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Oracle WebCenter Sites & Oracle Real-Time Decisions:

Integrating marketer-controlled targeting with automated recommendations to optimize online engagement.

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Introduction

Customer expectations for online interactions have increased dramatically. When individuals go to an organization's website, they expect that the organization understands who they are and what their touch points with the organization have been. They expect to instantly be provided with a contextually relevant and personalized experience that will meet their needs, regardless of the online channel or device they are using. Thus an online marketing strategy that employs targeting to deliver optimized online experiences is an important driver in achieving customer loyalty and maximizing revenue. A 2009 Forrester survey indicated that 62% of consumers found personalized content such as recommendations useful, contributing anywhere from a 2 to 20% lift in revenue.[1]

Strategies to deliver targeted content can range in complexity depending on the goals of the marketing organization. In some cases, marketers may have a clear idea of customer segments and which content to present to those segments. In other situations, determining a targeted marketing campaign can be complex. Factors driving this complexity include the volume of available content (e.g., products, media, and offers), the dynamic nature of content, and the difficulty in discerning meaningful customer segments. Furthermore, targeted content could include not only recommended products (or media, articles, etc.) but also selection of different presentation styles (e.g., varying website stylesheets), custom navigation, and more.

Proliferation of customer touch points or channels creates a new complication in creating a contextually relevant online experience for the site visitor. Customers can now interact with the business over the web, email, mobile devices, social networks, call-centers, and in-store kiosks. In summary, creating an optimal multi-channel experience for customers necessitates understanding customer touchpoints and data across different channels and driving effective cross-channel campaigns.

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[1] Forrester Research, Sucharita Mulpuru, "What You Need to Know About Third-Party Recommendation Engines", November 18, 2010

Oracle WebCenter Sites together with Oracle Real-Time Decisions (RTD) provides a solution that marketers can use to implement strategies that solve any level of targeting from deterministic to fully automated. WebCenter Sites is a complete Web Experience Management solution with business user friendly tools to create and manage large-scale and multi-lingual websites, target content based on customer segments, drive social interaction with user-generated content and gadgets, and manage the mobile channel as an integrated part of the traditional web presence. RTD enhances WebCenter Sites targeting features with predictive targeting that uses powerful statistical-based data modeling.

This paper will discuss the following:

- Overview of content targeting capabilities in WebCenter Sites
- Using Real-Time Decisions with WebCenter Sites to add automated predictive targeting
- Business-user friendly controls for defining a targeting strategy
- Key marketing reports used to derive insights on the targeting strategy
- Examples of WebCenter Sites-RTD usage

Content Optimization with Oracle WebCenter Sites

Oracle WebCenter Sites enables marketing users to specify content targeting strategies. Using user friendly interfaces, marketers designate visitor segments and select content to present to those segments. Marketers can then choose to display targeted content on any section of a web page. Analytic reports provide insights into the effectiveness of the strategy such as the number of users in each specified segment who clicked on a recommendation.

Marketing users can create visitor segments using implicit and explicit criteria. Implicit criteria include location, time of day and day of week, click stream behavior, and search engine referrer keywords. Explicit criteria include known visitor profile information such as age, gender and specified interests.

The following example illustrates a typical use case using implicit targeting: A marketing user for a travel related company defines a strategy to show offers for different vacation packages based on known information about an anonymous user. The marketer creates a segment for visitors who come to the website from 11:00am to 1:00pm and entered "beach" and "vacation" into a search engine. Based on this segment, the marketer selects an offer for Mexico holidays to show to this visitor on the home page. Alternatively, if the visitor clicks on parts of the website tagged as "beach" such as an article or image, then this promotion could be shown. Likewise additional segments and recommendations can be created.

A targeting specification could also include explicit information about a customer stored in a cookie or for a user who previously registered on the website and has logged in. For example, if the visitor profile contains an address, then beach vacation promotions could be presented to users who live in New York and are visiting the website in December. WebCenter Sites also enables definition of a customer segment utilizing combination of explicit and implicit criteria. Furthermore, WebCenter Sites enables usage of explicit criteria from third-party systems such as CRM systems.

In addition to targeting a single content item such as an offer, advertisement or product, Sites can also be used to create recommendations with a list of content, for example suggested articles to read. The list can be filtered by a variety of sorting and filtering criteria such as latest date or ascending/descending values of an attribute such as price. Marketers can select specific content or use a dynamic query-driven selection based on dates, tags, categories, and other criteria.

