

Nimbus 3-Step Research for New Product Development

The history of new product development is littered with stories of products that should never have seen the light of day. We have all heard about expensive launches for much touted new products that have failed to live up to their sales projections. What about the reverse situation – products that we have never heard about because they never came to market. Maybe some of them could have become great success stories but for whatever reason they were abandoned early in the new product development cycle.

Clearly, the best new product strategy is weeding out the winners and losers early in the development cycle. But that's easier said than done, at least up to now. The problem is that the most common research approach for testing new concepts and products utilizes small groups in a qualitative study. There are well know problems with the focus group methodology; 1) **observer dependency** where the researcher is not a detached observer but always a participant, 2) **positive bias** resulting from a desire to please the researcher, and 3) **runaway** focus groups that direct the dialogue to their own purposes.

Even beyond the concept phase of new product development when research budgets might support different methodologies with larger sample sizes, there are problems that can arise. Paper and pencil based studies have a cultural bias and verbal responses to a researcher can be swayed by interactions between the researcher and subject. Virtual shopping studies overcome some of these limitations by immersing the subject in a virtual store environment and recording purchases in an objective manner. Without eye tracking, however, there is little discovery about how the subject “shops the shelf”. On their own, eye tracking studies do an excellent job of identifying what captures the shopper’s attention and interest but don’t necessarily capture actual shopper behavior such as product examinations and purchases. In either case, the resulting data captured by the methodology is insufficient by itself in terms of modeling the purchase decision.

Figure 1 Nimbus Screen Shot of Shelf Shopping

Figure 1 shows a virtual product being picked up from the shelf for closer examination. The package may be rotated and areas of interest may be tracked on front, sides or back of the package. These areas of interest might be the logo or a graphic element on the label. Tracking shopper interest in these specific locations on the package helps designers redesign existing packages or develop new packages that have more impact on the shelf and increase purchase rates.



Nimbus Dynamically Integrates Eye Tracking and Virtual Shopping

Nimbus has achieved a breakthrough in shopper marketing research by dynamically integrating eye tracking and virtual shopping into seamless research studies for clients. **Nimbus methodology** combines the best practices of discrete choice consumer research:

- Minimizes statistical anomalies and creates an ***orthogonal data set*** by utilizing a monadic survey design.
- Captures ***stated preference*** using a natural and intuitive interface.
- Seamlessly replicates the ***entire shopping experience*** in a virtual environment.
- Applies an optimal experimental design to shopper insights research using the principles of ***Choice Modelling*** theory developed by Nobel Prize winning economist, Daniel McFadden.

