Scrum.org

## De Evidence-Based Management Gids

Betere waardelevering in onzekere omstandigheden

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# Doel van de EBM gids

Organisaties hebben een doel: iets unieks bereiken. Dit doel communiceren ze op verschillende manieren om iedereen gemotiveerd te houden en op één lijn te krijgen.

* **Een Visie**, vertolkt de verandering die de organisatie wil maken in de wereld.
* **Een Missie**, vertolkt de reden waarom deze organisatie als enige in staat is om de *Visie* te verwezenlijken.
* **Doelen**, met verschillende niveaus en termijnen, waarmee de organisatie hun *Missie* en *Visie* kan realiseren. .

Organisaties stellen doelen zodat ze concrete vooruitgang kunnen maken ten opzichte van het bereiken van hun Missie en Visie. Zonder doelen zijn de Missie en Visie slechts grootse ambities. En vice versa, zonder duidelijke Missie en Visie, missen doelen een overtuigende zingeving, met name voor diegenen die in onzekere omstandigheden werken.

Deze gids definieert EBM en haar concepten.

# Definitie van Evidence-Based Management

Evidence-Based Management (EBM) is een raamwerk dat mensen, teams en organisaties helpt om beter besluiten te nemen, waarmee ze hun doelen kunnen bereiken door het bewust inzetten van experimenten en feedback.

# EBM helpt organisaties om hun doelen te bereiken in een complexe wereld

Complexe problemen hebben geen eenvoudige oplossingen. Organisaties moeten experimenteren met het omschrijven, naar toe werken en behalen van grotere doelen in kleine stapjes. In iedere stap wordt het resultaat van het experiment vergeleken met de gewenste uitkomst en volgt aanpassing in de volgende stap (zie Figuur 1).[[1]](#footnote-1)

EBM right zich op drie doelniveaus:

* **Strategische Doelen**, belangrijke zaken die de organisatie graag wil behalen. Deze doelen zijn zo groot en ver weg, met vele onzekerheden op de weg ernaartoe, dat de organisatie niet anders kan dan empirisme gebruiken om ze te behalen. Omdat een Strategisch Doel ambitieus is en de weg ernaartoe onzeker, heeft de organisatie een serie praktische doelen nodig, zoals *Tussenliggende Doelen*.
* **Tussenliggende Doelen**, waarvan het behalen aangeeft dat de organisatie op weg is naar een Strategisch Doel. De weg naar het Tussenliggende Doel is enigszins onzeker, maar niet volledig onbekend.
* **Directe Tactische Doelen**, hier ligt de focus van de huidige verbeterinspanning van de organisatie.

Om voortgang te maken richting Strategische en Tussenliggende Doelen, stellen organisaties hypothesen op over verbeteringen die helpen richting hun Directe Tactische Doelen te bewegen. Op basis van deze hypothesen worden experimenten uitgevoerd om te verbeteren. Ze meten de uitkomsten van deze experimenten (bewijs) om hun voortgang richting hun doelen te bepalen, en om vervolgstappen te bepalen (nieuwe hypothesen), waaronder ook het bijstellen van doelen op basis van de bevindingen.

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**Figuur 1: Behalen van Strategisch Doelen vereist experimenteren, inspecteren, en aanpassen [[2]](#footnote-2)**

# Doelen Stellen

Organisaties moeten meetbare doelen bepalen die duidelijk maken wanneer dat doel is bereikt. Deze meetbare doelen, metingen en experimenten moeten transparant worden gemaakt om organisatorische afstemming te bevorderen.

Stel, we moeten reageren op een infectie-uitbraak:

* Het Strategisch Doel is om de effecten van ziekte uit te roeien, gemeten in het aantal mensen die besmet worden en significant ziek worden. Metingen zijn belangrijk om te begrijpen of er voortgang wordt gemaakt en of het strategische doel relevant blijft naarmate tijd verstrijkt. In dit voorbeeld is het doel gericht op de effecten van de ziekte, en niet op de manier waarop de gewenste impact wordt bereikt. Het doel is bijvoorbeeld niet om een bepaald percentage van de populatie te vaccineren. Ook al kan dit een activiteit zijn die nodig is om het Strategisch Doel te behalen, is dit niet zelf het Strategisch Doel.
* Een voorbeeld van een Tussenliggend Doel is het succesvol voltooien van een vaccinproef voor deze ziekte. Dit is nog steeds ambitieus en meetbaar, en om dit te behalen moeten mogelijk meerdere activiteiten voltooid worden. Dit is een noodzakelijke stap op de weg naar het behalen van het Strategisch Doel.
* Voorbeelden van Directe Tactische Doelen zijn activiteiten zoals het isoleren van symptomen, evalueren van een behandeling, DNA sequencing van een virus of bacterie, enzovoort. Dit zijn cruciale korte termijn doelstellingen waar een team of een groep bestaande uit meerdere teams naartoe werkt.

