# Using Analytics to Deliver Digital Personalization for Online and Offline Data

The ever-shrinking attention spans of web or app users are measured in just seconds. In an effort to keep their interests, marketers are combining clickstream data with traditional customer data to build sophisticated real-time predictive marketing interactions.

## Clickstream Data and Analysis

Clickstream data is a digital trail a web user creates while browsing digital properties. This detailed data is full of valuable customer information.

Clickstream analysis is useful for better understanding user intentions with regard to specific products or services. Marketers obtain and report on this raw data – everything from mouse-overs to searches to downloads. This customer-level information is then transformed into a normalized format along with channel-level information (e.g., sessions, pages visited and other related data) structured and summarized at the individual customer level.

## Optimization Is a Core Competency for Digital Marketers

With today's complex customer interactions across many digital channels, marketers use a variety of testing approaches to evaluate their strategies. For example, A/B testing compares two versions of a web page with a single element altered (versions A and B) to see which one optimizes conversion rates, allowing marketers to validate the most effective elements.

If you want to measure the effect of more than one variable, multivariate testing (MVT) can be used. MVT has the power to help target areas where redesign efforts will have the most influence on users' experiences. However, a large amount of traffic is needed to complete since it's typically used to test all possible combinations of elements.

## A/B and MVT Versus Predictive Analytics

Online testing must move from traditional testing methods to predictive analysis to optimize a multifaceted digital customer experience. This testing has helped marketers present the most effective content to customers through its efficiency, measurability and capacity to cut through noise and assumptions. But the evolving digital marketing landscape begs for greater analysis in order to operate in more channels, handle more data and support more users.

Predictive analytics helps marketers uncover areas where past methods for digital personalization have fallen short, or have been limited to single-channel digital interactions.

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# Personalized Digital Experiences Need Adaptable Prediction

Standalone predictive analytics solutions surpass embedded predictive capabilities found in many digital experience platforms because they enable data scientists and developers much greater latitude to design, develop and deploy predictive models to websites and mobile applications. They have the added ability to incorporate large and varied digital data sets from numerous sources, including cloud-based and on-site offerings.

Predictive analytics solutions also allow for monitoring of predictive models and adaptation to new developments so marketers can evaluate predictions for effectiveness and incorporate those predictions into real-time digital marketing efforts.

## Components of Personalization Architecture

The personalization architecture can be broken into five major components:

- The collection engine (CE) collects raw clickstream data for every session and every user accessing the web page.

- The normalization engine (NE) transforms this raw data into normalized clickstream data tables for marketing and analytics teams to analyze.

- The analytical engine provides the tools and processes used by the analytics team to analyze the normalized data and build models.

- The decision engine (DE) uses info from real-time data sources to make a decision about which treatments should be presented.

- The personalization engine (PE) enables digital marketers to configure portions of the web page that will be personalized.

# Phased Approaches for Digital Personalization

There are three phases for accomplishing digital personalization. The first is the data phase, whereby data is collected and normalized. The second phase is the analytics phase – where analytical techniques are applied and the results are placed into production – served to the appropriate channel via real-time decision management. The third is the operational execution phase where models and campaigns are monitored and improved. Below are additional details for each phase:

## Startup (Data) Phase

1. Visitor enters site and requests unique, personalized content.

2. The PE asks what to render or show to the site visitor.

3. This inquiry is sent to the DE where the marketer has designed different campaign experiences based on a marketable population.

4. A randomization model is then used to perform an optimization test.

5. The decision is then provided to a campaign data mart, which submits a treatment code to the PE. This code tells the PE to contact the content management system and identify creative assets to display.

6. Clickstream data is collected.

## Analytics Phase

1. The clickstream data, captured by the CE, is converted to put it in a business context.

2. Data is transformed and loaded to the analytical data mart.

3. Predictive models are built using data.

   **Example 1**: SAS® digital intelligence solutions have the power to apply sophisticated math, such as decision trees, to large digital data and get near-real-time responses. This helps improve targeting for personalization because you can use algorithmic data-driven support to quickly identify the best audiences.

From decision tree analysis you can produce audience tables and identify a receptive audience for future personalization, which can be sent to the DE without any programming or coding required.

**Example 2**: SAS digital intelligence solutions can also run predictive models for each traffic channel to determine the most important factors that differentiate visitors who convert. Diagnostic plots are made, and an analyst can observe which products appeal to which traffic sources.

These two predictive approaches show how advanced analytics can support the DE and PE and be deployed in the operational execution phase.

In order to deploy the models identified in this phase:

1. The CE sends a periodic/batch flow of raw clickstream data to the analytical data mart.

2. The NE normalizes the raw clickstream data for easier analysis and loads it into the analytical data mart for easier analysis. The mart can also be merged with data from outside sources.

3. The enterprise analytics team can choose tools to develop required segmentation and scoring models, such as SAS® Enterprise Miner™ or SAS Visual Analytics.

4. Models are deployed to the real-time DE.

## Operational Execution Phase

In this phase, the enterprise monitors model performance and continues to improve its predictive models by periodically downloading data that was captured by the CE and deploying it to the DE (essentially, a cycling of the startup and deployment phases).

## To learn more

Download the full paper by Suneel Grover of SAS to get a detailed overview of how marketers can collect detailed digital data, extract digital intelligence and provide personalized web content by merging cloud-collected clickstream data with an organization's on-site customer data, along with outlining different analytical approaches.

To learn more, please visit:

SAS® Customer Intelligence

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