

# Nur Wertsteigerung ist fortschrittsrelevant

Über die Entkopplung von Wert- und Qualitätsproduktion

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Ralf Westphal, One Man Think Tank EOOD



"Every organization has to have a non-negotiable core capability – a way to measure outcomes."

[Jeremy Epstein](#)

Robert



Klausur z

erwenden Sie bitte  
ulationsnummer,  
rsehen ist.  
r jede Aufgabe wir  
geben werden. Die  
Übungsgruppen.

- (a) Wie lautet
- (b) Zeigen Sie,

Eine Folge  $(a_n)$  konvergiert gegen den Grenzwert  $L$ , wenn für jedes  $\epsilon > 0$  ein  $N \in \mathbb{N}$  existiert, so dass für alle  $n > N$  gilt  $|a_n - L| < \epsilon$ .

untersuchen Sie, wie

(a)

Berechnen Sie das folgen

Bestimmen Sie die Ab

F:

taufgabe:

er Teilmenge  $D$

lle Zahl  $a > 0$  g

die Funktionen

se oder gleich

4/2

b) Bestimmung des Flächeninhalts eines Dreiecks mit den Seitenlängen  $a=10$ ,  $b=12$  und dem Winkel  $\alpha=110^\circ$ .

Ges:  $V_{\text{Ges}} = \frac{1}{2} \cdot a \cdot b \cdot \sin \alpha = \frac{1}{2} \cdot 10 \cdot 12 \cdot \sin 110^\circ \approx 54,96$

$V_{\text{Ges}}^2 = V_{\text{a}}^2 + V_{\text{b}}^2 - 2 \cdot V_{\text{a}} \cdot V_{\text{b}} \cdot \cos \alpha$

$V_{\text{Ges}}^2 = 100 + 144 - 2 \cdot 10 \cdot 12 \cdot \cos 110^\circ$

$V_{\text{Ges}}^2 = 244 - 240 \cdot (-0,342) = 244 + 82,08 = 326,08$

$V_{\text{Ges}} = \sqrt{326,08} \approx 18,06$

Die Geschwindigkeit über Grund beträgt  $18,06 \frac{\text{km}}{\text{h}}$

6) a)  $A(0|0; 0) \quad P(240|0)$   
 $R(240|0)$

b)  $f(x) = ax^3 + bx^2 + cx + d$   
 $f'(x) = 3ax^2 + 2bx + c$

1)  $A(0|0) = d = 0$   
 $A(0|0) = c = 0$

Verständ:

$f(x) = ax^3 + bx^2$   
 $0 = 240^3 a + 240^2 b \quad | : 240^2$   
 $0 = 240a + 240b \quad | : 240$   
 $0 = 240a + 240b \quad | : 240$   
 $0 = a + b$   
 $b = -a$

$f(x) = ax^3 - 240ax^2$   
 $f'(x) = 3ax^2 - 480ax$

12. SE je  $\alpha$  abhängig  
 um  $\approx 0,12$   $\alpha$   $\approx 10^\circ$

Gesucht:  $\alpha$

Berechnen mit Sinusatz:

$\frac{V_{\text{a}}}{\sin 90^\circ} = \frac{V_{\text{b}}}{\sin \alpha}$

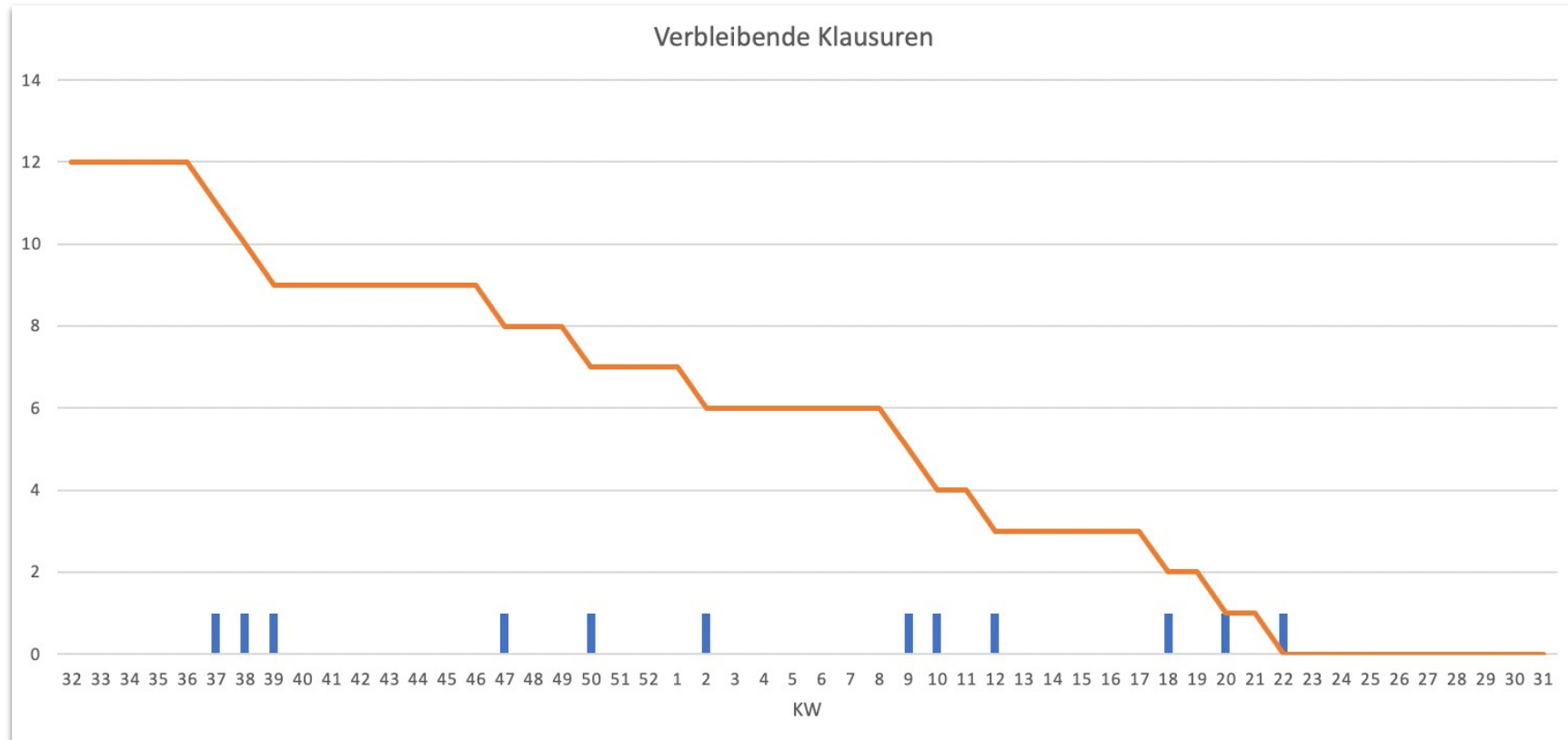
$\sin \alpha = \frac{V_{\text{b}} \cdot \sin 90^\circ}{V_{\text{a}}}$

$\sin \alpha \approx 0,2928$

$\alpha \approx 16,93^\circ$

Antwort:  
 Es muss den Kurs  $16,93^\circ$  wecheln können!

