Southbeach Notation: Its Semantics and Case Study

Howard Smith

Independent Consultant, London, UK
smithhn@gmail.com

Abstract. This paper, submitted to TRIZ Future Conference (TFC) 2018, describes Southbeach Notation, a rich visual model style with well-defined semantics [1] [2], rooted in the principles of Triz. The paper explains why Southbeach was developed and outlines the design goals for its specification and subsequent software implementation. A case study is included which illustrates how the use of Southbeach, in conjunction with Triz methods, allowed a Fortune 500 company to win a major new contract (TCV $2B). The paper lists each of the elements of the new notation and why these were found to be necessary if the visual style were to be accepted by practitioners and consultants who work with methods other than Triz or who use diagrammatic tools that, at first sight, do not resemble a typical Triz diagram. The authors claim that Southbeach unifies ideas from many different analytical methods and diagrammatic styles yet has remained true to Triz principles. The paper describes four ways to obtain examples of Southbeach models.

Keywords: Triz, Notation, Southbeach

1 What is Southbeach Notation?

Southbeach is a visual notation (diagrammatic convention) oriented to design, improvement, problem solving and innovation. Inspired by typical Triz notations and encompassing the core ideas of useful and harmful functions, and of increasing and decreasing effects, Southbeach adds new function types, attributes and effects. The authors and independent consultants have found these extended semantics useful when applying the methodology in complex or challenging projects.

As with any Triz notation, Southbeach can represent problems that require inventive solutions in both technical and non-technical fields (business, public policy etc.) Southbeach has been used in the design of products, services, business processes, enterprise architecture and in organisational design, strategy and planning.

A formal specification of Southbeach Notation is available [1] [2].

A first software implementation of the notation is available as Southbeach Modeller, a product of Southbeach Solutions [3]. The authors of the notation regard this as the reference specification.

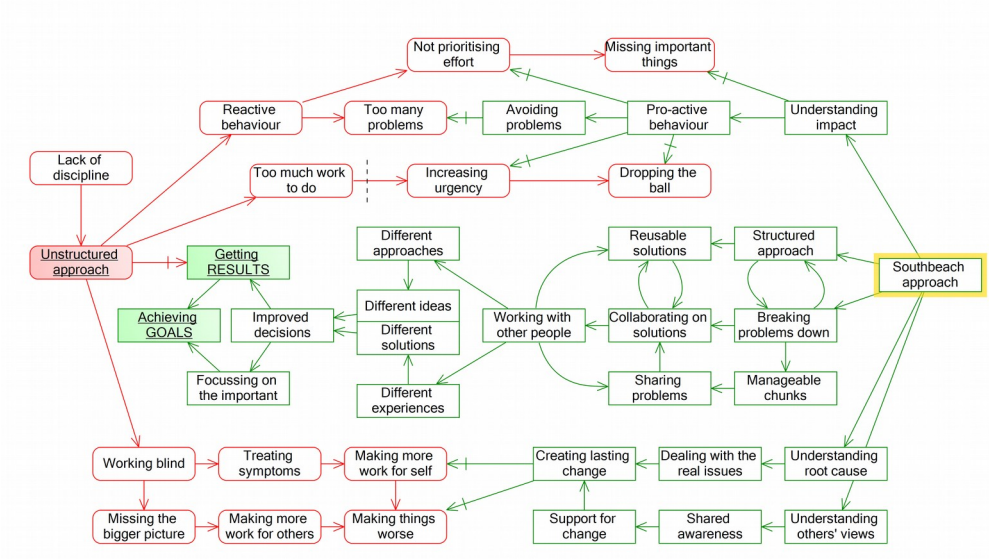

Fig. 1. A Southbeach model (in colour) that emphasises design goals for the new notation. This model explains the value of Southbeach in fostering collaboration among team members and their clients in complex projects such as the VoC case study described in Section 3. below.

2 Why was Southbeach developed?

The ideas that led to the specification of Southbeach Notation were first proposed in 2005. The authors were aware of the power of Triz, but were also aware that:

- Triz practitioners were using a variety of notations, as evidenced in the literature. There was no commonly adopted standard for how to draw a Triz diagram.
- If practical tools (software applications) were to be developed to support a new notation a single specification would be required.
- The authors felt that to support the kinds and styles of consulting work which dominated the industry in which they worked (IT services, professional services, strategy consulting) their teams would need certain new function types, attributes and effect types. The notation needed to be extensible.
- In these industries, a wide variety of analytical diagrams were already in use (argument maps, causal loops, concept maps, decision trees, sign diagrams, SWOT charts and others) yet Triz notations were virtually unknown. The authors of Southbeach sought to put Triz at the heart of the new notation yet embrace diagrammatic conventions common among consultants. They sought to unify the semantics of all of these diagrams where possible.

