



Universal Process Notation v1

An easy to read, structured business process notation for business people

INTRODUCTION

UPN is an easy to use business process notation intended for general use, to provide usable process information to the executors of business process, while providing for the technical needs of an IT audience. This document provides rules and guidelines for the practical application of the Universal Process Notation (UPN) in a business context. It also describes the various components of the notation.

PROBLEM STATEMENT

WHAT DO WE MEAN BY “BUSINESS PROCESS”?

Every day, billions of people interact with millions of companies or public services to procure or provide goods or services, through trillions of transactions. These interactions are the practical expression of business process, the efficiency of which can generate savings or waste of global proportions. While some of these processes are automated, the vast majority (typically ~80%) are manual processes, carried out by people at every level of an organization.

LESS IS MORE

While it is widely agreed that diagrams help users to visualize process flows, the excessive use of symbols in some methodologies requires the consumers to be fluent in the notation language. And the content creator must also be an expert in order to apply the notation to real life processes. Or we have to insert a translation step where the complexity of the process notation is converted to a format that is accessible by users. This adds cost and imposes a training and education burden, as well as creating a barrier to adoption. The sheer size of the potential audience demands a simple language that needs no training or translation.

SOLUTION

The Universal Process Notation (UPN) has been designed to meet the needs of the general business community. UPN provides:

- 1 A universal and accessible notation for end-to-end process that is accessible and comprehensible to all areas of the business.
- 2 A bridge to the technical approach used by IT for documenting automated processes.

FEATURES & BENEFITS

- Simplified palette of symbols and associated rules creates an accessible notation.
- A typical business end-user can follow the flows and notation easily with no training.
- Training a new content creator is fast.
- Simplicity enables consistency across the content creators.
- Business users can document and describe processes quickly and clearly in collaboration with each other.
- Business users can clearly visualize the process flows and immediately identify inefficiencies, bottle necks and other process issues.
- Users can focus on results (outputs) instead of activities.
- The business can be customer focused (outside-in).

UPN ARCHITECTURE

UPN COMPONENTS

This section describes the components of UPN.

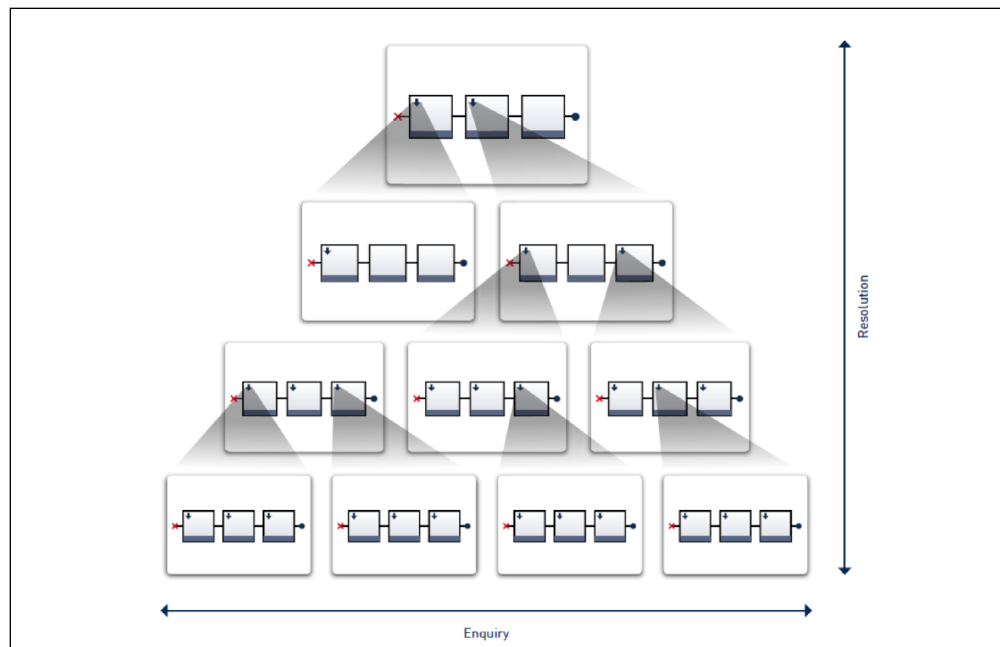
End-To-End Process

Creating a UPN based, end-to-end cross functional process which clearly communicates business objectives to all users ideally requires a top down approach. The object is not just to create a horizontal model from end-to-end but also vertical visibility for the purposes of process accountability and management. Level one is used to define the key operational and management processes of the business displaying the senior level management accountable for each process area, and clear, measurable outputs at each stage. The key objectives should be derived from the corporate strategy / objectives.