Het *Strategisch Doel* is meestal gericht op het behalen van een hoogst wenselijke maar nog onbehaalde uitkomst voor een specifieke groep mensen. Het doel behalen leidt tot verbeterd geluk, veiligheid, zekerheid of welzijn van de ontvangers van een bepaald product of dienst. In EBM noemen we dit *Unrealized Value*: het verschil tussen de gewenste uitkomst en de huidige ervaringen van een begunstigde. *Unrealized Value* wordt hieronder in meer detail beschreven, in het onderdeel *Key Value Areas.*

# Begrijpen wat waardevol is

Organisaties meten veel verschillende dingen. Over het algemeen vallen metingen in de volgende drie categorieën:

* **Inputs.** Dit zijn de dingen waar de organisatie geld aan uitgeeft. Hoewel inputs noodzakelijk om waarde te creëren, is er geen correlatie tussen de hoeveelheid input en de waarde die klanten ervaren. Inputs houden experiments in toom, bijvoorbeeld een organisatie kan grenzen stellen aan hoeveel een team mag uitgeven (de input) om een idee voor verbetering te testen.
* **Activiteiten.** Dit zijn de dingen die mensen in de organisatie doen, zoals werk verrichten, bijeenkomsten houden, discussiëren, code schrijven, rapporten maken, conferenties bijwonen enzovoort.
* **Outputs**. Dit zijn de dingen die de organisatie produceert, zoals productreleases (inclusief functionaliteiten), rapportages, foutrapportages, productreviews enzovoort.
* **Outcomes**. Dit zijn de wensen die een klant of gebruiker van een product ervaart. Ze vertegenwoordigen een nieuwe of verbeterde mogelijkheid die eerder onbereikbaar was voor de klant of gebruiker. Voorbeelden zijn sneller dan voorheen kunnen reizen naar een bestemming, of meer geld verdienen of sparen dan eerder mogelijk was. Uitkomsten kunnen ook negatief zijn, zoals wanneer de waarde die een klant of gebruiker ervaart vermindert ten opzichte van eerdere ervaringen, bijvoorbeeld wanneer een dienst waar ze tot nu toe op vertrouwden niet langer beschikbaar is.
* **Impacts**. Ditzijn de resultaten die een organisatie of haar niet-klantenstakeholders (zoals investeerders) behalen wanneer klanten of gebruikers van een product hun gewenste doelen bereiken. Denk hierbij aan zaken als toegenomen omzet of winst, een verbeterd marktaandeel en een hogere beurskoers. Echter, het is belangrijk te benadrukken dat positieve impacten alleen op een duurzame manier te behalen zijn wanneer klanten daadwerkelijk betere resultaten ervaren.

Het probleem waar de meeste organisaties tegen aanlopen, wat vaak wordt gereflecteerd in de dingen die ze meten, is dat het meten van activiteiten en outputs eenvoudig is, terwijl het meten van uitkomsten moeilijk is. Organisaties kunnen veel gegevens verzamelen met onvoldoende informatie over hun geschiktheid om waarde te leveren. Echter, om hun doelen te behalen, is het essentieel om waardevolle uitkomsten te leveren. Bijvoorbeeld meer uren werken (activiteiten) en meer functionaliteit leveren (outputs) is geen garantie voor verbeterde klantervaringen (uitkomsten). | The problem most organizations face, which is often reflected in the things they measure, is that measuring activities and outputs is easy, while measuring outcomes is difficult. Organizations may gather a lot of data with insufficient information about their ability to deliver value. However, delivering valuable outcomes to customers is essential if organizations are to reach their goals. For example, working more hours (activities) and delivering more features (outputs) does not necessarily lead to improved customer experiences (outcomes).