- The authors hoped that, by specifying a rich notation, a software application that implemented that notation could become a standard tool in the consultant's toolkit, allowing them to share visual models and to collaborate using visual models.
- While the IT and professional services industry used a small number of commonly adopted drawing, illustration and mind mapping tools, none of these software applications structured the visual models around inventive problem solving (Triz). This prevented any existing software from generating 'directions' for improvement, to support problem solving and innovation, directly from the models themselves. Moreover, standard drawing packages and mind mapping tools imposed no standard and so teams could not develop visual models in a common style.

The authors had previously toyed with the idea of simpler Triz notational extension dubbed P-TRIZ, designed for business process design and improvement (BPM). This was later abandoned in favour of the more ambitious Southbeach Notation.

2.1 Goals for the Southbeach Notation

The goals for the specification of Southbeach were to:

- Provide a rich visual modelling style oriented to design, problem solving and innovation.
- Place Triz concepts at the heart of the new notation.
- Propose a visual standard against which rich software tools could be developed. Every aspect of the semantics (other than user supplied 'tags') are represented using a visual idiom.
- Extend the visual semantics to reach a broader market, without compromising on the core.
- Unify concepts from other diagrammatic conventions. For example, a Southbeach model can represent an influence map, root cause or decision tree as easily as it can do a Triz problem.
- Be accessible, easy to understand and productive for non-specialists, specifically: for Southbeach diagrams to become a common currency among consulting teams and in collaborative workshops.
- Be extensible, via user-defined 'tags', for specialist domains, rich world knowledge and scientific problem solving.
- Allow for the implementation of software tools (macro processor, rules engine or other algorithm) that, based on a user-defined methodology (Triz being one), could generate useful supporting output from a visual model: reports, suggestions, directions for improvement, ideas, solutions etc.

3 Case Study: Voice of Customer (VoC)

The use of Southbeach Notation helped a team to reach the understanding and consensus necessary to create and submit a complex bid that won them a major new contract (total contract value $2B). The client, a Fortune 500 company, stated that the aligned solution proposed by the bid team represented 65% of the reason that they awarded the contract to the supplier.

3.1 The Problem

In response to an extensive Request for Proposal (RFP) a bid team of twenty had been working relentlessly for several weeks, answering hundreds of detailed questions raised by the client during the formal bid process. As the final response date for bid submission drew near, it became obvious to the bid manager that key members of the team disagreed fundamentally over many different aspects of emphasis within the proposal. There was disagreement both on ‘win themes’, the solution elements they related to and how these should best be presented in the submitted proposal. This uncertainty among the team, and the attendant time pressure, was complicating the work of finalising the proposal materials and, specifically, the writing and crafting of a compelling executive summary. In effect, the bid team were running out of time to complete their work.

The problem was exasperated by the team’s awareness that their proposal would be subject to critical review by many different client representatives, each working in diverse areas of the client's business that would be affected by the supplier’s solution if they were to win the contract and if the solution were to be implemented. It was not clear to the bid team how the client would make the final decision nor who the key decision makers were.

A method had to be found to align the team around the explicit and implicit requirements of the client organization. In this carefully regulated contractual negotiation, there was little opportunity to speak openly and directly with the client executives involved. The bid was overseen by the client’s procurement specialists against a strict set of competition rules.

Moreover, the supplier had worked with this client in the past. Many different supplier-customer relationships had been established between the two organisations, both personal relationships and business relationships. The bid team therefore had, in effect, a lot of knowledge of the client’s organisation and needs. However, they did not know who had decision making authority for the new contract. At the same time, some members of the client organization were expressing disappointments with the supplier's existing services. The bid team therefore knew that they had to 'up' their game and demonstrate a new and deeper level of understanding of the client's overall requirements. Clearly, that clarity could never be expressed in the proposal if key

members of the bid team continued to disagree about the core themes to present in the executive summary and how best to structure the proposal response around these.