Each high level process step is exploded to the next level where again the key steps and accountabilities are documented with inputs and outputs. This process is repeated until the appropriate task level is reached, with no limit on the number of levels. The number of levels required is that which ensures end users are provided clear, easy to use and consistent process driven content and will differ from process area to process area because some processes are inherently more complex than others.

Inputs and outputs at the top level need to be carefully considered because they will set the scope for their child diagrams. Note: It is possible that users will want to see a top level diagram that is more graphical and omits input output lines, to create a more appealing and less technical top level view. This can be achieved by creating a top level graphical view with a link to a top level process view, beneath which the detail is provided.

Process maps should have vertical as well as horizontal integrity.

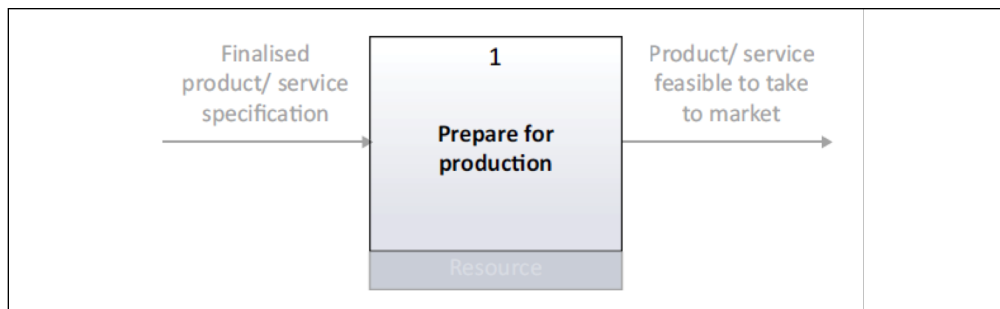


Process Map

A process map is a hierarchical collection of process diagrams. Each diagram must conform to the rules laid out in this specification. Below level one, each diagram represents an exploded view of a higher level process step. If we make sure that the initial input and final output on each diagram matches those of the higher level, or parent, process step and extend that principle all the way down the hierarchy we can guarantee that the most lowly process contributes to the organization's objectives.

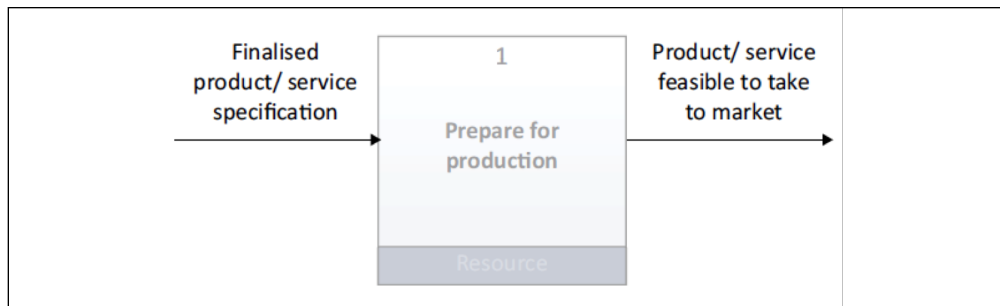
Activity Box

Used to describe a process step, processes are made up of activities therefore the activity box is always described using a present tense imperative verb and a noun. Text must be concise. Detail is provided in drill-downs or attachments and must not include attributes which are handled elsewhere e.g. Resources.



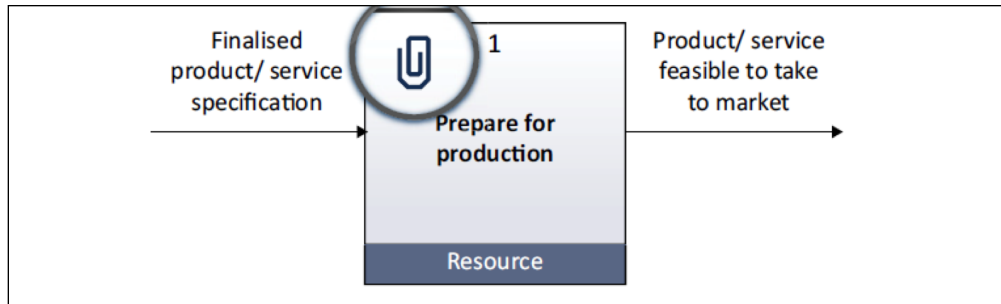
Flow Lines

Are used to denote activity inputs and outputs, the direction of the arrow head indicates whether the line is an input or output relative to a specific activity. Arrows must be one way to prevent user confusion.



