White Paper

Is There Such Thing as a High-Level Business Process?

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There are two essential business modeling techniques that should be in the toolbox of every business analyst; the first is Business Function Modeling, the second Business Process Modeling. The former is the most powerful means of modeling and demonstrating what it is that an enterprise ought to be doing. It is also the foundation for all other business models. The latter is the most effective means of modeling how an enterprise can consistently navigate its way to predefined business outcomes in response to specific Business Triggers.

In recent years the Process Model has come to be used in ways that are not always appropriate. Some of these uses can even introduce logic and structural errors into the Process Models, resulting in quality errors and operational inefficiencies in the enterprise concerned.

The one use that is most prone to introducing logical errors (in fact it is almost guaranteed to) is that of drawing 'High Level' Process Models and then breaking them down ('decomposing' them) to ever-lower levels of detail.

This use, which has become a widespread practice among many (though not all) consultancies and practitioners carrying out Business Process Management and Improvement Projects, as well as introducing structure and logic errors, can also result in up to three or four times more models being produced than are necessary.

This White Paper will demonstrate what each of these structures and logic errors are and how they can arise and, more importantly, show how they can be avoided.

Level 0 Process

Market For Travel Media Identified → Martket Own and Clients' Products and Services → Create Marketing Products and Services → Publish Travel Media → Sell Travel Media Products and Services → Distribute Travel Media Products → Travel Media Market Needs Met

Level 1 Process

Need For Marketing Identified → Plan Marketing of Own and Clients' Products → Promote Brand to Customers → Market Brand to the Travelling Public → Market Brand to the Tourism Operators → Measure Brand Ranking in Market Place → Need For Marketing Fulfilled

Level 2 Process

Need Marketing Plan Identified → Define Channels to Market → Define Trusted Sources of Research → Design Brand Architecture → Implement Brand Architecture → Marketing Plan Implemented

Figure 1: Diagram showing decomposed Business Process Diagrams

Hidden Flaws

At first glance, the technique shown in *Figure 1* above seems like a sensible and structured approach to take. However, its apparent simplicity hides many shortcomings that can introduce some critical logic errors.

The reality is that it is not actually possible to draw a **valid** high-level Process Model due to the number of logical and structural errors that doing so can create. These errors do not arise due to any lack of ability on the part of the modeler; rather they are an unavoidable result of the approach.

Business Function

More commonly called a Function. A discrete activity or a coherent set of activities that a business must perform in order to meet its business objectives and continue in existence. Business Functions are what the enterprise ought to be doing.

Modeling Definitions

In order to fully understand how these logical errors can occur, it is necessary to first look at some basic Business Modeling definitions.

The terms 'Function' and 'Process' are two of the most widely used terms in Business Modeling. Ironically, they are also two of the

most misunderstood and misused terms, with the meaning of each depending on the past experience of the practitioner or on the modeling methodology being employed. Even major methodologies differ in their understanding and definition of these two fundamental terms. For example, ArchiMate supports the concept of both Function and Process as modeling elements. On the other hand, APQC refers to the major activities in an enterprise as 'Processes' and sees 'Function' as an organization unit within an enterprise.

If you search through various sources, you will get many definitions for both Business Function and Business Process.

Due to the lack of consistent definitions for these two critical elements in business modeling, I have, over the last 15 years, developed and honed two definitions that have served me very well in enterprises of all sizes around the world. I have also formalized these definitions within IMM, the Integrated Modeling Method.

In order to be able to model Processes in a rigorous way, we need to elaborate on our above definition by adding the following definition of essential elements.

Observing the formal IMM definitions above, a 'Process' is shown to be essentially about 'sequence' and 'flow'. It is these two qualities of Process that make it difficult to correctly model at a high level without introducing logic errors.

Schematic Vs Model

At this point it might be worth looking at the differences between an informal or 'schematic' diagram and a formal **diagrammatic model**. The former is simply an informal representation of a Business Process or Function; the latter is a rigorous, unambiguous, logically correct representation of that Process or Function.

For a diagram to be classed as a model it must demonstrate that it uses **standard conventions** and **rigorous standards**.

Standard Conventions

The term 'convention' here means 'a way of representing an object on a diagram'. So a 'standard convention' simply means objects will be represented on diagrams in a consistent manner. Depending on the stakeholder's "viewpoint" (as can be found in notations such as ArchiMate) – there can be more than one representation of an element, as long as the use is consistent.