3.2 The Solution

Each member of the bid team was individually interviewed by a Southbeach/Triz consultant in order to indirectly capture the client's requirements and perspectives on 1) the proposed solution, 2) the 'win themes' the bid were developing and 3) the client's requirements. The output of each of these interviews was a Southbeach visual model. A typical interview lasted around ninety minutes. The bid manager had to make a case to the bid team for them to agree to cooperate with these interviews, given the time pressures under which they were working. Some bid team members later stated that they were intrigued by how their views had been clarified, purely as a result of the synthesis possible in developing a visual model of their perspective.

At the end of the interviews the Southbeach/Triz consultant had over twenty detailed visual models to work from. They reflected the diverse views of the bid team. The entire bid team were then brought together in a workshop, facilitated by the Southbeach/Triz consultant, who then shared all the models with the whole team. Their reactions were revealing. For the first time they were able to see clearly each other's perspective and their disagreements were laid bare. This generated a lot of discussion among the team and the team agreed to run a second workshop, as soon as possible, to try to align their views. The consultant explained that he had a process by which multiple models could be combined to a single agreed model and he offered to facilitate the work. The bid team agreed to this.

The second workshop lasted a complete day. The bid team worked together intensely to develop a single integrated Southbeach model that everyone could sign up to and which captured all the viewpoints among the team members and their perceptions of the client's requirements. The process which the Southbeach/Triz consultant took them through included:

1. Resolving differences of terminology among bid team members
2. Ensuring that all viewpoints were adequately captured in the integrated model so as to build the larger picture
3. Where disagreements existed, resolving these by further decomposition and then re-integrating those elements into the holistic model

At the end of this day the team already had a significantly improved understanding of how to complete the bid work. But the Southbeach/Triz consultant convinced them that a further stop would add even more value. Working alone, the Southbeach/Triz consultant generated an extensive set of 'directions' for solution improvement from the integrated single model of the bid. In effect, the model was 'pointing the way' to an improved description of the bid team's proposed client solution. The voluminous set of suggestions generated by the model became working materials for the bid team.

From it, they were able to select ideas which they later included in the description of their solution. This substantially improved and expanded the description of their solution in the proposal.

As the bid manager and technical leads on the bid started to read these suggestions and ideas, a picture started to emerge. It turned out that many of the issues in the current supplier-client relationship were caused by a lack of information sharing between the two organisations. While this might seem obvious, it was not obvious at the time. The Southbeach visual model had revealed it. A bid team member then suggested that they should, as part of their proposal, suggest building a repository of such knowledge for the client. This became a significant ‘win theme’ in the bid work.

Moreover, when the lead architect on the bid read through the ideas generated by the Southbeach model, it immediately suggested to him a ‘best in class’ technology product that could be used as the basis of such a knowledge repository. This product was included in the supplier’s proposal as a central component of the entire solution, around which all other elements were integrated. It became the major win theme that unified and clarified the proposal and around which all bid team members could describe and write about their component of the solution. The fact that the proposed repository was based on a commercial off the shelf (COTS) technology, with support by the vendor (who became a partner to the supplier in the bid) added credibility to the supplier's proposal. The testimonials of other clients using the same technology also added credibility to the proposal.

3.3 The Outcome ($)

The proposal was accepted by the client, a Fortune 500 company. The total contract value (TCV) was $2B. In a debrief given by the client after the proposal had been submitted and the winner announced, the client decision maker, a senior executive, stated that the Continuous Knowledge Management System (CKMS) proposed was 65% of the reason why they had chosen to give the contract to the supplier.

The client was never aware of the role that Southbeach/Triz had played in the both the alignment of the bid team and the suggested identification of the repository as the unifying element of the solution proposed.

3.4 The Value of a Shared Visual Space

During the facilitated Southbeach/Triz workshops described above, an additional benefit of using Southbeach emerged. By projecting the Southbeach models onto a large screen, the workshop attendees had a 'shared space' in which to work. They began to focus on improving the model, rather than talking in circles around the individual issues preventing their progress. The model became the team’s focus of attention and development.

Since Southbeach Notation semantics allows for the inclusion of different perspectives, needs and roles, everyone was able to add their knowledge of the client's requirements to the model without disrupting the model development. There was rarely any need to 're-draw' the model as new information came to light. The model became a single integrated view of the voice of the customer (VoC) expressed indirectly based on the knowledge of each bid team member.