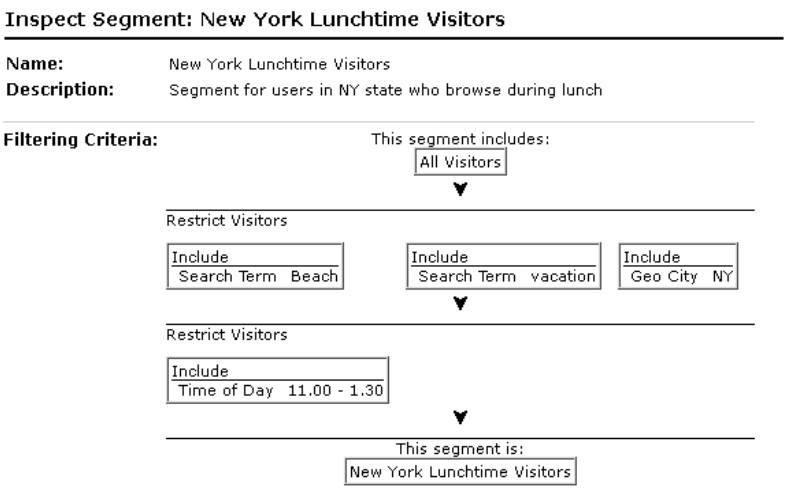

Figure 1: Segment definition in WebCenter Sites

Figure 2: Recommendation definition in WebCenter Sites for a list of promotions

WebCenter Sites offers marketing-specified content optimization that can drive site stickiness, conversions, and repeat visits. This is especially effective in use cases where the customer segments are understood and a manageable volume of content is targeted. In more complex use cases, when there are dozens, hundreds or even thousands of potential products or other content to target,

developing a an optimal targeting strategy can get challenging. Furthermore, there are likely customer segments unknown to marketing. Discovery of this information by marketers or business analysts may not be achievable given the volume of content and complexity of customer segmentation. In these situations, automated predictive targeting can increase the likelihood of conversions.

How Automation with Oracle Real-Time Decisions Enhances Content Targeting

WebCenter Sites together with Oracle Real-Time Decisions (RTD) offers the best of marketer-controlled targeting and automated recommendations to provide an optimized experience for site visitors. Using the power of statistical data models and historical and real-time analytics, RTD predicts the best content to present to each user and measures the effectiveness of the recommendations. RTD automates the manual task of sifting through volumes of customer data, determining likely and potential customer segments, and matching segments to catalogs of data (both of which can be large and changing daily).

RTD uses real-time analytics, contextual data, predictive modeling, and event centric closed loop analytics to target content and makes continuous improvements, automatically adjusting and learning over time. As customer interactions take place, RTD continuously refines its data models to achieve optimal content selection for each site visitor.

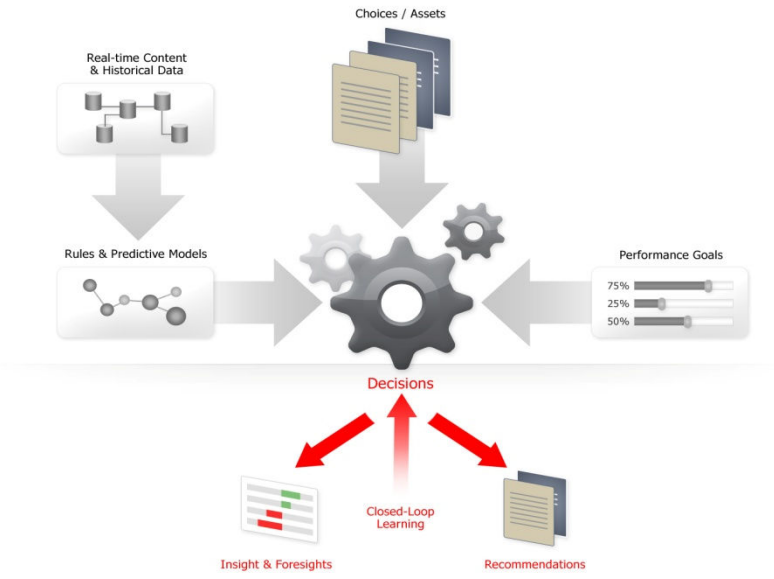

Figure 3: RTD Decision-Making Process

Inherent in RTD's automation is the ability to ingest and process behavioral data of millions of site visitors along with an unlimited number of customer attributes. RTD assembles this data, runs it through statistical models to return the best-fit recommendation from a set of content. Customer attributes can come from real-time behavior of an anonymous user such as location and time-of-day. It can also include registered profile information such as gender and age. The wealth of historical customer information sitting in CRM, commerce systems, and data warehouses can also be fed into RTD.

RTD includes built-in multi-variate testing so that content can be automatically optimized on the site based on ongoing testing by the system. Marketing is thus alleviated from the tedious process of setting up experiments, comparing results, refining the setup, and redeploying new tests. The solution performs the complete job of managing experiments, selecting which content to show, tracking recommendation variations shown to different visitors, analyzing results, and automatically refining the content selection as it learns.