Rigorous Standards

In its simplest form this means 'always employ the standard conventions', but over and above that, it means to do so in a manner that is always the same. Standards will also tell you those things that should appear on a model and those that should not.

Testing the Diagram

Let's look at the Level 0 'Process' that was shown in *Figure 1* above and test it to see if it qualifies as a) a true Process and b) a true model.

Level 0 Process

Market For Travel Media Identified → Martket Own and Clients' Products and Services → Create Marketing Products and Services → Publish Travel Media → Sell Travel Media Products and Services → Distribute Travel Media Products → Travel Media Market Needs Met
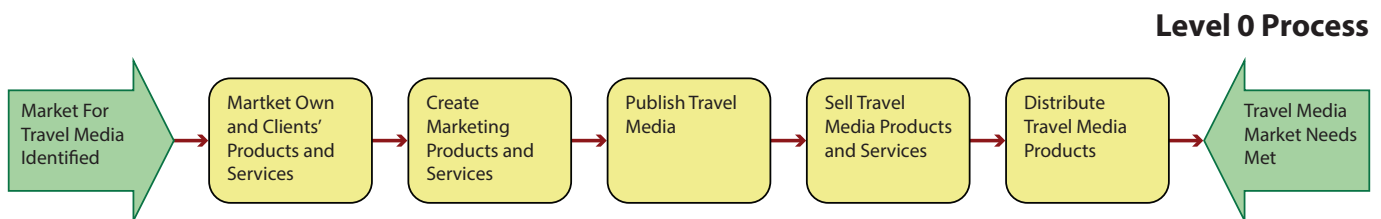
Figure 2: Diagram of a Level 0 Process

In order to qualify as a Process it must contain the five mandatory elements of a Business Process. To qualify as a model it must use standard conventions throughout.

The diagram displays four of the key elements in that it has a Trigger, a Preferred Outcome, a set of Business Functions and a defined order in which the Functions should be executed to arrive at the Preferred Outcome.

However, it does not have any Non-Preferred Outcomes. This one fact alone prevents it from being considered a true Business Process. This is because no valid Process can exist without at least one Non-Preferred Outcome, as without one there would be no safe way to define what should happen in the event that the Preferred Outcome could not be obtained.