Nimbus Delivers Shopper Insights from Concept to Market in Three Research Steps

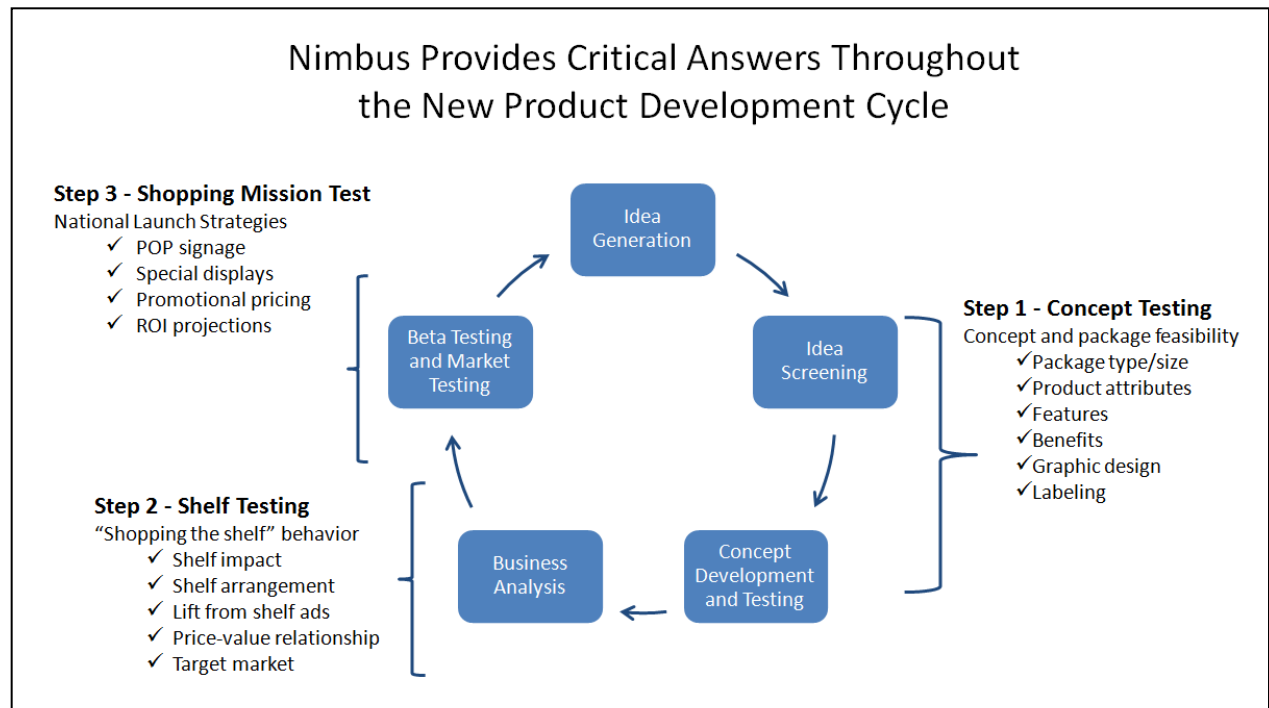
Nimbus provides a common platform for conducting shopper insight research across the full spectrum of needs over the product life cycle. Special modules of Nimbus have been developed that set up the optimum experimental design across the following three phases of the new product development cycle;

Step 1 – Evaluate as many good ideas and possible and identify the winners and losers.

Step 2 – Measure how well the top two designs perform in a shelf test against other products.

Step 3 – Conduct a full fledged shopping test to determine which launch strategies work best.

Figure 2 Nimbus Shopper Insights at all Phases of NPD Cycle



Step 1 (Nimbus Evoke™) - Concept testing of multiple proposed designs with eye tracking and focus group feedback to identify the most feasible approaches. This low-cost research protocol quickly establishes the market receptivity of alternate designs and provides valuable feedback to graphic designers on which graphic elements are most effective in communicating with the desired market.

Fig 3. Nimbus Evoke™ is a new breed of qualitative-quantitative research that opens the door to improved concept testing with insights that can be implemented in the real world. Each individual is able to manipulate the new design in virtual space and to view the product from all sides. The actual areas of the package that are viewed by the respondent are then matched to a questionnaire that is filled in by the respondent on what they found appealing. These quantitative results are then compared to the qualitative assessment of the product that is shared during the group discussion giving invaluable insights back to the design process.



Figure 3 Nimbus Evoke Session

A **Nimbus Evoke™** study is conducted with small groups of respondents who are given the opportunity to indicate their preferences in a virtual comparison of the designs. Screening questions establish demographics and brand loyalties during panel recruitment. Virtual images of the product are shown 3D on screen and can be individually selected and enlarged by the respondent. Eye tracking is utilized to identify which areas of the package elicit the most interest. Respondents get a chance to select/deselect the product they wish to purchase. All of the products being tested are stop-rotated through front, side1, back and side2 with areas of interest (AOI's) being captured for all respondents.

Figure 4 **Nimbus Evoke™** Screen Shot of Test Packages



Dynamic Eye Tracking - The client-supplied digital images are arranged for presentation onscreen simultaneously as shown in **Figure 4**.

The ovals indicate those portions of the test packages that the designers want designated as areas of interest (AOI's). Each package may have a dozen or so AOI's scattered around the front, sides or back of the package. Each package may be selected for closer examination during which the package may be rotated to side #1, the back and then side #2. Fixations and viewing duration of AOI's on all faces of the package are recorded.

