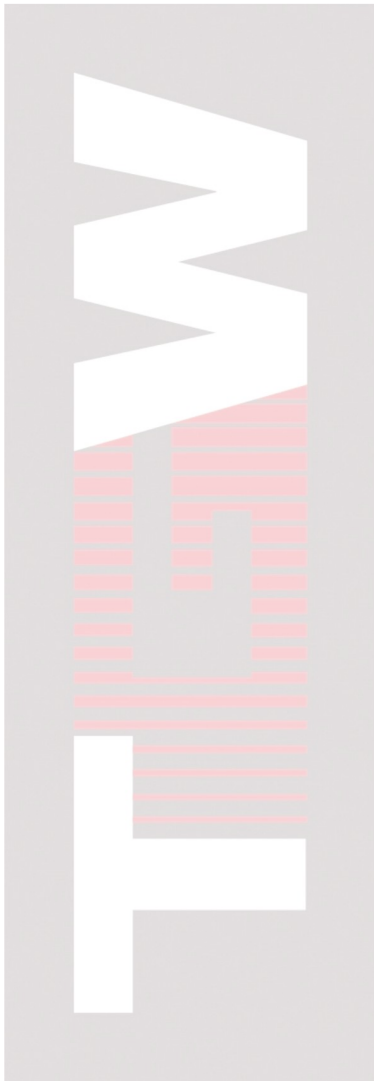
A large, semi-transparent version of the TEW logo is positioned on the left side of the slide. It features the letters 'T', 'E', and 'W' in white, with the 'E' containing vertical red lines. The entire logo is set against a light grey rectangular background.

# Kapazitätsplanung

# Kapazitätsplanung



# Kapazitätsplanung



## Kapazitätsplanung:

Wie groß muss das System sein?

## Last-Management:

Wie klein kann das System sein?