While it is possible for organizations to improve *impacts* without improving customer outcomes, doing so usually harms the organization, such as when it reduces product quality to improve profitability, or when it sells products below cost to increase revenue and market share but harms profitability. Achieving impacts is important, but they have to be achieved in a sustainable way that does not harm the organization’s long-term viability.

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# Voortgang maken in de richting van doelen in een opeenvolging van kleine stappen

De eerste stap in de richting van een Strategisch Doel is het begrijpen van je Huidige Toestand, zodat je de aandacht kunt richten op mogelijke verbeteringen. Bijvoorbeeld, wanneer je doel is om de klanttevredenheid te verbeteren, zul je moeten weten wat je huidige klantervaring is, en hoe je klanten deze graag anders zouden zien. Je zult waarschijnlijk ook moeten begrijpen wat je capaciteit om waarde te leveren is, oftewel hoe snel kun je verbeteringen doorvoeren in de ervaren klantwaarde, zodat je realistische korte- en middellange-termijndoelen kunt stellen.

De Experimenteerlus (zie Figuur 1) helpt organisaties van hun Huidige Toestand naar hun Directe Tactische Doel te bewegen, vervolgens naar hun Tussenliggende Doel, en uiteindelijk naar het Strategisch Doel, door kleine, meetbare stappen te nemen, experimenten genoemd, gebruikmakend van expliciete hypothesen.3 Deze lus bestaat uit:

* **Het vormen van een hypothese ter verbetering.** Gebaseerd op ervaring vorm je een idee waarmee je verwacht te bewegen in de richting van je Directe Tactische Doel en je bepaalt hoe je het slagen van dit experiment meetbaar maakt..
* **Uitvoeren van je experimenten.** Voer de verandering door waarvan je denkt dat het een verbetering is en verzamel gegevens om je hypothese te bevestigen of weerleggen.
* **Inspecteren van je resultaat.** Heeft de gemaakte verandering de resultaten verbeterd of verslechterd, gebaseerd op de metingen die je hebt? Niet alle veranderingen zijn een verbetering; sommige veranderingen leiden tot verslechtering.Adapting your goals or your approach based on what you learned.
* **Aanpassen van je doelen of je aanpak aan de hand van wat je hebt geleerd.** Zowel je doelen als je verbeterexperimenten zullen zich waarschijnlijk ontwikkelen naarmate je meer ontdekt over klanten, concurrenten en de competenties van je organisatie. Doelen kunnen wijzigen door gebeurtenissen van buitenaf, waardoor je de tactieken om je doelen te bereiken zult moeten heroverwegen en bijstellen, bijvoorbeeld:
  + Was het Directe Tactische Doel het juiste?
  + Zijn de tussentijdse en Strategische Doelen nog steeds relevant of moeten ze worden aangepast?
  + Als het Directe Tactische Doel niet is bereikt, maar het nog steeds belangrijk is om te bereiken, hoe kunt je het de volgende keer beter kunnen doen?
  + Als je je tussentijdse of strategische doelen hebt bereikt, moet je nieuwe doelen formuleren.Hypotheses, Experiments, Features, and Requirements

Organizations can spend a lot of money implementing features (distinguishing characteristics) and other requirements in products,[[3]](#footnote-3) only to find that customers don’t share the company’s opinion on their value; beliefs in what is valuable are merely assumptions until they are validated by customers. This is where hypotheses and experiments are useful.

A hypothesis is a belief that doing something will lead to something else, such as delivering feature X will lead to outcome Y. An experiment is a test that is designed to prove or reject some hypothesis.

Every feature and every requirement really represents a hypothesis about value. One of the goals of an empirical approach is to make these hypotheses explicit and to consciously design experiments that explicitly test the value of the features and requirements. The entire feature or requirement need not actually be built to determine whether it is valuable; it may be sufficient for a team to simply build enough of it to validate critical assumptions that would prove or disprove its value.