All of the responder's actions including the package first selected for closer examination, the total elapsed time of examining a package, the viewing of AOI's and then the final selection of the package that the responder would "buy" are compared to the other elements of the session including the responder's answers to an onscreen questionnaire and the group discussion to build a complete story on the new package design project and clear directions on refining the package.

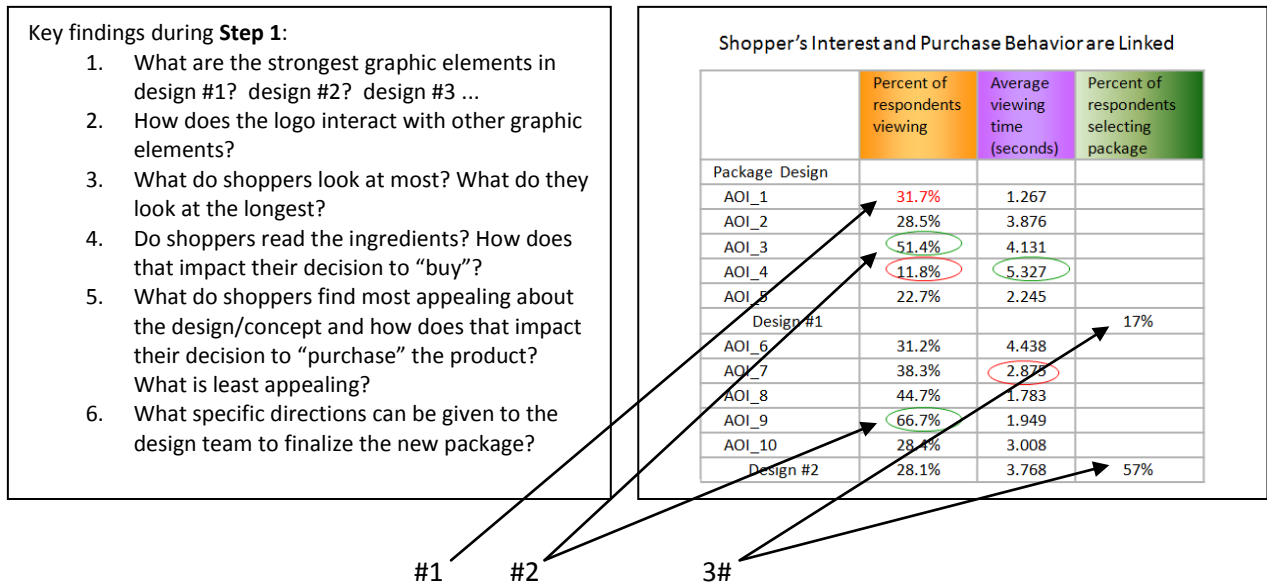
Step 1 –Concept Testing (Nimbus Evoke™ continued)

Behavioral questions for which we are seeking quantitative answers during a **Nimbus Evoke™** session:

- Which prospective package attracts the most frequent attention from shoppers?
- Which prospective package attracts shoppers’ attention for the longest period of time?
- What percent of the time is a specific design noted first (versus other designs)?
- What visual elements do respondents note at all, note first, and note most often on particular prospective packages?
- What eye-path do most respondents most commonly use on particular prospective packages?
- Which prospective package was selected for purchase most often?

Figure 5 illustrates how respondent viewing data is combined with **their stated preference** for a specific test package using the Nimbus interface to perform the selection in a natural and intuitive manner.

Figure 5 **Nimbus Evoke™** Sample Report



Observations on Sample Data Table in Fig 5.

1. AOI_1 in Design #1 garnered nearly 32% viewership but respondents didn’t like what they saw (value is in red due to negative rating in post session questionnaire).
2. The strongest element in Design #2 (AOI_9) out pulled the strongest element in Design #1 (66.7% vs 51.4%).
3. Design #2 was preferred nearly 3 to 1 by the responder panel (57% vs 17%) which is a clear directional even though the panel size is small. The control garnered 26% of the first place choices but is not shown in the table.