3 Fächer à 2 Klausuren pro Halbjahr

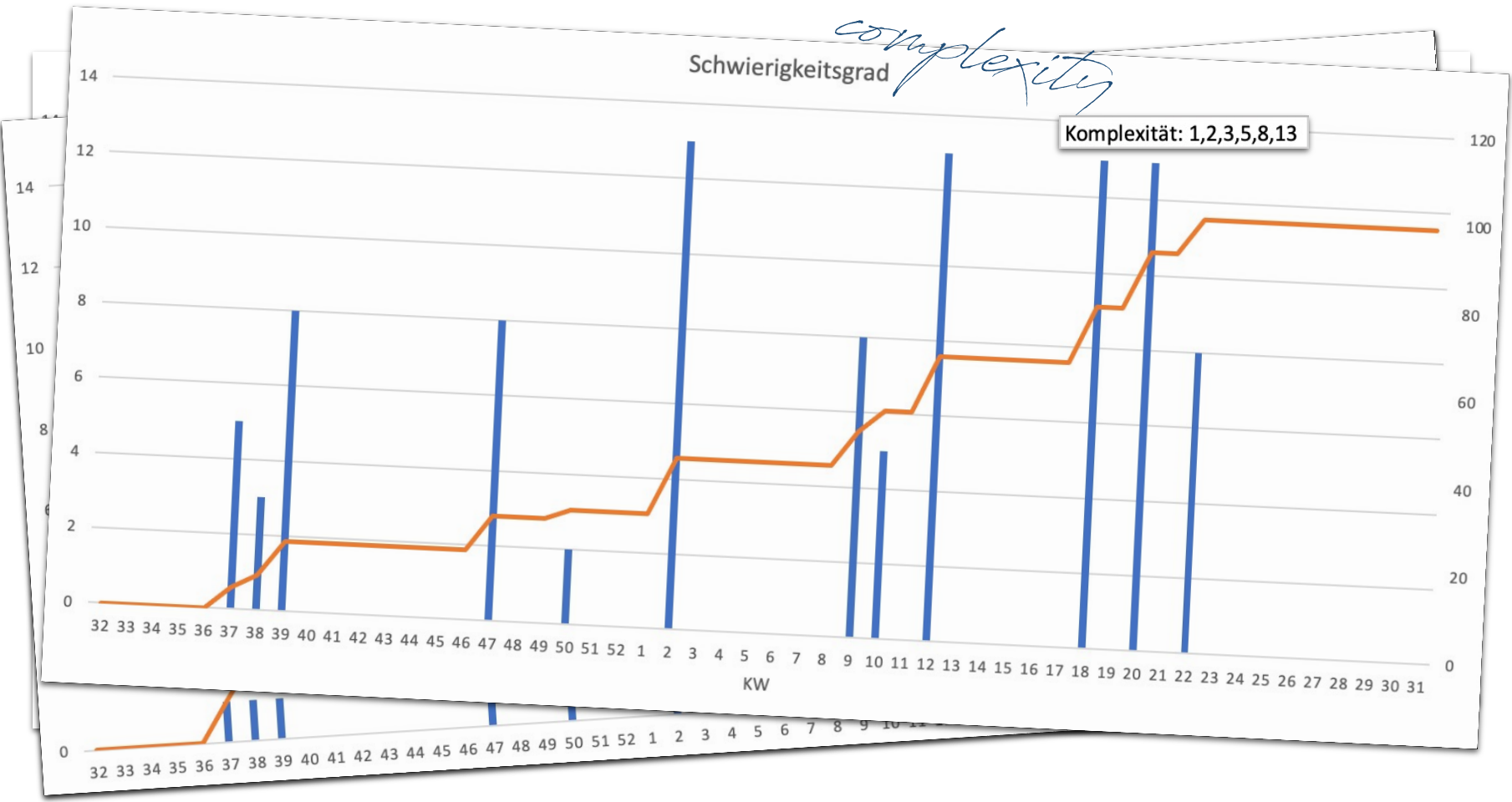


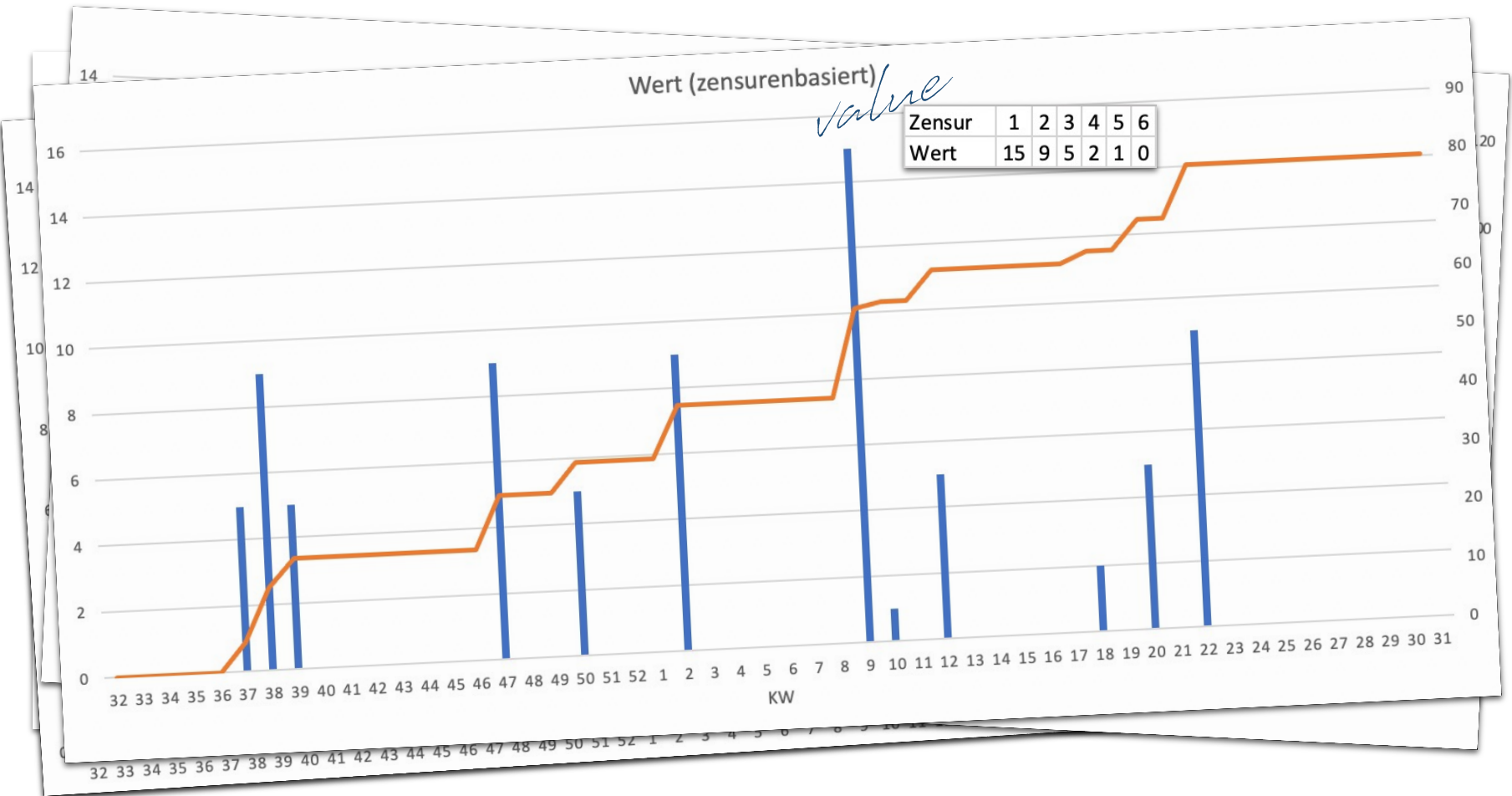


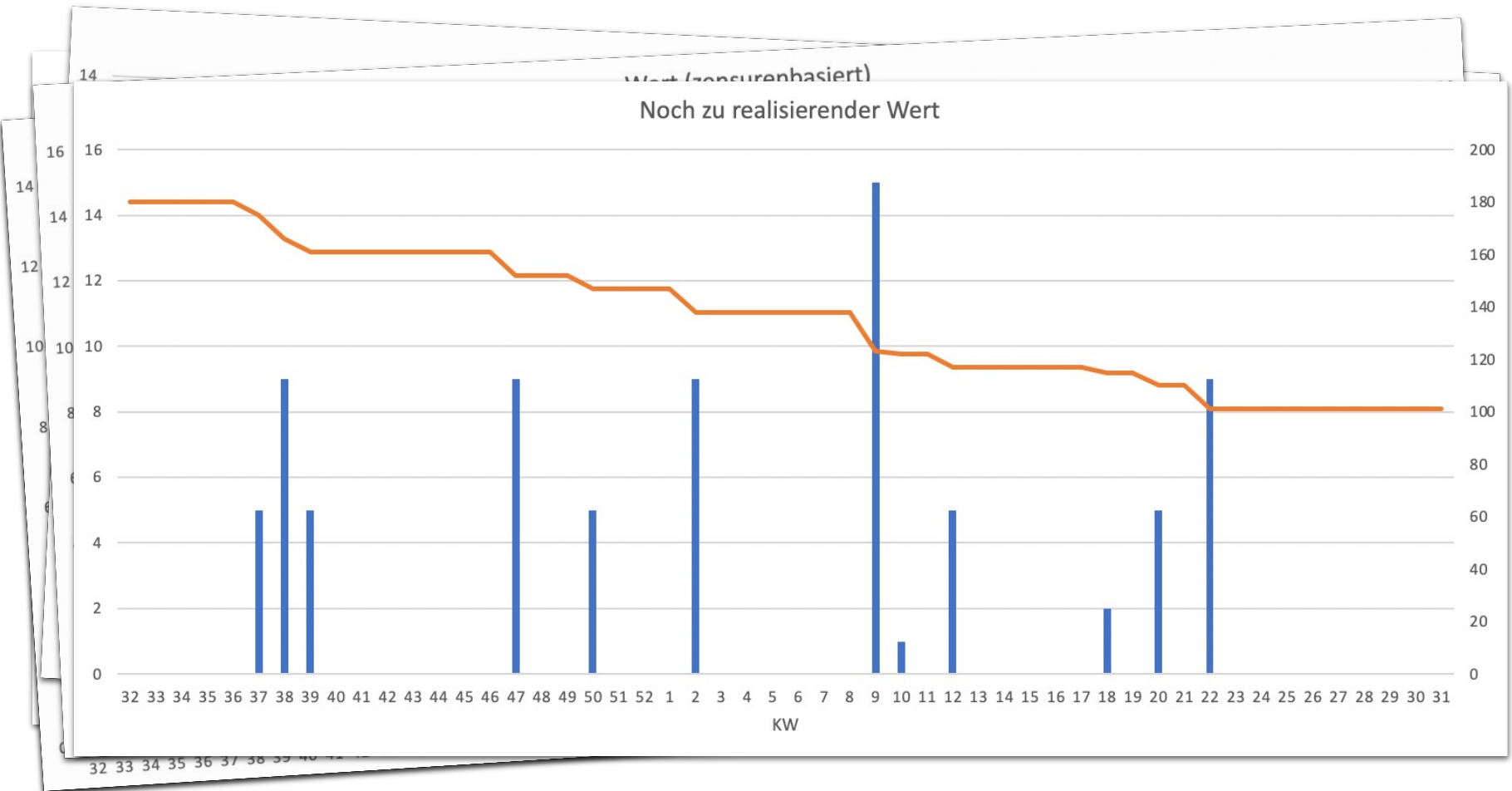


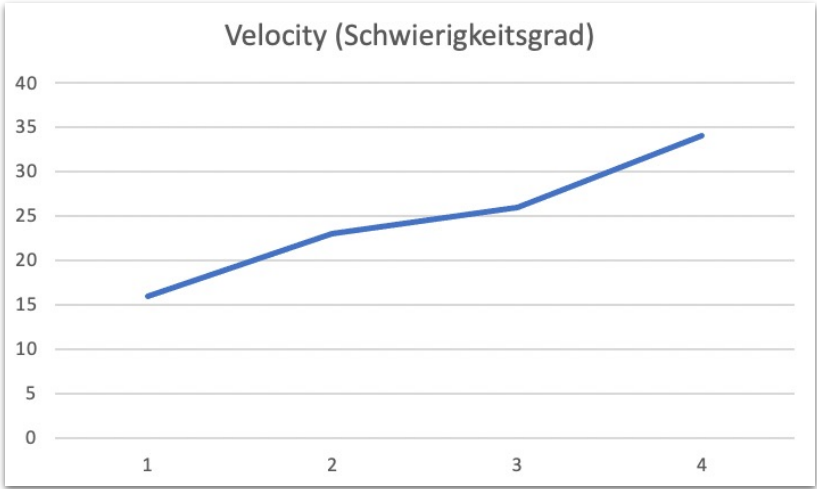
Schwierigkeitsgrad *complexity*

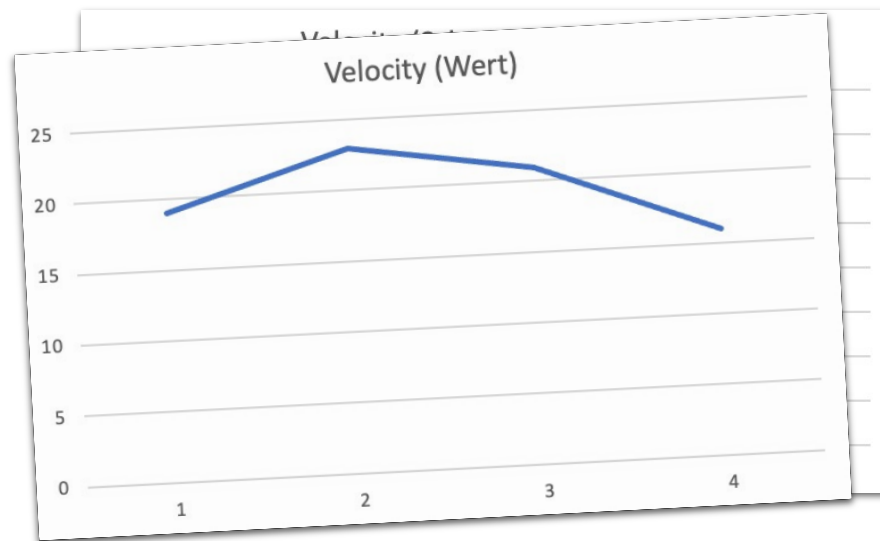
Komplexität: 1,2,3,5,8,13













Value over complexity



## Principles behind the Agile Manifesto

*We follow these principles:*

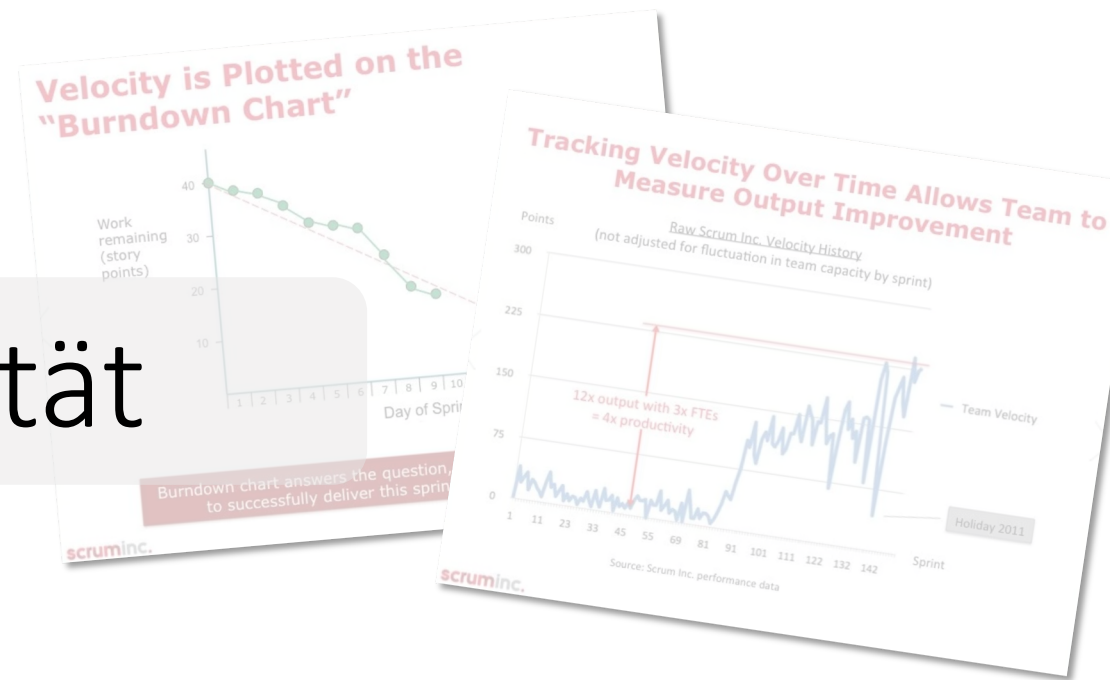
Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

Welcome changing requirements, even late in



# Wert $\neq$ Komplexität

Eine vernachlässigte Unterscheidung



"Ultimately, that outcome, the assignment of value by a party [...] external to the organization is the reason for being of the organization."

[Jeremy Epstein](#)

# It's the money, stupid!

Was ist Wert?

| Monat | Gewinn                |                       |      |
|-------|-----------------------|-----------------------|------|
|       | ohne Software         | mit Software          |      |
| 1     | 120.000,00 €          | 125.000,00 €          |      |
| 2     | 130.000,00 €          | 135.000,00 €          |      |
| 3     | 135.000,00 €          | 140.000,00 €          |      |
| 4     | 128.000,00 €          | 133.000,00 €          |      |
| 5     | 124.000,00 €          | 129.000,00 €          |      |
| 6     | 126.000,00 €          | 131.000,00 €          |      |
| 7     | 127.000,00 €          | 132.000,00 €          |      |
| 8     | 130.000,00 €          | 135.000,00 €          |      |
| 9     | 133.000,00 €          | 138.000,00 €          |      |
| 10    | 140.000,00 €          | 145.000,00 €          |      |
| 11    | 145.000,00 €          | 150.000,00 €          |      |
