Applying Earned Benefit Management[1]

Benefits for Projects[2]

Adding a benefits dimension to the Earned Value Method

By Crispin ("Kik") Piney, PgMP, PfMP

This article extends the scope of the Earned Value method beyond its traditional focus on budgeted cost, to encompass benefit-value, and support the strategic dimension of projects.

Introduction: an Aha! Moment

Wayne Abba, the past chairman of the College of Performance Management, made me aware of an article of his [Abba W. 2008] that is included in the Project Manager's Handbook [op. cit.]. Among the interesting facts about the development of Earned Value Management (EVM) and its application in U.S. Federal Government projects, he provides a definition of EVM from the Electronic Industries Alliance Standard EIA-748-B [EIA, 2019]. As will be explained below, this definition got me thinking about a posible, compatible extension of the current EVM paradigm that would provide a stepping-stone between project Earned Value and program Earned Benefit as it has been described in the current series.

Reminders on the Earned Benefit Model

The Earned Benefit model has been developed and explained over a number of articles in the current series [Piney 2018a].

Piney [2018b] ["Benefits Maps You Can Count On"] starts off by describing the basic concepts of benefits maps (also called *Benefits Realization Maps* (BRM)) and applying them to a case study.

Developing a Benefits Map

The BRM for the case study is shown in Figure 1. A BRM illustrates how to make the benefits happen. It is built up as follows: once the required benefits have been defined by the strategic sponsor, the following steps allow you to build the map:

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[1] This series is by Crispin "Kik" Piney, author of the book Earned Benefit Program Management. Aligning, Realizing and Sustaining Strategy, published by CRC Press in 2018. Merging treatment of program management, benefits realization management and earned value management, Kik's book breaks important new ground in the program/project management field. In this series of articles, Kik introduces some earned benefit management concepts in simple and practical terms.

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You need to determine, in order, based on the benefits:

- the changes to the environment that are required in order allow each benefit to occur ("outcomes");
- what we need to be able to do if we want to change the environment in this way ("capabilities");
- what tools we need in order to create these capabilities ("deliverables"); and, finally,
- what we need to do to create the tools ("initiatives" or "component projects").

This set of steps can be read in the reverse direction – starting from the initiatives – to explain why each step is necessary: from project to deliverables, to the capabilities of these deliverables, to the outcomes of applying the capabilities, and, finally, to the benefits associated with the outcomes. The concept of "disbenefits" is also included in order to cater for negative side effects due to the planned steps or the end-result of the program.

Each of these steps is represented in the BRM by a "node". The links between nodes are represented by arrows to indicate the logical flow from cause to effect. The initiatives are drawn on the left and the logical chain is read from left to right, across to the strategic benefits, although, as explained above, the BRM is built up from right to left, starting from the end-goal represented by the strategic benefits required. In this way, reading from left-to-right, the BRM provides the *tactical* view of the program; the logic of the *strategic* plan is developed from right to left. The elements of the map can then be quantified.

Piney [2018b] explained the concepts of a) "contributions" – the amount a given BRM node contributes to the overall benefits –, and b) the corresponding "allocations" – the amount of investment that is required to deliver the node's result –. The proportion of a node's total contribution provided by a direct predecessor is defined as the "contribution fraction" and assigned to the corresponding link.

The algorithm by which this information can be used to calculate the contributions in all of the nodes in the BRM was described. This algorithm is known as the *Benefits Allocation Routine* (BAR) and diffuses contributions from right to left across the BRM.

These ideas are explained based on a representative case study.

Reading a Benefits Map: Understanding the Case Study

The business objective of the program in this example is to increase profits for an organization in the area of customer service. The premise of the case study is that strategic analysis by senior management has shown that increased customer satisfaction with after-sales support enhances business results and has the potential for delivering additional revenue of €300,000 per annum compared with the current level of business. However, this service will also lead to an increase in operational costs amounting to 25% of the corresponding financial improvement, thereby reducing the net benefit by that amount.

The corresponding BRM after applying the BAR is shown in Figure 1.

