



A SkillsNET® and Decisionality White Paper

Web-Dialogue Insights

Redefining Consumer Dialogue at Scale

Insights to Web-Dialogue

Redefining consumer dialogue at scale

Web-dialogue is a person-to-computer interaction designed to enable a consumer to reach the best-of-fit dialogue-outcome in context of their need.

Web-dialogue is based on an algorithmic decision-tree (*codified-dialogue*). The technology that supports web-dialogue is Web-Services (SOAP, XML and WSDL) based on a universal standard for component software. This means a *dialogue-component* is built once and accessed from multiple-channels such as a PC, Mobile Phone, PDA, IPOD or indeed any networked device. A *dialogue-component* is stateless (i.e. not dependent upon a database) and dynamically connected enabling change to happen at the **speed of articulation**. In this way *dialogue-components* cope with complexity and the changing nature of structured dialogue in a way that is fluid and able to rapidly evolve with the world around them.

These *dialogue-components* are made up of *dialogue-steps* that a consumer follows in order to meet their needs. Each *dialogue-step* represents a specific element of human instruction, such as conditional logic and rules, a validation check, an action to be taken, a consideration before going to the next step, an example or story to help understanding, or a *dialogue-outcome*. The motion following these steps, forward or backwards, is known as *dialogue-decisioning* and its metric is a *decision-point*. Therefore, *decision-points* are the tangible common currency for the measurement of consumer behavior. The *dialogue-steps* taken form a *decision-path*, and the actual route taken along a *decision-path* is known as a *decision-string*. The metrics provide 'time and motion' analysis. The *decision-string* may be any length, but ought to be the optimum *decision-path* to reach the best-of-fit *dialogue-outcome* (i.e. a consumer should reach the outcome they want as quickly as possible).

Within the dialogue language of each *dialogue-step* there is the means to influence behavior, stimulate understanding and increase objectivity. Positive influences improve the probability of guiding a consumer to the most fitting *dialogue-outcome*. Therefore, web-dialogue can be significantly improved by undertaking usability tests, even though this is not the typical modus-operandi. The influencing of behavior impacts the flow of human interaction and is applicable across diverse areas from personal well-being to selecting the most fitting type of health insurance. Furthermore, each *dialogue-outcome* can be considered and used as a potential prompt, thus providing the means to automatically trigger events such as multiple transactions, alerts, escalation, calls to action etc.

Any *dialogue-step* that contains conditional logic and rules (example: the *decision-options* to a condition are 'yes', 'no' or 'other') involves a *nano-decision* risk. This can be likened to reaching a T-junction (2 *decision-options*) or a

crossroads (*decision-options*) while driving a car. Making an incorrect decision means traveling along the wrong road (*decision-path*) in the wrong direction. Until you reach a familiar landmark or signpost, time is being wasted taking you further from your final destination (*dialogue-outcome*).

With the increasing speed and complexity of the marketplace, higher and higher volumes of *nano-decisions* are being made every day. Many *nano-decisions* are made under time pressures, so the risk of mistakes occurring inevitably increases. Countless small or nano-mistakes have an accumulative impact noticeable at the macro level of a market. In other words, unintended consequences lead to greater volatility as the rate of complexity and velocity increases.

So, as consumer time becomes scarce and other stress factors are increasing, the occurrences of incorrect *nano-decisions* are becoming more frequent. This in turn creates the need for even more high quality dialogue to take place, within a short space of time. The current methods for this dialogue (usually via call centers) acts as a barrier to this, the dialogue is slow and reliant on many different factors. Understandably, this need for better dialogue is increasing the pressure for marketing to be extended to include deep transparency of consumer interaction, which would allow automated reporting of demand-sensing thus driving innovation to meet emergent unmet needs. Again, with current methods this transparency is difficult to achieve (if not impossible).

Algorithms: The Foundations of Web-Dialogue

Inaccurate *nano-decisions* can also be caused by the poor *algorithmic structure* of the web-dialogue. This *algorithmic structure* can be equated to a *decision-tree*; it is the overall framework into which all else fits. This may not be related to the volume of *decision-tree* branches within an *algorithmic structure*, but more to *dialogue-steps* within the structure hanging loose, outside of the context of a *decision-path*. A strong *algorithmic structure* prevents these hanging *dialogue-steps* by providing clear navigational flows designed for self-service and streamlining. In other words, a strong *algorithmic structure* is logical and leads to more *productive interactions (PI)*.