| 12    | 158.000,00 €          | 163.000,00 €          |      |
|       | <b>1.596.000,00 €</b> | <b>1.656.000,00 €</b> |      |
|       |                       | 60.000,00 €           | 3,8% |
|       |                       | mehr Gewinn           |      |

Wert bedeutet: Mehrgewinn

*Mehr Gewinn durch  
weniger Kosten und/oder  
mehr Umsatz*



*Sofort  
einsatzbereit*

| Monat | Mehrgewinn<br>Kauf |
|-------|--------------------|
| 1     | 5.000,00 €         |
| 2     | 5.000,00 €         |
| 3     | 5.000,00 €         |
| 4     | 5.000,00 €         |
| 5     | 5.000,00 €         |
| 6     | 5.000,00 €         |
| 7     | 5.000,00 €         |
| 8     | 5.000,00 €         |
| 9     | 5.000,00 €         |
| 10    | 5.000,00 €         |
| 11    | 5.000,00 €         |
| 12    | 5.000,00 €         |
|       | <b>60.000,00 €</b> |

vereinfachte Darstellung



| Monat                | Mehrgewinn |              |
|----------------------|------------|--------------|
|                      | Wasserfall |              |
| 1                    | -          | €            |
| 2                    | -          | €            |
| 3                    | -          | €            |
| 4                    | -          | €            |
| 5                    | -          | €            |
| 6                    | -          | €            |
| 7                    | -          | €            |
| 8                    | -          | €            |
| 9                    | -          | €            |
| 10                   | -          | €            |
| 11                   | 5.000,00   | €            |
| 12                   | 5.000,00   | €            |
| <b>10.000,00</b>     |            | <b>€</b>     |
| <del>10.000,00</del> |            | <del>€</del> |