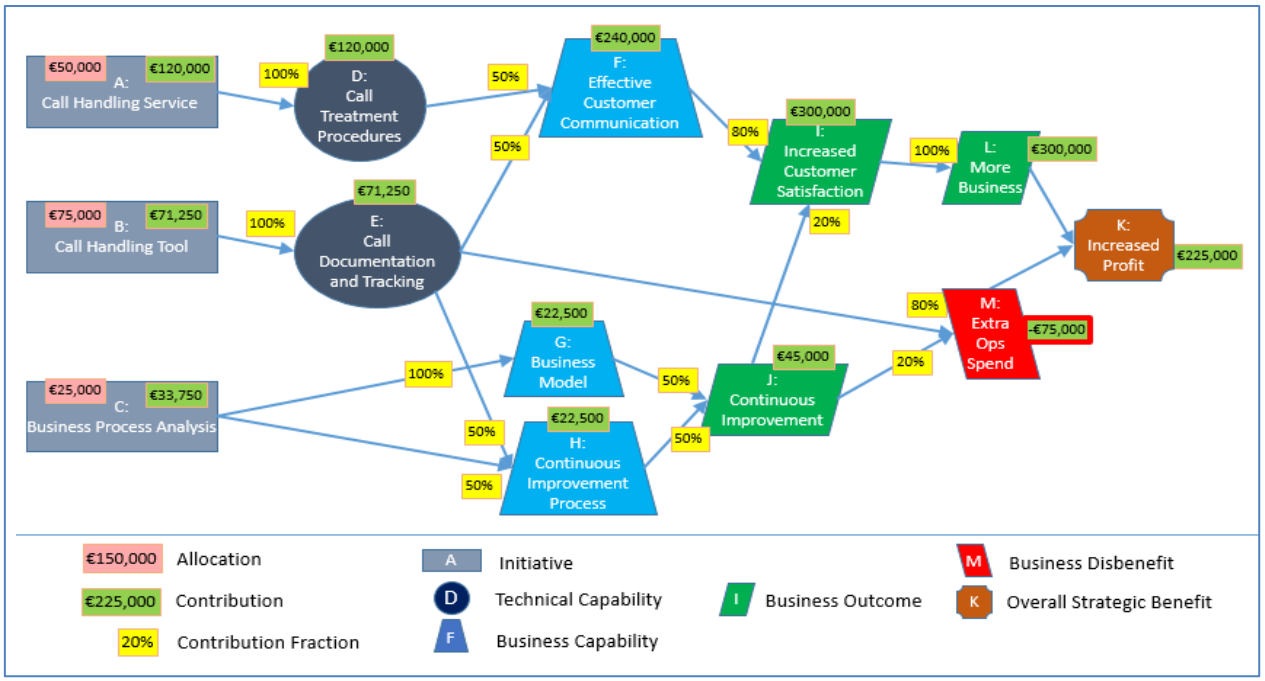

Figure 1: The Case Study BRM after Applying the BAR

Piney 2018c ["The Value of Benefits"] then explained how the calculated contributions of the initiatives can be combined with classical Earned Value concepts to provide a first approximation to a comprehensive Earned Benefit evaluation and forecasting technique to support benefit-focussed program performance management.

The Initial Earned Benefit Concept

The Earned Value Method (EVM) provides a well-established technique for tracking a project's progress based on the three, core project performance indicators of time, cost and scope. At any point in time, EVM can be used to provide the value of Percent Complete (PC) for the project. The Earned Benefit extension of this technique to programs started from the premise that the value of a project's contribution to the overall benefits at any point in time is directly proportional to its percent complete. That is to say that the contribution of a project rises from zero to its full contribution (calculated by the BAR) as its PC rises from zero to 100% (calculated by the EVM). The value of this contribution is known as the "Component Earned Benefit".

The initial approximation to the program Earned Benefit is defined as the sum of the Component Earned Benefits.

The rest of this article will explain how this initial technique for calculating the program Earned Benefit can be refined to provide an indicator that is more directly aligned to the business justifications for the project components, while still making use of the basic concepts of the Earned Value Method.

From Earned Value to Project Earned Benefit

A Beneficial Extension to Earned Value

The key sentences from the definition of EVM provided in the Electronic Industries Alliance Standard EIA-748-B [EIA, 2019] are as follows:

"The essence of earned value management is that [...] a target planned value (i.e., budget) is established for each scheduled element of work. As these elements of work are completed, their target planned values are 'earned'".

On my initial reading of this definition, I missed the clarification in brackets that specifies that the planned value for each scheduled element of work. is equal to its budgeted cost. This oversight allowed me to consider that, if we allow the "value" to be set based on a target other than the budgeted cost, we could use all of the Earned Value performance management framework in a different but compatibly related context. This new approach would work as follows:

Rather than using the budgeted cost (allocation) as the planned value for each scheduled element of the project's work ("activity"), we should define an "activity value" based on the activity's contribution to the benefit of the project, to be known as its *Activity Benefit-Value* (ABV). The sum of all of the planned activity benefit-values of a project should be equal to the benefit contribution specified for the whole project. As explained in the reminders at the start of this article, the benefit contribution of each component project of a program is evaluated from the overall program benefit by applying the BAR to the quantified BRM. In this way, the ABV can be used as the basis for benefit-focussed project performance management.

This benefit-based paradigm can also be applied to the definition of the Performance Management Baseline defined in the ANSI Standard for Earned Value Management Systems [ANSI (2005) EIA 748, 2.1 Section E]. This standard requires projects to "provide for the integration of the program work breakdown structure and the program organizational structure in a manner that permits cost and schedule performance measurement by either or both structures as needed". The addition of the word "benefit" to "cost and schedule" as units of performance measurements in this ANSI requirement would extend it to include the strategic scope of the Earned Benefit-Value System.

In order to avoid confusion with the classical Earned Value Method, a new set of terms needs to be defined for the additional, benefit-related indicators and techniques.

New Terms and Formulas

I will use the term *Earned Benefit-Value Method* (EBVM) for the proposed extension to the classical Earned Value Method.

Whereas Earned Value – earlier known as "Budgeted Cost of Work Performed" – is the sum of the budgeted costs of the activities (and partial activities) that are reported to have been carried out up to the data date of the report, for the EBVM, it is the sum of the corresponding Activity Benefit-Values that is used. This sum is known as the project's *Earned Benefit-Value* (EBV) and represents the Earned Benefit contribution at the project level. For both EVM and

EBVM, a convention also has to be agreed for dealing with activities that are only partially completed.