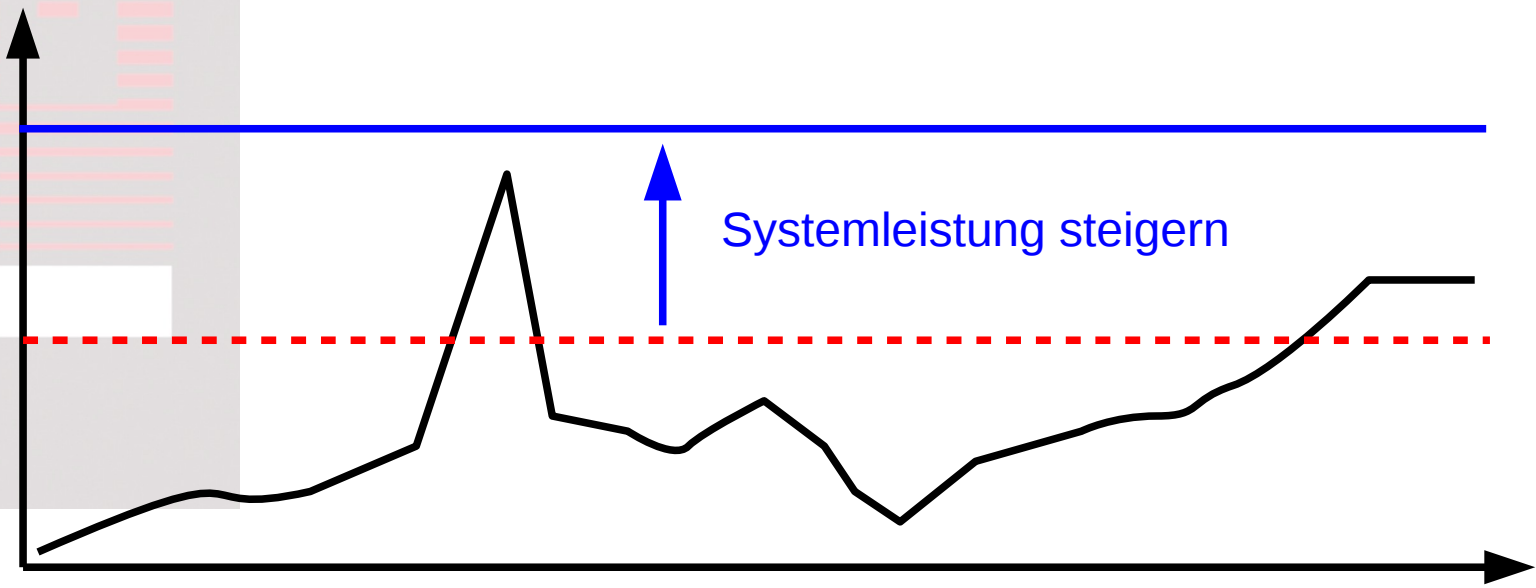
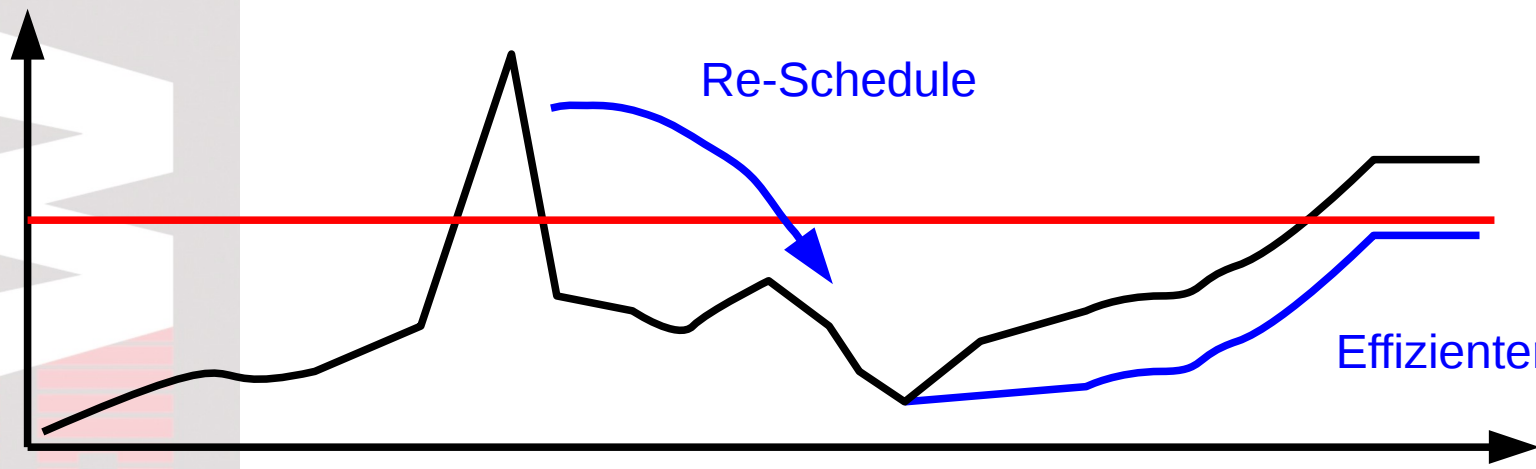
=> Der Knick ist unsere „Rote Linie“



A large, semi-transparent version of the TEW logo is positioned on the left side of the slide. It features the same stylized 'E' with red vertical lines and is set within a light grey rectangular frame.