For example: a web-dialogue for diagnosing flu needs to ascertain the conditions for rapid escalation if related to the bird flu. However, if it had a poor *algorithmic structure* this would create time delays and increase the risks of poor *nano-decisions* leading to unintended consequences – in this case, the loss of life.

At scale, weak *algorithmic structures* increase *non-productive interactions (NPI)* leading to negative effects on macro economic and social factors. Every negative basis-point movement of the **PI : NPI** ratio adds to the cost base and serves to suppress innovation and growth.

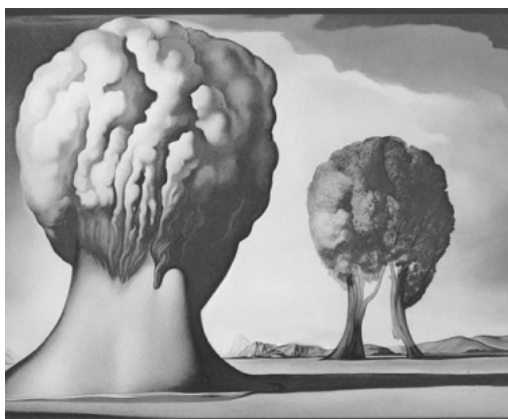
A poor *algorithmic structure* is typically found when instructions have been written as content. Content is very easy to write and maintain without due consideration to consumer interactions in practice. A common custom when updating content is to simply add more content with hyperlinks without consideration to their applicability to the *algorithmic structure*. This means consumers may need to study great swathes of content in an attempt to extrapolate the *decision-path* in the context of their need. In other words they will often have to read from the beginning of the content to understand what instructions they need to follow, as it is usually very difficult to dip in and find and use the instructions needed for their present needs.

Content is usually designed to cover a very general area and drilling down to high granularity is overly complex due to fragmentation. New and additional content piled on top of current content make this situation more complex, with the equivalent of 'addendums' and 'references' often being added. The structure of content is therefore not necessarily the same as an *algorithmic structure* as frequently rules are not defined in the context of a decision-path.

Another cause of poor *nano-decisions* involves the use of out-of-date content or and over dependency upon referencing other (often external) content which have fragile *algorithmic structures* or have been poorly designed for usability. Content that is cast in stone or out-of-date content simply increases *NPI*. Above all, consumers are increasingly frustrated with content dumping.

Decisionality: Providing the tools

With present methods content is difficult to use and impossible to change efficiently and effectively. By using Decisionality's products this changes. The Decisionality software suite allows those with the know-how, which is needed to



create the content, to encode it in simple to use dialogue-components. The creation process is simple and intuitive and allows the emphasis to be placed on the dialogue itself rather than the software method for delivering it. These dialogue-components can then be delivered and used quickly and efficiently at the point of need from any accessible web enabled device.

So, a *dialogue-component* is a self-contained *algorithmic structure* with the last *dialogue-step* of each *decision-decision-path* being a *dialogue-outcome* or *web-dialogue link* to another *dialogue-component*. A *decision-path* may pass through any number of *dialogue-components*. As with current dialogue rules contained in a word document, a *dialogue-component* also needs to be stateless,

meaning that it can be changed independently from other components, otherwise by changing one web-dialogue you need to change them all. This makes the act of change and amendment a chore and therefore discourages change. These *dialogue-components* are built once and are accessible from multiple points, multiple networked devices, multiple processes and multiple forms / documents.

The author of a *codified web-dialogue* is a *Subject Matter Expert (SME)*. Feedback loops from consumers when the *web-dialogue* is not clear or has become misaligned with reality or new understanding has materialized. The more deviations away from *web-dialogue* the more one becomes disconnected from the consumer at scale. An *SME* has ownership of a *web-dialogue portfolio* containing components. This *web-dialogue portfolio* is a tangible asset and can increase or decrease in value (depending on current needs, demands and the uniqueness of the know-how within the portfolio).

The gap between *market needs* and *web-dialogue* ought to be minimal to ensure freshness and instant availability no matter the life time of a product (this is crucial on products with long life terms, such as pension schemes). In other words, as much *web-dialogue* as may be needed by consumers, now or in the future, ought to be codified. The level of control around the transparency of *market needs* and *web-dialogue* materially influences consumer sense-making and demand sensing.

Redefining the definition of web-dialogue involves separating the codification, usage and measurements. Once this first step is made then a paradigm shift in the consumer sense-making and demand sensing can be achieved including advancing self-service and self-sufficiency.

