The Breakdown Structure:
90% of how to manage projects safely

By Simon Harris, PMP, CGEIT, Ex PRINCE2® examiner

Editor's Note: This is part 1 of a several-part analysis by Simon Harris. By the way, we praise Simon's use of the phrase PMBOK® Guide. Too many use the flawed practice of naming The Guide to the Project Management Body of Knowledge just PMBOK. Duncan's insistence with the 1st Edition was that it is not the entire body of knowledge, only a guide to it. In fact, this is one of the ways we know whether a PM consultant, writer, or provider has a clue or not: Whether they know the difference between PMBOK and the PMBOK Guide.

It is relatively rare for a practitioner to demonstrate deep knowledge about two diverse standards; we are fortunate to have Simon write for us. Because Simon contributes his insights from the UK, we have left his article in classic British English. To our dear readers who are a bit confused by the British spelling, welcome to the International world of Project Management! Thank you Simon!

Project problems are… not the fault of the customer's inarticulate expression of needs

Finding a customer who can clearly express what they want is rare. Often the first wobble that sets a project off to an unstable start is poor expression of needs. Any unsure start may be further destabilised by the typical customer who doesn't actually know (at least completely) what they do want.

The next near fatal-blow may then be that even for those bits that the customer is clear on, the team isn't sure what steps are required, or how to clearly express the steps to create the solution.

Scope capture is problematic and it does not have to be so.

Success is Possible

With powerful approaches to help define scope that are well understood and applied with skill the problems above can be overcome.

The tools exist but sound understanding is a rarity and NOT conveyed by the popular standards in circulation.

How It Goes Wrong

Imagine this scope oriented fragment of a customer's request "… send a man to the moon and bring him back safely …" The engineer's thoughts are instantly racing away down the work oriented track "… and we will have to **build** a rocket and …".

The Right Start

The project manager is, I hope considering the customer's view of what is in scope and funds and timescale: E.g.:
"… safely by the end of this decade." ***Defining the work comes second, not first.***

The PM's Initial Focus

The PM should want to determine "how will we know when we have met expectations and thus deserve to get paid?" The wise PM sees one (sic) issue to resolve:

1. What needs producing?
2. What are the limits on 'goodness' in order to be not too good and not too poor?
3. How do I get the whole team (customer and technicians) to see the same goal?
4. How do I get them all motivated to contribute to the goal's achievement?

After we've explored some problems with current "wisdom" on scope definition I will set-out some suggestion of mechanics and philosophy that clarify a useful way to approach breakdown structures, their creation and use. Then I'll apply those insights to the scoping out of "man to the moon and back safely."

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Project problems: The fault of the incomplete, inarticulate, and inaccurate guidance on tools.

Problems as described in my opening paragraphs have their roots in the use of the Work Breakdown Structure (WBS), or rather misuse. Across the published guidelines we get much that is contradictory and much that is vague. Lack of insightful guidance shows our profession's state of the art for what it is – still in the phase of defining the basics.

Missing Concepts, Poor Definitions & Shallow guidance

Within some circles, surprisingly, the WORK breakdown structure is explicitly defined as verb free – i.e., contains no "doing words", no tasks! (the PMI® WBS Practice guide second edition, page 22). Holy war erupts when "Activity definition" is described in the context of the scope chapter rather than the time management chapter.

In the world driven by the boss, the customer, the pay-rise or the retained job, the chapter the guidance is in, or, "can I use a gerund?" is secondary to *"can I use it to assist my customer in defining scope?"*

Equally unworldly, PRINCE2® would have us leap from PBS to Product Flow Diagram (an AoA, or Activity on Arrow network) without a breakdown structure of the project's work content in sight.

Scope Definition's End Point

Whether we follow PRINCE2, APM or PMI scope definition feeds into schedule and (time-phased) budget modeling. AoA networks are dead and gone having been replaced by the more powerful syntax of the AoN (Activity on Node) precedence diagram. But that aside however we arrive at it, dependency modeling (and budgeting) needs as an input the most complete a set of activities that we can create. The natural source of activities, in contradiction to the practice guide's vocabulary is the lowest level of the WBS (see the APM Pathways definitions repeated on page 5 of this paper).

Good Concept & Vocabulary

Those who pay the project's bills care not a jot about boundaries between chapters or contradictory APM versus other committee's definitions. Those of us who take the customer's money should argue about how to do the best job, not which exam-oriented label to apply to the poor results we often achieve. Outside exams, a clear and understood vocabulary giving access to well defined concept, principle and process *is important*. It is also flawed within the field of project scope definition.

> **Scope's pivotal importance derives from the fact that it overlaps**
> **with and often drives every other element of project control.**

From herein any reference to *project scope* should be read as inclusive of programme scope, work-package scope or even task and activity scope – size doesn't change the principles under discussion.

Vocabulary

That some texts want to call our initial model a WBS or Work Breakdown Structure is a shame. We lose an opportunity to bring clarity of concept and vocabulary where it is sorely needed.