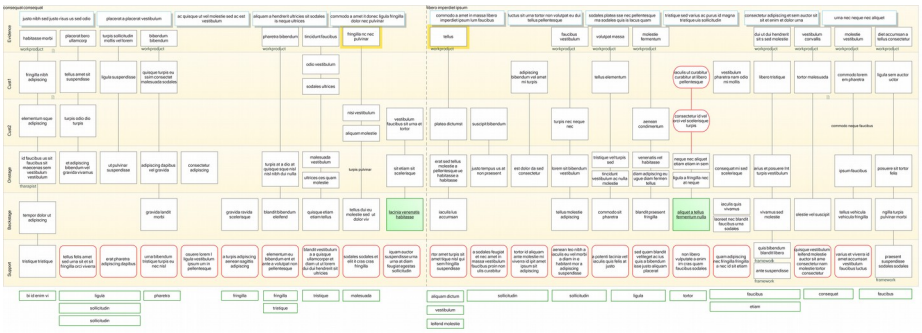

Fig. 2. A Southbeach model (in colour) from the client case study cited above (anonymised for client confidentiality.) This model, one of several from the VoC project, uses 'process like' swim-lanes (Triz Separation by Role) and is shown in the form of a Service Design Blueprint. Models such as this acted as a shared visual space for the teams, allowing them to collaborate on improvement of the proposed client service and its supporting technical solution.

4 Examples of Southbeach Models

Selecting example Southbeach/Triz models for a paper such as this is problematic. Choose a simple model and the impression is given that the notation is not extensible to a complex problem. Choose the wrong style of model (or the wrong subject of the model) and the reader could be led to believing that Southbeach is unsuitable for other work. The notation is, in fact, amenable to many modelling styles, including Triz. It is therefore recommended that the reader explore the wealth of examples available on the Internet, both as images and .SBM files. This includes:

1. Search of Google Images using the search term 'southbeach notation': www.google.co.uk/search?q=southbeach+notation&tbm=isch

2. The gallery of examples, provided by the developer of the reference implementation: http://www.southbeachinc.com/product.html

3. Download a trial version of Southbeach Modeller and look through the example models provided in the directory /Documents/Southbeach. In this directory are also visual guides to the notation explaining each semantic element: http://www.southbeachinc.com/software/download/index.html

4. Visit one of the blogs that have showcased examples in the past, for example: http://southbeach-examples.blogspot.co.uk

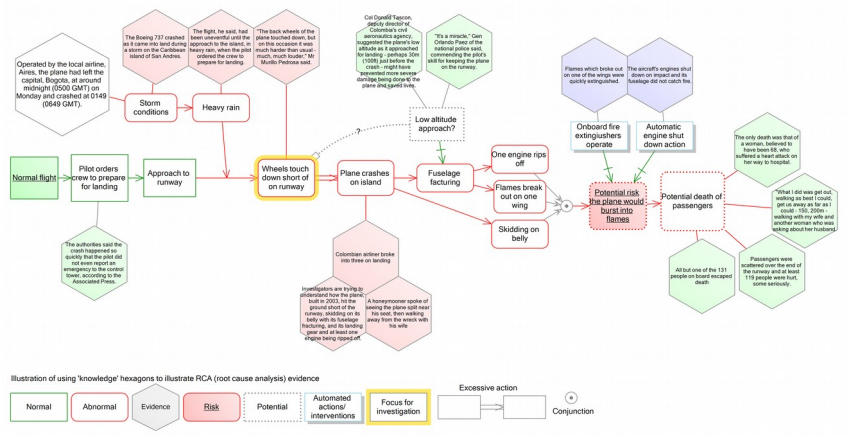

Fig. 3. A Southbeach example (in colour) from the diverse set of examples distributed with the reference implementation. This model is Step 1 in the development of Root-Cause models that describe how an airliner broke into three on landing, yet all but one of the 131 people on board escaped death. The Boeing 737 crashed as it came into land during a storm on the Caribbean island of San Andres. Note the use of Southbeach 'knowledge' objects to capture evidence from the investigation which is subsequently analysed and then decomposed.