*Nach 10 Monaten  
Entwicklungszeit  
einsatzbereit*

vereinfachte Darstellung

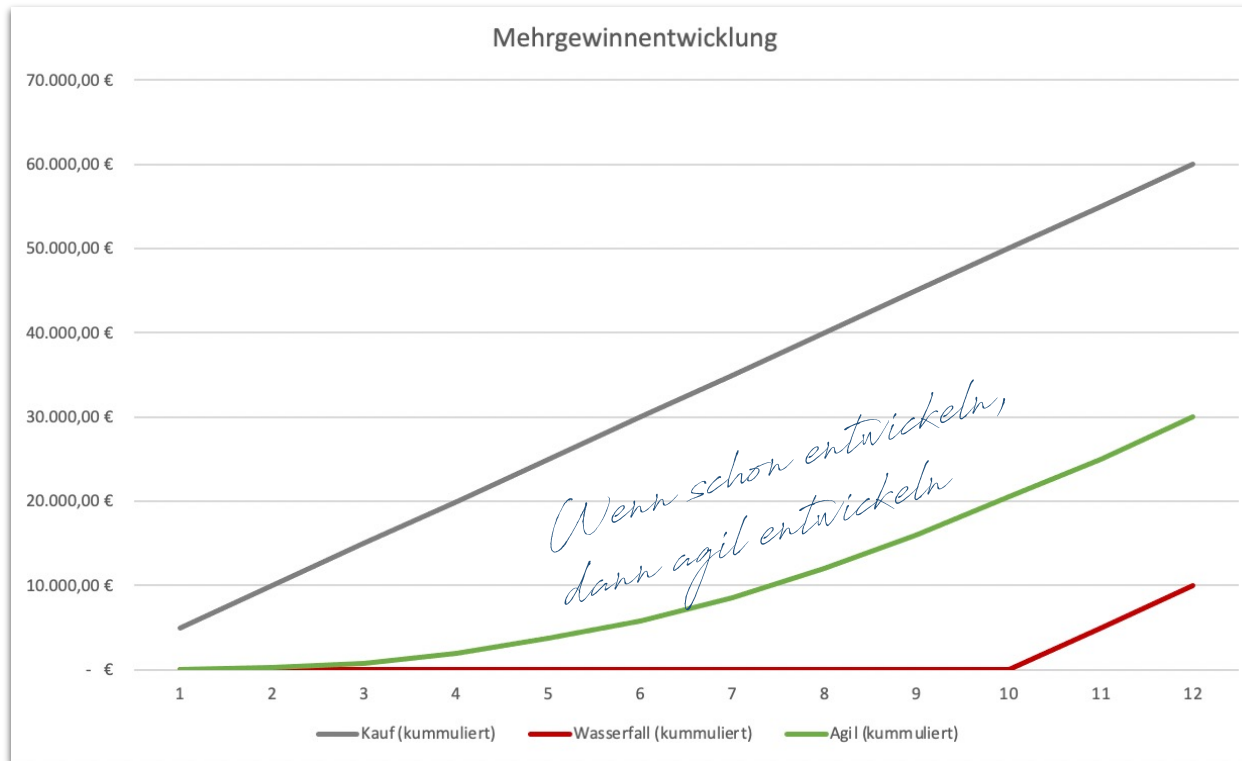


| Monat | Mehrgewinn Agil    |
|-------|--------------------|
| 1     | - €                |
| 2     | 250,00 €           |
| 3     | 500,00 €           |
| 4     | 1.250,00 €         |
| 5     | 1.750,00 €         |
| 6     | 2.000,00 €         |
| 7     | 2.750,00 €         |
| 8     | 3.500,00 €         |
| 9     | 4.000,00 €         |
| 10    | 4.500,00 €         |
| 11    | 4.500,00 €         |
| 12    | 5.000,00 €         |
|       | <b>30.000,00 €</b> |