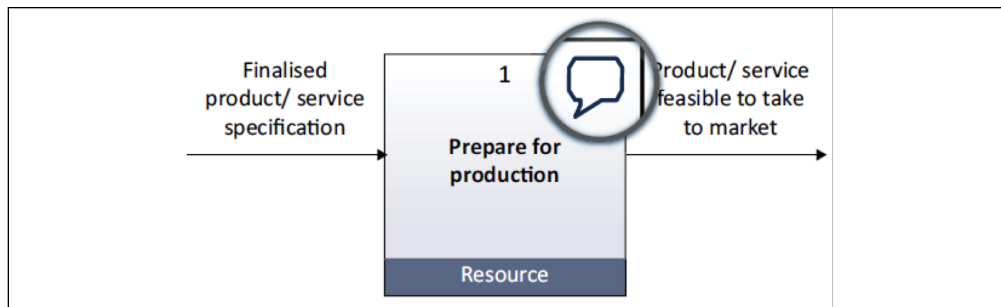
Attachments

A suitable icon (or icons) can be displayed inside the Activity Box to provide access to any associated documents, tools, templates or other information.



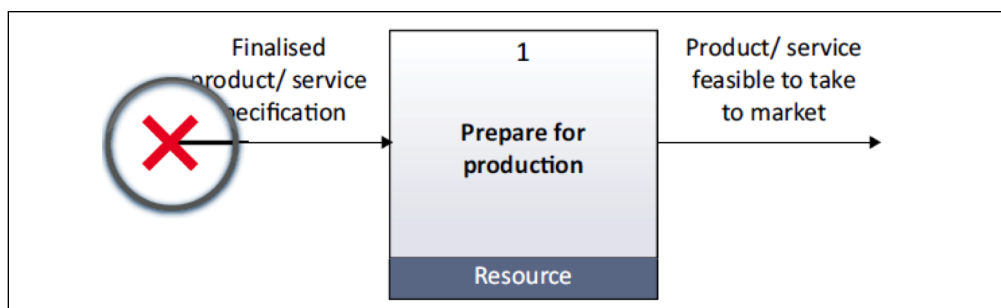
Additional Notes

Displayed as an expandable speech bubble inside the Activity Box, this provides short notes about the activity.



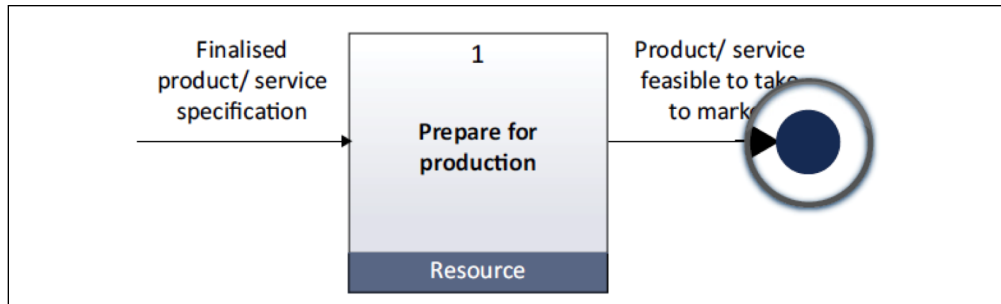
External Connectors

These are used to indicate when a process falls outside the scope of the process or map or to denote the start and finish points of a diagram.



Flow Line Connectors

Are used to link process flows on adjacent diagrams. This facilitates horizontal navigation through peer diagrams in a process.



Statement Links

Are used to visibly display a relationship between the process step and a statement in a set of text statements. Often used in compliance mapping, for example, to show compliance with ISO9001 or to define a set of risks and controls.