DecisionMetrics: Measuring the Immeasurable

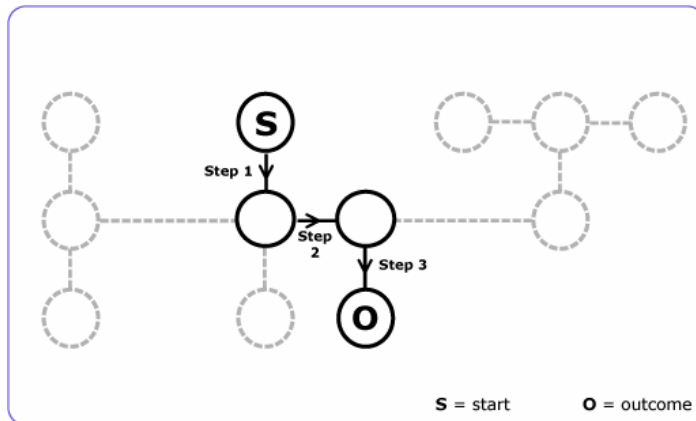
In the past viewing the usage of interaction has been like a one way street. No matter how you look at it the only things you can see are the beginning and the end. No matter how complex the interaction itself only these two points can be measured. Our tool, DecisionMetrics allows you to view the actual usage as is, every *dialogue-step* that is made is recorded and combines to form a complex street map of *decision-paths* that not only shows the streets, but also the footprints of each and every consumer who has traveled down those streets.

The real-time capture of web-dialogue by this Decisionality product provides the XML data for generating the decisioning metrics. These provide measurements of the consumer interaction, giving an organization an unprecedented level of transparency and supplying the means for developing accurate hindsight, insight and foresight of consumer interactions.

To understand the power of these metrics it is necessary to show the kind of metrics that can be generated from web-dialogue. This can be better understood

by an examination of the *decision-string* (the combination of each *dialogue-step* a consumer has taken along a *decision-path*).

The Value of DecisionStrings



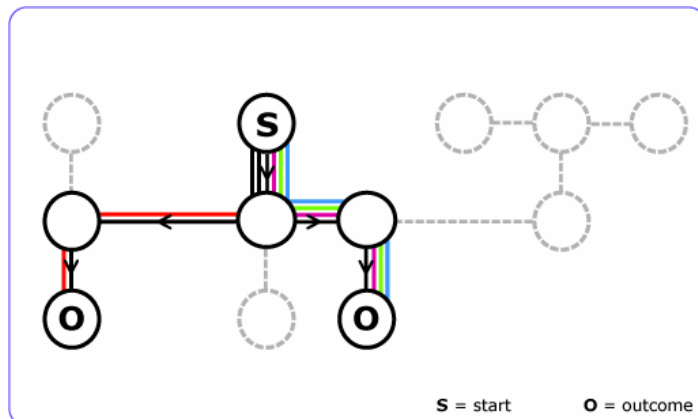
Step by Step

This diagram shows a simple *decision-string*, highlighting the *dialogue-steps* a consumer has taken from the start point (Circle S) to the *dialogue-outcome* (Circle O). The *decision-string* is the permanent record of the steps (1 to 3)

taken along the decision-path, just like walking down a muddy path leaves a series of foot prints that can be tracked.

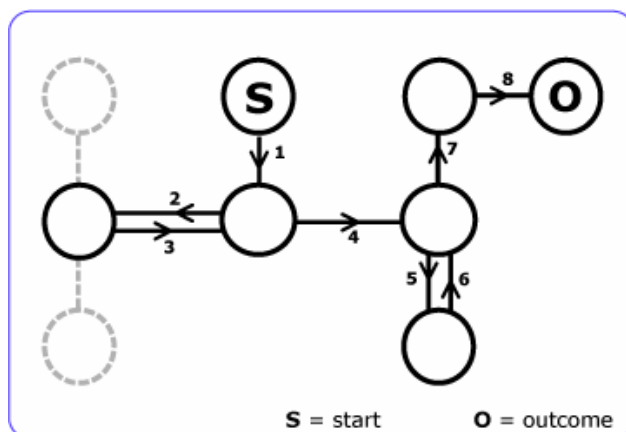
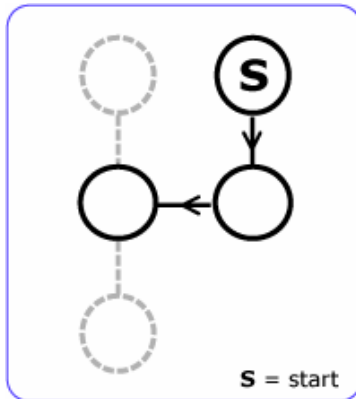
Tracking Multiple Consumers

The next diagram shows the *decision-strings* related to multiple consumers. Basic patterns of usage begin to emerge. It can be clearly seen which *dialogue-steps* are more popular. Also visible is another *decision-path* that while less popular obviously offers some attraction to a minority of consumers.