vereinfachte Darstellung

*Jeden Monat  
ein wenig  
einsatzbereiter*

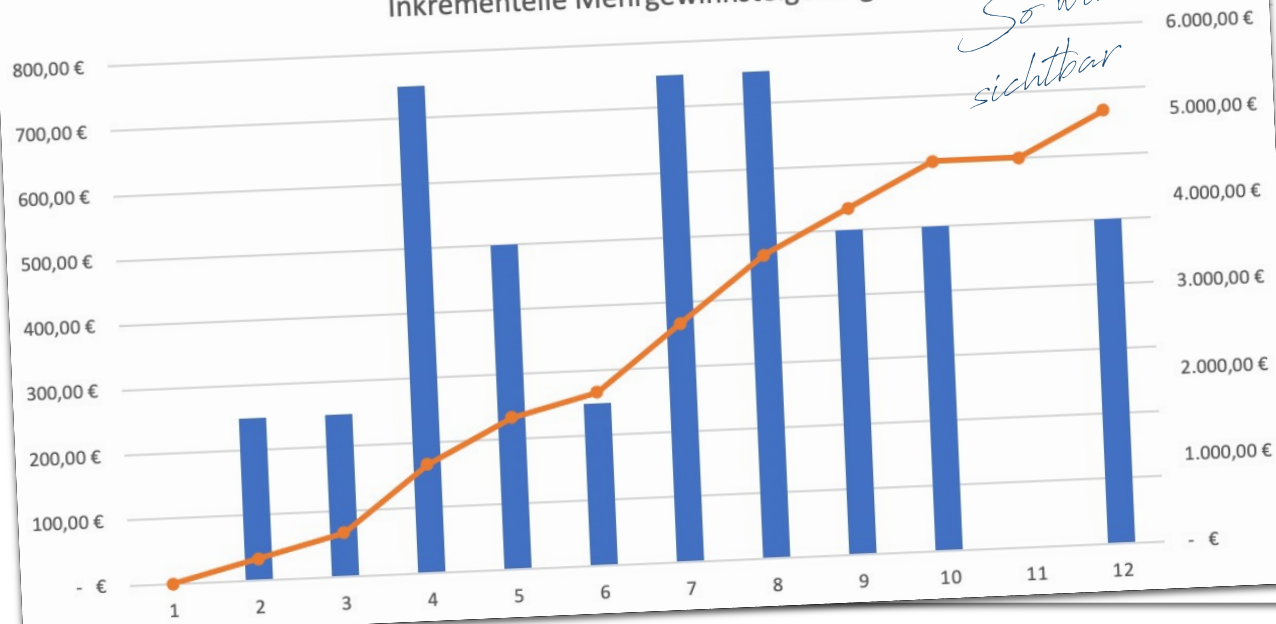




### Mehrgewinnentwicklung

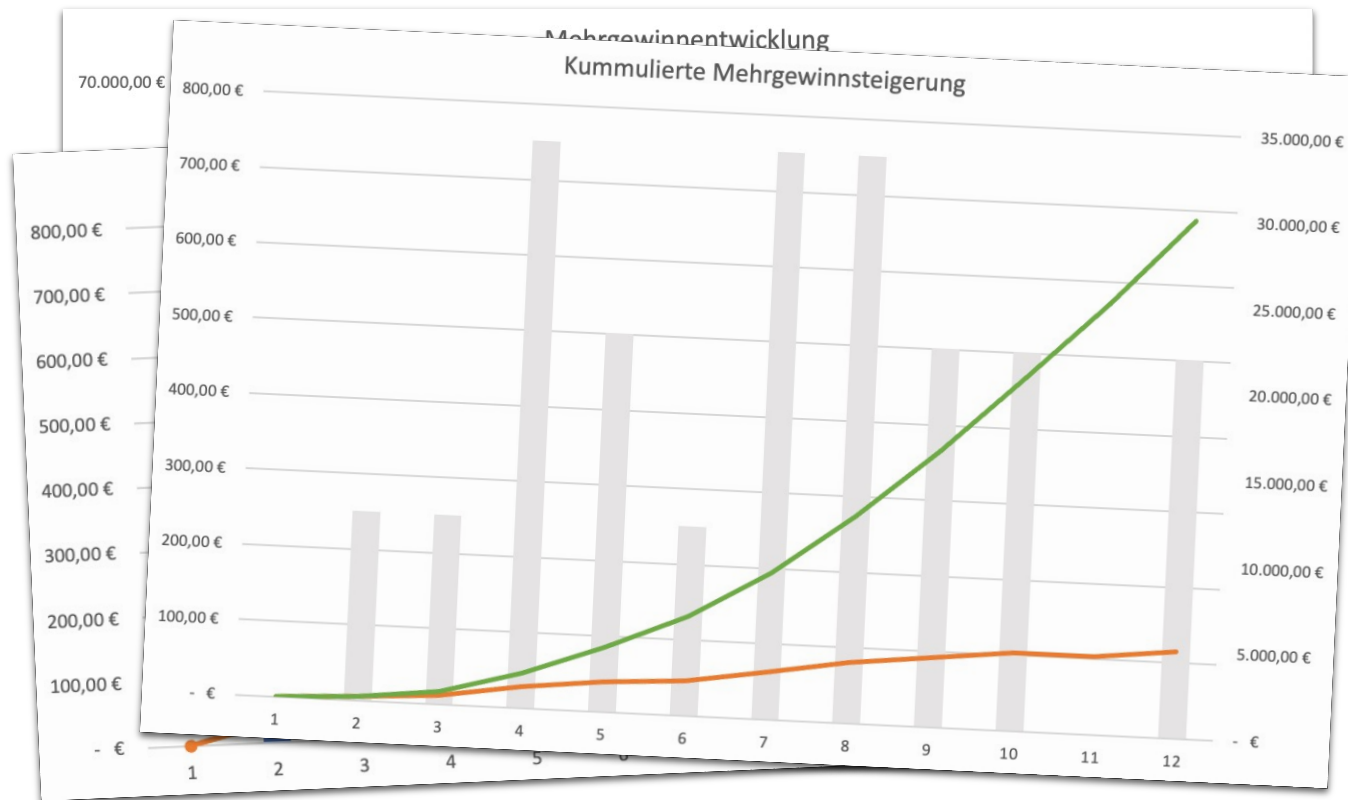
70.000,00 €

### Inkrementelle Mehrgewinnsteigerung



*So wird Fortschritt sichtbar*

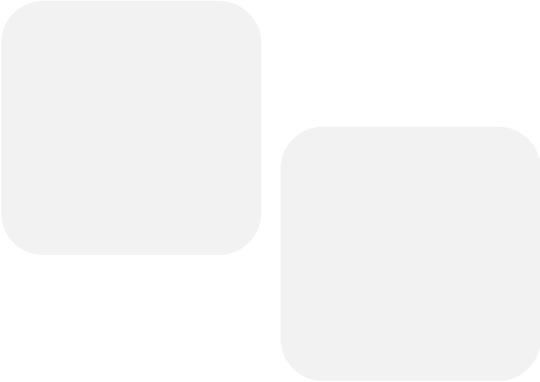






# Wertvolle Stellvertreter statt Mehrgewinn

Wert entsteht im Auge des Kunden



“Value is subjective — an experience that takes place entirely in the customer domain. Logically, no external force can create it or even co-create it. Only those who ultimately consume can create value. Value is not 'created' by firms.”,

[Austrian Economics In Contemporary Business Applications](#)



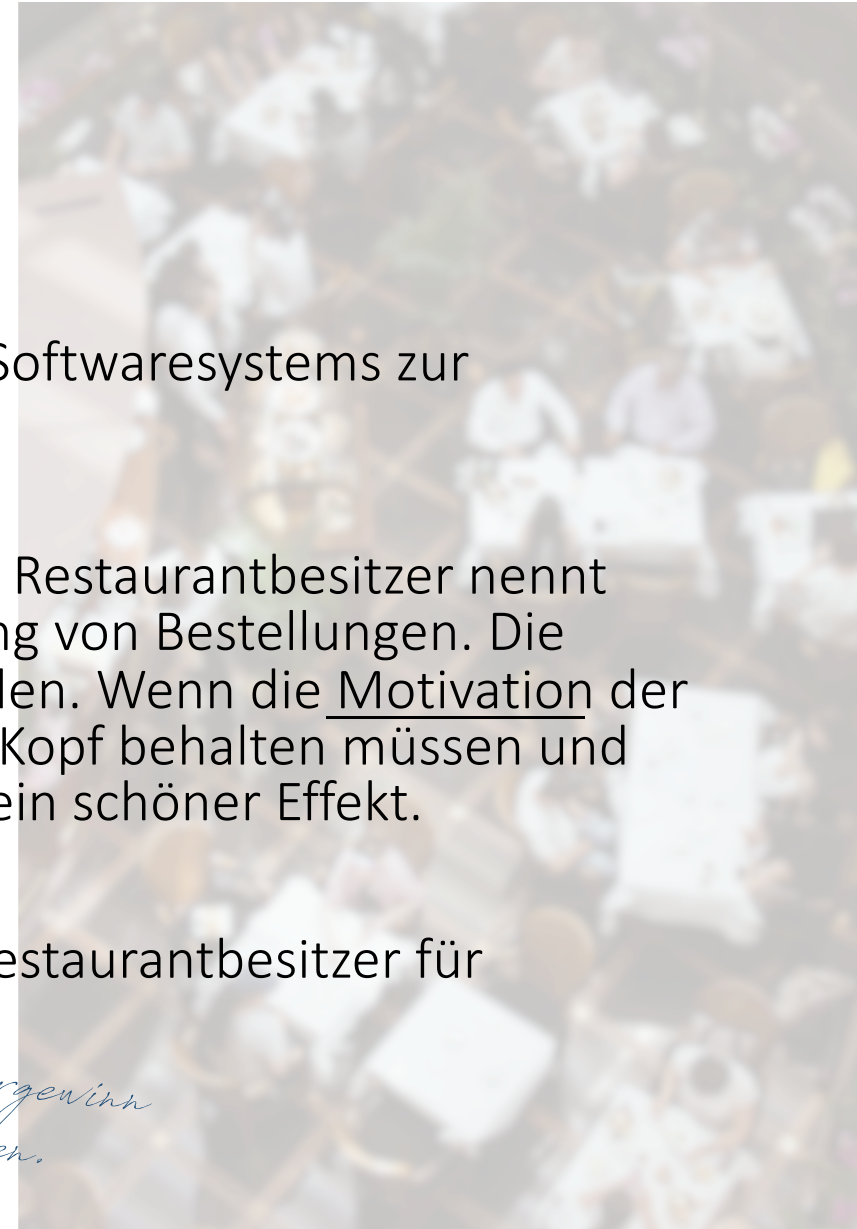
# Beispiel

Ein Restaurant beauftragt die Entwicklung eines Softwaresystems zur Bestellaufnahme für die Servicekräfte.

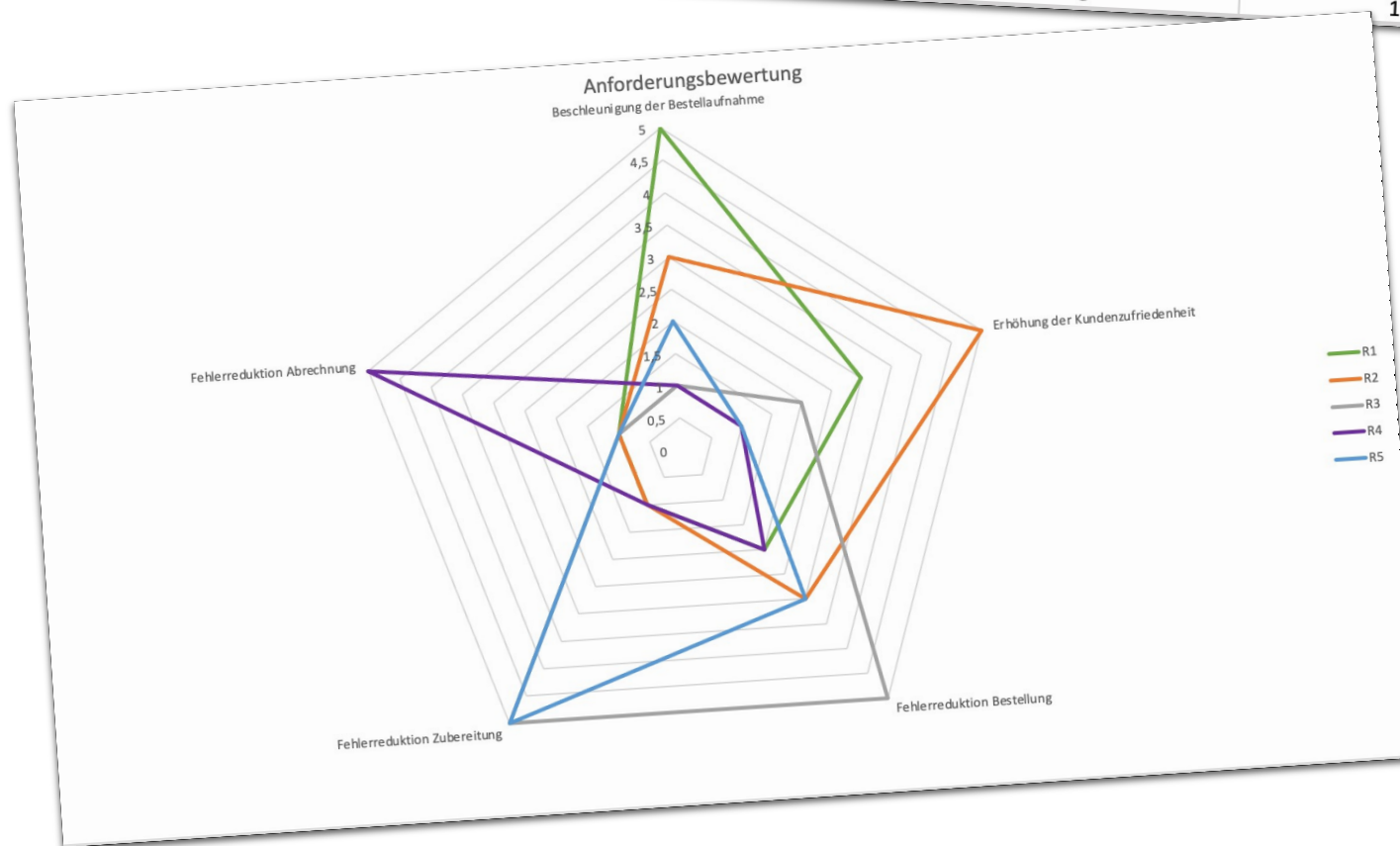
Was ist die Motivation für die Beauftragung? Der Restaurantbesitzer nennt eine Erleichterung der Aufnahme und Bearbeitung von Bestellungen. Die Bedienung der Gäste soll auch beschleunigt werden. Wenn die Motivation der Servicekräfte dadurch steigt, weil sie weniger im Kopf behalten müssen und weniger Fehler passieren, dann ist das ebenfalls ein schöner Effekt.