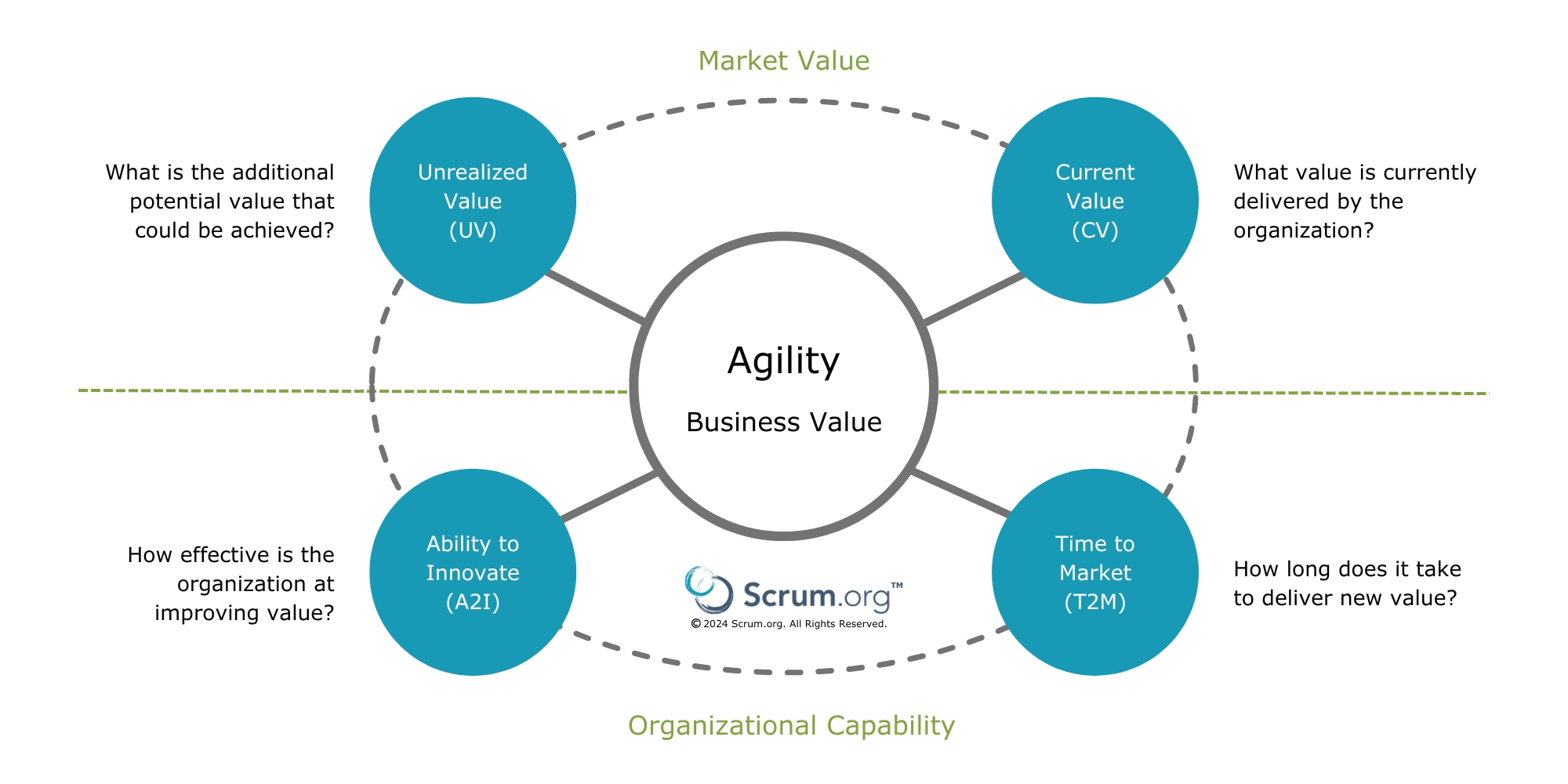
Explicitly forming hypotheses, measuring results, and inspecting and adapting goals based on those results are implicit parts of an agile approach. Making this work explicit and transparent is what EBM adds to the organizational improvement process.

# EBM Uses Key Value Areas to Examine Improvement Opportunities

In addition to using hypotheses and experiments to move toward goals, EBM provides a set of perspectives on value and the organization’s ability to deliver value. These perspectives are called Key Value Areas (KVAs). These areas examine the goals of the organization (Unrealized Value), the current state of the organization relative to those goals (Current Value), the responsiveness of the organization in delivering value (Time-to-Market), and the effectiveness of the organization in delivering value (Ability-to-Innovate).

Market value KVAs (UV, CV) reflect customer outcomes. Whereas, organizational capability KVAs (A2I, T2M) reflect the organization’s ability to deliver valuable customer outcomes, and so may be measured in terms of either outcomes or outputs. Input, activity, output, and impact measures do not tell an organization anything about organizational capability to deliver valuable outcomes.

Focusing on these four dimensions enables organizations to better understand where they are and where they need to go (see Figure 2).



