

# Customer journey optimization

Maximize engagement, increase conversions with SAS® Customer Intelligence 360



## Business Impact

To successfully manage customer journeys, you must identify the unique paths that consumers can take and guide them to desired outcomes. Using artificial intelligence through reinforcement learning, SAS® Customer Intelligence 360 can evaluate, discover and present the ideal experience in real time. The result is a set of customer journeys fueled with higher conversion rates, deeper engagement and increased lifetime value.

## Challenges

- **Performance measurement:** Every prospective interaction with your company provides an opportunity to make an intelligent decision to deepen engagement. Attribution insights assist in understanding which interactions along a journey contribute to conversion goals but depend on historical data that is constantly changing.
- **Measurement considerations:** It's not just traffic sources and offsite viewable ad impressions that drive business conversions. What is the impact of A/B testing? Do tactics like remarketing, recommendations and next-best actions influence measurement?
- **Customer interaction optimization:** Journey performance measurement leads to the desire to improve micro and macro goals through A/B,

multiarmed bandit and multivariate testing. However, if you focus on optimizing individual interactions, you'll lose sight of the broader context and objective of customer journeys.

Although each of these approaches provides value, determining the best recipe of offers, products, channel and timing to guide customers down unique paths is an opportunity to improve a brand's holistic strategy and approach to managing journeys.

## The Issue

Customer journey orchestration, maximizing engagement, increasing conversions, relevant personalization and other aspirations all contribute to the challenge of optimizing consumer paths. When marketers take shortcuts by applying broad rules to audience segments, it results in customers receiving mass marketing messages. Brands usually push these communications to consumers as an output of a forced marketing campaign timeline and not as a real-time result of customer actions or preferences. The outcome is an irrelevant message that falls flat.

On the bright side, this translates to an opportunity to treat customers uniquely and provide a variety of experiences that can address their interests at different speeds. You can guide some customer paths at a slower pace while giving others personalized content to accelerate their path to purchase.

## Our Approach

SAS applies reinforcement learning, a type of artificial intelligence, to customer journey optimization. That means that SAS collects and contextualizes the relevant data, shows that data to an algorithm, and allows it to learn and recommend actions.

Reinforcement learning differs from standard supervised learning or propensity-based predictive targeting by not relying on historical data for model training. Instead, reinforcement learning learns from experience through trial and error.

This means that marketers can run A/B or multiarmed bandit tests to optimize a defined goal's performance across a journey of interactions, as opposed to a single interaction. And the benefits of journey-based attribution measurement and predictive targeting don't go away. Applying reinforcement learning allows marketers to leverage the entire body of customer journey analytical methods in a much more efficient, accurate and systematic manner.

The result? Marketers learn more in less time, evolving and proactively accounting for customer preferences and behavior changes.

As data volumes, varieties and computational power continue to advance, applying AI marketing techniques to journey management is a natural progression. For data-driven marketers, real-time decisioning and optimization techniques are now core to every customer journey.

When marketing problems get too complicated for a typical if-then-else targeting approach, reinforcement learning for customer journey optimization can save the day. SAS offers brands the flexibility to:

- Define business goals.
- Design environments for customer journeys.
- Actively monitor each customer's position within those journey paths.
- Produce real-time next-best actions for every customer's situation to maximize the probability of progression while respecting customer lifetime value.
- Deliver appropriate messaging and/or content for each interaction across channels.
- Keep the system fresh by striking a balance between trying new sequences of creative delivery and presenting customers with the currently best known sequences of content.

SAS uses a combination of Q-learning and long short-term memory recurrent neural networks for deep reinforcement learning that provides brands the ability to scale across simple or complicated use cases.

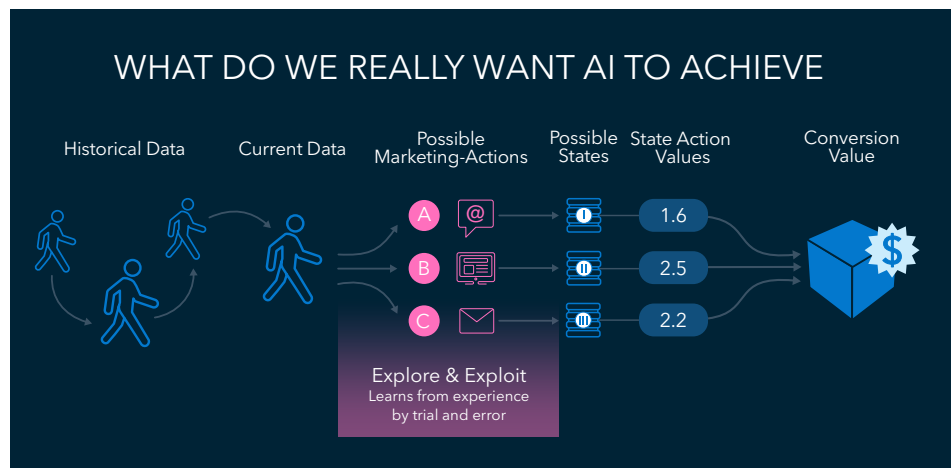
The solution is designed to handle time-based sequential data with the ability to learn and accurately detect where consumer interactions that occurred earlier in a fragmented journey can influence next-best-action estimates later.

Here's an example of customer journey optimization in action:

- A consumer begins filling out an online form for a large retail purchase or consumer loan but then abandons the form before completion.
- The customer then browses to a news portal and receives a third-party display media ad regarding the abandoned products. Click-through and conversion rates on this retargeting action are frequently very low.
- An alternative tactic would be a marketing action to send a follow-up email including the abandoned product with other offerings prioritized by an analytically derived recommendation system. Conversion rates are typically better, but there's still room for improvement.
- With SAS Customer Journey Optimization, reinforcement learning could be applied to compare the consumer's abandoned shopping cart experience with parallel patterns of other customer journeys that resulted in conversion. Applying the freshest next-best-action tactics to achieve the highest rate of success for every micro and macro goal defined for this journey will result in higher conversion rates than the other approaches.

Help your marketing leaders understand that there are different journey optimization paths based on customer behavior, demographics and history? What if instead of focusing all marketing strategies on accelerating customers to a purchase, you could begin guiding customer journeys to both convert and secure the highest net profit as well?

You can. Customer journey optimization using reinforcement learning inside of SAS Customer Intelligence 360 applies a holistic approach, keeps personalization fresh and continues to evolve to improve your customer journeys.



To learn more about SAS Customer Intelligence, please visit [sas.com/ci](https://sas.com/ci)