RTD resolves the complexity around decision making when the amount of data available on a customer is vast or when customer segments are not pre-defined at a granular level. RTD essentially enhances targeting features in WebCenter Sites by adding an automated decision process. By including automation as part of a targeting strategy, companies can achieve not only increased revenues but also significant cost savings. A Forrester study indicated that without automation 25% of a merchandising's team's time is spent in manual determination of cross-sells and up-sells and were often error prone.[2]

WebCenter Sites and RTD: A Powerful Combination

WebCenter Sites used in conjunction with RTD delivers a targeting solution that incorporates the best of marketer-controlled segmentation with real-time recommendations and optimization. This powerful combination enables marketers to employ a mix of strategies best suited to their business.

Marketers first start in WebCenter Sites to create the targeting specification. This involves indicating which content to target to customer segments and for what part of the webpage. For complex decisions, where automation is needed, the user can easily invoke RTD from the WebCenter Sites targeting interface to make a decision about what content to show the site visitor in a particular part of the page. At runtime, WebCenter Sites passes attributes of the site

[2] Forrester, Sucharita Mulpuru, "What You Need to Know About Third-Party Recommendation Engines", November 18, 2010

visitor to RTD (such as time of day, location, search keywords used) and requests for a recommendation to present for that visitor. RTD examines the attributes and returns a recommendation. WebCenter Sites provides feedback on the visitor's action (e.g., was the recommendation clicked on). RTD uses this feedback to refine its data models. This process is illustrated below.

Figure 4: WebCenter Sites-RTD Joint Solution

There are many possibilities as to what can be targeted. Options are not limited to product or asset level recommendations on a specific page. Targeted content could include banner ads, products or services highlighted on different pages such as the home page or check -out page, navigation flow (e.g., optimal registration page flow), styles (e.g. green background or blue), messaging used for an offer (simple text vs. lengthier text), call to action, and more.

WebCenter Sites and RTD can also be used to target content across all customer touch points including web, mobile, call center, email, in-store kiosks and more. This is possible because the WebCenter Sites content is accessible via RESTful services. Any external system such as an email management system can query WebCenter Sites to retrieve targeted content. This could be content manually chosen for a segment by the marketer or the RTD recommendation. That content could then be used in an email, campaign or other channel communication. Other optimization solutions in the market produce results that are not focused around the overall cross-channel customer experience, but rather around the experience in a single channel silo. Those solutions look at customers in specific channels with the optimization strategy defined b y the business users responsible for that channel.

Flexible Options for Marketing

Marketers have several levels of control when leveraging RTD from WebCenter Sites. The more advanced the marketing user, the more options that can be exposed. This section describes the

automation options available to marketers when using Sites and RTD together to specify a targeting strategy for a website.

Full Automation - At the most basic level, marketers create an RTD-based recommendation in WebCenter Sites to use on a section of the website page. This entails selecting a course level set of 'Choices' for RTD to select from. These Choices can be chosen via a query (e.g., show all content tagged 'holiday', created between 11/1 and today, and less than $100.) The content could also be a specific list selected by the marketer. The marketer can also choose the number of products (or other assets like articles) for RTD to select to show the site visitor. At this point, the marketer's job is complete.

At runtime, WebCenter Sites will send RTD the attributes for the particular visitor (such as location, age, gender, and preferences). RTD will then determine the best content and send the recommendation to WebCenter Sites. WebCenter Sites will send feedback back to RTD on the customer decision (clicked, viewed, etc). RTD will incorporate this information to refine its data models and thus learn from each customer interaction.

In the above scenario, the business user basically develops one targeting strategy for all segments and passes one set of content for RTD to use for all customers. RTD infers segments and uses automation to make decisions about the actual content to show the user. The customer segmentation is effectively built into the RTD modeling. It can later be reported on so that marketing can better understand the customer base.