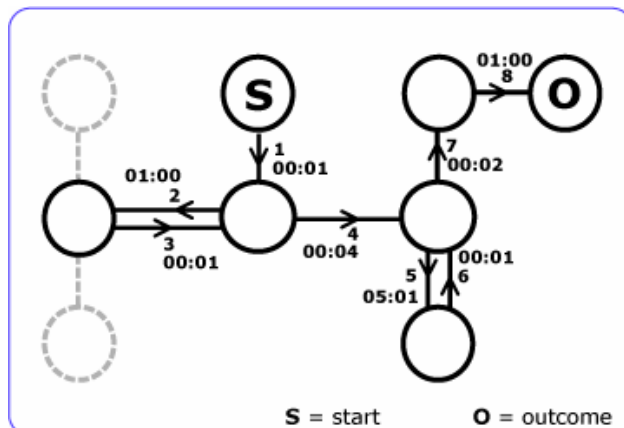
Studying Behaviour

In the above examples the consumers all reach an outcome (circle O). However, the recording of incomplete *decision-paths* can be just as valuable if not more so than that of complete *decision-paths*. In this example the consumer has reached a *dialogue-step* and stopped. They have not reached a dialogue-outcome. Now, perhaps this consumer was interrupted. But when the *decision-paths* of multiple consumers are visible a pattern may emerge, if more than one consumer has reached this same point and stopped, there is a cause for concern, and perhaps the dialogue here is flawed or there is simply no interest in continuing with this type of interaction.



The great thing about these metrics is that all consumer dialogue is recorded in real-time. This is shown in the diagram on the left. Each step is numbered 1 to 8 and represents the order in which the *dialogue-steps* were taken. Here we see two cases where the consumer took one *decision-path* and then back tracked (steps 2 and 3 and steps 5 and 6). In this case they finally reached a dialogue-outcome, but in theory a consumer should choose the best-of-fit *decision-path* each time, it is after all the *decision-path* that they want. That they are exploring other options may indicate that they are uncertain or they are considering the tradeoffs.

The final diagram in this series shows the consumer's *dialogue-steps* along with the time they spent on each and every step. This again can highlight issues with

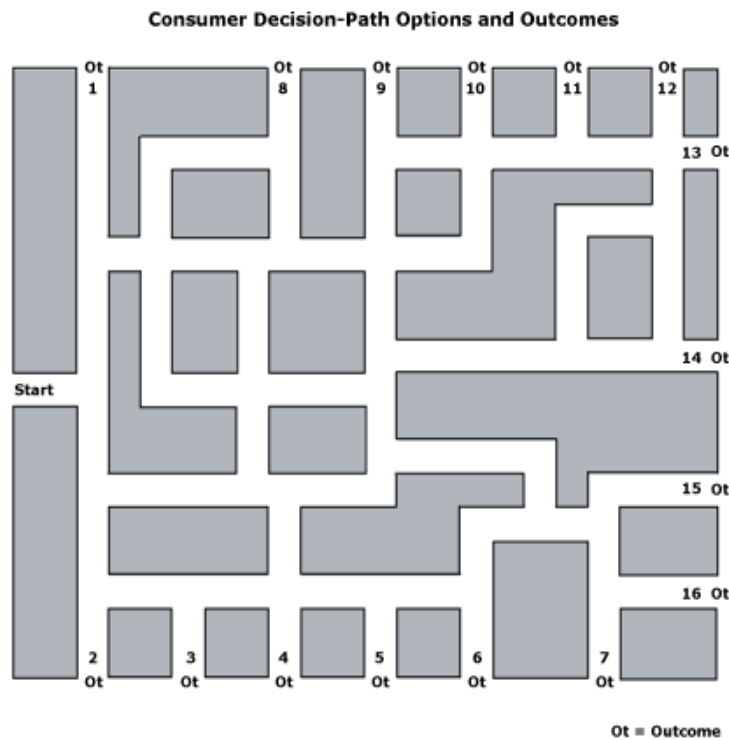


logic, instruction or choice. It can show how productivity of each consumer interaction when following this web-dialogue. Here for example step five was taken after a wait of 5:01 minutes. This may indicate a flaw in the instructions or the toughness associated with choosing an option and would be worth examining in closer detail. If most consumers complete the web-dialogue in a short time but one consumer is taking their time, and seems hesitant at each step of the way then this may indicate a problem with that consumer, perhaps they are unclear on what to do, or perhaps they are just being cautious with careful consideration being given to each *dialogue-step*.