Step 1 –Concept Testing (Nimbus Evoke™ continued)

After the product viewing and manipulation session is complete and a final choice has been made, a series of onscreen questions are posed to determine what the respondents found memorable and what they liked about the products being tested. These are some of the attitudinal questions that are posed after the product evaluation has been completed:

- What are respondents' self-reported intentions to purchase the brand after having seen the prospective packages?
- How eye-catching do respondents say particular packages are?
- How strongly do respondents associate certain image and attribute statements with the brand?

Both behavioral and attitudinal responses are then matched to actual viewing data for each respondent so that better interpretations can be made on whether the subjects were positively influenced by the design elements. Recommendations are accompanied by detailed charts and tables that highlight the winners and losers.

An executive summary covers these main areas:

- **Label readership** - How effectively does each design lead consumers to key package information? When the product is picked up from the test set and examined more closely what portions of the label is examined for the longest time? Is the package rotated so that the all sides are viewed? How much time is spent on each side?
- **Communication** - How effectively does the design convey the product proposition?
- **Package Appeal** - How do consumers react to the overall look of the packaging? Is there any evidence of confusion, irritation, skepticism? Is the packaging considered appropriate for the category?
- **Brand Perceptions** - Are the brand image and specific product values effectively conveyed? Is the imagery established by the packaging consistent with long term marketing strategy?
- **Motivation** - How effective is the package in encouraging consumers to purchase the brand? Is there any evidence which indicates the package serves as a purchase deterrent?

Nimbus Evoke™ studies can be fielded with results back in a matter of a few weeks so there is no reason not to screen more new concepts and dramatically increase your chances for product launch successes. More important, **Nimbus Evoke™** costs only a little more than traditional focus group sessions and provides so much more insight not to mention the added quantitative measures that increase the confidence of the findings.

Step 2 - Shelf Shopping Study

The objective at this step of the development cycle is to find out if the new product has shelf impact against the competition and what the reaction of the target group is towards this new package. In addition, the shelf shopping study may test the findability of the test package and the impact of POP signage if any on viewing and examination of the package.

The shelf shopping study is usually conducted between the new package design and a control, but multiple new packages can be tested along with a control. So this study can also be used to identify the best prospective package among the remaining designs. Naturally, the performance of the new package can also be compared against competitive packages. Various price points may be tested and a price-to-value relationship can be developed. The client may specify how the virtual shelf is arranged. Multiple arrangements can be tested to provide insight into the optimum arrangement. Since this shelf testing involves both eye tracking and virtual shopping there is a wealth of detailed metrics that help to identify how well the new package design stands out on the shelf and how well the design fits the search path of the typical shopper.

Figure 6 **Nimbus Screen Shot of Shelf Test**



Figure 6 shows a shelf test for the beverage category. Multiple scenarios are created to take into account the type and number of variations that the client wishes to test. Each respondent is presented with only one scenario under monadic testing conditions. This is done in order to ensure that the data is orthogonal and that biases such as adaptive learning are minimized.

Some of the questions that may be answered during the **Shelf Shopping Study**:

- To what extent does the new product packaging format break clutter and gain the attention of target consumers when placed on the store shelf among competitive brands?
- How does the test package perform relative to the control in terms of views, examinations and purchases?

Step 2 - Shelf Shopping Study

Questions continued ...