As for classical Earned Value, a number of options are available for assigning values to partially-completed project activities. For example, to mitigate the "90% complete" syndrome, an "inverse optimism" factor can be applied to the reported completion percentage. This entails multiplying the activity's reported "percent complete" by the square of this value[3] before multiplying it by the activity's value at completion.

Now that this benefit-related extension of Earned Value has been defined, the EBV should be used instead of the Component Earned Benefit – defined earlier as directly proportional to a budget-related EVM – in the calculations for the program Earned Benefit.

Once this initial expansion of the EVM has been made, the concepts can be developed to provide additional, project EBVM-related formulas such as the following:

- Planned Benefit-Value (PBV) = forecast EBV for a given date
- Benefit-Value Schedule Performance Index (BVSPI) = EBV / PBV
- Benefit-Value At Completion (BVAC) = specified contribution of the project
- Benefit-Value Percent Complete (BVPC) = EBV / BVAC

It is clear that, if the ABV for each activity is set equal to its budgeted cost, the EBVM becomes identical to the EVM. However, in order to take advantage of the additional capabilities of EBVM in the Earned Benefit environment, the project sponsor needs to work with the project manager on setting the ABV for each activity.

Setting Activity Benefit-Values

The starting-point for distributing the project contribution across the scheduled activities is to agree on an approach for assigning project management benefit-value in general. Once this process has been agreed, it needs to be applied to the chosen project.

The most effective method for deciding on how to share the project's total contribution between the project's activities is to work in a hierarchical manner, based on the project's Work Breakdown Structure (a WBS is shown in Figure 2) and assign benefit-value weights (as percentages) to all of the WBS components

The first decision should be how to share the project's contribution – the benefit-value of level 0 – between the WBS elements at level 1. The sum of the weights at this level should. be 100%. Once this decision has been made, the next level can be addressed in a similar manner, sharing weight of each "parent" WBS element between its "children" at the next level down – and so on down to the level at which the activities to be scheduled are defined. In cases where

[3] 50% complete would therefore provide 12.5% of the total value, 75% give 42%, and 90% complete deliver slightly less than 75%.

performance reporting at the specified management control point level is sufficient, this benefit breakdown process can stop at the control-point level.

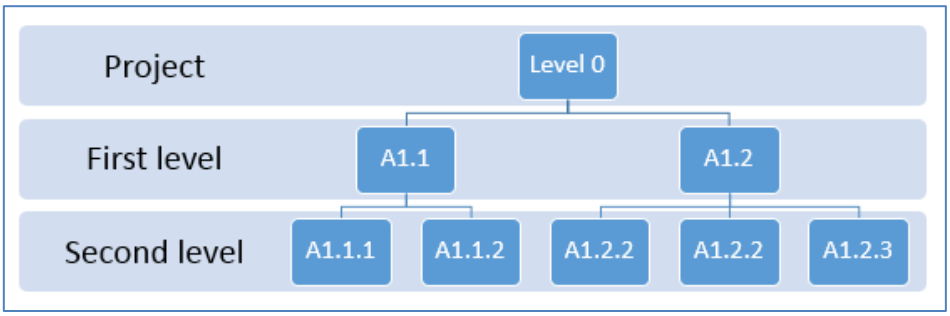

Figure 2: A Typical Work Breakdown Structure

Although the process is clearly defined, the starting-point which entails reaching an agreement on the concept of benefit-value can be hard to achieve. Some of the options for addressing this question will be examined in the case study that is presented below.

Case Study – Delivering the Call Handling Tool

This example focusses on the second project component in the case study: the creation of B=*Call Handling Tool*, which has an allocation from the program cost of €75,000 and a contribution to the program benefit of €71,250. The work required for this project has been analyzed and documented in the form of a WBS and the resulting delivery schedule.

The main actions in this analysis included:

a. create the WBS;
b. decide on the ABV weightings of the activities in a hierarchical manner as explained above;
c. determine the dependencies between the corresponding activities;
d. estimate the effort required for each activity;
e. assign activity resources and specify their daily cost;
f. estimate the duration of each activity;
g. develop the schedule including dates and resource-based budget for each activity.

The details of these actions for the case study are presented next.

Actions a and b are first applied in order to provide a benefit-value weighted WBS.

Developing the Benefit-Value Weighted WBS

The first step was to create the WBS. The initial decision concerns the structure of the first level. This structure then conditions the rest of the work on the WBS and provides a basis for the discussion on ABV weightings.

For the case study, the decision for the first level was to use a simple product development lifecycle in three phases comprising a basic design phase, a requirements definition phase, and an implementation phase. The implementation phase was further split into two steps:

development, followed by a verification step. This life cycle structure provides a basis for discussion and decision on the ABV weightings at levels 1 and below of the WBS.

The following decisions on weights have been made:

- the first level is shared 20%, 20%, 60% between basic design, requirements definition, and implementation.
- the 60% weighting of the implementation phase is made up of 40% for development and 20% for verification.
    - we will discuss this decision in more detail later in the article as it raises important questions about the nature of activity benefit-values.
- sub-assignments are made in a similar way for the weightings in the lower layers.

The resulting Activity Benefit-Value weighted WBS is shown in the form of a mind map in Figure 3.