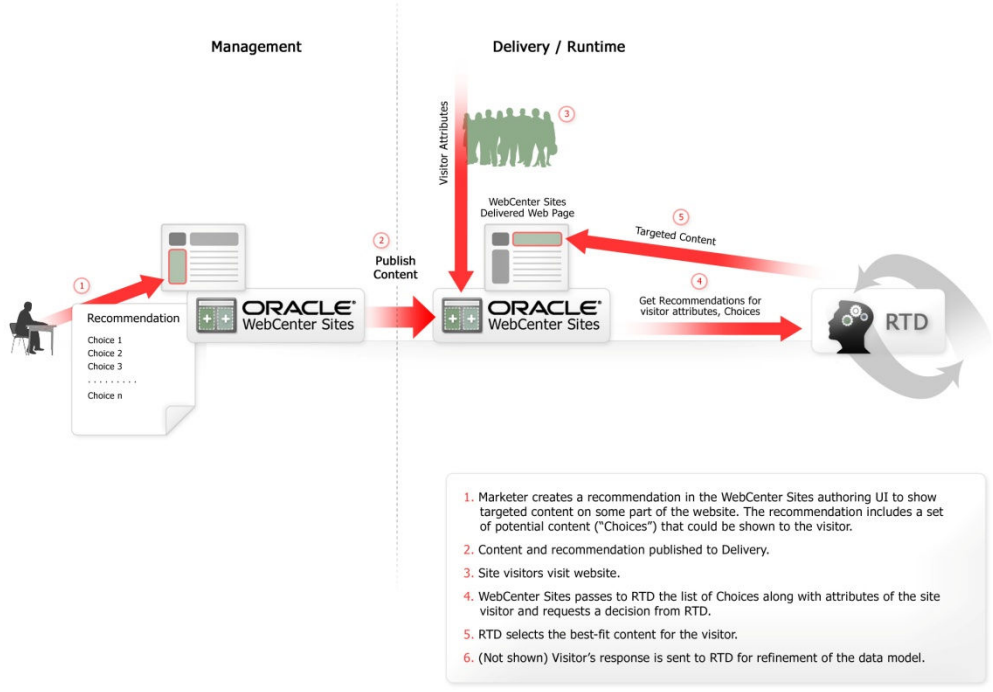

Figure 5: WebCenter Sites and RTD: Full Automation – RTD manages all customer segmentation

Controlled Automation - RTD exposes more advanced marketers options to influence its data models to optimize decisions for specific business outcomes. For example, an organization may want to reduce shopping cart abandonment. Or the desired outcome may be to increase customer loyalty. Or perhaps the business goal is some combination of the two. Furthermore, the performance goals for a new potential customer for acquisition could be different than a long time customer.

RTD provides business users a simple way to edit and specify the performance goals. Performance goals could be specified only once or continually adjusted. In either case, RTD's decision making can take into consideration critical factors into its data model used for making decisions and thus refine and optimize decisions for performance goals important to the business. Typical performance goals include the following:

- Maximizing revenue
- Maximize average transaction amount
- Maximize profit
- Maximize conversions
- Maximize page views
- Maximize retention
- Reduce shopping cart abandonment
- Maximize click-thrus
- Maximize downloads
- Increase customer loyalty

The figure below shows how the performance goal of the targeting strategy can have multiple components. While a single performance goal can be set for all users, it is also possible to set different goals for different groups of users. Even setting multiple goals for each user group is possible. Business users can set weights using a simple user interface with slider controls.

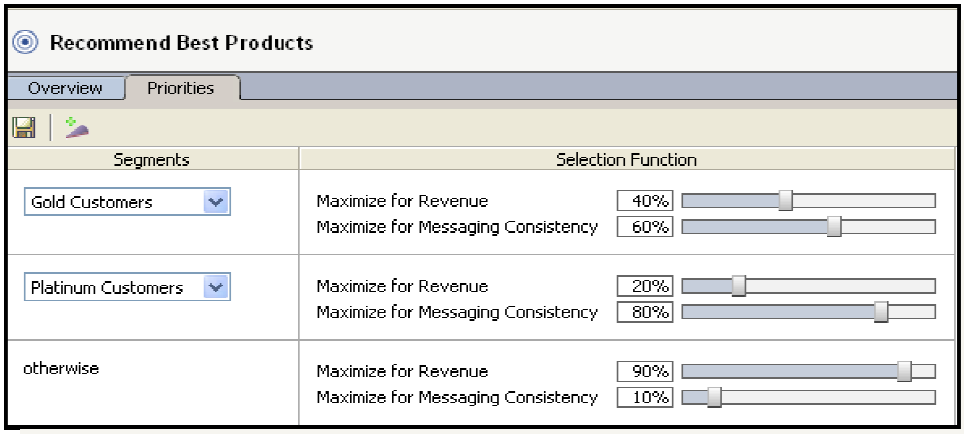

Figure 6: Setting Performance Goals per Segment

As shown above, longer-time customers known to be fans of the company could have a 'Customer retention' goal weighted at 30% and the 'Maximize profit' goal set at 70%. However, for new customers the desired weighting could be 60%/40% to ensure new customers come back and buy more so we can improve their lifetime value.

In addition to setting performance goals, more advanced options can also be provided to business users to specify and edit rules to steer the RTD models. These rules include eligibility rules, filtering rules and scoring rules. These rules are described below:

- *Eligibility rules* indicate when Choices are eligible in the decision-making (e.g., only consider a particular Choice if the Choice is available in the state where the site visitor is from).
- *Filtering rules* allow the specification of different performance goals for different user groups. (e.g., the performance goal for new customers is maximizing customer loyalty. The performance goal for existing customers is maximizing revenue.)
- *Scoring rules* allow the placement of weights on certain Choices so that those Choices are given extra consideration in the data model. (e.g., more weight could be given to Choices that match high inventory levels).