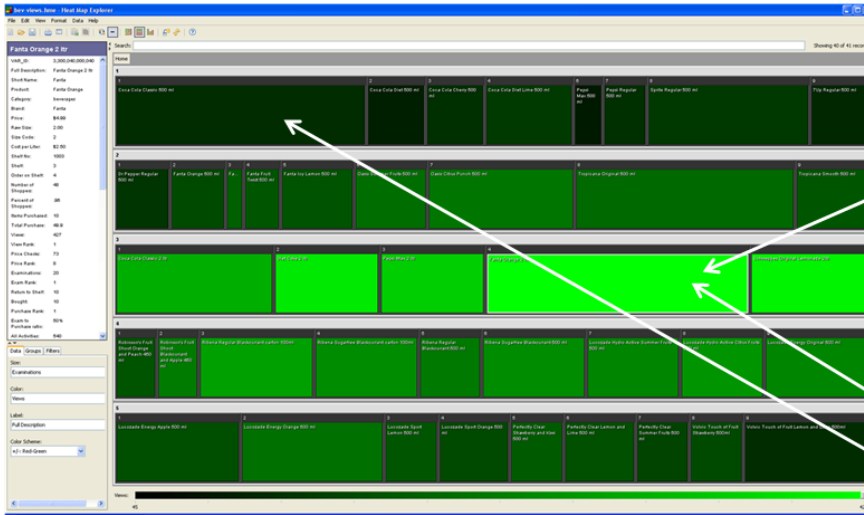
- How does the test package perform relative to competitive packages in terms of views, examinations and purchases?
- Which shelf placements attract the most frequent attention from shoppers to the new product?
- What percent of total category time is spent with the test package?
- What is the eye path for most respondents who see and examine the test package?
- How many respondents examine the test package and rotate the package to read the side or back labels? How much time is spent examining the test package versus the control or a competitive package?
- Which test package sells the most product?
- What is the ratio of examinations to purchases?
- What is the impact of shelf signs on viewing, examinations and purchases?
- What is the impact of different price points of sales?
- What are the differences in viewing, duration of viewing, examination and purchase between different demographic segments or shopper segments? Does the new package appeal to a broader demographic?
- What visual elements do respondents note at all, note first, and note most often on specific packages?
- How does label reading of the test package differ from the control or other competitive products?
- What is the cross-impact of viewing/purchasing the new package on total sales for the brand?
- What is the impact of the new package on total category sales?

Step 2 -Shelf Shopping Test (continued)

Measuring the impact of redesigned or new packages can be quickly and easily gauged through the use of unique visualization tools developed by Nimbus. One such tool is the planograph which presents the critical metrics collected during the study in a physical format similar to the planogram.

Figures 7 & 8 Planographs for Beverage Shelf Shopping Test

Shelf Shopping Data is Converted into Easy-to-Understand Visualizations called Planographs



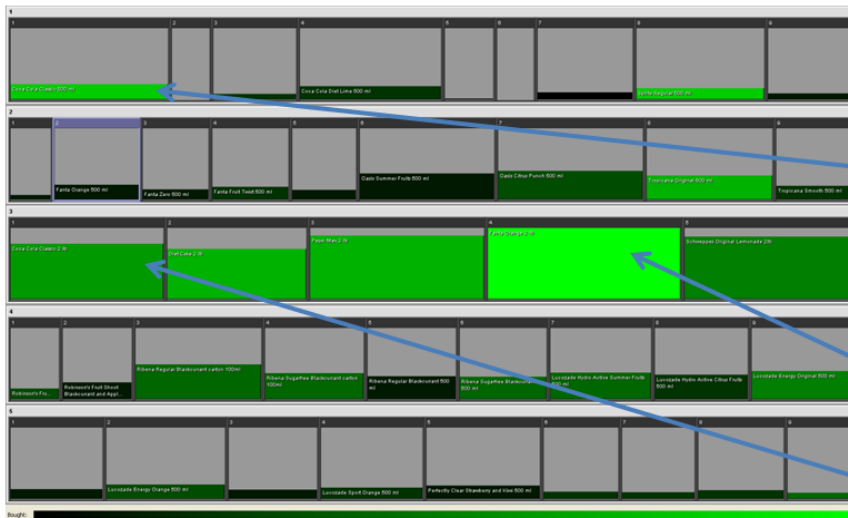
Fixations represent the number of times respondents look at the SKU. The greater the fixations the brighter the green color!

Fanta Orange 2 Ltr Bottle had the greatest number of Fixations.

The length of each bar reflects the number of examinations performed on the SKU. The longer the bar the more examinations were conducted.