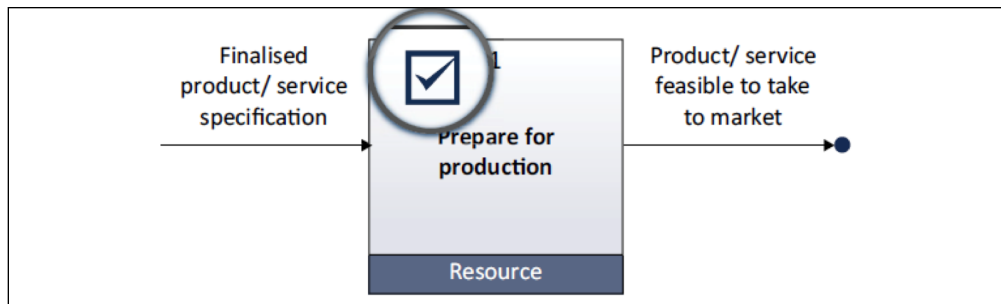
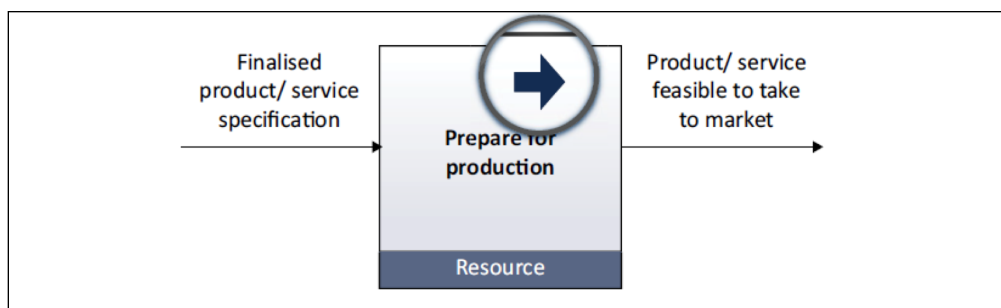


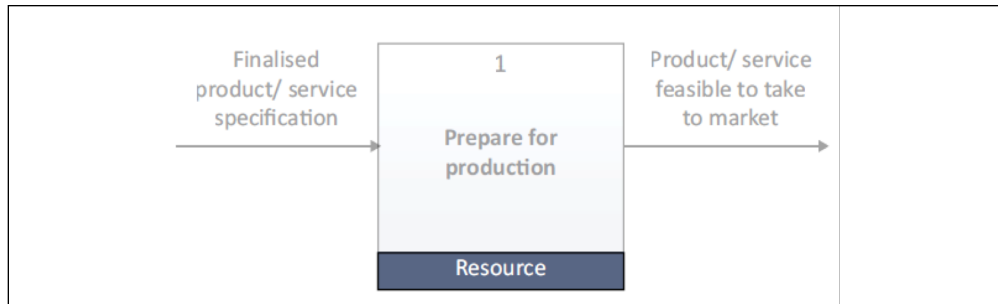
Diagram Links

This allows for the linking of Activity Boxes to similar or related process diagrams.



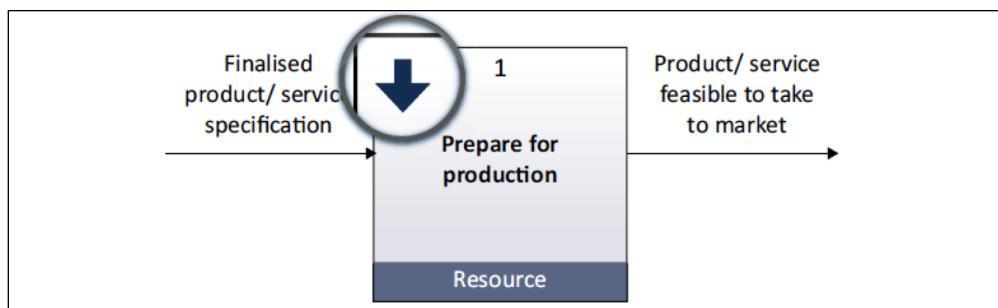
Resources

Are used to display people or systems that are either responsible or accountable for the execution of an activity.



Drill Downs

Displayed inside an Activity Box are used to navigate down to the next level in the process, i.e. they transport the user to a more detailed view of the process step.



A business process is a series of activities that each have a clearly defined beginning and end. A business process flow tells us:

- What to do
- When
- Why
- How
- Who is responsible or accountable for each step
- Who owns the process
- The current version number
- The authorization status

UPN OVERARCHING PRINCIPLE

The primary objective of the UPN is to create accessible content that is easy to use for the primary audience, the business end user.

This overarching principle drives all rules and guidelines set out in this document and is the guiding principle when developing content.