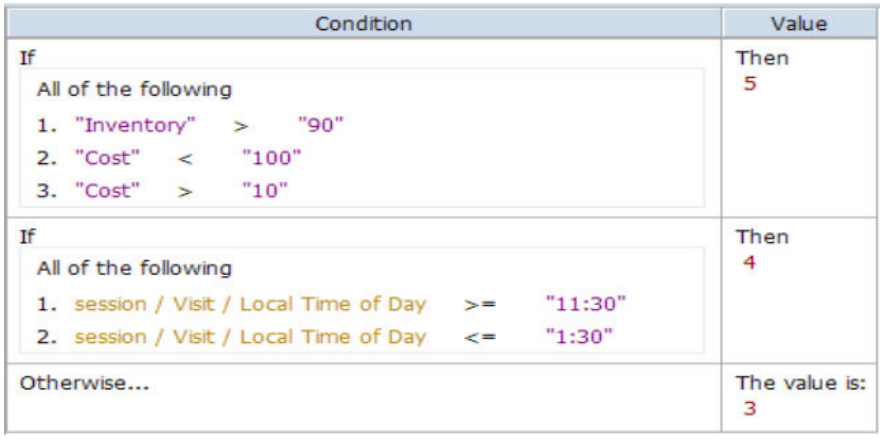

Figure 7: Creating scoring rules to weight recommendations

A more sophisticated marketing user can also create segments in WebCenter Sites and create a targeting specification for each segment with RTD recommending content from specified Choices for each segment. Thus business users have the ability to control the segmentation and some degree of control over the content presented but uses RTD to make the actual recommendation from the set of Choices.

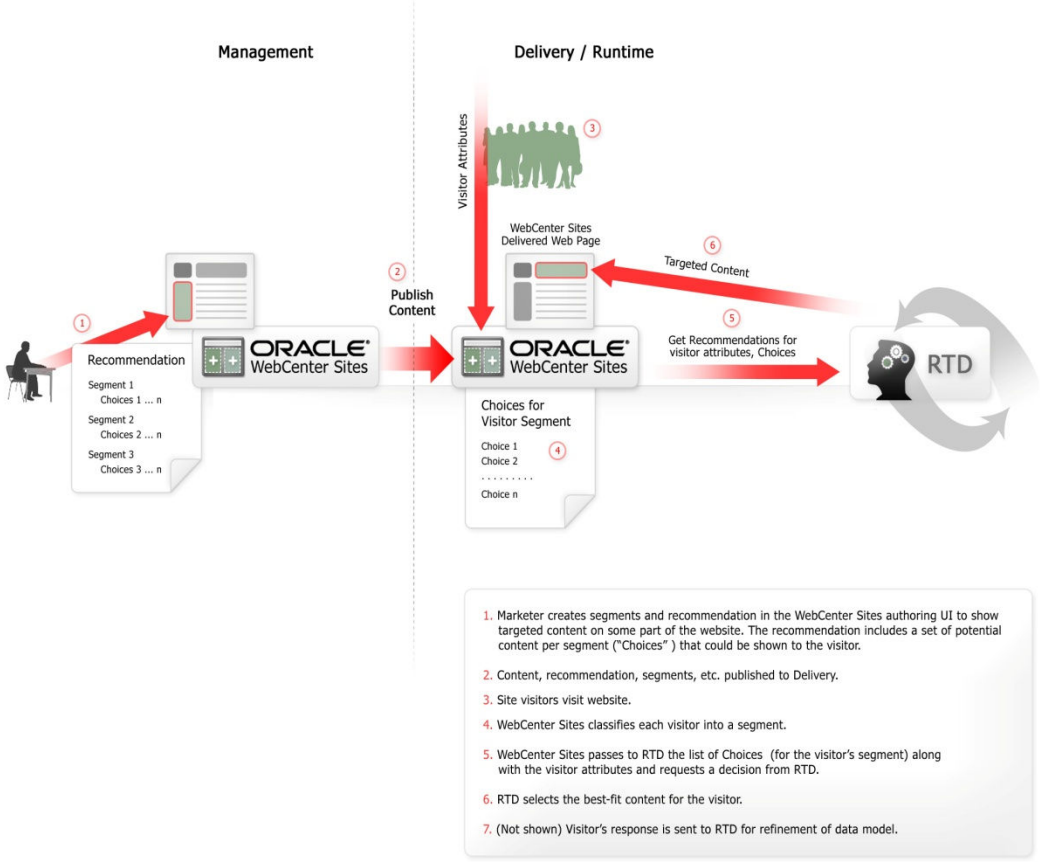

Figure 8: WebCenter Sites and RTD: Controlled Automation – Marketer does first-level segmentation in WebCenter Sites

To summarize, business users have multiple levels of control over the decision making. A business user can let RTD handle all the decision making based on a broad set of content. Furthermore, RTD provides intuitive controls to business users to specify performance goals and rules that help steer the RTD model in the direction of desired business objectives. Automation is therefore not a black-box. Oracle provides a transparent system with a high degree of visibility to business users who have the ability to influence the modeling when key business drivers must be accounted for.