**Figure 2: Key Value Areas provide lenses to examine improvement opportunities.**

Each KVA focuses on a different aspect of either value, or the ability of the organization to deliver value. Delivering business value (Current Value) is important, but organizations must also show that they can respond to change (Time-to-Market) while being able to sustain innovation over time (Ability-to-Innovate). And they must be able to continually make progress toward their long-term goals (Unrealized Value) or they risk succumbing to stagnation and complacency.

## Current Value (CV)

### Measures that quantify the value that the product delivers today

The purpose of looking at CV measures is to understand the value that an organization delivers to customers and stakeholders at the present time; it considers only what exists right now, not the value that might exist in the future. Questions that organizations need to continually re-evaluate for current value are:

1. How happy are users and customers today? Is their happiness improving or declining?
2. How happy are your employees today? Is their happiness improving or declining?
3. How happy are your investors and other stakeholders today? Is their happiness improving or declining?

Considering CV helps an organization understand the value that their customers or users experience today.

**Example**: While profit, one way to measure investor happiness, will tell you the economic impact of the value that you deliver, knowing whether customers are happy with their purchase will tell you more about where you may need to improve to keep those customers. If your customers have few alternatives to your product, you may have high profit even though customer satisfaction is low. Considering CV from several perspectives will give you a better understanding of your challenges and opportunities.

Customer happiness and investor happiness also do not tell the whole story about your ability to deliver value. Considering employee attitudes recognizes that employees are ultimately the producers of value. Engaged employees that know how to maintain, sustain and enhance the product are one of the most significant assets of an organization, and happy employees are more engaged and productive.

## Unrealized Value (UV)

### Measures that quantify the potential future value that *could be* realized if the organization met the needs of all potential customers or users

Looking at Unrealized Value measures helps an organization to maximize the value that it realizes from a product or service over time. When customers, users, or clients experience a gap between their current experience and the experience that they would like to have, the difference between the two represents an opportunity; this opportunity is measured by Unrealized Value.

Questions that organizations need to continually re-evaluate for UV are:

1. Can any additional value be created by our organization in this market or other markets?
2. Is it worth the effort and risk to pursue these untapped opportunities?
3. Should further investments be made to capture additional Unrealized Value?

The consideration of both CV and UV provides organizations with a way to balance present and possible future benefits. Strategic Goals are formed from some satisfaction gap and an opportunity for an organization to decrease UV by increasing CV.

**Example**: A product may have low CV, because it is an early version being used to test the market, but very high UV, indicating that there is great market potential. Investing in the product to try to boost CV is probably warranted, given the potential returns, even though the product is not currently producing high CV.

Conversely, a product with very high CV, large market share, no near competitors, and very satisfied customers may not warrant much new investment; this is the classic cash cow product that is very profitable but nearing the end of its product investment cycle with low UV.

## Ability to Innovate (A2I)

### Measures that quantify the effectiveness of an organization in delivering new capabilities

The goal of looking at A2I measures is to maximize the organization’s ability to deliver new capabilities and innovative solutions. Organizations should continually re-evaluate their A2I by asking:

1. What prevents the organization from delivering new value?

2. What prevents customers or users from benefiting from that innovation?

Improving A2I helps an organization become more effective in ensuring that the work that it does improves the value that its products or services deliver to customers or users.

**Example**: A variety of things can impede an organization from being able to deliver new capabilities and value: spending too much time remedying poor product quality, needing to maintain multiple variations of a product due to lack of operational excellence, lack of decentralized decision-making, inability to hire and inspire talented, passionate team-members, and so on.

As low-value features and systemic impediments accumulate, more budget and time are consumed maintaining the product or overcoming impediments, reducing its available capacity to innovate. In addition, anything that prevents users or customers from benefiting from innovation, such as hard to assemble/install products or new versions of products, will also reduce A2I.

## Time-to-Market (T2M)

### Measures that quantify how quickly the organization can deliver and learn from feedback they gather from experiments

The reason for looking at T2M measures is to minimize the amount of time it takes for the organization to deliver something that is potentially valuable. To know this they must measure the result so that they know whether they actually improved the value their customers experienced. Questions that organizations need to ask to evaluate their T2M are:

1. How fast can the organization learn from new experiments and information?

2. How fast can you adapt based on the information?

3. How fast can you test new ideas with customers?

Improving T2M helps improve the frequency at which an organization can potentially change CV.