So, would adding a Non-Preferred Outcome turn it into a valid Process? If all of the other elements are valid, then it would. But how valid are they? Let's look at them in more detail.
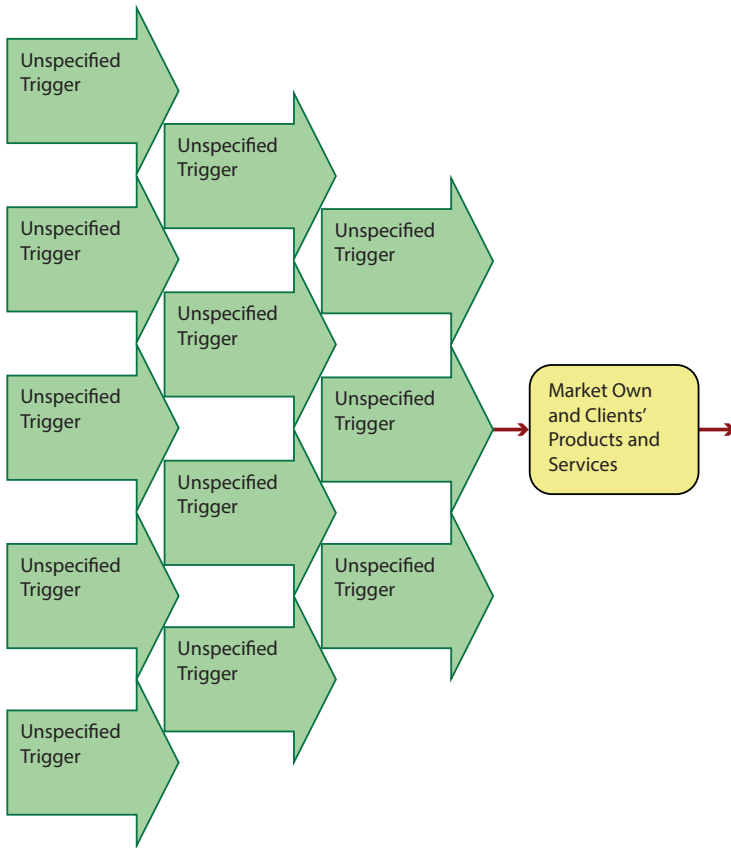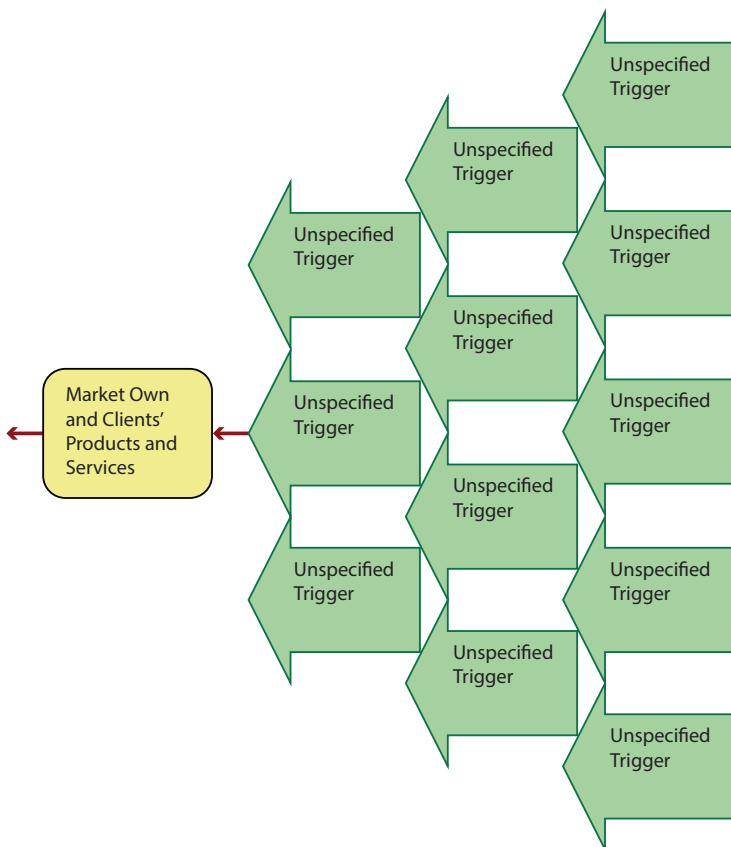
Figure 3: Multiple Triggers

Figure 4: Multiple Preferred Outcomes

Triggers

The Process Model tells us that just the single Trigger of 'market for travel media identified' is the only Trigger that initiates the execution of this sequence of Business Functions. Is this true?

It is highly unlikely. For example, each time the enterprise created a new product or each time it recruited a new client it would definitely want to market its own and client's products and services. This adds two more valid Triggers. It would not take much more investigation to find out that at this high level there are very many Triggers that could initiate this sequence of Business Functions.

All of these Triggers would need to be shown on the diagram, making it look something like this.

Then, in order to qualify as a true model, the diagram must be able to answer the following questions:

- Do all of the Triggers need to occur before any part of "Market Own and Clients' Products & Services" can begin?

- If not, will the occurrence of any single Trigger initiate all of the activities within "Market Own and Clients' Products & Services".

- If not, in what combinations do the Triggers occur and what parts of "Market Own and Clients' Products & Services" does each initiate?

We then have to ask the same set of questions regarding the Preferred Outcomes.

- Is there just one preferred outcome to this sequence of Functions? If not, how many?

- Is it sensible to suggest that there are multiple Preferred Outcomes to this sequence of Functions?

- If there is more than one, do they all occur at the same time?

- If not, which do and which don't and under what circumstances do some occur and some not?

With so many unanswered questions and so many ambiguous structures with regards to Triggers and Outcomes, it is obvious that the diagram is telling us nothing about what truly triggers this set of Business Functions and what outcomes are achieved and in what order or combination.

For this, it cannot be considered to be a valid Process Model.

Function Precedence

Maybe the only anomaly in the diagram lies with Triggers and Outcomes. What about the precedence shown in the diagram? In a valid Process Model, an arrow going from Step A to Step B tells us unambiguously that Step B cannot begin to be executed before Step A has been completed.