WebCenter Sites and RTD Use Cases

Below are examples, illustrating how using the powerful targeting and automation features of WebCenter Sites and RTD together can deliver optimized content on a website:

Use Case	Solution with WebCenter Sites and RTD
Financial company: Present different credit card or home-mortgage offers on the home page based on anonymous user criteria such as location or past viewed offers (from the cookie); if the user logs in, then target offers for financial instruments such as CDs based on the customer's account size.	Marketers define the customer segments in WebCenter Sites based on geo-location. Marketers then specify a set of offers (Choices) for each segment. RTD subsequently chooses the specific offer to target a specific user based on account size and click streams.
Retail company: Home page shows recommended products in a "You might be interested in" section using anonymous attributes of the visitor such as time of day, location, and search engine referrer keyword.	Marketers select a spot on the home page to display the selected products. The marketer then runs a query in Sites to select all content with an inventory level over 10K. RTD then selects a list of 5 content items from that list.
Retail company: On the shopping cart page, run a test to see if upsell recommendations lead to more revenue.	In Sites, the marketer selects 10 related products for each product. RTD is invoked to select 2 of those related products to show the site visitor.
Media company: Show recommended articles or videos to the visitor based on previous viewing history.	The marketer creates a query in Sites to show articles created in the previous 24 hours of the website visit and tagged with the same category as the article the visitor is currently looking at. RTD selects 3 articles from the list. A filter insures that previously viewed articles are not shown.
Services company: Based on the user's click stream navigation, show related offers. For example, if the customer clicks on home insurance content and lives in a flood area (detected by anonymous location), then present informative articles on flood insurance or an offer from the company.	The marketer creates a segment in Sites for visitors living in a certain geographical zone and also click on content marked "flood" at least twice. The marketer then selects potential articles to show to the user. RTD makes the selection of actual articles to show the visitor.
Travel company: Show upsell offers for a trip such as entertainment packages or airport parking discounts before purchasing. Or for an airline, show upsell offers based on the customer's flying status. For example, for a user identified as a business traveler, upsell executive lounge passes.	The marketer creates a segment for business travelers in Sites based on the majority of past trips being marked as 'business'. Marketer also specifies the executive lounge passes to target to that segment. Alternatively, if the marketer has multiple possible offers and isn't sure which would yield the best conversion, RTD can select from the various offers to choose the most likely offer.
Services company: Target different rate calculators or styles of 'get an instant quote' box based on the search engine	In Sites, the marketer chooses three different styles of calculators: one with more input options which results in a more precise quote and the other with fewer options. RTD

keywords used to come to the website.	chooses which of the calculators to show the visitor.
All companies: test variation of wording for an offer. For example "Today only: Get 20% off" vs. "20% of all Purchases" or "Protect your account" vs. "Prevent Fraud".	The marketer specifies a dynamic query in Sites to select offers that are still current, applicable for the geo-location of the visitor, and not a service the user already has. The results of the query are passed to RTD to choose the offer to show the site visitor.
Telecom: Target offers for new services or new phones on various pages based on user's geographical location and local available services.	The marketer creates a segment in Sites for different geo-locations and chooses the services of phones applicable to each location. RTD selects the actual products or services to display to the sit visitor.
Technology company: For a customer support section, show recommended FAQs or support documents based on user's purchase history and technical level.	The marketer can specify a query in Sites to find support articles related to the customer purchases made in the past year. This list is passed to RTD to return a priority ordered list of articles to show.

Furthermore, the advanced options described in the previous section could augment these sample scenarios. For example, the marker could set up performance goals to maximize revenue which would steer RTD's decision making and influence the results. Endless possibilities exist for using WebCenter Sites with RTD to drive automated predictive targeting. There is a combination that is right for every company's specific strategy.

Gain Valuable Insights with Closed-Loop Optimization

RTD and WebCenter Sites provide numerous reports to demonstrate the success of various targeting models and provide insights that can be used to refine the targeting strategy. The business users can also learn about the customer base and which visitor attributes are correlated with responsiveness to particular offers and recommendations. A few of these reports are highlighted below:

- *Performance Trends* - This RTD report shows a summary of important trends related to offers. For example, in the report below, we can see that during the months of July to September, there was a large increase in the users interested in Student Loans offers. This would indicate that more marketing to student prior to the school year would be beneficial.