Ein Softwaresystem, das all das leistet, hält der Restaurantbesitzer für wertvoll.

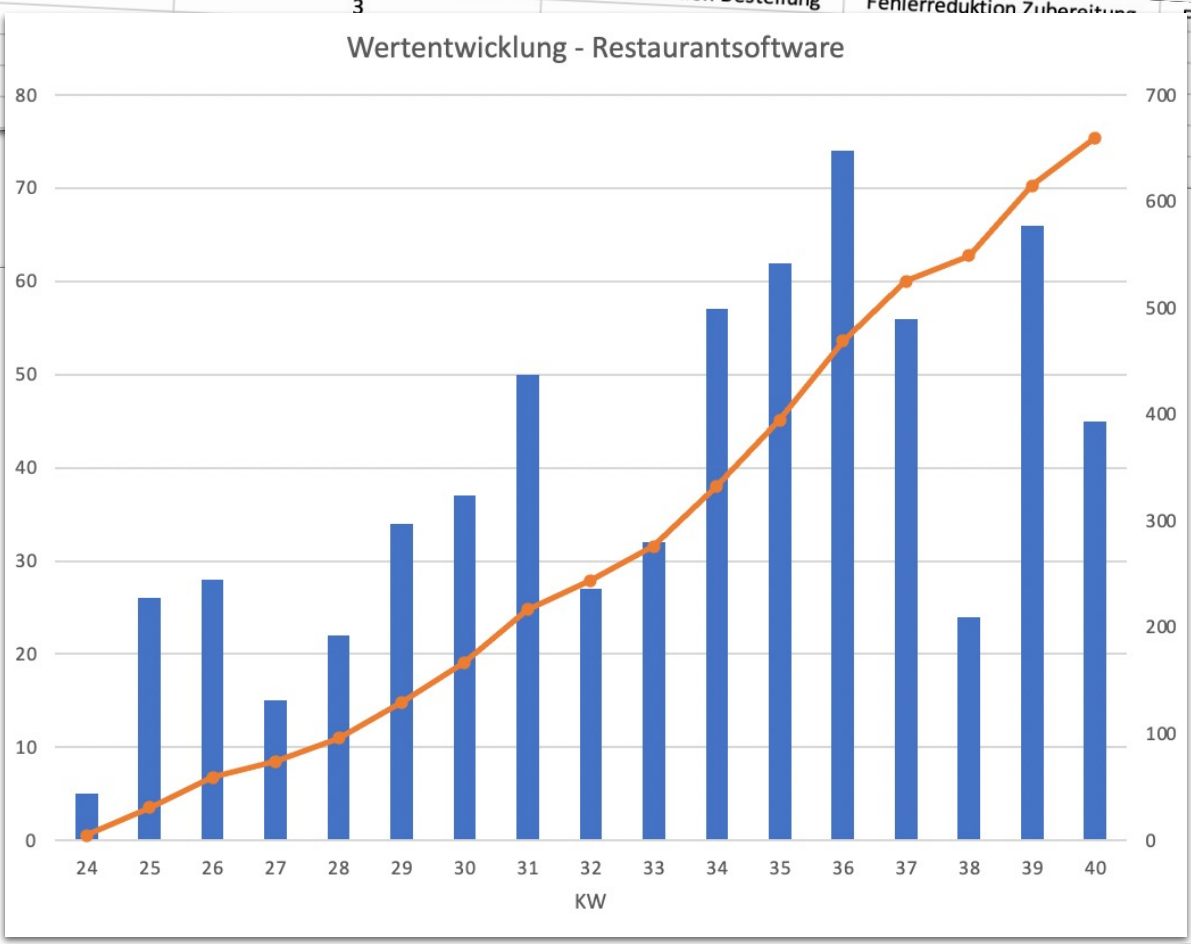
*Aber der konkrete Mehrgewinn  
kann nicht beziffert werden.*



| Anforderung | Beschleunigung der Bestellaufnahme | Erhöhung der Kundenzufriedenheit | Fehlerreduktion Bestellung | Fehlerreduktion Zubereitung | Fehlerreduktion Abrechnung | $\Sigma$ |
|-------------|------------------------------------|----------------------------------|----------------------------|-----------------------------|----------------------------|----------|
| R1          | 5                                  |                                  |                            |                             |                            |          |
| R2          | 3                                  | 3                                | 2                          |                             |                            | 12       |
| R3          | 1                                  | 5                                | 3                          | 1                           |                            | 13       |
| R4          | 1                                  | 2                                | 5                          | 1                           | 1                          | 14       |
| R5          | 2                                  | 1                                | 2                          | 5                           | 1                          | 10       |
|             |                                    | 1                                | 3                          | 1                           | 5                          | 12       |



| Anforderung | Beschleunigung der Bestellaufnahme | Erhöhung der Kundenzufriedenheit | Fehlerreduktion Bestellung | Fehlerreduktion Zubereitung | Fehlerreduktion Abrechnung | $\Sigma$ |
|-------------|------------------------------------|----------------------------------|----------------------------|-----------------------------|----------------------------|----------|
| R1          | 5                                  |                                  |                            |                             |                            | 12       |
| R2          | 3                                  | 3                                |                            |                             |                            | 13       |
| R3          | 1                                  |                                  |                            |                             |                            | 14       |
| R4          | 1                                  |                                  |                            |                             |                            | 10       |
| R5          | 2                                  |                                  |                            |                             |                            | 12       |



# Wert noch nicht an erster Stelle

Die Realität



ONE MAN THINK TANK



# 1. Team productivity and efficiency metrics

These metrics help you discover whether the forecast is predictable. These metrics delve specifically into the process.

Here is a list of metrics to track the speed of development process.

- **Lead time:** This is the time elapsed between the duration between the formulation of a user story and the time it is completed.
- **Cycle time:** This is the time from when the action goes from in-progress to completed. Each team member should be determined right at the beginning of the sprint, defining them at the start is essential to the process.
- **Sprint velocity:** Velocity is the amount of work completed in a sprint. Sprint velocity is basically the rate at which the team completes the specifications get converted into lines of tested code on every sprint.
- **Flow efficiency:** Lead time includes both work in progress and wait time. Measuring against the total wait time gives us a better understanding of the process.
- **Stories committed vs. completed:** The comparison of user stories completed in the sprint against the total committed stories.
- **Sprint burndown:** Also known as the burndown chart, it shows the tasks planned and the actual tasks completed.
- **Cumulative flow diagram:** This is a visual representation of the work in progress at any given period of time. The vertical axis denotes the number of items in each state.
- **Control chart:** This denotes the cycle time of teams with consistently shorter cycle times have any changes on an immediate basis.

Der Wert fehlt

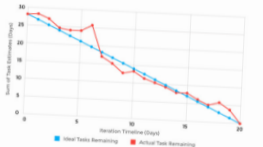
Wert auf Platz 7

## Agile Metrics Important for Your Project

Agile metrics measure different aspects of project development. Here are some agile metrics important for your project. They'll help you understand the development process better. Additionally, they'll ease the process of overall software release.

### 1. Sprint Burndown Report

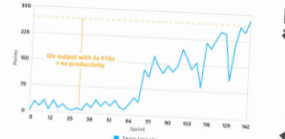
An agile framework comprises **sprint** teams. They organize their processes into sprints. Since a sprint is time-bound, it's important to track task progress frequently. A sprint burndown report is for tracking the completion of different tasks during a sprint. Time and work left to complete are the two main parameters of measurement in this case. The X-axis refers to the time. The Y-axis represents the work left. The unit of measurement is hours or story points. The team forecasts the workload at the beginning of a sprint. The target is to complete the workload by the end of the sprint.



Sprint Burndown Chart

### 2. Velocity

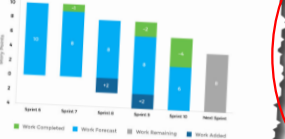
Velocity measures the average work a team does during a sprint. The report, in this case, contains several iterations. The accuracy of the forecast depends on the number of iterations. The more iterations, the more precise the forecast. The unit of measurement is hours or story points. Velocity also determines the ability of a team to work through backlogs. As time passes, velocity tends to evolve. To ensure consistent performance, it's important to track velocity. If the velocity declines, it's a sign that the team needs to fix something.