UPN RULES

FOUR SIMPLE RULES

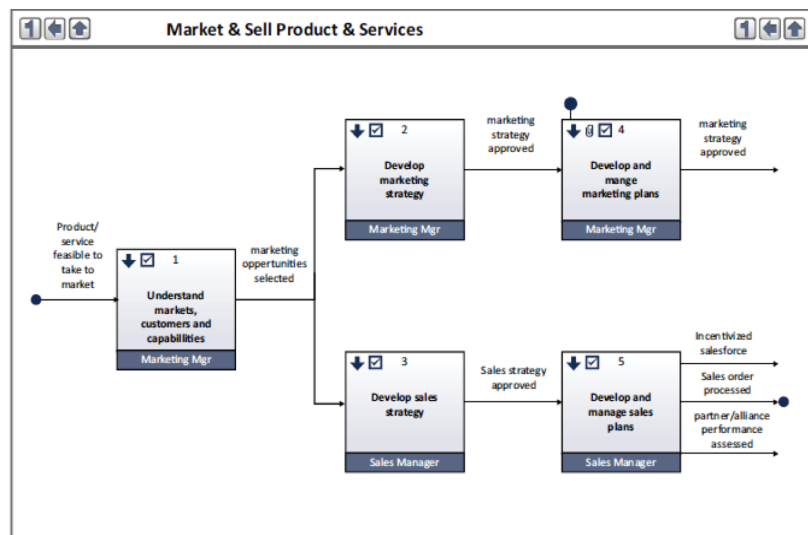
There are four unconditional rules that must be adhered to. They are basic but ensure the integrity of any process:

- 1 The activity box is the only drawing object used to display process steps
- 2 Process steps are always described as activities and NEVER functions
- 3 Inputs and outputs are always defined for every activity
- 4 Resources are always defined for every activity

UPN-R1. Only activity boxes are used to display process steps

The Activity Box is used exclusively to describe the activities required during the execution of a process. Other shapes may be used on a diagram in order to help reinforce the message but these should never be used within the process flow itself. This ensures the audience does not need to know, or refer to, a predefined set of shapes and symbols in order to understand the process flow.

This principle extends to 'decision boxes' which are usually not 'decisions' but conditional process routings, which in UPN are handled by multiple outputs (see Appendix 1 for more information).



UPN-R2. Process steps are always described as activities and NEVER functions

Processes describe activities, or tasks, that must be carried out in order to produce an output. They are the things we do during the normal execution of business.

Therefore we always describe the steps in a process as activities by using a present tense imperative verb followed by a noun. We DO something to SOMETHING.

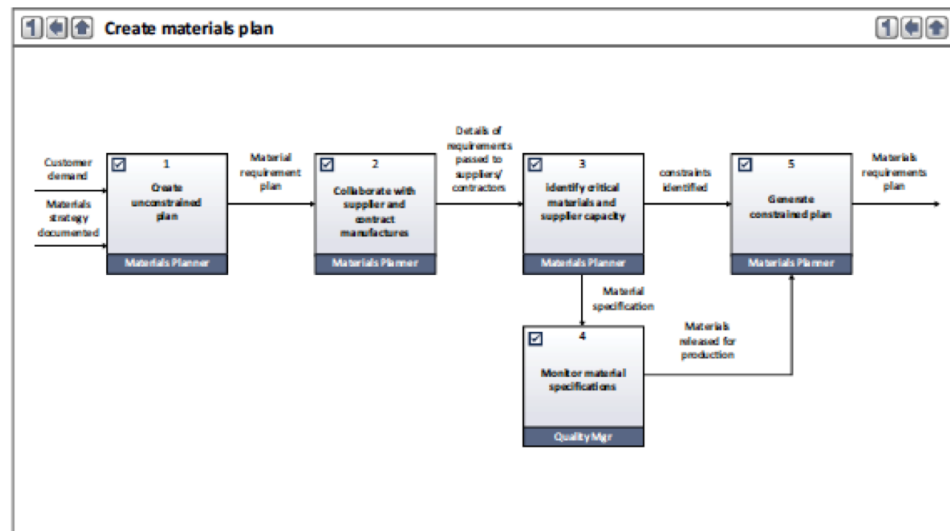
UPN-R3. Inputs and outputs are always defined for every activity

UPN focuses on the result, or outcome, of a process step instead of the activity. This applies to every step along the way so that each one clearly communicates an expected outcome. This ensures that customers and suppliers of the process flow can define, agree and clearly communicate handoffs; and where a drill down is created on a step, the scope of the child process diagram is clearly defined.