It is this *dialogue-data* which is of such great value, allowing an insight into the consumers mind. Did they travel down all the *decision-paths* exploring each in turn before reaching the dialogue-outcome? Did they follow a straight *decision-path* without hesitation? Did they set off down one decision-path before realizing it was not the way they wanted to go and so turned back? All of this can be shown by the decision-strings derived from dialogue-data.

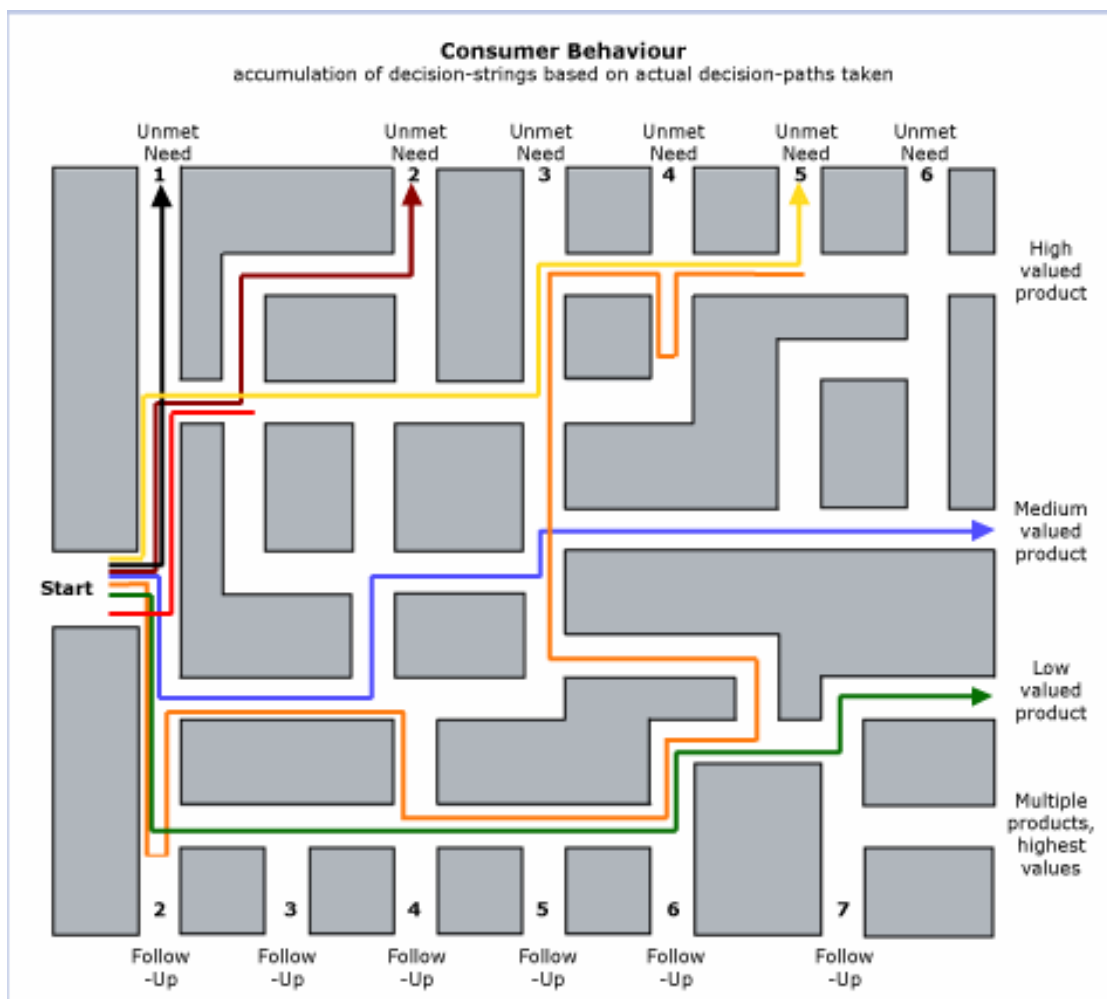
Understanding Behavior: Extrapolating the Lessons

In order to understand the changes that can be introduced with this system, it is necessary to look at the kind of learning that can be seen by using these metrics. The illustration below shows the various possible *decision-paths* and the possible dialogue-outcomes that they lead to.