Agile Velocity

### 3. Epic and Release Burndown

Unlike a sprint burndown, epic and release burndown focus on the bigger picture. They track progress over a large work body. There are many epics and versions of work in a sprint. So, it's important to track their progress as well as each sprint. The entire team has to be aware of workload in the epic and version. Epic and release burndown charts make that possible.



Epic and Release Burndown

## 4. Control Chart

In agile, control charts focus on the time duration from the "in progress" to "complete" status of tasks. Their purpose is to check the cycle time of a single issue. Teams with consistency in cycle times have predictable deliveries. Besides this, teams with short cycle times have a high throughput. When teams measure cycle times, they improve the flexibility of their processes. For instance, in the case of changes, you can discern the results instantly. As a result, team members can make the necessary adjustments. In general, a short and consistent cycle time is the target to achieve in every sprint.

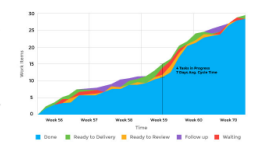


Control Chart

## 5. Cumulative Flow Diagram

The cumulative flow diagram (CFD) ensures consistency in workflow across the team. The X-axis represents time. The number of issues on the Y-axis. Ideally, the diagram should be smooth from left to right. Smoother out the color bands in case of uneven flow. The band narrowing means throughput is higher than the rate of entry. If the band widens, this means that your workflow capacity is greater than required, and it can be moved elsewhere to smoothen the flow.

The CFD measure the state of the work in progress. With that, you can take measures to speed up the workflow. The diagram provides a clear visual representation of bottlenecks. You can analyze how bottlenecks formed in the first place. After that, the team can take steps to eliminate them and make improvements.



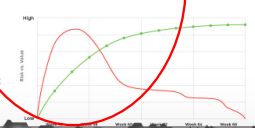
Cumulative Flow Diagram

## 6. Lead Time

Lead time is the period between the moment of making a request for delivering a product and the actual delivery. All the processes to bring a product to completion come under lead time. It also includes developing a business requirement and fixing bugs. Lead time is an important metric. The reason for this is it provides the exact time calculation for every product.

## 7. Value Delivered

Here, project managers assign value to every requirement. This metric uses either dollars or a points system. Implementing the features with high value should be the top priority. An upward trend in this metric shows that things are on track. On the other hand, a downward trend isn't a good sign. It means the implementation of lower-value features is going on. If that's the case, the team should make amends. Sometimes, you might even have to stop product development.

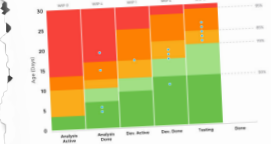


## 8. Net Promoter Score

Net Promoter Score measures how much the customers are willing to recommend the product or service to others. It's an index that ranges from -100 to 100. Customer loyalty is an important factor to determine the success of a firm. You can use the Net Promoter Score as a proxy for this purpose.

## 9. Work Item Age

Work item age is the aging work in progress. This metric indicates the time that passes between the start and completion of the current task. The use of work item age is to detect the timeline for unfinished tasks. By using this metric, you'll realize how your present tasks move forward. You can also compare your previous performance in the same context as the current scenario. The measurement tool, in this case, is the aging work in progress chart.



Work Item Age

## 10. Throughput

Throughput measures average tasks processed in each time unit. You can also call it a measure for story points per iteration. It represents a team's productivity level. Throughput helps you understand the effect of workflow on business performance. You can get a better overview of the capacity of your team. However, it doesn't show the starting point of tasks and make improvements.

## 11. Blocked Time

This metric assigns a blocker sticker to a task. It means that due to some reason, the assignee can't proceed with a particular task because of some dependency. As soon as the dependency is fulfilled, you should move the blocked card to the right on the task board. Count the number and duration of blocked cards for measuring the number of blockers. Resolving the blockers will allow you to finish your "in progress" task quickly.

Blocked Card

## 12. Escaped Defects

When there are bugs in production, it causes a lot of unexpected damage. They pose problems, and the team needs to address them. Escaped defects metrics help in bug identification when a release enters production. You can assess the quality of the software in a raw form. For more information on automated defect minimization, check out [Pinpoint's solution for test management](#).

## 13. Failed Deployments

Failed deployments is a useful quality metric. It helps in assessing the number of overall deployments. Moreover, teams can determine the reliability of the testing and production environment. This metric also determines whether a sprint is ready to enter production.

## 14. Code Coverage

Code coverage measures the percentage of code unit tests covered. You can run this metric with every build. It represents the percentage of code coverage in raw form. This metric gives a decent perspective on progress. But it doesn't cover other kinds of testing. Thus, high code coverage numbers don't necessarily represent high quality.

## 15. Quality Intelligence

The quality intelligence metric is a must if you're looking for clarity on software quality. It helps in identifying recent code changes. Suppose there are new codes that the team has developed but testing is yet to be done. Maybe there are instances where the quality declines in those codes. Quality intelligence helps determine the same. It makes the team aware of when they should invest more time in testing.

# Kunden wollen sehen, wohin ihr Geld verschwindet.

Entwicklung muss Rechenschaft ablegen

Ohne Wert-Fokus entsteht etwas  
anderes als Wert!

Optimiert wird auf das, was gemessen wird

# Dem Wert Beine machen

Die Aufgabe des Product Owner

*It's the comprehensive quality, stupid!*

When you have a constant pace and consistency.

Continuous attention to technical excellence  
and good design enhances agility.