Therefore every activity must have a minimum of one each clearly defined input and output. There may be more than one of each.

UPN-R4. Resources are always defined for every activity

Effective process demands accountability and responsibility. We must, therefore, define the resource responsible for the execution of a process step. This tells us who must do the task, i.e. who is responsible for the output. At high levels in a process map the resource will typically be the role accountable for ensuring the process is completed. At the lowest levels the resource will be the role actually responsible for completing the task.



UPN GUIDELINES

Application of the UPN rules is mandatory. The guidelines that follow provide further tools to communicate the content and then identify improvement opportunities.

These are practical guidelines arising from years of practical application of the UPN with hundreds of customers on millions of process diagrams. Departure from these guidelines should only be allowed where there is an identified business need that cannot be met by the standard rules and guidelines.

The ability to apply the guidelines is a good indicator of the health of a process. For instance, when applying the UPN to existing processes, authors and subject matter experts may find instances where it is impossible to achieve alignment with these guidelines due to the instability of previously undocumented processes. The rigor of UPMN will reveal activities that have no definable outputs; users are unclear why an action is carried out at all, or what the correct sequence is. Successful application of the guidelines may only be realized after several iterations of process improvement.

UPN-GL1 LOOK AND FEEL

The UPN is designed to be visual and informative but above all usable by the widest possible audience. To facilitate this UPN sets out a simple set of rules for creating content that does not need extensive training to read.

Deliver processes in digestible chunks (smaller diagrams).

Process diagrams should be optimized for display on a typical computer screen without scrolling, horizontally or vertically, and must be readable without zooming.

Limit the number of process steps on each diagram.

The application in which you draw UPN diagrams should enable quick and easy creation of drill downs to greater levels of detail, and manage the diagram relationships for you, thus avoiding the need for large diagrams.

Use pre-defined templates to restrict the drawing area.

The presence of a template to define the drawing area, and which is automatically applied to every new diagram, will prevent diagram size creep.

Ensure a standard and consistent style across all content.

Devise a set of common standards for the presentation of content so that end users see processes delivered in a consistent way regardless of who created them. Users may be confused by a change in drawing style that implies that something is different, when in fact there is no difference at all.



UPN-GL2 DESCRIBING ACTIVITIES

Relates to rule 1. Only activity boxes are used to display process steps. And 2. Process steps are always described as activities and NEVER functions.

Be specific when describing activities.

‘Process Order.’ Do we mean sales order, purchase order, customer order, works order?

Keep activity descriptions short and exclude attributes shown elsewhere.

“The sales manager will, in accordance with the Schedule of Authorizations, seek approval for the discount.” Make that, “Obtain discount approval,” add a resource of “Sales Manager,” and attach a link to the Schedule of Authorizations.

Describe all activity types with a single shape.

There is no distinction made between different activity types other than through the use of textual descriptions. Such activities as making decisions, starting or ending a process, or generating a report are all activities and are simply described using an imperative verb and noun construction in an activity box. This prevents us from confusing users with multiple shapes.

Activities on the same level must have equivalent ‘weight.’

For example ‘Assign Project Number’ may take a clerk two minutes and cost a few dollars. ‘Design & Build a New Aircraft Carrier’ takes thousands of people several years and costs billions.

UPN-GL3 DESCRIBING OUTPUTS

Relates to rule 3. Inputs and outputs are always defined for every activity.

Identify tangible outputs that clearly demonstrate an activity is complete.

Well defined outputs on each activity are one of the strengths of the notation in terms of process improvement. They help the creators and users of the content to focus on what they are actually delivering rather than what they are doing (results versus activity).

To be most effective authors and subject matter experts should focus on identifying an output that is tangible. This should be something that can be quantified, measured and tested for its existence. This may be a hard copy document, or a project ID, that has been recorded in an ERP system. It should be something that clearly tells the actor that the activity is complete. In doing so it becomes the input to the next activity telling the resource of this activity that it is time to start.

The identification of such a tangible output makes it easier to identify metrics and measurements that will help manage the effectiveness and performance of the process. All outputs in a process flow should ultimately add up to the final output and overall objective of the process. This in turn should be derived from the organization’s strategy and organizational objectives, thus facilitating the communication of company strategy right down to the individual actors and the part they play in the execution of that strategy.

The lack of a decision diamond is one of the most notable differences in the UPN notation. Please refer to Appendix 1 for a more detailed explanation.