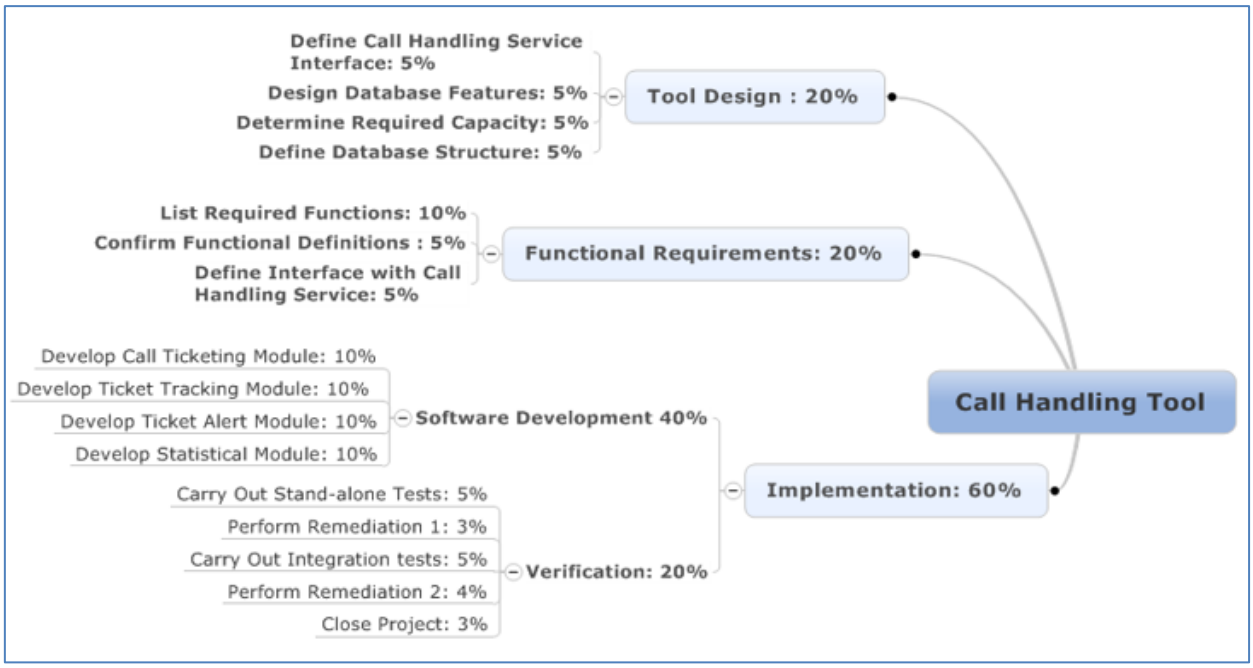

Figure 3: The ABV-Weighted WBS

Once the weights are available, the individual ABVs can be calculated based on the project's contribution to the program benefits.

At this point, the corresponding costed schedule can also be created by carrying out the actions c to g that were listed earlier.

Developing the Costed Schedule

For the purpose of the case study, the set of resources available was identified and their daily costs were specified. The project called on the following resources:

- a project manager,

- a call handling subject matter expert,
- a designer,
- an implementation team,
- operations staff.

These resources were assigned to the relevant activities, and the corresponding durations evaluated. Once the dependencies between the activities had also been determined, all of this information was fed into Microsoft Project®. The resulting schedule and budgeted activity costs are shown in Figure 4.[4]