# Reduzieren von Peaks

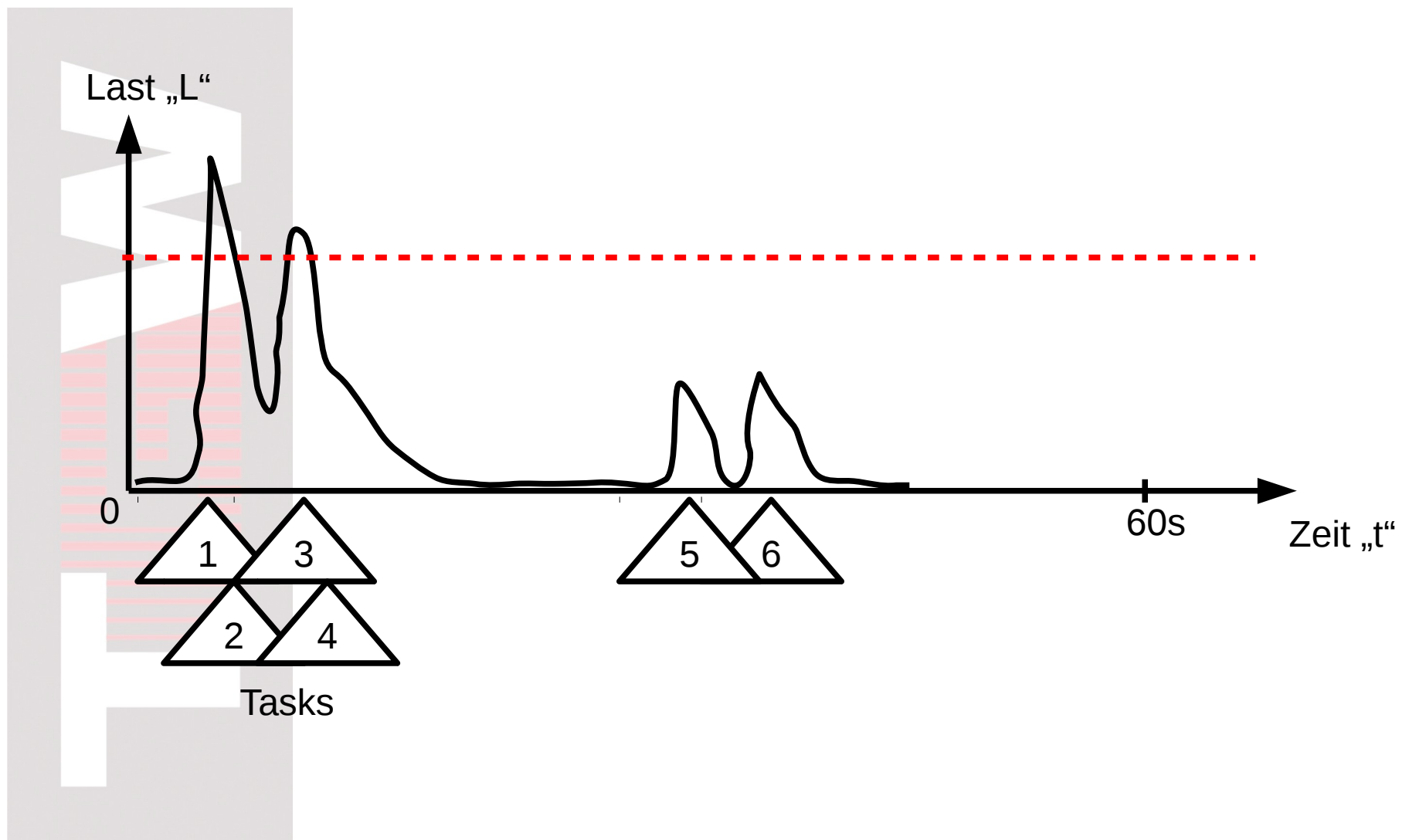
# Peaks



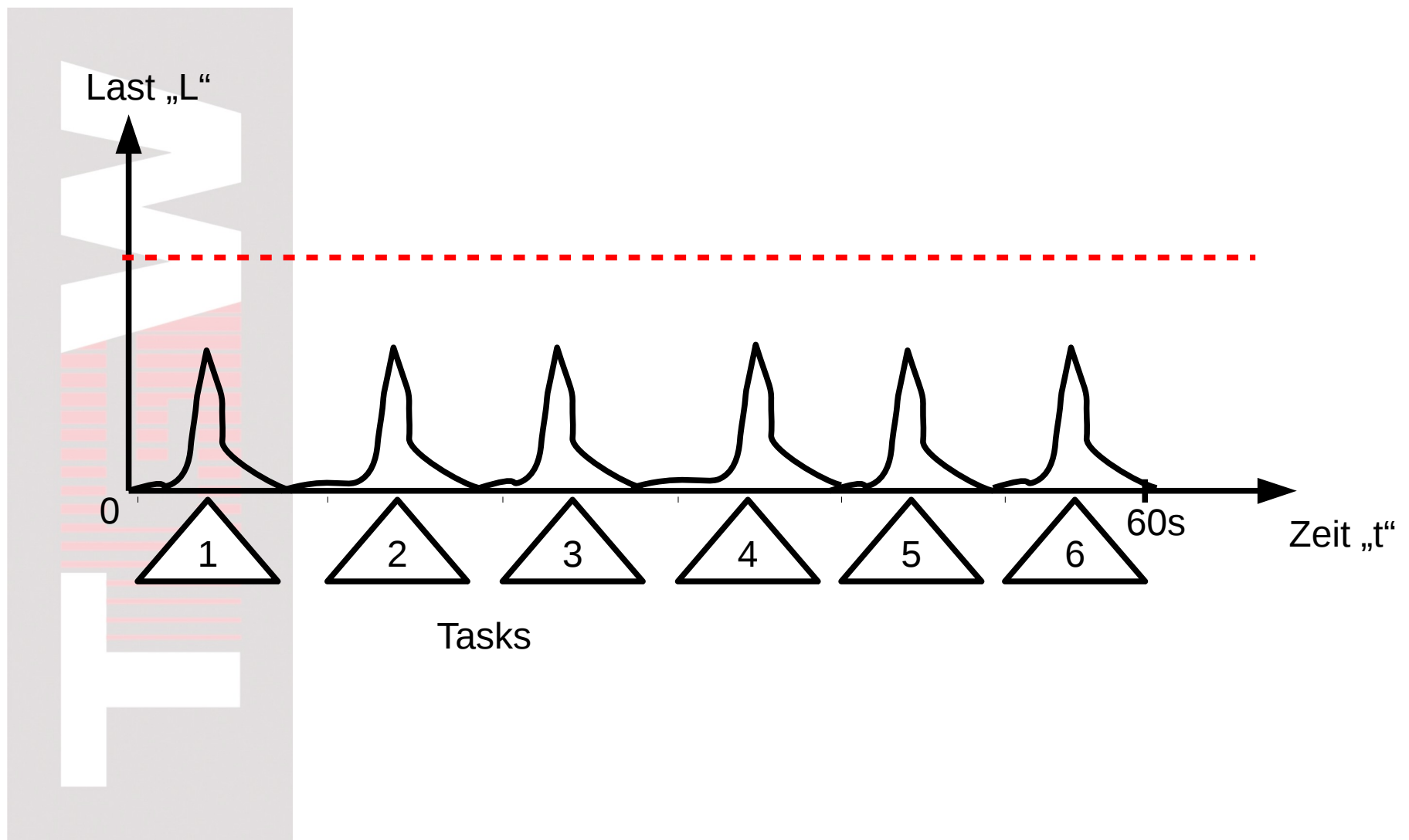
A large, vertical, semi-transparent version of the TEW logo is positioned on the left side of the slide. It features the same stylized 'E' with red vertical lines and the letters 'T' and 'W' in white, all within a light grey rectangular frame.