Avoid using of the past tense of the activity.

Using the past tense of an activity as an output should be avoided wherever possible. Simply recreating the activity description in a modified form adds little or no value to the process diagram and may suggest there is no purpose to the activity. If we are focused on results, we need to ask what the desired result is, what is likely to be our output. It may help to look forward to the requirements of the next activity. But do not allow this point to get in the way of productive process mapping.

UPN-GL4 DESCRIBING RESOURCES

Relates to rule 4. Resources are always defined for every activity.

Never use individuals' names or titles; use roles instead.

For example, in a large organization with many thousands of job titles, everyone has to know how to submit a holiday request. In this context, a role of 'Employee' is used instead of adding every job title to the activity.

Resources are the people or systems tasked with carrying out process activities. In large organizations several different people carry out the same activities at different times, with each of these players possessing different job titles. It is, therefore, often impossible to identify a single individual as being solely responsible for a process activity. Indeed it may be equally difficult to identify a common job title that is responsible for the execution of the task. As a result the recommended approach is to identify the role that each actor plays when executing the task rather than an individual name or job title. A good UPN Application should have the ability to associate individuals with the roles they play in the organization.

At higher levels use the accountable role, at lower levels use the responsible role, to ensure only one 'role' resource per activity box.

Given the hierarchical nature of the UPN, high level process steps may have a large number of resources involved in the execution of the lower level steps. Attempting to display all of these against a single activity box will make the diagram unreadable for the average user. The best approach is to identify the resource that is accountable for the overall execution of the step. This resource may not even play a part in the lower levels but they have overall accountability for the output of the high level activity.

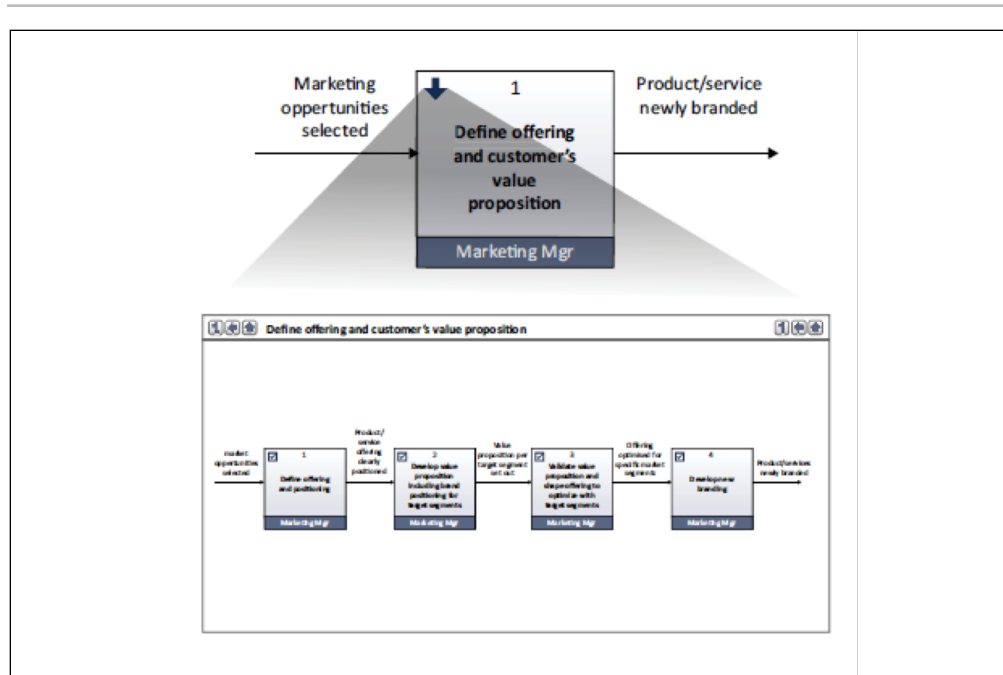
Note: When automated activities are found in the process flow it is often useful to display the system, or systems, that perform the activity as a resource. When doing so it is recommended that a suitable identifier is used to clearly denote a 'system' type resource from a 'human' type. This may be a prefix such as [s] against the resource name. However, it must be recognized that individual systems cannot be made accountable if any step in the process fails. It is recommended that a further human role is included as a contact point in the event of an issue with the system execution of the step. If a whole diagram is describing automated steps then it would only be necessary to add an accountable resource to the parent activity.