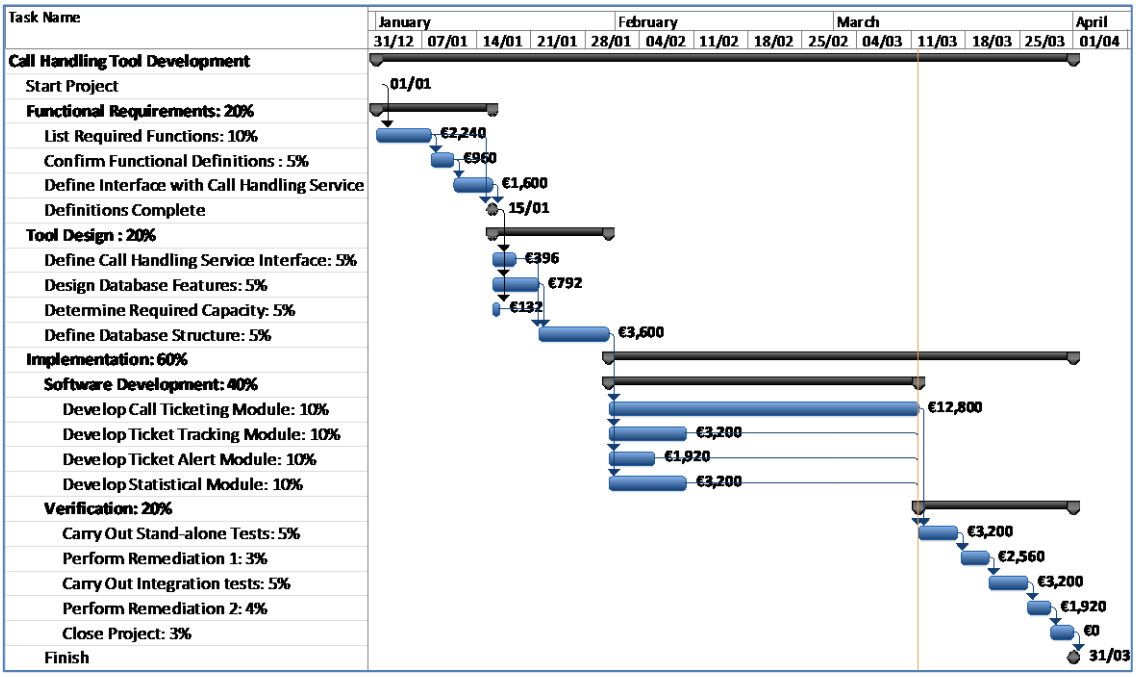

Figure 4: Costed Schedule of the Case Study Project

Once the schedule is available along with the budgeted activity costs plus the ABVs based on the weights defined earlier, the planned value and the planned benefit-value can be calculated for pre-defined intervals. The result of these calculations for weekly intervals is shown in tabular and graphical form in Figure 5.

[4] The costs of the project manager (PM) are allocated at the project level as an overall level of effort cost based on total duration, rather than as budgeted costs for specific activities. Similarly, the benefit-value of the PM's involvement is reflected in the results of the scheduled activities themselves rather than in specifically defined actions by the PM. Although a more detailed plan including explicit project-management activities could be created, this simpler convention for determining the benefit-values has the advantage of avoiding potentially endless discussions on the benefit-value of risk management, stakeholder management, etc.: the proof of the project management pudding is in the resulting benefit.

Date	Planned Value	Planned Benefit Value
01-Jan	€ 0	€ 0
08-Jan	€ 4,858	€ 7,125
15-Jan	€ 10,035	€ 14,250
22-Jan	€ 13,973	€ 24,938
29-Jan	€ 19,390	€ 27,708
05-Feb	€ 29,528	€ 43,641
12-Feb	€ 37,585	€ 52,013
19-Feb	€ 42,443	€ 53,259
26-Feb	€ 47,301	€ 54,506
05-Mar	€ 52,158	€ 55,753
12-Mar	€ 57,016	€ 57,000
19-Mar	€ 64,113	€ 61,631
26-Mar	€ 71,211	€ 66,263
31-Mar	€ 75,000	€ 71,250

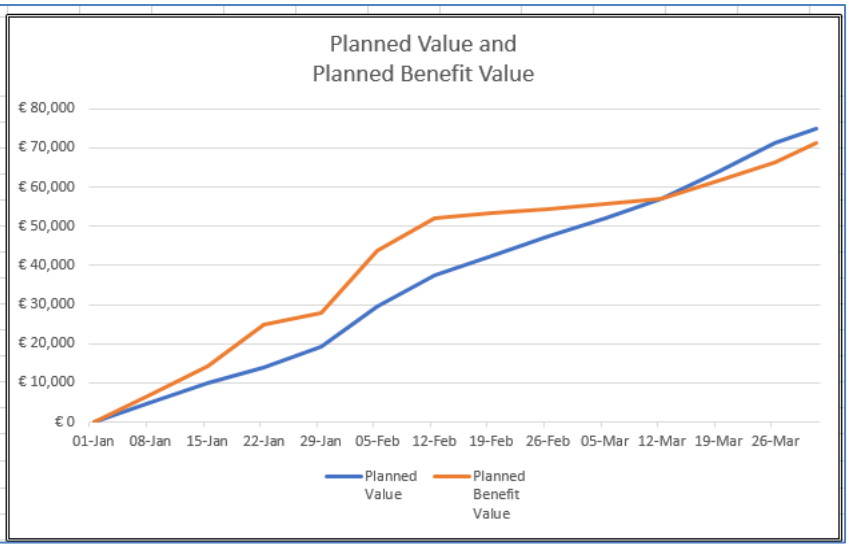

Figure 5: The Planned Value and Planned Benefit-Value Curves for the Case Study

In Figure 5, it can be seen that the planned benefit-value rises more steeply than the planned value curve at the start. The reason for this can more easily be understood by examining the curves at the same time as the schedule, as shown in Figure 6.

