Sonamine Predictive Player Segments ™

Using ConvertSoon™, PurchaseMoreSoon™, ChurnSoon™ and InfluenceSoon™ to improve game revenue and profits.

Introduction

The rapidly growing digital games industry provides hours of interactive entertainment to hundreds of millions of players worldwide. Leveraging global connections via the internet and mobile capabilities, these games allow players to imagine and share in virtual worlds of fun and creativity. Not surprisingly, the business of developing and marketing these games is extremely competitive, with new game studios being launched every week.

But business managers and marketers are not without tools to face these competitive challenges. Unlike traditional offline and box games, interactive digital games that are connected and collect game play data. This game play data allows marketers to peer into the behaviors of their players. By analyzing the game play data, marketers and game designers can personalize games to individual players, retaining players for longer periods of time and increasing the revenue obtained per player. It is natural to assume that game developers and publishers will have to adopt the best business intelligence and prediction techniques to maintain a competitive edge.

Data analysis

Leveraging the game play data goes by many different terms - business intelligence, reporting, data warehousing, data mining, predictions, metrics, A-B testing - the list goes on. This jargon soup makes it difficult to tease out what your company is currently doing and what it is not. One simple way to think about data is to group your data analysis activites into two types: backward looking and forward looking.

Backward looking activities will tell you what has happened in the past. For example, most reporting and "analytics" will tell you how many play sessions there were, broken down by different factors such as geography, levels and session lengths. Other types of "metrics" including virality, ARPU, ARPPU all tell you about what has already happened. By looking into time series of these metrics, you might be able to discern a trend in the past.

Forward looking activities are the prediction activities that will tell you what will happen in the future. For example, calculating every player's probability of converting to paying status would be a prediction activity. You are trying to predict whether a player will behave in a particular way in the future.

Another way to think about data analysis activities is to determine whether your analysis is at the aggregate level or at a player level. Aggregate data analysis helps you understand the behavior of large groups of players. For example, you may segment your players into the classic Bartle player categories. Metrics such as ARPU and virality are usually calculated at the aggregate level.

Player level data analysis lets you uncover insights for each player, so that you may perform 1-to-1 marketing to these players. Unique virtual goods recommendations and churn prediction would be examples of such player level analysis.

This paper discusses forward looking predictions that are generated for each player.

How predictions increase the bottom line

The evolving game industry can learn from more mature consumer industries that are leveraging predictions in their business operations. For example, an online retailer has found that shoppers who click on recommended products based on predictions have a 28% larger order size[i]. Industry leader Amazon.com derives 20-30% of its revenue from the product recommendations[ii]. To the games industry, adding prediction based recommendations could increase micro-transaction virtual goods revenues by 30%.

Beyond revenue, marketers know that it is cheaper to retain a customer than it is to acquire a new paying customer. Many consumer industries use advanced churn prediction techniques to identify and retain customers that are about to defect or churn. For example, a telecommunications company in the US was able to reduce monthly churn by 30% using a combination of churn prediction and retention campaigns[iii]. By using the same churn prediction and retention techniques, game developers can prevent the loss of revenue when players cancel subscriptions or stop returning to the game.

The key to using these predictions is to ensure that they are actionable. A prediction such as "overall ARPU will decline" is not actionable because it does not describe how a marketer can prevent the prediction from occurring. A prediction such as "these five subscribers have a 90% probability of abandoning the game" is actionable, because marketers can retain these five subscribers using promotions.

In the next few sections we shall discuss specific ways that predictions can be used in games.

Predicting conversion to paying status

The different dynamics and mechanics within games provide rich information that can used to determine player satisfaction and engagement. But it takes more than an engaging game to induce players to open their wallets. Other factors such as the relative affluence of the player, her credit-worthiness and age all affect the player's ability to pay for games. Finally, social group behavior and peer pressure are important factors influencing a player's decision to purchase virtual goods or

subscriptions. By analyzing each player's unique game play behavior, demographics and social interactions, the likelihood that each player will convert to paying status can be accurately predicted.

Marketers have several ways to utilize such conversion predictions. Marketers may decide to send reminder emails or display more "conversion related" messages to the players who are extremely likely to convert. These emails may not contain incentives. However, for players who are only moderately likely to convert, marketers may offer aggressive promotions. This dual-pronged approach ensures that you are accelerating the conversion process without unnecessarily giving offers to every player. The net result of would be to greater conversion rates and accelerated monetization of players while maximizing revenue.

Player retention through churn prediction

Since the cost of acquiring a new player is high, it makes sense to start retaining your existing players. Retaining existing players is important for all games regardless of the business model. For advertising funded games, returning players provide "inventory" which can then be sold to advertisers. Games funded by subscriptions would certainly want to retain the active subscribers. Free to play games funded by virtual-goods micro-transactions would want to engage players until they are "ready" to convert.