Simplicity—the art of maximizing the amount

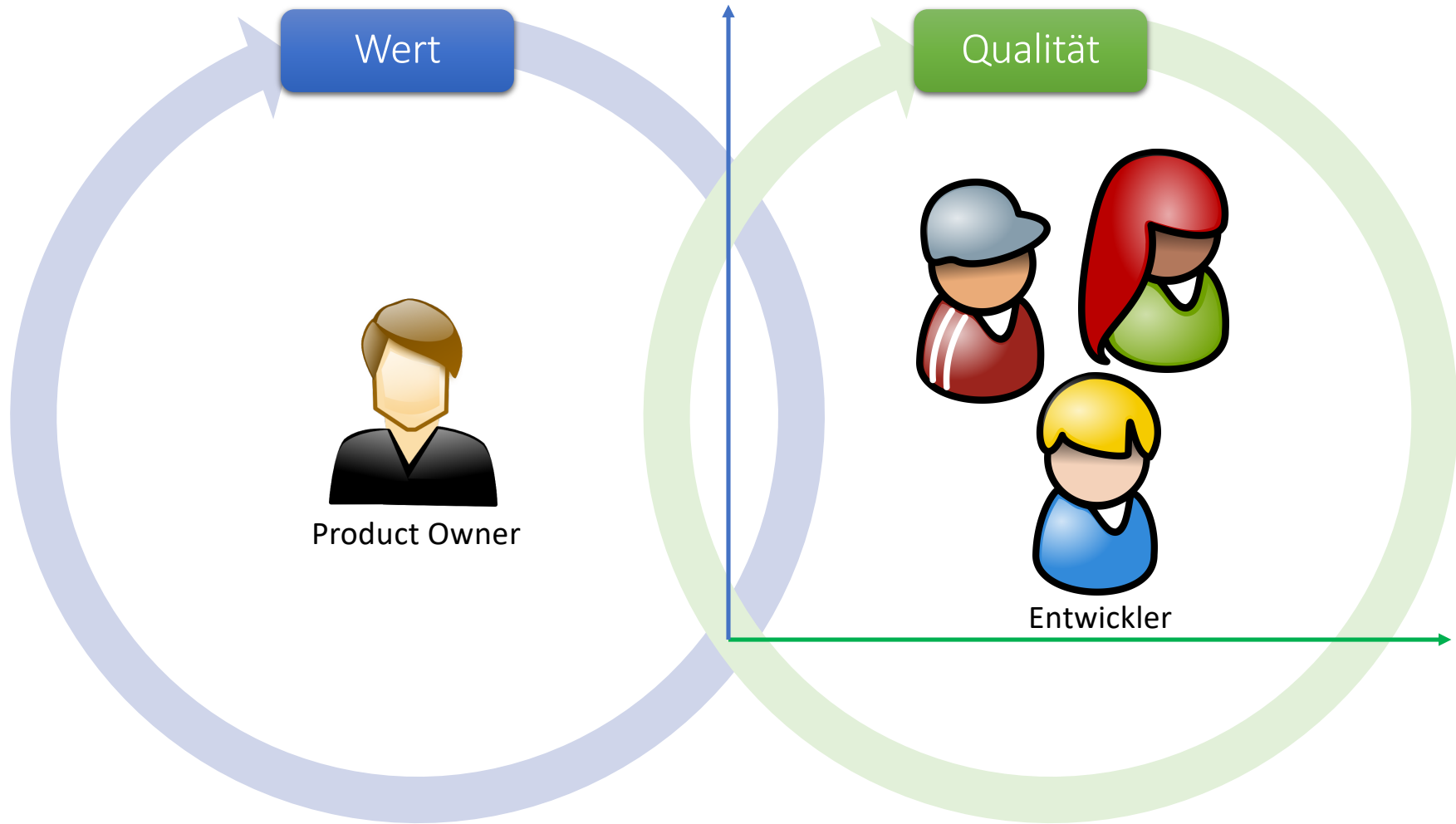
Eine nachhaltige Basis für Wert

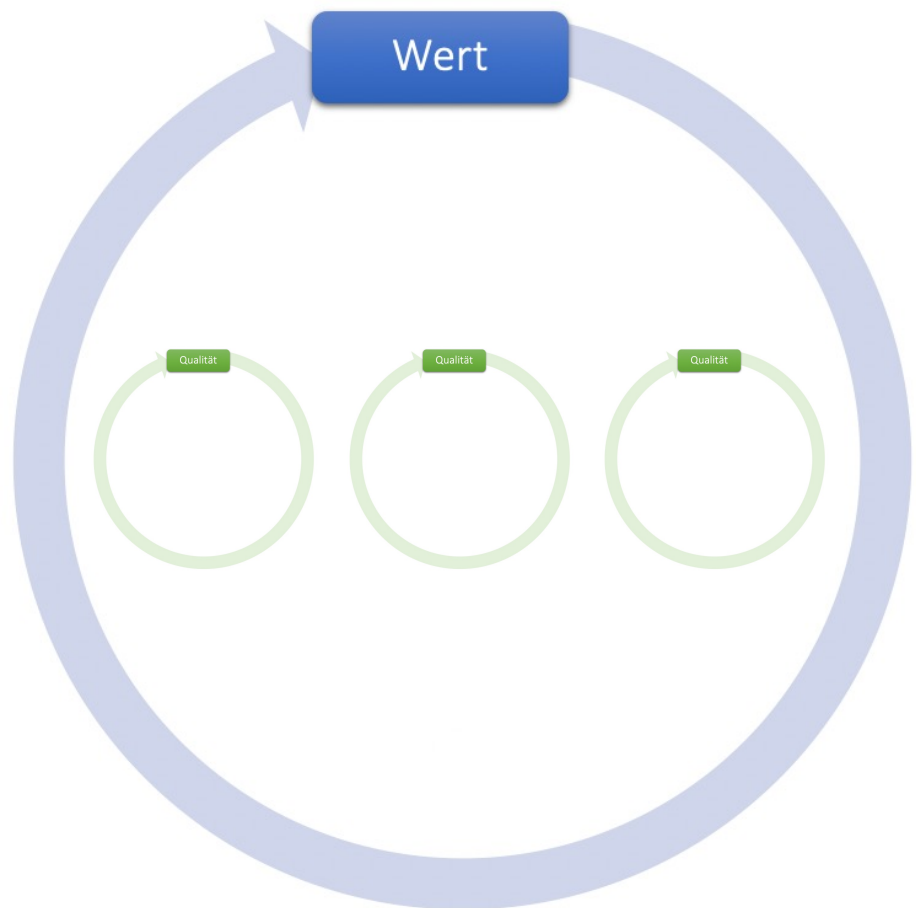
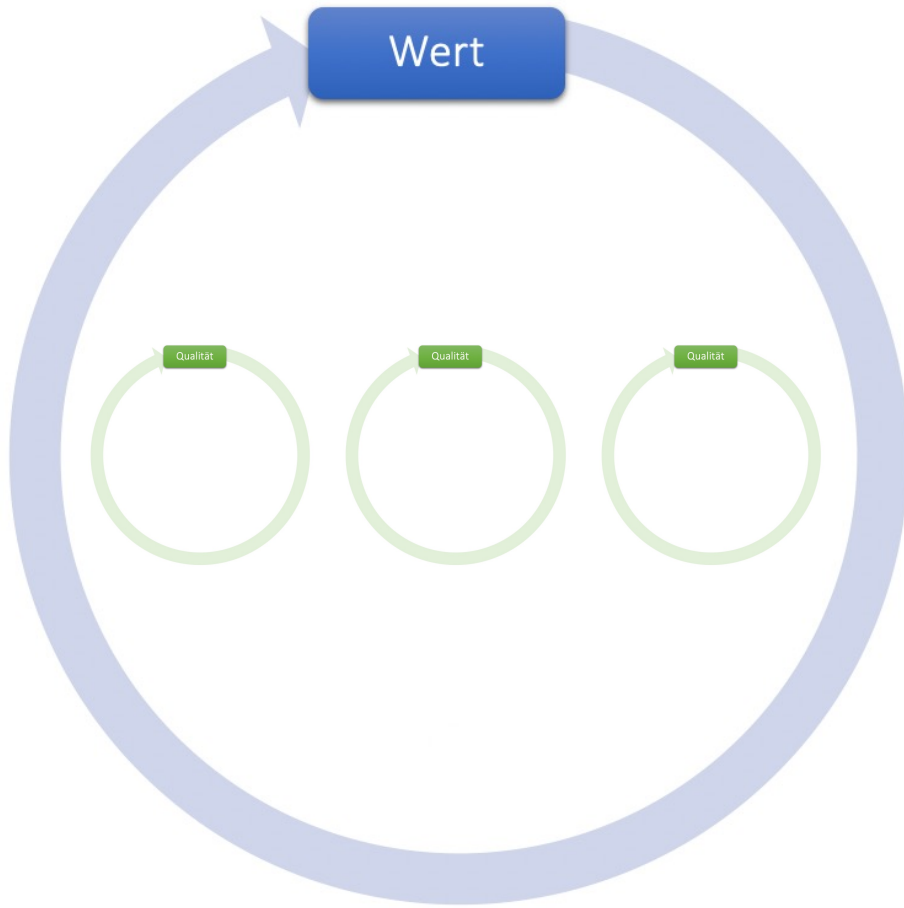


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# Wert $\neq$ Qualität

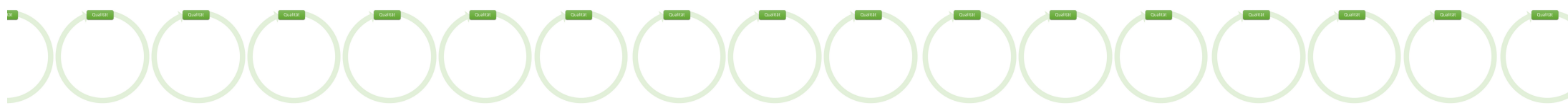
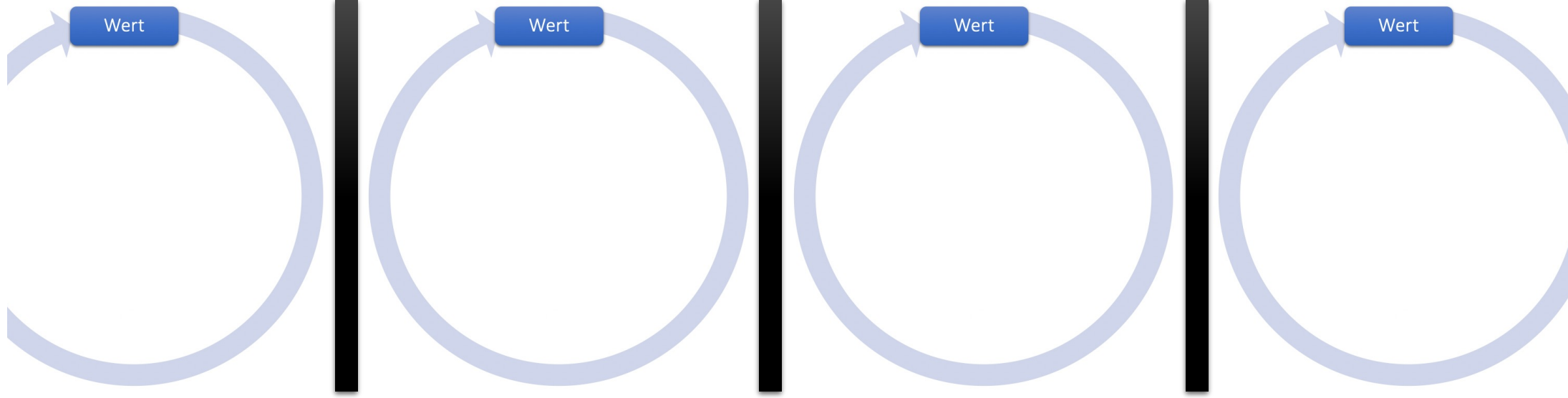
Eine überfällige Entkopplung







*Deadline*



Fin



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# Ralf Westphal

- 35 Jahre selbstständig in der Softwareentwicklung als Autor, Trainer, Berater, Referent, Chefredakteur, Gründer
- 12 Jahre Fokus auf nachhaltige Softwareproduktion durch Clean Code Development und Agilität
- Seit 2020:
  - Online Cohort-Base Trainings zum Thema Clean Code Development:  
<https://ralfw.de/trainings/>
  - Buch-Trilogie zum Thema Clean Code Development:  
<https://leanpub.com/u/ralfw>