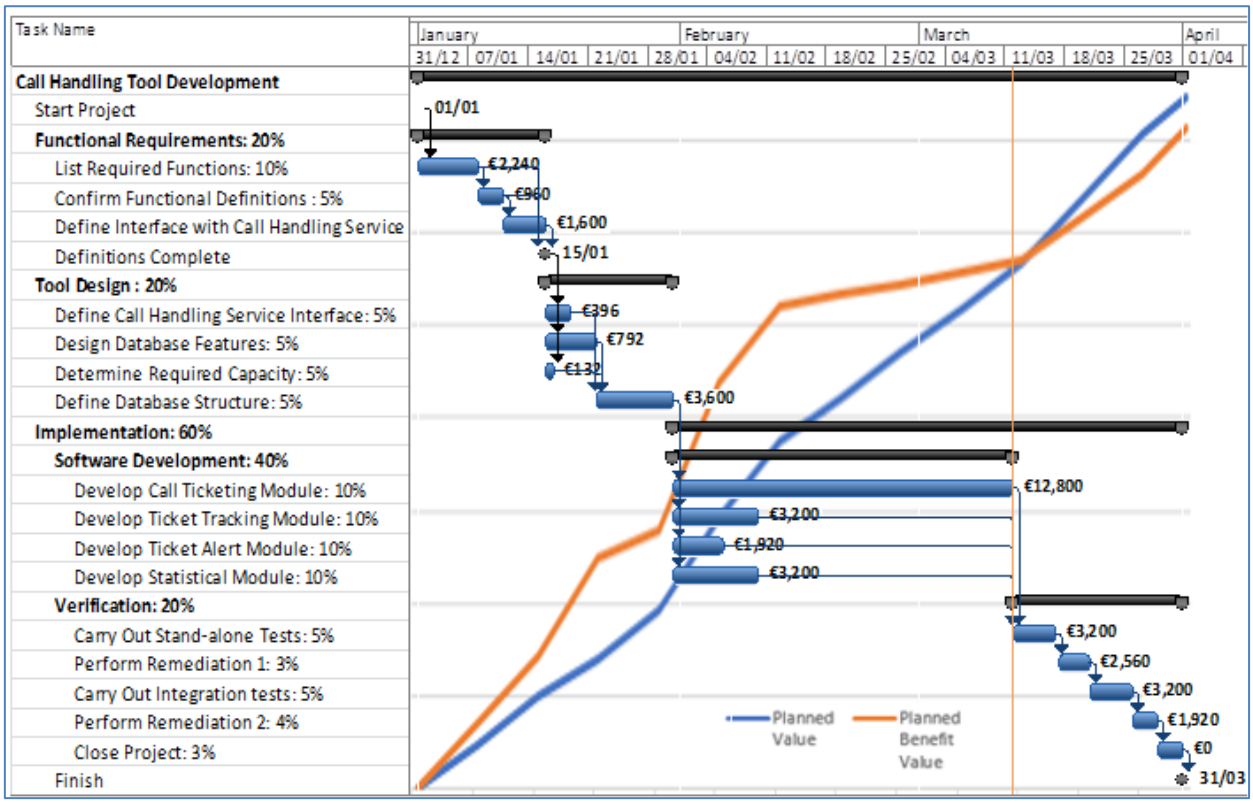

Figure 6: Project Schedule Overlaid with the Planned Value and Planned Benefit-Value Curves

Figure 6 shows that the Planned Benefit-Value rises faster than Planned Value in two steps: first during the Functional Requirements and the Tool Design phases, and next, still faster, during the Development step in the Implementation phase. These differences between the two

curves can be explained by the fact that the client of the specified deliverable recognizes the importance of effective design (i.e., the first two phases) and is also impatient to see something concrete created (the Development of the call handling modules: specified, therefore, as 40% of the total project Benefit-Value).

Planned Value then overtakes the Planned Benefit-Value because the cost of testing, remediation and handover have been assessed by the sponsor as a necessary evil that costs more than it delivers (BV weighting of 20% for Verification).[5]

This analysis of the effects of the ABV weights underlines one of the challenges of this approach: stakeholder attitudes towards project management processes.

Attitudes Towards Project Benefit-Values

Attitudes towards project benefit-values are closely linked to how the people assigning these values regard project management. Most of us have encountered the "macho" sponsor who seems to believe that time spent preparing and clearing up is project time wasted. This may well be the reason behind the low weighting percentages for the Verification step in the case study example above (and one reason behind the high incidence of project failures in general). Luckily, however, in this example, the strategic value of the Requirements and Design phases has been recognized through the applied weights (20% plus another 20%) – with the result that the Planned Benefit-Value remains ahead of the Planned Value during these two phases: the return on investment of the work during these phases is positive (i.e. the Planned Benefit-Value is greater than the Planned Value).

A more dependable and consistent approach to developing the weights is to explain, before starting the weighting exercise, the meaning of Benefit-Value in the EBVM context. The Benefit-Value should not be seen so much an "opportunity score" measuring how happy you will be to see a given activity completed; it should rather be understood from the point of view of threat minimization, and answer the question "how key is this activity to the reliable delivery of a working deliverable?"

Based on this threat minimization approach, the subcategory weightings in the Implementation phase for the case study should be reversed: although writing the code is an absolute requirement for creating the deliverable, the true value of this work can only be guaranteed through testing, plus any required remediation.

The result of making this change in the weightings is shown in Figure 7.

[5] Note that, in general, it can also be interesting to plot the EBVM Planned Benefit-Value Percent Complete and the EVM Planned Percent Complete curves together when comparing and contrasting Earned Benefit-Value and Earned Value behaviour. In the current example, this would not provide any new insights because the total benefit contribution of this project is very close to its total cost allocation, so the two PC curves would be scaled by almost identical amounts. .