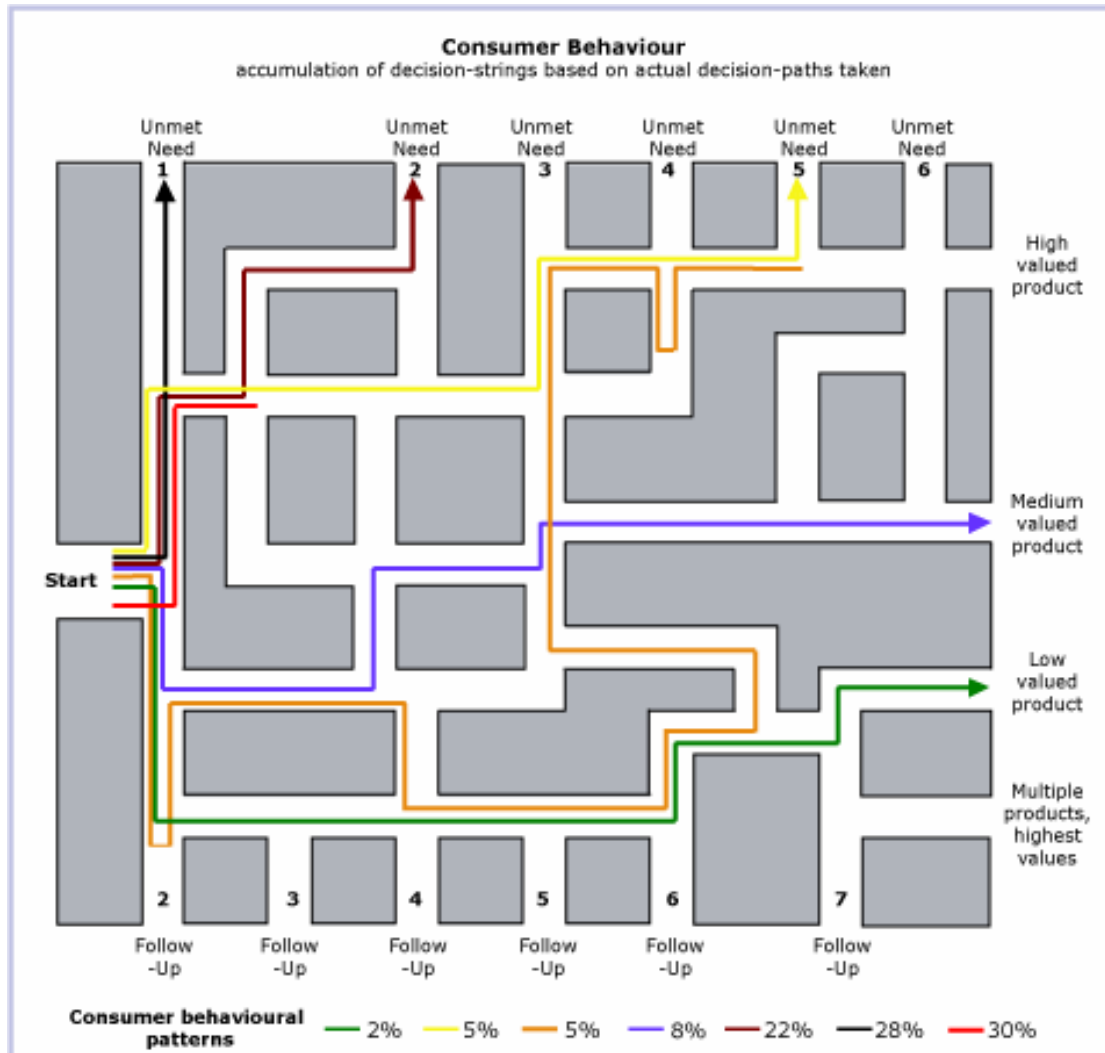


These *dialogue-outcomes* (referenced OT in the diagram) can trigger many types of events, including high value, multi product transactions, qualification in or out of a job with links to other more suitable positions or red alerts which can notify those in control of potential problems. As no consumers have yet traveled these *decision-paths* they are blank. The next diagrams show what happens once consumer *dialogue-data* has been gathered.