# Einlasten von Aufträgen („Random Arrivals“)

# Zufällig



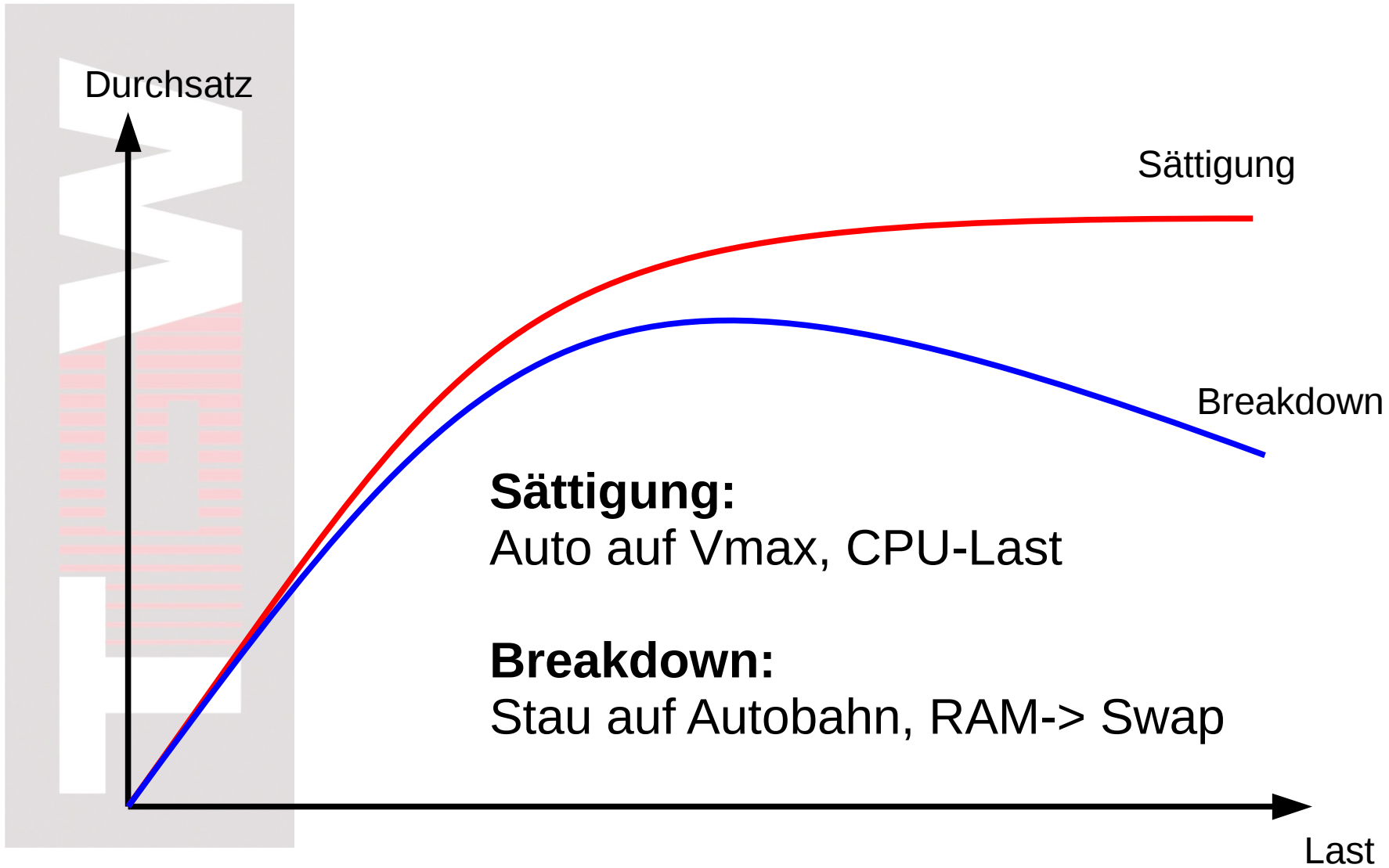
# Deterministisch



A large, semi-transparent version of the TEW logo is positioned on the left side of the slide. It is rendered in a light grey color, with the 'E' still showing the red vertical line pattern. The logo is partially overlaid by the main title text.

# Die Verzögerung im Zusammenhang

# Zwei-Klassen-Gesellschaft



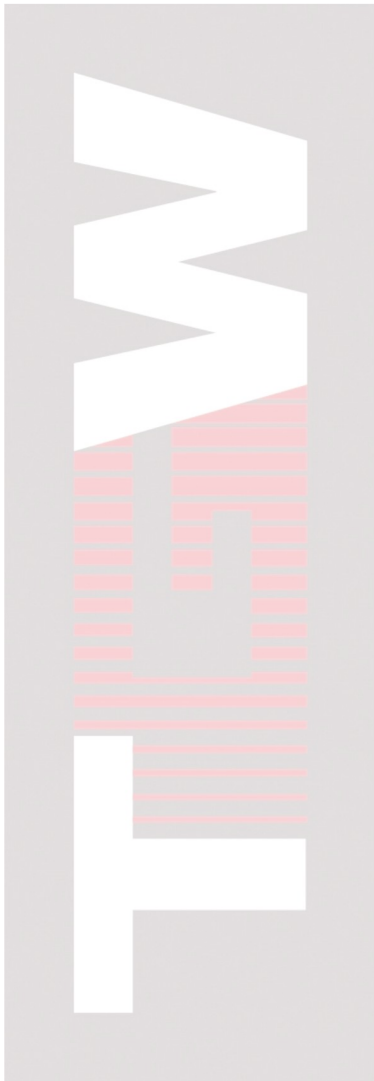
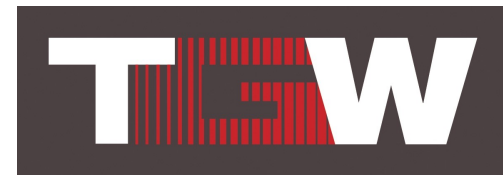


@MartinKlierDBA - Performance is rarely an accident



A large, vertical, semi-transparent version of the TEW logo on the left side of the slide. It features the letters 'T', 'E', and 'W' in white, with the 'E' containing red vertical lines. The background of this logo is a light grey rectangle.