The arrow going from 'Market Own & Clients Products & Services' to 'Create Marketing Products & Services' in *Figure 5* below tells us that no part of the latter can occur before all parts of the former have been completed. This is highly unlikely to be the case in any real world enterprise.
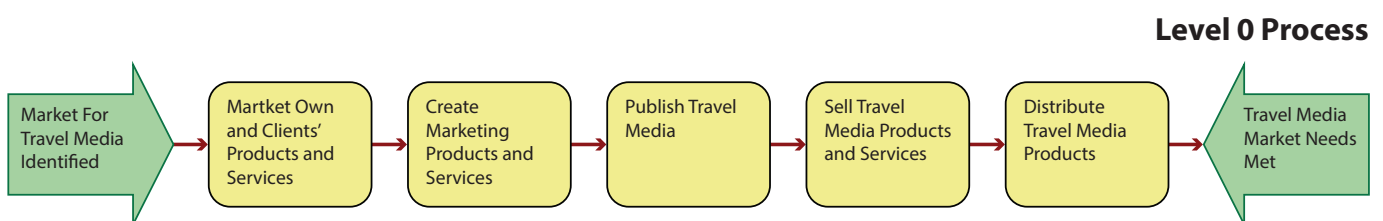
Level 0 Process

Figure 5: Function Dependency shown by arrows

Many marketing activities can be executed at the same time as product creation activities are executed and some can even be executed after them. Some products and services might be created before they are marketed, others might be marketed before they are created.

Not all parts of one high level Function would have to wait to start until all the parts of another high-level Function have been completed.

In reality the dependencies between the Sub-Functions of the high-level Functions is far more likely to look something like that shown in *Figure 6* below.
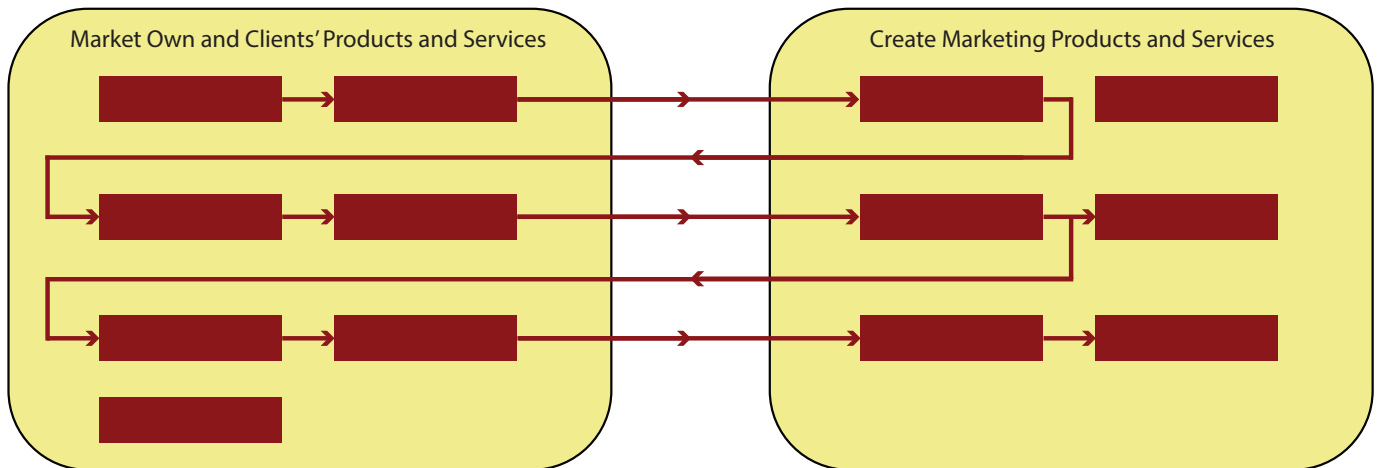

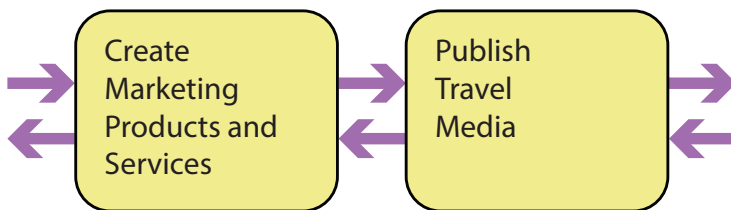**Figure 6: Dependencies between Sub-Functions**

Figure 7: Two-Way Arrows = Deadlock

Some modelers try to overcome this precedence anomaly problem by drawing arrows in both directions between the two process steps, as in the *Figure 7*.

