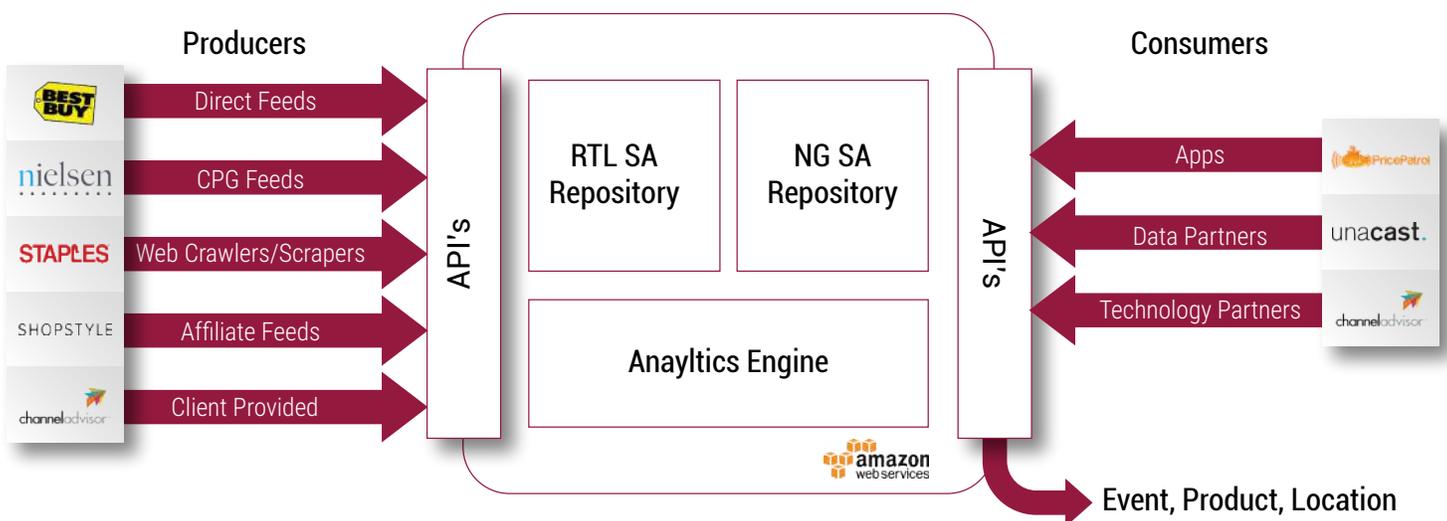# The Shop**Advisor** Solution

INTRODUCTION

ShopAdvisor provides a rich repository of product availability, location and consumer behavior data that we harvest from direct data feeds, Nielsen (product availability and sales data), affiliate channels, web crawling, and customers. From this repository, we enable our customers to build drive to location proximity marketing campaigns, measure the impact of those campaigns and then use this information to inform future campaigns. Simply stated we enable proximity marketing by providing the insights digital agencies, CPG companies, restaurants, retailers and App partners need based on extensive multi-source data with analytics.

Customers use ShopAdvisor to build applications which range from using ShopAdvisor data to power store locators and product finders, that enable consumers to find specific products or a type of product (i.e. men's shirts), and the locations that have those products in stock and available for purchase.

Shop**Advisor** ARCHITECTURE

The ShopAdvisor solution is a high performance, high availability, cloud based data aggregation and analysis platform. We provide a repository of consumer product behavior opaque to the consumer identity allowing our clients to maximize their brand effectiveness.

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We ingest our data into the platform from retailers, App providers, third parties (e.g., Nielsen, Gravy, etc.) as well as web crawlers. The ShopAdvisor solution employs a "serverless architecture" that utilizes Amazon's API Gateway and Lambda service to do a majority of the API processing. The API architecture consists of three components: The User API, Pre-Caching and Deployment.

USER API

The User API is the front-end interface to the solution. Requests from the Internet are routed through this portion of the infrastructure. User requests are sent to the hostname and routed to the API Gateway using "Custom Domain Names." The API Gateway routes the API requests to the corresponding Lambda functions. The Lambda function processes the request and accesses the ElastiCache cluster and optionally the Cassandra ring and Elastic search cluster to satisfy the request. For a small set of retailers, a real-time query of their website is made to insure the product availability information is up-to-date. The request is formatted and returned to the API Gateway.