**Example**: Reducing the number of features in a product release can dramatically improve T2M; the smallest release possible is one that delivers at least some incremental improvement in value to some subset of the customers/users of the product. Many organizations also focus on removing non value-added activities from the product development and delivery process to improve their T2M.

Example Key Value Measures (KVMs) for each KVA are described in the Appendix.

# Inspecting and Adapting Based on Experiment Results

Once you have gathered measures from your experiments to improve value, you will need to inspect or evaluate your results against your goals to see if your improvement ideas worked. Examining measures in each of the Key Value Areas will help you to maintain a balanced perspective.

Immediate Tactical Goals should improve Current Value and reduce Unrealized Value. Even when Immediate Tactical Goals are focused on organizational effectiveness or speed of obtaining feedback, considering CV and UV helps the organization keep customer satisfaction in sight. Each KVAs is a different lens that helps you focus on different aspects of your performance towards the goals you are trying to achieve.

Similarly, when your Immediate Tactical Goals are focused on improving effectiveness (A2I) or the speed at which you can obtain feedback (T2M), you never want to ignore or take for granted your customers’ experiences. When an organization targets improvements only in A2I and T2M without monitoring CV and UV, they are focused only on internal processes that may not help them further satisfy customers or achieve value. This can lead to, or be an indication of, a lack of outcome-based goals.

If you succeed in achieving your Immediate Tactical Goal, congratulations! Your next step will be to form a new Immediate Tactical Goal that, when achieved, will take you closer to your Intermediate Goal. Continue devising experiments, or things you can try, to achieve that goal.

If you’ve actually achieved your Intermediate Goal, even better! Now you’ll need to form a new Intermediate Goal that, when you achieve it, will move you closer to your Strategic Goal. You’ll also need to form a new Immediate Tactical Goal to provide you with a nearer target to work toward.

Sometimes you’ll find that your goals need adjusting. You might discover that a goal is no longer relevant, or that it needs to be refined. This can happen to your goals at any level. And sometimes you’ll fail to reach your Immediate Tactical Goal because your experiment did not produce the results you had expected. This is not a bad thing, and what you learned helps you to devise new experiments that may yield better results.

**End Note**

Evidence-Based Management is free and offered in this Guide. Although implementing only parts of EBM is possible, the result is not Evidence-Based Management.

**Acknowledgements**

Evidence-Based Management was collaboratively developed by Scrum.org, the Professional Scrum Trainer Community, Ken Schwaber and Christina Schwaber.

**Appendix: Example Key Value Measures**

To encourage adaptability, EBM defines no specific Key Value Measures (KVMs). KVMs listed below are presented to show the kinds of measures that might help an organization to understand its current state, desired future state, and factors that influence its ability to improve.

**Current Value (CV)**

|  |  |
| --- | --- |
| KVM | Measuring: |
| Revenue per Employee | The ratio (gross revenue / # of employees) is a key competitive indicator within an industry. This varies significantly by industry. |
| Product Cost Ratio | Total expenses and costs for the product(s)/system(s) being measured, including operational costs compared to revenue. |
| Employee Satisfaction | Some form of sentiment analysis to help gauge employee engagement, energy, and enthusiasm. |
| Customer Satisfaction | Some form of sentiment analysis to help gauge customer engagement and happiness with the product. |
| Customer Usage Index | Measurement of usage, by feature, to help infer the degree to which customers find the product useful and whether actual usage meets expectations on how long users should be taking with a feature. |

**Unrealized Value (UV)**

|  |  |
| --- | --- |
| KVM | Measuring: |
| Potential Market Share | the potential market share that the product might achieve if it better met customer needs. |
| Customer or User Satisfaction Gap | The difference between a customer or user’s desired experience and their current experience. |
| Desired Customer Experience or satisfaction | A measure that indicates the experience that the customer would like to have |