5 Semantics of Southbeach Notation

It is impractical to describe the full semantics of Southbeach Notation in this short paper. Rather, the paper highlights the most important ways in which Southbeach extends typical Triz notations. The full specification [1] [2] explains, in depth, every visual element (functions, attributes and effects) and how they combine to provide a rich thinking palette. For example, red indicates 'harmful', shaded red a 'risk', a dashed line 'insufficiency'. Thus, a shaded red box outlined by a dashed line, indicates an acceptable risk.

Practitioners using Southbeach rarely use the full power of the notation. Often, they work with the elements they know from their knowledge of the methods they wish to apply.

5.1 Use of Colour in Southbeach Notation

The core semantics of a Southbeach visual model are similar to other typical Triz models: useful and harmful functions, increasing (production) or decreasing (counteracting) effects, and the influences or relationships among them. Colour is used to distinguish where the situation depicted is being improved or worsened: red effect lines for harmful, green for useful. For example, a harmful function counteracting another harmful function is, in fact, a green (system improving) effect. Southbeach Notation adds two new colours to the mix:

- Blue: meaning 'action', an intervention or recommendation. More later.
- Black: meaning neutral, i.e. not useful or harmful, no perspective on usefulness or undetermined effect.

Thus, Southbeach diagrams can be drawn on whiteboards or flipcharts using a standard four-colour marker pen set, although a software tool is more commonly used.

5.2 Goals and Risks in Southbeach Notation

It is often helpful to highlight explicitly the goals and risks in a situation or system. Goals are considered to be the end purpose of the system, always therefore useful. Risks are considered to jeopardise goals, therefore always harmful. These two functions are distinguished from regular functions by being shaded. Of course, goals and risks may have useful or harmful implications represented by other functions in the model.

While it is possible to take a perspective (useful or harmful) on every element and function in a model, goals are always considered useful and risks harmful. This asymmetry has been shown to be helpful in the modelling process.

Note that in a chain of functions the last is not necessarily the goal of the system. Goals or risks can apply anywhere in a model. As with all functions, goals and risks can have effects on, or be affected by, other functions.

5.3 Function Types in Southbeach Notation

Southbeach distinguishes kinds of functions in a model by shape. The following shapes are provided:

Table 1. Southbeach Functions

Normal function	Rectangle	Useful or harmful function.
Choice	Diamond	Useful or harmful choice. Each of its outgoing effects do not apply together, but separately as the situation develops or changes.
Issue	Lozenge	Useful or harmful issue. A function may raise an issue. An issue may itself have effects, which occur if the issue is resolved.
Action	Blue rectangle	Represents those functions, proposed to be added to the system, and which improve the situation but which are not yet accepted as part of the system. Thus, a consultant can use actions to highlight their recommendations or solution ideas. Later, the recommendations can be accepted and incorporated as functions.
Event	Circle	Allows for the explicit representation of a function that is an event (occurs at a specific time or period). For example, at the start or end of a chain of effects.
Knowledge	Hexagon	Knowledge about the system. Facts. Other information which just 'is' and for which there is no useful or harmful perspective.

Each of the kinds of functions listed above Southbeach calls 'agents' in the situation or system represented by the model. The choice of word signifies the agency of one function on others, via its effects (influences). Agent or function: they are effectively the same thing.

Conjunction: There is, in addition, one special shape, a small solid dot, the conjunction. This allows for joins and splits in the way effects operate on, or are affected by, multiple functions. Think of join and split as logical ANDs. The conjunction models the simultaneity of effects.

5.4 Attributes in Southbeach Notation

Attributes modify both functions and the effects between them. Each has a visual style. The attributes provided are:

Table 2. Southbeach Attributes

Useful	Green line	From some (or someone's) perspective, the function is useful.
Harmful	Red line	From some (or someone's) perspective, the function is harmful.
Neutral	Black line	Neither useful nor harmful.
Insufficient	Dashed line	For example, a weak, but useful, function. Or an acceptable risk, if harmful.
Surplus / Excess	Doubled line	An excessively harmful function. A surplus of a useful resource.
Potential	Dotted line	Consultant's use dotted lines to indicate something has potential to act, or may be later added to a model. Southbeach adopts the same convention. For example, a suspected problem, yet to be confirmed.
Dysfunctional	Jagged or irregular line	The function or effect is not operating reliably or always. For example, an unpredictability of operation.
Goal	Shaded green	The purpose, end-result or ideal configuration of the system.
Risk	Shaded red	Specific risks in the system that work against goals, even if there is no effect between the risk and the goals of the system.
Focus	Yellow highlight	As with a yellow highlighter pen, used simply to highlight those functions of the system that are of particular interest to the analyst or team working on the problem.
Historical	Crossed through	The function was in the system, but is no more. This allows the consultant to leave a function in the model, for clarity, but to mark it as no longer applying. Its effects are negated.