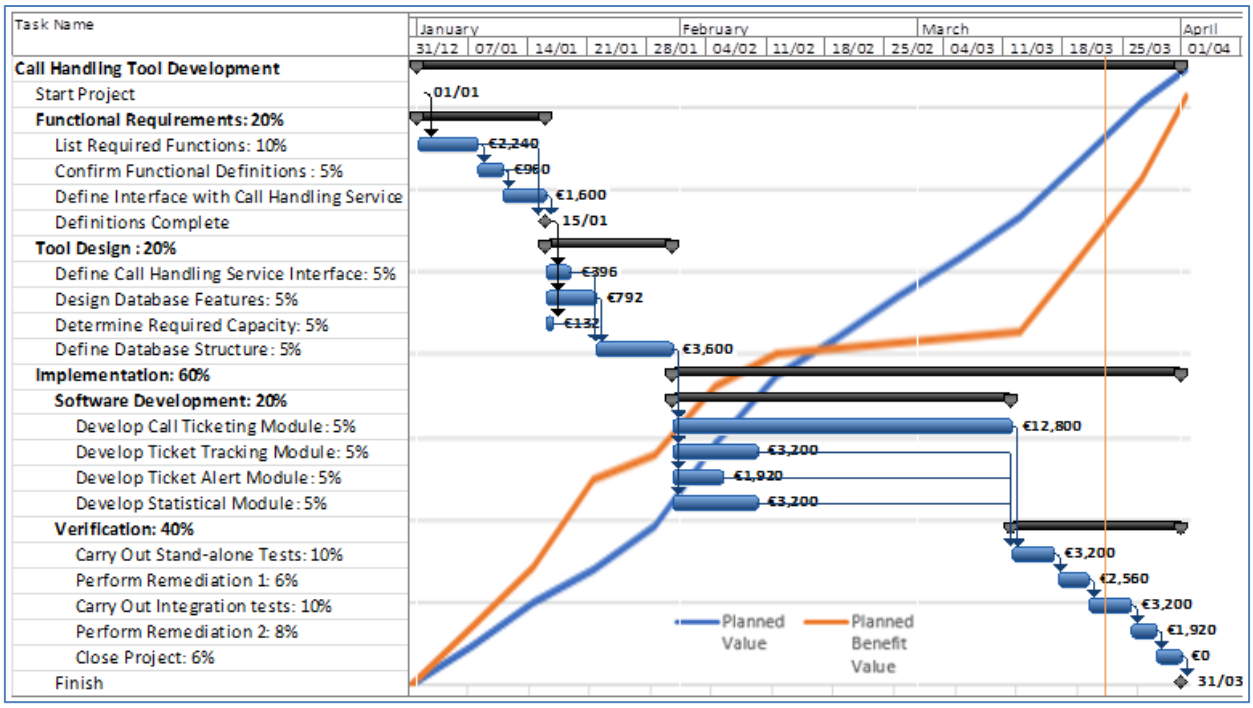

Figure 7: Project Schedule Overlaid with the Planned Value and the Modified Planned Benefit-Value Curves

In both cases, the Planned Benefit-Value greater than the Planned Value during the first two phases because the definition and design phases are key to ensuring that the correct deliverable will be created. However, a striking difference between Figure 6 and Figure 7 is the cross-over point between the Planned Value and the Planned Benefit-Value curves in the two cases. In the first example, it occurs at the point where all of the development work has been completed; in the modified example, the cross-over occurs much earlier, well before all of call handling modules have been developed; this signifies that the cumulative benefit-value of the work to date is considered to be less than its cumulative budgetary cost because, at that point, there is no guarantee that what has been done can actually deliver the required working deliverable. Conversely, once the Verification step begins, the cumulative Planned Benefit-Value rises much more sharply than the Planned Value for the reasons outlined above on the importance of verification.

As can be seen from the previous discussion, the decision on the assignment of benefit-value weights has an effect on application of the EVBM throughout the lifetime of the project. For this reason, the options need to be analyzed carefully before formally deciding on the set of ABV weights.

Reviewing the Benefit-Value Weighting Strategy

Rather than comparing the planned value curves, the effect of the choice of weights can be visualized more clearly in terms of the change in the Planned Values over each interval. These increments can be shown together on a single chart, overlaid on the schedule summary chart, as shown in Figure 8. This type of increment chart can prove extremely useful as a basis for

discussions with the strategic stakeholders on the policy to adopt for specifying the weighting approach for the activity benefit-values.

Figure 8 shows the profile of the threat minimization approach adopted for assigning the ABV weights: the benefit expected from the activities in the first two phases of the life cycle increases much faster than the costs, whereas software development cannot add much value without the subsequent contributions from the verification step.