**Time-to-Market (T2M)**

|  |  |
| --- | --- |
| KVM | Measuring: |
| Build and Integration Frequency | The number of integrated and tested builds per time period. For a team that is releasing frequently or continuously, this measure is superseded by actual release measures. |
| Release Frequency | The number of releases per time period, e.g. continuously, daily, weekly, monthly, quarterly, etc. This helps reflect the time needed to satisfy the customer with new and competitive products. |
| Release Stabilization Period | The time spent correcting product problems between the point the developers say it is ready to release and the point where it is actually released to customers. This helps represent the impact of poor development practices and underlying design and code base. |
| Mean Time to Repair | The average amount of time it takes from when an error is detected and when it is fixed. This helps reveal the efficiency of an organization to fix an error. |
| Customer Cycle Time | The amount of time from when work starts on a release until the point where it is actually released. This measure helps reflect an organization’s ability to reach its customer. |
| Lead Time | The amount of time from when an idea is proposed, or a hypothesis is formed until a customer can benefit from that idea. This measure may vary based on customer and product. It is a contributing factor for customer satisfaction. |
| Lead Time for Changes | The amount of time to go from code-committed to code successfully running in production. For more information, see the [DORA 2019 report](https://cloud.google.com/devops/state-of-devops/?utm_source=thenewstack&utm_medium=website&utm_campaign=platform). |
| Deployment Frequency | The number of times that the organization deployed (released) a new version of the product to customers/users. For more information, see the [DORA 2019 report](https://cloud.google.com/devops/state-of-devops/?utm_source=thenewstack&utm_medium=website&utm_campaign=platform). |
| Time to Restore Service | The amount of time between the start of a service outage and the restoration of full availability of the service. For more information, see the [DORA 2019 report](https://cloud.google.com/devops/state-of-devops/?utm_source=thenewstack&utm_medium=website&utm_campaign=platform). |
| Time-to-Learn | The total time needed to sketch an idea or improvement, build it, deliver it to users, and learn from their usage. |
| Time to remove Impediment | The average amount of time from when an impediment is raised until when it is resolved. It is a contributing factor to lead time and employee satisfaction. |
| Time to Pivot | A measure of true business agility that presents the elapsed time between when an organization receives feedback or new information and when it responds to that feedback; for example, the time between when it finds out that a competitor has delivered a new market-winning feature to when the organization responds with matching or exceeding new capabilities that measurably improve customer experience. |

**Ability to Innovate (A2I)**

|  |  |
| --- | --- |
| **KVM** | **Measuring:** |
| Employee Engagement | A measure of the degree to which employees are aligned with and bought-in to the organization’s goals. |
| Innovation Rate | The percentage of effort or cost spent on new product capabilities, divided by total product effort or cost. This provides insight into the capacity of the organization to deliver new product capabilities. |
| Defect Trends | Measurement of change in defects since last measurement. A defect is anything that reduces the value of the product to a customer, user, or to the organization itself. Defects are generally things that don’t work as intended. |
| On-Product Index | The percentage of time teams spend working on product and value. |
| Installed Version Index | The number of versions of a product that are currently being supported. This reflects the effort the organization spends supporting and maintaining older versions of software. |
| Technical Debt | A concept in programming that reflects the extra development and testing work that arises when “quick and dirty” solutions result in later remediation. It creates an undesirable impact on the delivery of value and an avoidable increase in waste and risk. |
| Production Incident Count | The number of times in a given period that the Development Team was interrupted to fix a problem in an installed product. The number and frequency of Production Incidents can help indicate the stability of the product. |
| Active Product (Code) Branches | The number of different versions (or variants) of a product or service. Provides insight into the potential impact of change and the resulting complexity of work. |
| Time Spent Merging Code Between Branches | The amount of time spent applying changes across different versions of a product or service. Provides insight into the potential impact of change and the resulting complexity of work. |
| Time Spent Context-Switching | Examples include time lost to interruptions caused by meetings or calls, time spent switching between tasks, and time lost when team members are interrupted to help people outside the team can give simple insight into the magnitude of the problem. |
| Change Failure Rate | The percentage of released product changes that result in degraded service and require remediation (e.g. hotfix, rollback, patch). For more information, see the [DORA 2019 report](https://cloud.google.com/devops/state-of-devops/?utm_source=thenewstack&utm_medium=website&utm_campaign=platform). |

1. Voor meer informatie over complexiteit, zie het gedeelte over Scrum Theorie in de Scrum Guide op <https://www.scrumguides.org/scrum-guide.html> (of download de Nederlandse gids via <https://www.scrumguides.org/download.html>) [↑](#footnote-ref-1)
2. Figuur gebaseerd op Mike Rother’s Improvement Kata (<http://www.personal.umich.edu/~mrother/The_Improvement_Kata.html>) [↑](#footnote-ref-2)
3. [↑](#footnote-ref-3)