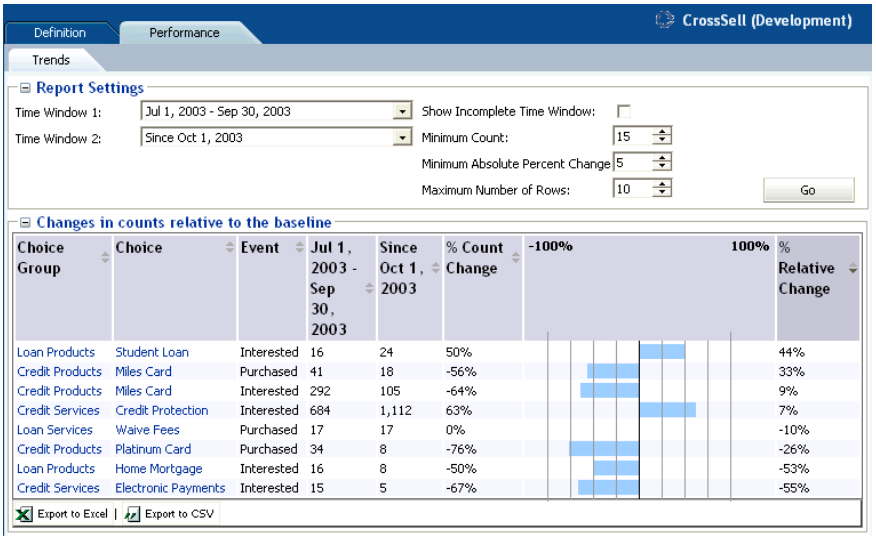

Figure 9: Performance Trends Report

- *Choice Analysis Drivers* - To take it a step further, it is possible to drill down on each offer. The RTD Choice Analysis Drivers report identifies the attributes that are influential as drivers of predictiveness and presents an ordered list of most predictive attributes.

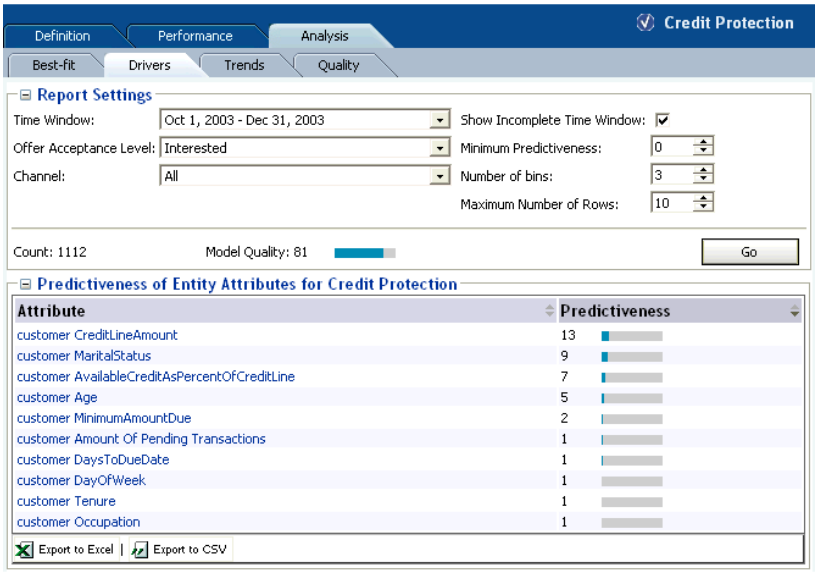

Figure 10: Choice Analysis Drivers Report

- *Segment Reports* - WebCenter Sites provides additional insights on the number of times a recommendation was clicked broken down by customer segment.