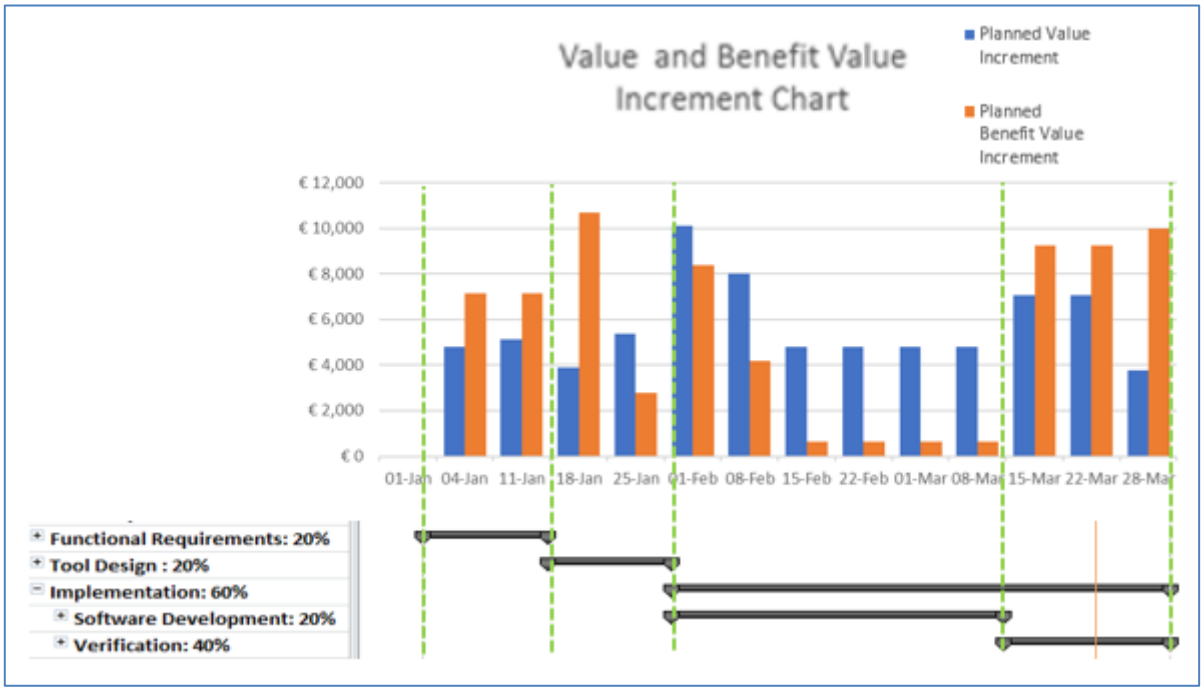

Figure 8: Comparing the Rate of Increase of Planned Value and Planned Benefit-Value

This analysis highlights two major advantages of this threat minimization approach as opposed to the opportunity score attitude:

- In the opportunity score weighting scheme depicted in Figure 6, we see the potential benefit of the work to be "ahead of the cost curve" based principally on the development stage, whereas, as shown in Figure 7, the threat minimization approach protects to a large extent against unwarranted optimism in the progress of the project.

- The higher benefit-value weights for key project management activities, as used for Figure 8, provide a business justification for investing in the initial (preparation) and final (verification and closing) project activities that are so necessary for increasing the overall likelihood of project success. In fact, targeted assignment of benefit-value weights is not only a sound basis for effective performance management at the strategic level, it also provides a strong, concrete incentive to executive management and the project team for adopting best practices in project management.

Conclusion

A very small textual change to the definition of Earned Value has provided the basis for a compatible extension from the project-centric Earned Value Method and allied management processes into the area of program and portfolio management. Whereas the existing definition states: "*[...] a target planned value (**i.e.,** budget) is established for each scheduled element of work.*", replacing the specific "i.e." in that definition by a flexible "e.g." provided the inspiration for a way to add an approach focused on Benefit-Value to the classical budget-related Earned Value Method for projects.

The new set of indicators including Earned Benefit-Value and Planned Benefit-Value provides a coherent link between the project Earned Value Method and the program Earned Benefit Framework. A broader definition of the Performance Measurement Baseline (PMB [ANSI 2005]) to encompass the new benefit-related paradigm would also entail only the smallest of change (shown next, in bold) to the current definition by specifying that the PMB should "provide for the integration of the program work breakdown structure and the program organizational structure in a manner that permits cost, **benefit,** and schedule performance measurement by either or both structures as needed". Adding this concept of benefit to the PMB has the advantage of allowing the project stakeholders to focus their attention on what they hope to get out of the project rather than, as at present, simply on what they have to put into it. In this way, the project stakeholders can consider the strategic value of their project rather than simply worrying about its cost.

These changes would ensure that performance management for projects, programs and portfolios is based on a single, coherent set of tools and is directly linked to strategic success. The inclusion of a benefit focus in performance management may seem potentially revolutionary as an idea but, as a technique, it only requires a simple, evolutionary change.

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About the Author

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After many years managing international IT projects within large corporations, **Crispin ("Kik") Piney**, B.Sc., PgMP is now a freelance project management consultant based in the South of France. At present, his main areas of focus are benefits realization management, risk management, integrated Portfolio, Program and Project management, as well as time and cost control. He has developed advanced training courses on these topics, which he delivers in English and in French to international audiences from various industries.

Kik has carried out work for PMI on the first Edition of the Organizational Project Management Maturity Model (*OPM3™)* as well as participating actively in fourth edition of the *Guide to the Project Management Body of Knowledge* and was also vice-chairman of the Translation Verification Committee for the Third Edition. He was a significant contributor to the second edition of both PMI's Standard for Program Management as well as the Standard for Portfolio Management. In 2008, he was the first person in France to receive PMI's PgMP® credential; he was also the first recipient in France of the PfMP® credential. He has acted as subject matter expert on many of PMI's recent standards and practice guides. He is co-author of PMI's *Practice Standard for Risk Management*. He collaborates with David Hillson (the "Risk Doctor") by translating his monthly risk briefings into French. He has presented at a number of recent PMI conferences, delivered the keynote at EVM World in 2018, and published a number of formal papers.

Kik Piney is the author of the book *Earned Benefit Program Management. Aligning, Realizing and Sustaining Strategy*, published by CRC Press in 2018.

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