PRE-CATCHING COMPONENT

In order for the API to handle requests quickly and efficiently, relatively static data is pre-cached into ElastiCache. There are currently eight types of pre-cached data:

> **Subscribers:** api keys and subscriber information
> **Retailers:** retailer information
> **Locations:** retailer location information
> **Geospatial Index:** geocoded retailer location data
> **Product Mappings:** product data mapped by barcode, sku, and external id
> **Postal Data:** US and Canadian postal code data
> **Groups:** preconfigured group data
> **Global Locations:** geocoded location and postal data for reverse geocoding

DEPLOYMENT

The software life cycle management of Lambda functions and their associated resources requires the use of a framework. Serverless was chosen as the framework to manage the development, testing, and deployment of the ShopAdvisor API. Serverless manages the optimization, packaging, and deployment of your Lambda functions and associated resources. Serverless utilizes CloudFormation, allowing it to create and associate any resources needed for your project. Serverless allows developers to test the code locally as well as deploy the code to AWS for additional testing. The ShopAdvisor API deployment structure has been divided into three stages: Development (dev), Staging (staging) and Production (prod).

PROCESS IMPLEMENTATION & MEASUREMENT

ShopAdvisor is connected to 50+ ad networks and exchanges for maximum digital media reach (display, video, social) across various audiences including demographic, psychographic, contextual, shopping habits, and brand category buyers. This insures we are reaching the right audience at the right time in guiding and measuring your next customer to nearby brick-and-mortar stores (or restaurants). Additional targeting options includes inventory availability, dynamic promotions, and high viewability. Custom rich media creative ad units provide a customized marketing message to each shopper by displaying relevant nearby store or restaurant information (including map to and click to call functionalities), weather messaging, local event promotion, video, social and a slew of other KPIs.

Rich Media Creative Examples

Rich Media Interaction

Total Clicks	Total Impressions
CTR	Avg. Dwell Time
CPC	Bttn. Engagements
Foot Traffic	

Breakout by:

Age Group	Gender	Income Level
Day of Week	Hour of Day	Creative by Name
Device/Brand	City/Region	Education Level

All Metrics Can Be Broken Down by Individual Retailer

- 50+ AD NETWORKS
- PRE-CAMPAIGN ASSESSMENT
- RICH MEDIA CREATIVES
- POST-CAMPAIGN ANALSIS

Valuable insights into post campaigns reporting extends beyond impressions, clicks/CTR and include engagements such as foot traffic lift analysis, sales lift measurement, detailed audience insights, time of day, day of week, redemptions, conversions, geographical information, custom rich media creative engagements per KPI and more.

SALES LIFT BASICS

Why Agencies, Brands and Retailers Need Sales Lift Analysis

Not all marketers have access to the person level outcome data necessary to understand the impact of their spend on ad sales. To address this problem, ShopAdvisor has a geo-based Sales Lift Analysis service to help agencies, brands and retailers capture the sales lift created by their mobile proximity marketing campaigns and add a deeper level of return on ad spend (ROAS).

The ShopAdvisor Sales Lift Analysis Methodology

ShopAdvisor's testing methodology helps marketers properly select markets / geographies (cities, DMAs, regions, etc.) to run their campaigns in and help them analyze results. ShopAdvisor's approach enables marketers to understand the effect of their campaigns on actual sales -- units and dollar volume -- and other criteria such as foot traffic across targeted areas.

Understanding Test and Control

All campaigns are conducted using designated test and control locations. Test locations are where the promotions run. Control locations are where the promotions do not run. The objective in selecting test and control markets is to identify locations that will be as close to each other along several dimensions to ensure as much of an "apples to apples" comparison as possible. Markets must also be significant enough to be statistically relevant so that the results are representative of a desired population and representative enough that the results can be extrapolated to a broader universe.

## Test and control locations can be created using the following approaches:

Matched Markets

Select a set of similar market pairs such San Francisco and Boston. Show promotions to one and not the other and then compare results.
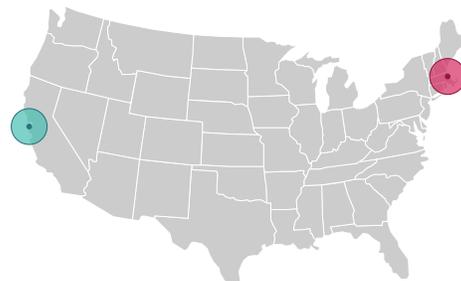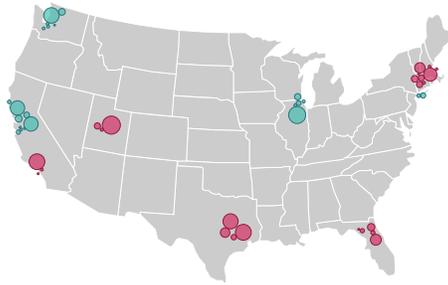
Balance of the Chain