All of these attributes can be applied to any function type without visual ambiguity. For example, a red diamond, outlined using a dotted line, but fully shaded, represents a 'potential choice' in the system that is considered a 'risk'. Another example is a hexagon outlined using a dotted line. This would represent 'potential knowledge' about the system.

5.5 Effect types in Southbeach Notation

This is perhaps the most controversial aspect of Southbeach. In most Triz notations the only two effects provided are increasing (produces) and decreasing (counteracting) influences, with modifying attributes, i.e. insufficiency, dysfunction. Southbeach 0.9, by contrast, specifies a number of additional effect types. Each is distinguished visually using a different arrow head or a special end of line shape. These additional effects were introduced after careful study of the differences that arise in the suggestions for system improvement that might apply.

The effect types in Southbeach are:

Table 3. Southbeach Effects

Produces / Counteracts	Standard increasing and decreasing effects between functions.
Prevents	A counteracting effect that acts in advance (prevention).
Opposed	Physical (not technical) contradiction between two functions. A symmetric double headed effect line.
Contributes to / Detracts from	Used to distinguish the difference between non-accumulative and accumulative effects.
Creates / Destroys	Used to distinguish discrete system function from continuous system function, for example, a production line creates discrete widgets. This bridges Southbeach to the domain of discrete system simulation.
Stores / Consumes	Used to model functions that operate as they would do in a stored value model, e.g. systems dynamics.
Becomes / Replaces	One function is transformed, or replaces, another. Models system change.
Causes	Used to highlight a causal function in a model. Root cause or root contradiction (once identified).
Uses	One function uses another function as a resource. Without the resource the function may not be able to operate.
Implements / Specifies	Specialised effects to model the relationships between elements of the system in terms of their implementation and specification.
Related	A bland effect (simple line) drawn between function to signify a relationship exists (i.e. one might be influencing another) but the nature of the effect is not yet known or specified.

Is a	A ‘is a’ B. The function A is an example of function B (its type). This is useful to simplify the drawing of certain models. Instances of a class of functions can be added to the diagram without the need to draw all the attendant effects into and out of them, since the class function serves that role.

See the full Southbeach specification [1] [2] for the visual shape in each case. The use of all of these effects in is no way mandatory. Many Southbeach models use only a small number of effect types. However, all of the above (Table 3) serve specialised purposes in problem solving or visualisation.

5.6 Effect-specific attributes in Southbeach Notation

In addition to the attributes in Table 2 above, which apply to both functions and effects, there are a small number of additional attributes that apply only to effects. Again, each has a simple visual representation stated in the specification.

Table 4. Effect-specific attributes

Necessary	A (function) is strictly necessary for the effect to occur. Combined with the attribute ‘insufficient’ (dashed line), this allows for the representation of ‘necessary but insufficient’ functions.
Inevitable	The effect on the target function is inevitable.
Delayed	The effect of one function on another is delayed (time).
Accelerated	The effect of one function on another is accelerated (time).
Questionable	The effect is questionable / unsure.
Not	The negation of an effect, for example, A is NOT producing B

5.7 Separations in Southbeach / System Structure

Triz practitioners will be familiar with the 9-Box model: system/subsystem/supersystem, past/present/future. By placing function in different boxes the specialist is explicitly stating that a function is separated by another, denoting a system structure, in this case separation by system hierarchy and time. Southbeach generalises this idea. This allows it to adapt to conventions used in a wide range of methodologies and tools.