If all these guidelines are followed it should never be necessary to have more than one role resource on an activity box. If you still need to do so, the possibility exists that your activity needs breaking into more than one activity, or requires a drill down (in which case you can use an accountable resource on the parent activity).

UPN-GL5 ADDITIONAL INFORMATION (ATTACHMENTS & DRILL DOWNS)

Process related information must be easily available to the user.

Additional process related information should be easy to access directly from the process step to which it is related using an interface from the process application. As a user follows a process flow they should be able to directly launch any associated documents, tools and other information in order to assist in the execution of the activity. This could be more detailed steps within the process, with further process steps, or a completely separate system that supports the execution of the process.



Drill Downs

The look and feel guidelines above describe the limitation on the number of activities to display on a single diagram. This leads to a hierarchy in the process map in which the content creator describes each level of the process in terms of the key steps. For each key step the author will create a new level as a drill down which will describe the parent activity in more detail. The UPN Application should facilitate the creation of the drill downs and place no limit on the number of levels allowed.

Attachments

Data transfers / transforms as a result of an activity in a process flow, and completion of a process step may require a user to make reference to other content. End users still require access to this data in order to make changes, create it for the first time or to validate. Just as the notation is easy to follow it should be equally easy for the user to access the associated data.

This additional information is normally available in the form of an attachment menu that is directly accessible from the activity box.

IS UPN SUITABLE FOR IT DEPARTMENTS?

UPN allows Business Process to be defined with a degree of rigor and detail that is consistent with the needs of an IT department. The simplicity of the notation makes the content accessible to all audiences. So what happens when the IT department wants to automate part of the process? This represents a level of detail that the end users may or may not be interested in and the underlying UPN Application will need to accommodate the needs of the IT department. This can be achieved in various ways:

- By the native support for a notation such as BPMN, into which the IT department can switch to develop the detailed solution
- By the use of additional data elements on the activities to allow IT to identify system connection points
- By integration with ERP tools such as SAP's Solution Manager
- By the ability to exchange content with other platforms such as BPMN and BPEL through XML interfaces

IT departments may take a different view - that the technical tools used for process automation can be extended into the manual process area. This is not a practicable solution. The complexity of those notations is such that the amount of training required to generate process content, even using a cut down version of the symbol palette puts the tool beyond the reach of ordinary business users; and the content created requires additional training of the end user audience, to interpret the more complex notation. Both of these are a bar to adoption outside the IT department. It makes more sense to allow IT to add their complexity where they need it than to force the business to adopt a language that is more complex than they need for the vast majority (~80%) of the business processes that will never be automated.

CONCLUSION

UPN provides a simple notation for use by line of business managers to document, improve, publish and manage their business processes, the majority of which will never be automated. Its simple notation makes process accessible to all users instead of creating "shelfware," and through the capabilities of the underlying application can provide an extensible solution for IT departments.

APPENDIX 1 – DECISION BOXES

UPN'S SIMPLE ALTERNATIVE TO DECISION DIAMONDS

In reality most flow chart decision boxes are not decisions at all, they are process routing branches based upon a decision made by the process designers when they drew the diagram. e.g. if the sale is a direct sale do this, if it's an indirect sale do this.

In simple terms you could represent a branch point with an activity box 'Consider whether this is a direct or indirect sale' and use output flow lines for Direct and Indirect sales to reroute the user. In practice in UPN you can usually omit the box and make the routing clear on the output lines from the previous activity.

The UPN solution also has another significant advantage over the diamond decision box. Decision boxes are binary. In our previous example the decision box would say 'Is the sale direct?' There are then two possible outcomes, 'Yes' and 'No'. But what if the question has multiple outputs? In the decision box world we have to have a sequence of binary decision boxes. "Do you want a cup of tea?" Yes/No. "Do you want a cup of coffee?" "Do you want a glass of water?" The diagram will soon become cluttered with drawing objects as we try to cope with the multiple options.

In UPN we have as many output line options as we need from the previous activity, drastically reducing the number of drawing objects required. Typically, representing a choice with decision boxes requires 50% more drawing objects than the UPN activity box solution. That's 50% more to draw, 50% more to maintain and 50% more for the user audience to read, and potentially get wrong. Less is more.

Some drawing tools have addressed this issue by providing a multiple output decision box which is essentially the same as the UPN solution except that it still uses a diamond shape. Given that typing text into a diamond shape is less efficient than into a rectangular box, the UPN solution is still better, especially as it can eliminate the need for the box.



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05/13/2014