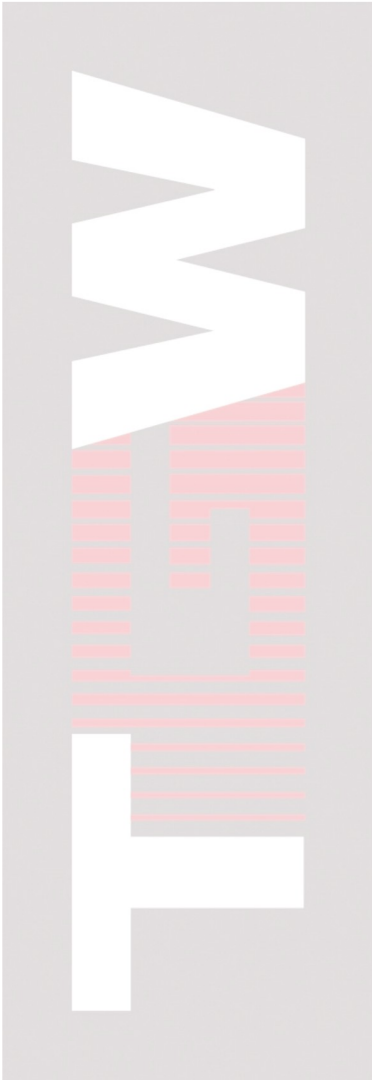
# Performance-Tests



## Tu' es!

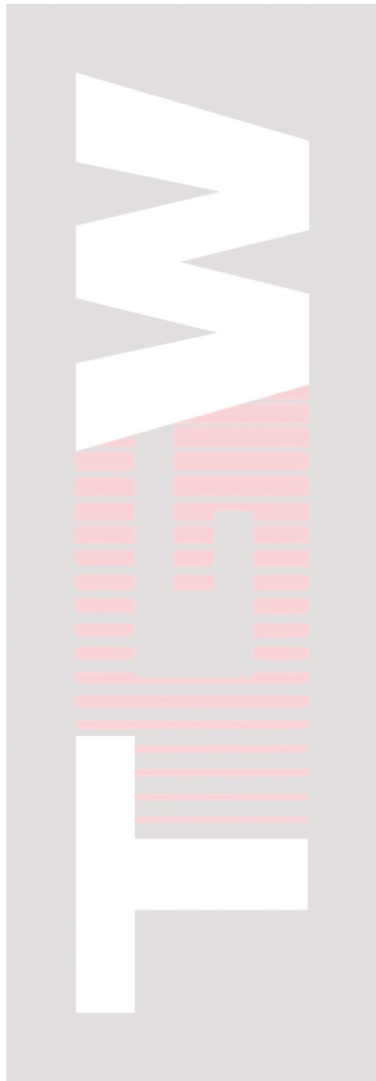
Damit findest Du mehr als wenn Du es gar nicht versuchst.