Fanta Orange 2 Ltr dominates the examinations with Coke Classic 500ml (upper left) a close second

Nimbus Planographs can Integrate Viewing Data with Actual Sales to Give Greater Insights!



Duration of viewing is represented by height of the bar.

Coke Classic 500 ml generated good sales even though total viewing duration was low indicating a mature, well accepted brand.

The color intensity represents the sales volume. The brighter the color the higher the sales!

Fanta Orange 2 Ltr dominates sales volume.

Coke Classic 2 Ltr did about average.

Step 3 - Full Shopping Mission test is executed once the following key developmental decisions have been finalized; a) package design including both graphics and label copy, b) pricing strategy, and target audience. This field test is conducted with a virtual store environment that replicates the client’s main channel. Multiple aisles and fully stocked, viewable shelves allow for the specification of a shopping mission and/or a shopping budget so a true measure of the sales volume may be projected. Alternate promotional strategies may be tested including aisle banners, shelf signs and special displays etc. Detailed metrics on shopper behavior are collected and recommendations on the optimum strategy are made. Output tables include spreadsheet tables that may be analyzed using a number of multivariate techniques as well as easy-to-interpret planograph visualizations and pivot tables to measure the best promotional strategies. Panel data from 360 to 400 respondents is collected from multiple cities to yield nationally projectable sales estimates.

Figures 9 **Aisle Banner and Displays to Promote Aisle Traffic**



Figure 9 is a screenshot of a multi-aisle virtual store set up to replicate a particular chain. The study allows aisle traffic promotion strategies to be tested such as aisle banners and other special displays.

Figure 10 shows a hypothetical aisle sign hung right where the manufacturer’s products are located. Almost any type of display or device can be replicated in the virtual environment and tested for impact.

Each of the variations in the study need to be coordinated into various scenarios that respondents can interact with. Nimbus can reduce overall marketing research costs because many times scenarios can test for multiple tactics.

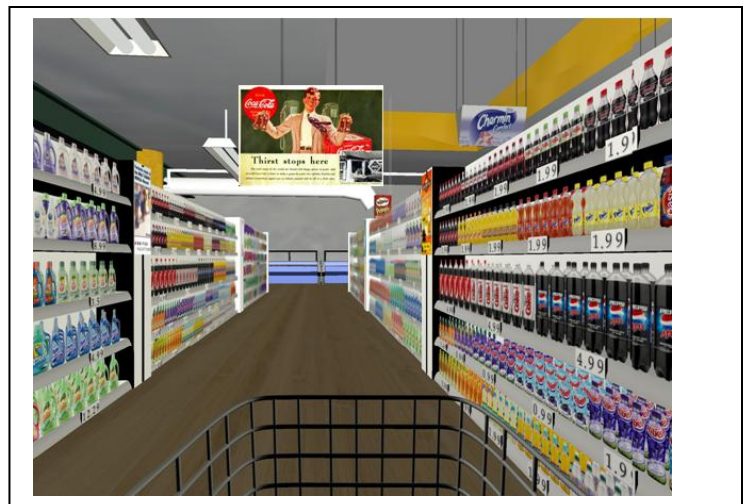


Figure 10 **Aisle Signs to Attract Attention to Stock**

Step 3 - Full Shopping Mission (continued)