This diagram shows the *decision-paths* of numerous different consumers. Some of the *dialogue-outcomes* here involve unmet needs or a request for a follow-up human-dialogue (via a call center or on-line one-to-one). Whereas, other *dialogue-outcomes* lead to event triggers for straight through transactions. Despite not having all the pertinent information, judgments can already be made just from the basis of this alone. For example, no consumer has reached the *dialogue-outcome* for multiple products or any of the *dialogue-outcomes* that would lead to a follow up. And at least a few consumers have reached no *dialogue-outcome* at all (orange and red).



This next diagram shows the same situation but adds percentages into the mix. This now tells us which percentage of consumers travelled down which route giving us a much greater level of granularity. So what results can we garner from this?



Let us say the behavioral patterns represent 100 people, these are just a few of the measurements that can be derived.

0% high valued single transaction

- 0/100 reached the dialogue-outcome 'high valued product'
- Yet 7% of consumers (yellow + orange) came close to this dialogue-outcome

0% required follow-up

- 0/100 reached any of the follow-up dialogue-outcomes

- Yet 5% of consumers (orange) came close to dialogue-outcome two, four and six but eventually stopped any interaction before reaching any other dialogue-outcome

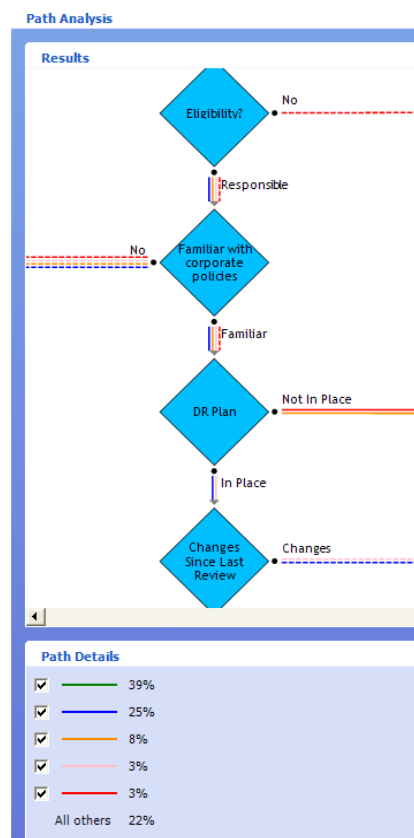
55% needs unmet

- 55/100 consumers needs unmet (black, brown and yellow)

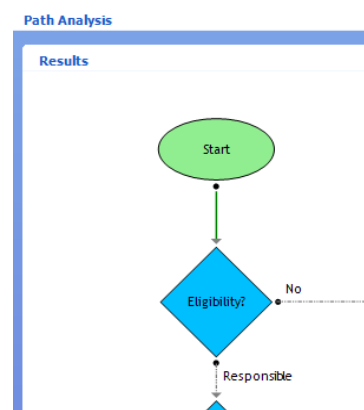
40% interactions end abruptly

- 40/100 consumer interactions did not reach an dialogue-outcome (red, orange yellow)

Even these simple extrapolations show how useful this method is. The fact that 40% of interactions ended abruptly are of great concern and with traditional methods would have been missed. But now it is known this should be carefully studied. The dialogue-components where these consumers ended their journey can be examined in depth and the logic behind them improved (especially the area where the red string ends losing in the process a massive 30% of consumers).



DecisionMetrics provides automated reporting of the metrics and patterns based on web-dialogue. The diagram on the left shows how DecisionMetrics displays the aggregated flows of dialogue in the context of the decision-tree. By simply examining the dialogue represented by the green-line (see below), it is clear that 39% of all consumers stopped at the first *dialogue-step*. This provides the focus for immediate action to improve the *dialogue-flows*.



Web-dialogue and Event-tags

Each *dialogue-step* can trigger an *event-tag*. From a codification perspective, when using DecisionFlows, this simply involves defining a value for the *event-tag* record when defining a *dialogue-step*. The *event-tag* is optional. The power of an *event-tag* lies in its ability to trigger anything within the context of a *dialogue-step*. Such *event-tag* triggers can link to a contextual advert, video, picture, schematic, table, or alert – in fact anything.

Let's consider the influence of *event-tags* upon consumer behavior during a web-dialogue session. The consumer interface for the web-dialogue could display alongside the specific interaction a photograph showing a particular symptom relating to the human strain of bird flu. The web-dialogue makes reference to the photograph to help the consumer choose the best-of-fit option that matches their symptoms. In this case a picture is more powerful than words (particularly in a physical context where accurate diagnosis relies on visual understanding). Therefore, an *event-tag* triggers something that is contextual and which can influence the dialogue behavior of the consumer. Also, an *event-tag* can trigger actions of a pre-emptive nature such as call to an ambulance or notification to a crises management team.