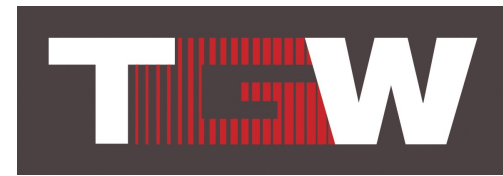
**Du wirst nie alles finden.**



# Messen

**Durchsatz!**  
und  
**Antwortzeit!**



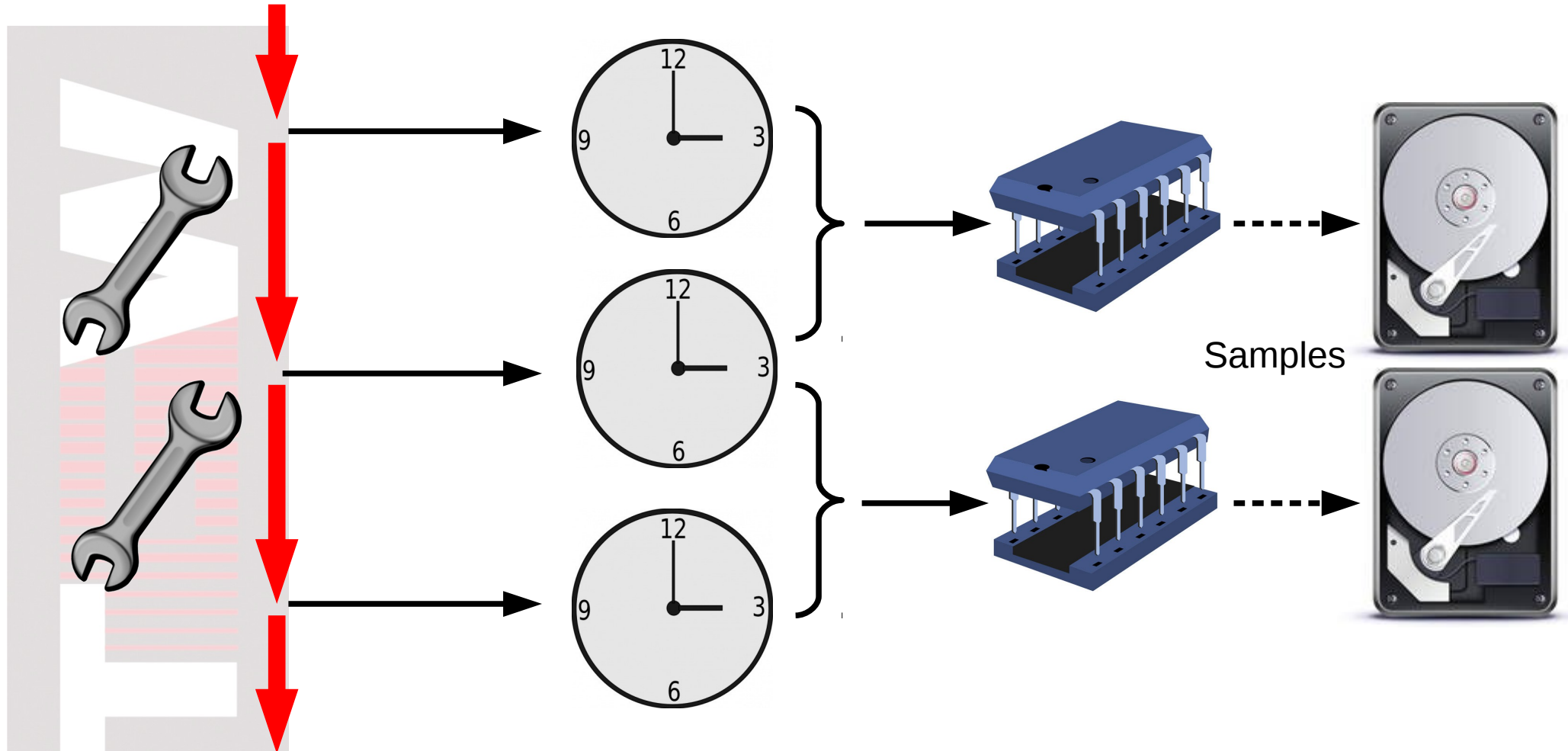


## S.M.S.

Seiner Majestät Schiff?  
Short Message Service?

**Surrogate  
Measures  
Suck**

Messen



# Code Instrumentation

A large, vertical, semi-transparent version of the TEW logo is positioned on the left side of the slide. It features the same stylized 'E' with red vertical lines and is set within a light grey rectangular frame.

# Performance is a feature

**Performance is a feature!**

**Planen <- Kosten**  
**Einbauen -> Nutzen**

**=> Gehört detailliert ins Pflichtenheft**



A large, vertical, stylized version of the TEW logo on the left side of the slide. The letters 'T', 'E', and 'W' are white on a grey background. The 'E' is filled with horizontal red lines.

# Overhead:

## - 30%

Durch qualifizierte Instrumentalisierung (=Feedback) wird die Qualität besser.  
Das hebt die Mehraufwände um ein Vielfaches auf!

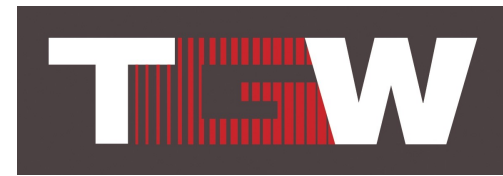


# Vielen Dank für Eure Aufmerksamkeit!

Download: <http://www.usn-it.de>



# Performance



is rarely  
an  
accident



<http://www.usn-it.de/index.php/2014/09/30/performance-is-rarely-an-accident-deutsch/>