To take a simple example, a SWOT chart consists of four boxes. A function placed in the ‘Strength’ box is considered useful. A function placed in the ‘Threat’ box is considered a potential risk. Southbeach allows the user to draw any set of boxes, X by Y, and to label the axes of separation. The separations supported by Southbeach are:

Table 5. Southbeach Separations / Structures

Separate in space (physically or conceptually)	For example: Above, below, within, outside
Separate in time	For example: Now, before, the future
Separate by parts (of the system or situation)	For example: Part A, B, C
Separate by perspective (also viewpoint)	For example: My view, your view
Separate by aspect (or quality)	For example: Reliability, consistency, strength
Separate by role (or user)	For example: The supplier, the customer
Separate by probability (likelihood zones)	For example: Certain, unlikely, probable, 25% chance, etc.
Separate on conditions	For example: Above limit, below limit, in range
Separate by version (of the system or model)	For example: Draft, final, proposed change

Using boxes, with defined axes of separation, Southbeach can represent a multitude of system structures visually and, therefore, the semantics of situations that cannot be represented by a simpler 'flat' diagram. This aspect of Southbeach is unique in the market and allows the tool to emulate a vast range of existing visual analysis methods already known to many specialists and consultants, for example 2x2s, 3x3s, NxMs, swim-lane and grid models of any dimensions.

Structures are represented visually and the model drawn over it. Each function placed in a box inherits two additional 'attributes' X and Y. These separation values can be referenced, as can any other attribute, by software systems such as inference engines, rules engines, reporting engines, etc. Thus, the software has access to:

- The standard attributes of every visual element, e.g. useful, harmful, goal, risk, insufficient, dysfunctional.
- The separation of the visual element (on the canvas) from others, e.g. the function is acting in the past, resides in the supersystem, is used by a specific role.
- 'Tags' supplied by the user for the domain (world knowledge) in which they are working.

Functions and effects in a Southbeach model therefore have rich meta data associated with them: a) a list of standard attributes from the visual notation itself, b) one of more typed separation values (by time, by space, by perspective etc.) and c) one of more typed 'tags' supplied by the user during the model development.

Note that both mutually exclusive (disjoint) and non-mutually exclusive (set of) 'tags' are supported. For example, type of animal and animal attributes.

5.8 Effects on, and by, Effects

Southbeach, perhaps uniquely, allows for functions to have effects (influences) not only on other functions, but on the effects of other functions. For example, if harmful function H is counteracting useful function U, function S could be introduced to the model in such a way that it counteracts the effect of H on U, without counteracting any other effect of H or U in the situation depicted. And vice versa, effects can

themselves have effects. For example, the production of widgets depletes a resource supply chain process. This required, in the visual representation and software implementation of Southbeach, arrow types that could not only join to functions (to boxes) but also to the mid-point of lines connecting boxes.

6 Final Thoughts / Summary

Southbeach Notation is rooted in Triz but extends typical Triz diagrammatic conventions with concepts that are both necessary for the most challenging projects and for the depiction of any visual analytical model that must be accessible to a non-specialist. The authors of Southbeach sought to unify concepts from a range of methods that consultants in their industry already knew and practised. This has led to a new notation which is both extremely generic yet is also rigorously defined and consistent with Triz. A consultant can, using Southbeach, draw something as simple as a SWOT chart or a root cause diagram and still make use of Triz's inventive problem solving, to point to directions in which they can then hunt for solutions.

Feedback from users leads us to believe that Southbeach Notation is worthy of examination by the Triz community. Comments are always welcome. A business change specialist noted that Southbeach models are readily understood by non-technical personnel and that this leads to greater acceptance of rigorous methods by business teams, the very people that sponsor many projects. Some users have reported that the generality of Southbeach makes it practical for them to stop using a mix of drawing package, mind map or other specialised software, and instead use Southbeach as a preferred way of representing all problems, goals and situations. Further, the case study cited in this paper has demonstrated that analytical methods can be brought into large multi-disciplinary projects if the right visual notation and tool set is made available, creating a valuable shared visual working space. The methodological approach, about which there was considerable scepticism at first, challenged the team's assumptions, opening the path to the identification of the winning client solution.

Lastly, an interesting side-effect of the development of Southbeach Notation is that it has introduced Triz concepts to a broad audience who might not otherwise have encountered inventive problem-solving methods. This is most welcome.

References

1. Smith, H., Burnett, M.: Southbeach Notation 0.9, BPTrends (June 2011)
2. Smith, H., Burnett, M., Young, C.: Southbeach Notation 0.8, BPTrends (May 2008).
3. Southbeach Solutions.: Southbeach Modeller, Reference Implementation. https://www.southbeachinc.com
4. Various authors.: Southbeach Model Gallery (2009-2017). http://www.southbeachinc.com/product.html