Sadly, this does not work because it actually represents **deadlock**. It tells us that 'Publish Travel Media' cannot begin until 'Create Marketing Products & Services' has been completed, which in turn cannot begin until 'Publish Travel Media' has been completed.

All of the inherent and unavoidable structural anomalies that have been detailed above show that it is not possible to draw a high-level Process Model that could be effectively implemented operationally.

Diagrams representing Processes can be drawn at a high level, but should not be thought of as models. All such diagrams are merely schematic views, rather than models, and should be clearly labeled 'Schematic View Only', in the same way that schematic architectural drawings are labeled 'Not Drawn to Scale'. This prevents them being misinterpreted and inappropriately used.

What's the Correct Level?

There may not be a single 'correct' level as such. However, there are two criteria, which if met, will enable you to know that you are modeling every Business Process at the most effective level from both an operational and automation point of view. The first criterion is that the Process should have a single Preferred Outcome, the second is that each step in the Process should be an Elementary Business Function/Process/Activity – the name depends on the modeling methodology you are following.

Single Preferred Outcome

The Single Preferred Outcome is a very powerful test to apply to any Business Process in order to establish whether or not it is truly lean and targeted.

It answers the fundamental question, 'What is it that this Business Process is meant to achieve?' If the answer to this question cannot be expressed as a single Preferred Outcome for the enterprise, then it will be difficult to model the Process effectively, even more difficult to implement it operationally and probably impossible to successfully automate.

A Business Process may have several Non-Preferred Outcomes at which it can be safely terminated, or an alternative Process Triggered, if the Preferred Outcome cannot be attained, but every truly Lean Process will only have a single Preferred Outcome.

Elementary Business Function

A Function which, once begun, must be completed or, if not completed, must be undone. If there is a valid intermediate state for the Business Function, then it is not elementary.

Elementary Business Function

Once you have identified the single Preferred Outcome for a Business Process, then the most efficient way to get to it is to ensure that every step in the Process is an Elementary Business Function (EBF) (or equivalent in your chosen methodology).

So, before you start drawing Process Models, first decompose your Business Functions or Processes (depending on the methodology you are following) to a level where the criteria for an Elementary Business Function, as defined on the left, apply.

You can then use these elementary elements as steps in the Process. This is an especially powerful approach for several reasons:

- It is the elementary elements (e.g. Elementary Business Function) in an enterprise that create, use and transform all data.

- These elementary elements are ideal candidates for conversion to modules in computer applications, be they desktop, web or mobile.

- These elementary elements can validly be steps in many Business Processes so, once modeled and known for one Process, can be safely re-used across the enterprise, thus preventing unintended and undocumented duplication.

Conclusion

Although diagrams can be drawn for high level Business Processes, these diagrams cannot be thought of or used as Process Models. They are merely schematic representation of the Process and should be clearly labeled as such.

When you need to produce Process Models that are true, robust, logically correct representations of the Process that you are modeling you should apply the following tests in the order listed:

- Ensure that all five mandatory elements of Trigger(s), Process Steps, Precedence, Preferred Outcome and Non-Preferred Outcome(s) are all known and documented.

- Ensure that there is only a single Preferred Outcome for the Process.

- Ensure that there is at least one Non-Preferred Outcome.

- Ensure that each Process step is an Elementary Business Function (or equivalent in your methodology)

When all of the above criteria are met, you can be sure that the Process Models that you produce will be lean, efficient, capable of being tuned and will carry no hidden structural or logic errors.

Bibliography

IMM – Integrated Modelling Method: Function Modelling.
Author: John Owens. PDF eBook. First published 2002.

This book describes the key role that the Business Function Models plays in all business modeling and describes step-by-step how to build future state Business Function Models for all or part of an enterprise of any size, in any business sector.

http://integrated-modeling-method.com/product/ebooks/3502/

IMM – Integrated Modelling Method: Process Modelling.
Author: John Owens. PDF eBook. First published 2002.

This book describes when and how to effectively build Process Models from the Business Function Model. It defines all of the mandatory elements of a true Business Process and also describes effective ways of optimizing and tuning Processes.

http://integrated-modeling-method.com/product/ebooks/business-process-modelling-ebook/

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