Event-tags are *structured-events* as they need to link with a contextual object. They are also by implication *time-based events* as each is triggered in the context of a *dialogue-step* at that moment in time. This means an *event-tag* may link with different objects according to the time of day. A *dialogue-outcome* may trigger multiple *event-tags* such as a transaction, instruction and an alert.

Synchronous and Asynchronous Dialogue

Web-dialogue is a synchronous dialogue as the person-to-computer interaction is happening in real-time (the computer and person are both "present" during the interaction). However, an *event-tag* may trigger an asynchronous dialogue such as a diarised email that is sent to the consumer at a future date. Asynchronous dialogue is where one or more processes occur at later times as a result of a consumer action, whereas a synchronous dialogue is happening at the same time as that consumer action.

Push and pull marketing strategies can all involve asynchronous dialogue but with the intent to trigger a synchronous dialogue. The combination of synchronous and asynchronous dialogue provides infinite opportunities for consumer interaction.

The asynchronous dialogue can be used to notify consumers of new opportunities, so for example an email could be sent informing them of a new product or service. No matter how the consumer responds their actions provide insights. If the consumer triggers a synchronous dialogue from within this email notification then the real-time recording brings qualitative data that is as solid as traditional

quantitative data. However, these notifications could, they be synchronous dialogue when using other types of channels.

Other Types of Synchronous Dialogue

DecisionFlows generates Web-Services software (XML, SOAP and WSDL) for web-dialogue. The same web-services can be used for human-dialogue (call centers, support groups etc) and mobile-dialogue (see illustration on left of a dialogue related to buying a camera). The difference relates more to the consumer front-end for consuming the web-service, rather than the web-service itself. There is therefore the added advantage that the web-service is built once and is accessible from multiple channels providing consistency across all consumer touch points regardless of whether it is person-to-computer or person-to-person.



Web-Dialogue and Consumer Behavior

By taking advantage of the full area of a web-dialogue screen the quality of the dialogue may be influenced. The notion that a picture is equivalent to a thousand words is simply illustrative of the way *event-tags* can be used to orchestrate other objects to influence behavior.

Another behavioral influence involved the display of time as this may sway a consumer to stay longer during the early stages of web-dialogue. It may also influence the consumer at a later stage to accelerate the interaction towards an outcome.

Behavioral influence can also happen when the consumer is aware of the real-time recording of their interactions to be part of a transactional contract. This may well increase the level of honesty, though equally the value in more complex interactions is for the consumer simply to reflect upon the decisioning-paths already taken.

Finally, understanding the consumer mood changes from neutral to happy or anger provides a powerful insight especially as the change is in the context of a *dialogue-step*. The mood change may be due to many reasons ranging from misleading communication or fundamental problems with product design.

Consumer Behavior and Contracts

When web-dialogue is a pre-contact interaction then the real-time capture of each decision-step with a date and time stamp can become part of the contract content. This is particularly important when the consumer dialogue has contractual ramifications. For example:

- The consumer understanding investment risks before agreeing to buy a derivate styled investment.
- A candidate for a job undertaking self-assessment whereby claims about their experience are crucial in terms of their objectivity and accuracy.

Consumer and the Choice of Dialogue Style

As the *dialogue-component* can be triggered in context of an event, such as an online advert, the dialogue style may be different even though it involves say the same activity. The dialogue style may vary due to numerous reasons such as region, religion, gender, age, class, community or simply because of the consumer mood and desire, from the need to reach an outcome as quickly as possible or to reach a deep understanding before choosing the pathway towards the best-of-fit outcome.

The notion that one communication fits all interactions is one of many hardwired principles that need to be unravelled when moving from a content portal to a consumer dialogue portal.

A New Definition of Web-dialogue

Web-dialogue is a set of structured interactions defined within an algorithmic framework that can be changed at the speed of articulation. It offers consumer interaction in an easy to use form within the context of an event at any level of granularity. Because web-services software is automatically generated from a decision-tree then change happens when needed and is rarely static. As web-dialogue components are components of simple programs it provides the basis for agility and adaptability. The constraint is now the human mind rather than technology.

The DecisionMetrics generated by the usage of Decisionality's products allows this new definition of web-dialogue to work. Without these metrics there is no way for web-dialogue to become the fluid and organic creature it must become to cope with the hyper-fast changes that take place each and every day. Once organisations make the switch to this new method, they will begin seeing results almost at once, a truism made because of the very nature of the web-dialogue.