Select a set of markets. Show promotions to those markets and compare to the rest of the country that did not receive the promotions.
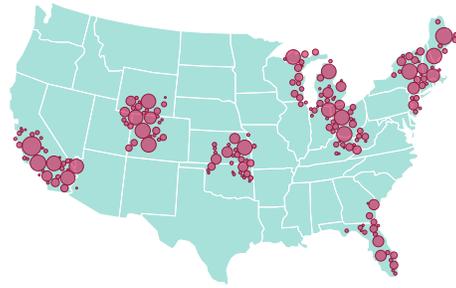
Group to Group

Select a set of test markets. Show promotions to those markets and compare to a group of "control" markets that are collectively similar to the test markets

Choosing the Data that's Needed

ShopAdvisor uses product availability and sales data from multiple sources including direct feeds from retailers or distributors as well as third party sources such as Nielsen. We examine the sales across the test and control locations over the course of the campaign, which are typically weeks or months.

The required data for sales lift analysis fits into three types of variables:

Location data

which helps to determine the best markets to test. It is important to know which markets are the most important to the customer and which ones we can get good matches on.

Time information

which helps to understand seasonal trends across different locations. Since the campaign will be measured over several weeks or months, we want to find markets that have matching time trends. The most recent data available is the best as it will be a more accurate picture of the time when the campaign launches. The more historical data we can get, the more likely we are to identify good matching markets and detect lift.

Sales information

product-level information is best, but we can have total sales for an area/time period as an outcome as well. For offline sales, if BRAND prefers, you can share "indexed" instead of gross sales amounts.

Developing the Test Design and Measurement Process

ShopAdvisor's sales, campaign management and market analyst teams work closely with the marketer in choosing the optimum mix of the aforementioned elements to be measured in the sales lift analysis.

The process for this includes:

○ Identifying the number of stores, geolocations, or DMAs needed for the sales lift analysis.

○ Selecting the test and control location approach -- i.e., matched markets, balance of the chain, group to group.

○ Determining whether the products to be tracked are truly available in the test and control stores and making adjustments as necessary.

○ Executing and monitoring the campaign -- measuring impressions, click throughs and other criteria.

○ Processing and analyzing the sales data for the products being promoted across the test and control locations.

○ Developing and delivering the Sales Lift Analysis results. Note: as point of sale data is most often collected after month end, final reports cannot be delivered until after this information is reported and analyzed.

CASE STUDY

During the fall of 2017, ShopAdvisor worked with an international CPG beverage brand to drive shoppers to purchase brand products at Publix Super Markets and to engage with influencer content. Post-campaign, ShopAdvisor provided geo-based sales lift and media performance analysis to determine its impact and success.
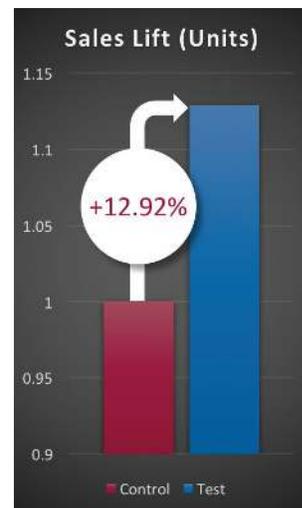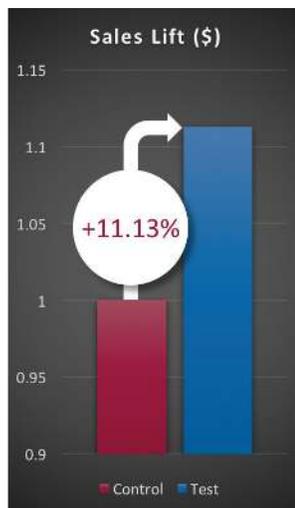
- **4.8 million total impressions**

- **0.33% Average CTR**

- **11.13% sales lift in revenue** on targeted categories for assorted beverage products with a **12.92% units sales lift** in test regions compared to the control region.

Sales Lift ($)

+11.13%

Control Test

Sales Lift (Units)

+12.92%

Control Test

Sales lift calculated comparing test, control, and all stores (test + control + unlabeled stores) YoY: ((t/a)-(c/a)/(t/a))

SUMMARY

The ShopAdvisor solution provides a unique set of a scalable, cloud based architectural components available in real time for analytical efforts or direct application queries. This proprietary combination of software, architecture and process allows our customers to determine location of products, usage and ultimately availability. Our unique market insights and overlays provide the ability to optimize the placement of products and advertising decisions. This technology is designed to scale as needed, provide multiple analytical engines and ever varying as well as increasing sources of information we can maintain recent through our refresh processes. Overall the technology implementation provides a secure, real-time, unique repository for mining insights in an increasingly competitive retail market place.

For more information email contact@shopadvisor. com