> **Clear concept is "First focus on nouns and be verb free.**
> **Second, add verbs to express the noun's life-cycle."**

The PMBOK® Guide WBS Definition

PMBOK Guide 4th edition glossary defines the WBS as "A deliverable-oriented hierarchical decomposition of the work (sic) to be executed (sic) by the project team to accomplish the project objectives and create the required deliverables. It organises and defines the total scope of the project."

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Also section 3.4.4 tells us that process 5.3 "Create Work Breakdown Structure is the process of subdividing project deliverables and project work (sic) into smaller and more manageable components." Now this would all be OK-ish and would convey the message that the WBS is about deliverables and the work/tasks/actions to create them. IE project elements named with verbs. But …

The Practice Standard

… the "Practice Standard For Work Breakdown Structures 2nd edition" says on page 22 bullet point 6 "Its [the WBS'] elements are defined using nouns and adjectives – not verbs" (I guess they missed their own example of "planning" in Fig 5.9 page 119).

Without the practice standard the PMBOK Guide would have been less than crystal clear but OK. Its use of "WBS" means what is created by process 5.3 could be better named and omits reference to the evolving nature of scope but is not actually wrong, at least for the initial stages of scope definition. In my opinion the practice standard would be improved by the amendment of that bullet to say "initially defined using nouns and later expanded into verb/ noun or gerund/ noun pairs."

The Glossary

The PMBOK Guide simply says a WBS ends with "Work-Packages" which the glossary defines as "A deliverable or project work component (sic) at the lowest level of each branch of the work breakdown structure." Careful reading of PMBOK Guide and the practice standard, searching for unequivocal and definitive guidance reveals that every discussion of the WBS includes the word "work ." In every reference it is implied we are referring to activities that create results. Nothing other than page 22 of the practice guide explicitly rules out verbs but nothing other that the glossary definition of work package (and 3.4.4) ever explicitly rules-in that a WBS includes the work (activity?) to deliver the results required!

I'm sure many people have read 3.4.4, its repetition on page 103 and the glossary entry as implying that "work-package," i.e., the end of the WBS branches, are a 'description/definition of the activities to be carried out,' and so would be shocked if it was suggested the WBS prohibits the use of verbs or description of activity. I.e., that Scope Management excludes consideration of *the scope of work* in 100% favour of *scope of results*.

Discussion of activity is (apparently) the exclusive domain of the Time Management chapter in process 6.1 Activity Definition.

Verb-Noun

Indeed my early training rammed home to me that a good WBS ended with verb-noun pairs. I still recall the example given "use any of Load Ship or Ship Loading or Ship Loaded."

My Confusion

Perhaps my confusion and argument depends on whether the "Work-Package" is the work's wrapper, defining only the resulting product – Like "Ship Loaded" – and all work is buried within the package (and PMBOK Guide chapter 6). I.e. the package's label is entirely a reference to the results achieved.

This is a potentially useful definition. Work-packages should then be explicitly specified in past-tense, outcome centred, 'milestone is achieved' type of language. Good guidance that I would highly recommend.

Product Breakdown Structure

But then this is entirely what is meant by PBS in some other authority's vocabulary and thus definitely not in these other authority's worlds a 'WBS'.

**Confusion of terminology arises from lack of cleanly and completely
thought-through concept shared across different authorities.**

Project Management is Immature

Unsurprising as project management is still a relatively immature discipline. We are still exploring the concepts of what is a highly interconnected set of ideas whose logic we cannot always see.

Broken Logic

For Example: curiously PMBOK Guide says the outputs of decomposition are different when used in 5.3 Create Work Breakdown Structure and in 6.1 Define Activities.

Inconsistency

When the technique of decomposition is used in process 5.3 what is created is this verb free WBS: I.e., a Results or Product Breakdown Structure in some other vocabularies.

In 6.1 Activity Definition at item 6.1.2.1 the technique of decomposition is used again. This time (apparently) it is only capable of producing a list, not a breakdown! Is this perhaps because we are no longer in Scope Management but Time Management? The PMBOK Guide gives no reason why the technique produces different format outputs in different chapters.

In the world of bosses, customers and job-retention, decomposition doesn't give different formats based on chapter boundaries: in both cases any format output that is useful is correct.

In one use the output's content is *definition of "result required"* by the customer to pay the bill and in the other it is *"steps to be taken (to get paid the salary check)"* and achieve the targeted result.

Exam Orientation

The 5.3 vs. 6.1 distinctions may be crucial to sitting for an exam but are irrelevant, even wrong, when returning value to shareholders through safe project conduct. In this regard the exam setters (or perhaps just exam cram trainers) have lost their way, believing that slavish repeating of what the book says is more important than being able to earn the money to pay for it. When the book is at odds with reality do we suggest adjustment to reality?

What we need to succeed with real-world customers and project teams is a conceptually sound approach, the vocabulary to discuss it and the tools that are equal to the real bill-paying problems the real-world throws at us.