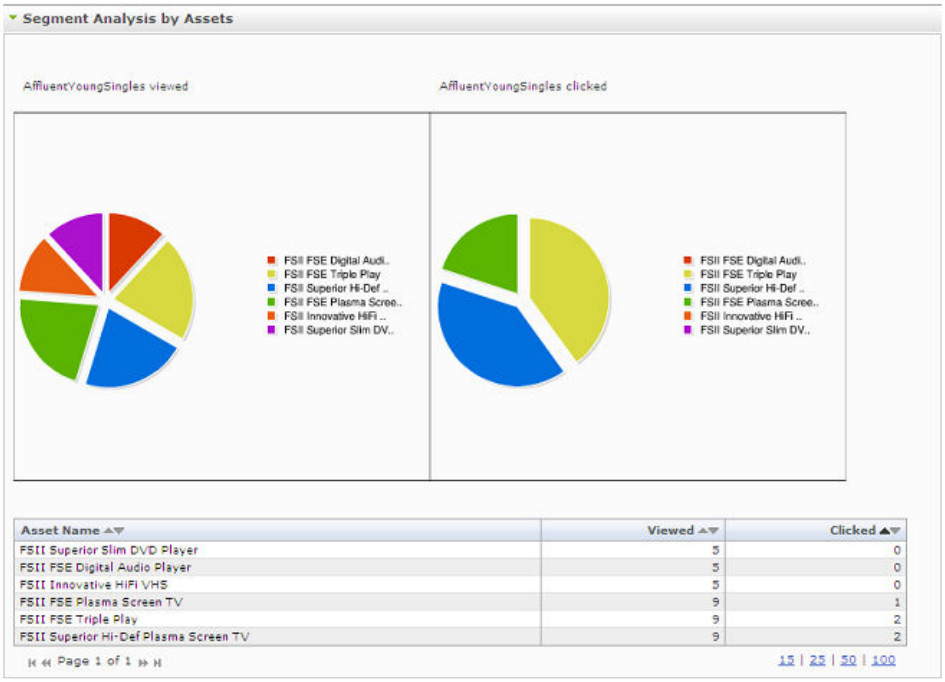

Figure 11: Segments Report

- *Best-Fit Report* – The RTD Best-Fit report can importantly help marketers identify potential segments. The marketing strategy can subsequently be updated to target underserved but potentially lucrative segments. The Best-Fit Report shows all of the attributes and hypothetical values that are most likely to predict an outcome. For the example in the report shown below, the following attributes and values have the highest correlation to the Platinum Card choice:
    - Customer CreditLineAmount: $ 8000
    - Customer Age: 47
    - Customer Marital Status: Divorced

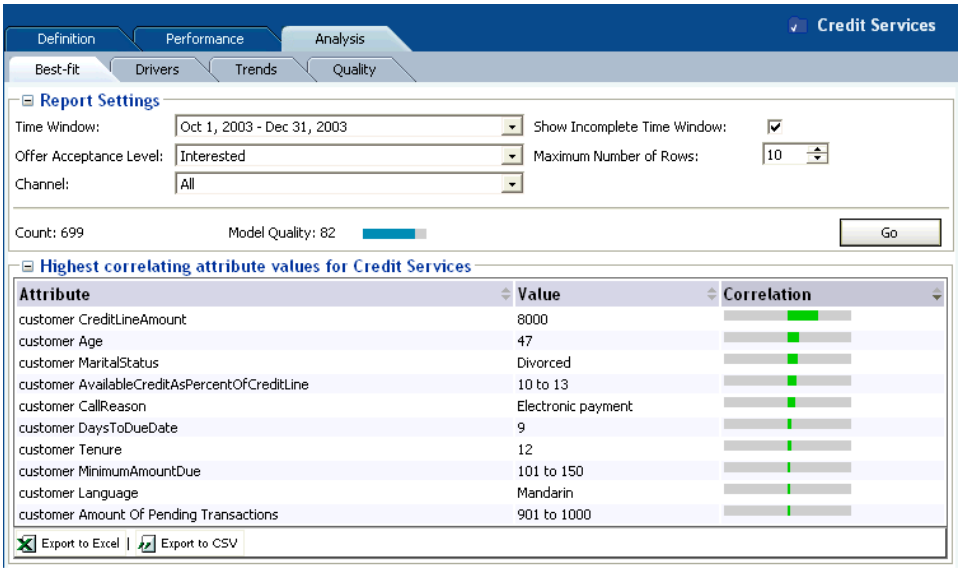

Figure 12: Best-Fit Report

Quality reports are also provided that basically grade the accuracy of recommendations and ensure accuracy of data models. The business can monitor these reports to track the effectiveness of the recommendations and gain confidence in the success of the automated strategy.

With these reports, Marketing can learn from the insights to make better decisions in many areas from customer segments to how to plan for product inventories. Marketers can understand user behaviors at different times during the day, days of week, and based on explicitly known profile attributes. Unlike standard analytics reports, the Sites and RTD reports are not simple data dumps. The reports have analysis built in such that actual *actionable insights* are given, not raw data. Overall, an organization gets a much better sense of their customer base and can make better strategic decisions regarding the company focus.

Conclusion

The combination of Oracle WebCenter Sites with Oracle Real-Time Decisions creates a powerful marketing solution for delivering optimized decisions and meeting performance goals of an organization. The right balance of marketer controlled and automated optimization can drive businesses to new levels of success in marketing and customer experience initiatives.

The solution provides many levels of marketing control to business users. Targeting strategies can be fully specified in WebCenter Sites for situations where segments are understood or defined and there is a manageable volume of content. At the other end of the spectrum,

marketers can access RTD from within Sites to provide automated predictive targeting. The targeting strategy could also lie somewhere in the middle with marketing providing some segmentation and course selection of potential content for those segments and RTD making the more fined tuned selection of specific content for each user.

Regardless of the targeting strategy, whether deterministic or fully-automated, a one to one experience can be achieved where a customer is served content based on his or her unique attributes. With a robust targeting strategy in place to manage the process of dynamically delivering personalized experiences to site visitors, marketers are empowered to meet the strategic goals of the business.

Oracle WebCenter Sites and Oracle Real-Time Decisions
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