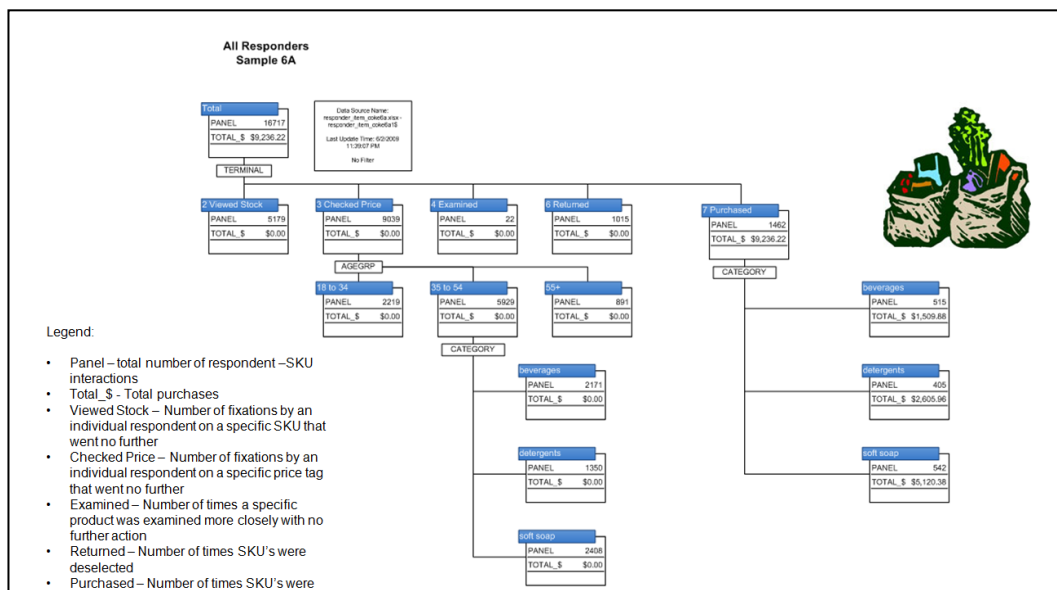
Questions that may be answered with data collected in **the Full Shopping Mission** study:

- Which shelf sign or aisle banner works better? What is the impact on aisle traffic?
- Which special display works better? How many shoppers view the product?
- What is the impact of the promotional pricing on examinations? What is the impact on sales?
- How does the shopping mission impact viewing, examining and purchasing of the product? What other products are purchased at the same time?
- What is the sales projection for the product by region? Nationally?
- What is the estimated ROI for the new product in first 12 months after launch?

Purchase Decision Tree Analysis - The integrated eye tracking and virtual shopping datastream lends itself to discrete choice modeling using a variety of multivariate techniques such as CHAID, multinomial logit and probit analysis. The dependent variable modeled is the purchase of the desired product expressed as either a binary variable (selected/deselected), an ordinal variable (units purchased as 0,1,2) or as a scalar variable(dollar value of purchase).

The list of potential independent variables includes almost any of the stimuli that the manufacturer or retailers wish to test; **environmental stimuli** such as the appearance of the store, number of aisles, lighting, flooring, width of aisles, height of shelves, length of shelves; **promotional stimuli** such as banners, displays, blade signs, promotional pricing, coupon devices; **category management** stimuli including level on shelf, adjacencies, assortment and arrangement. Figure 12 illustrates a sample purchase decision tree that may be constructed with the results.

Figure 11 Sample Purchase Decision Tree Output



Conclusion - Nimbus has Bottom Line Impact

Nimbus studies generate recommendations that have bottom line impact by identifying the strongest elements of the package design that can be combined to create a winning new package. The 3-step process ensures that more concepts get tested even under tight budgets and timetables. When all the studies are completed using **Nimbus**, the strategies for product launch are more carefully thought out and executed.

Figure 12 Example of the Bottom Line Focus

ROI Results of Merchandising Test			
	Total	No XXX Banner No XXX Ad Control	XXX Banner XXX Ad Test
Total Events	8,752	4,295	4,457
Views	59,096	29,942	29,154
Price Checks	15,195	7,958	7,237
Exams	1,781	816	965
Returns	965	457	508
Purchases	848	391	457
Net Increase in Units			66
Nationally Projectable Increase			17%
ROI Projection			18.50%

Coordinated Studies - **Nimbus** offers a unified methodology across all stages of the product/package development cycle that yields consistent results for more robust shopper insights. Since **Nimbus** has a common technological platform the data stream can be accumulated from one study to the next to build a knowledge base for the product category and the brand.

Faster Turnaround - the integration of studies across the NPD cycle results in quicker turnaround.

Lower Costs - **Nimbus'** integrated research studies lower the cost of developing and launching new products at a time when clients are looking for more cost effective solutions.

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