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Addressing Confused Concepts

Useful Conceptual Steps

The useful reality is:
#
Step 1. Use decomposition to create a breakdown of the impact the customer requires, THEN

Step 2. Use decomposition to create a breakdown of the tasks the team will complete. At this point the work is grouped by product or skill set;

Step 3. Reorient the task breakdown as is useful for scheduling, and as is useful for resourcing, as is useful for funding and for accounting etc.

None of these reorientations change the project scope. They merely change its representation to fit the planning decision, investment decision or control decision currently at hand.

How Published Guidelines Could Be Changed

PRINCE2 and PMBOK Guide say less than could be said. It is a shame as they are read more than most other documents. The PM profession is *getting less ability-creation per reading hour than it could*.

PMBOK Guide process 6.1 could be moved to chapter 5 where Scope Management is set-out and use decomposition to create the WBS with "W" as in Work and definition as in APM Pathways.

Perhaps chapter 5 of the PMBOK Guide and the PRINCE2 manual should both be revised to suggest an initial scope definition step of creating a "Results Breakdown Structure." Both would then give clearer guidance if they proposed extension of the RBS to be a "Results grouped **Activity** Breakdown Structure" (RgABS)?

PMBOK Guide Chapters 6 & 7 and PRINCE2 manual's shallow planning theme would all then translate the RgABS into the orientation best suited to each chapter's knowledge area. In chapter 6 we want a Phase Oriented Activity Breakdown Structure ready for 6.2 Sequence Activities prior to 6.5 Develop Schedule. Chapter 7 might re-arrange the RgABS to be an **A**ccounts-oriented **A**ctivity **B**reakdown **S**tructure in readiness for budget and cash-flow planning.

PRINCE2 would benefit from embracing activity based planning and providing guidance a little deeper than just "planning is important and there are techniques like critical path that you should know …".

Isolate and Name the Concepts
I suggest many (most?) of us consider a "work-package" to be the description of an assignable task or group of tasks – EG "Load the ship" - and that is the pragmatic usage we should stick to.

It would help us all if we isolated the concepts clearly then merged or replaced the plethora of vocabularies in the PMBOK Guide, the PRINCE2 manual, APM's Pathways, and elsewhere.

Pathways Definitions
Pathways' glossary entry on page xliii explicitly says of the WBS "… The lowest units of the WBS become the activities in a project …" Further, the glossary entry for work package says "A group of related tasks …" (task is entirely equivalent to "activity").

Vocabulary of Results
Independently of what any widely circulated committee drafted book says the vocabulary of project result is "Benefit" or "Impact" or "Product", the technique used to define it is decomposition which creates a *Product Breakdown Structure* (a more descriptive name such as the Results Breakdown Structure suggested above would server us better – see also below).

Vocabulary of Action
Action also needs vocabulary that supports discussion of relevant concepts, principles and processes. For action the words are "Task" or "Activity" or "Phase" or "Work-package" or "Project" or "Programme" et. al. Again the technique used to define it is decomposition which creates a *Work Breakdown Structure* (and again a better name such as RgABS is possible and useful).

Some Examples
We could now discuss a program such as "Cure World Hunger" as being decomposed into results such as "Global fair trade", "Access to Water" delivered by projects such as "Negotiate Trade Agreements." At a smaller scale a work-package to "Install Kitchen Sink" would have results such as "Hot Water Supply" and tasks such as "Bolt sink to wall"

Poor Names, Poor Conceptualisation
Both names (PBS & WBS) are poor. Many people interpret PRINCE2's term PBS to mean physical items and thus energy is wasted explaining that "product" encompasses for example "Culture change" or "Operating procedures" as well as "New factory" or "Table and chairs."

While WBS means, intuitively for most people "an expression of work to be carried out," in PMBOK Guide practice standard terms, *the work* is not exclusively the result created.

The names we use also omit information. Every WBS has an internal structure that the name is not revealing. We need names such as "Phase oriented (grouped) Work Breakdown Structure" or "Decomposition of Tasks grouped by Skill" to properly describe the information that coordinates a project to successful delivery.

A Better Name For PBS

A better name for what we produce at the start of any endeavour might be 'Benefits Breakdown Structure' as a project is only part of the endeavour towards benefits but it is the subject of another paper to argue that the whole notion of "Project" management is wrong. Let me know if you would like to read an argument against project management as a discipline!

… To be continued, in Part 2 …

About the Author

Simon Harris, PMP, CGEIT speaks, consults, mentors and trains on governance of change.

Simon helps client's boards with ownership of benefits enablement from "lightbulb" to harvesting.

Simon helps PMs match controls to project uncertainty, complexity and board risk appetite.

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Editor's note: Simon is also nearing completion of a book, **PRINCE2 For Real**, to be published soon. Written with the same combination of deep insights and freewheeling irreverence as this article, a quick look at the draft shows this to be a good one!

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