One common technique is to email players who have already abandoned the game and try to "re-engage" them. However, these re-engagement efforts are usually not very successful because the player has already left the game.

A more fruitful approach is to pinpoint players who are still active engaged, but who may be likely to abandon the game or subscription in the next few weeks. The key difference here is that these players are still currently engaged in the game and have not abandoned the game YET. It is possible for marketers to reach these players with promotional offers and targeted messages.

Acquisition through player-get-player campaigns

Recent studies have shown that a customer's decision to adopt a new mobile application is highly affected by the social group[iv]. For each social group, when there are more members who use an application, other group members are more likely to adopt the same application. Using this social peer pressure phenomenon, it is possible to predict which players will be successful at inviting their friends to the game. This social or peer pressure effect can be used by games marketers to improve their player acquisition campaigns. These "viral" player acquisitions are essentially free of charge, and thus reduce the customer acquisition cost for the game.

Tactically, a games marketer can provide extra incentives to players who score highly on these viral predictions. These incentives can be displayed within the game or using email promotions. A more targeted list of players ensures that these viral promotions are not shown to every player, thus avoiding a potentially unpleasant user experience for all players.

Players likely to purchase new content

Consumer industries have increasingly implemented comprehensive customer marketing programs. These programs aim to deepen the customer relationships by offering more relevant products to specific customer segments. Running monthly sales and promotions campaigns are standard tactics in these programs. Game developers are beginning to adopt these techniques by having special content sales for Christmas, Valentines, Easter and other holidays. Other monthly content promotions can also be executed with current content to drive revenue.

To maximize revenue while minimizing the perception of annoyance, marketers like to target these promotions to players who are most likely to respond to the promotion. Predictions can be used to determine these target lists. By using previous purchase and game play behavior, a purchase propensity model can be developed. This model will calculate for each player her likelihood to purchase the specific content. Marketers can then target the promotion to players in the top 10% of scores. The response rate is higher for this 10% group; marketers can send other relevant promotions to the remaining 90% of players.

Virtual goods or content recommendations

Most games allow players to personalize their experiences. These personalization options range from avatar appearances to city buildings and fixtures. Players get to choose from a large catalog of content that they can purchase or use. These catalogs are presented as a “shop” or “build” section of games. Unfortunately, players have to choose from a bewildering array of options, which increase in number as players progress toward higher levels.

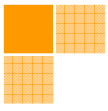
One way to improve the player experience is to recommend the most relevant and appropriate content for each player when she opens the catalog. The content relevance can be predicted using previous content purchases and each player’s social group purchases. Another way to leverage content recommendations is to send a weekly content discovery newsletter to all players. This content discovery newsletter would include five of the most relevant content to each player. An easier and more relevant discovery process will encourage players to purchase more content.

Sonamine predictions

Sonamine helps game marketers identify key players and content using prediction techniques. By engaging with Sonamine, game marketers can reduce churn and increase monetization rates.

To streamline the process, Sonamine offers standard predictions as player segments:

ConvertSoon™ identifies players that are ready to make a first time real currency purchase. ConvertSoon is a critical player segment for free-to-play games to monitor and manage. It is important for game developers to reduce any distractions and obstacles for these players to make their first purchase. You may wish to turn off third party advertisements and cross promotion offers for this segment.



PurchaseMoreSoon™ pinpoints players that are ready to buy more virtual items or games. Players will be matched to the next best item for them. This segment represents an engaged player base that can be further monetized. Not only does Sonamine identify the players, but PurchaseMoreSoon also ranks the products and virtual goods that each player is most likely to further purchase. Such predictions allow promotions to become more effective.

ChurnSoon™ identifies players most likely to stop playing the game in the near future. These are separated into paying and free users so you can provide the appropriate retention offer. For free-to-play games, players must be engaged for a few days before they convert. As such retention is critical. Similarly, for subscription games it is important to accurately predict which subscribers may be canceling their contract.

InfluenceSoon™ identifies players most likely to influence their friends to start playing the game. Such influencers must not only send out invites, but also actually have friends who accept their invites to play the game. These players are ambassadors and brand advocates that you need to carefully cultivate. To give them the best experience you may wish to reduce the third party advertisements that they see during the game play.

How Sonamine predictions are generated

Taking a page from the consumer industries using predictions, Sonamine analyzes data using advanced machine learning algorithms to generate their player predictions. Predicting behaviors such as churn and conversion is a "classification" problem in machine learning terminology. Sonamine uses various classification algorithms that are proven to be scalable and robust in handling the different types of data found in game play. These classification algorithms include neural networks and random forests. Next best recommendations are "associative" in nature and Sonamine uses a combination of collaborative filtering algorithms augmented with our patent-pending network analysis system.

Four types of data are used in the predictions. **Demographic information** about the player that is provided by the game developer can be included in the analysis. These data elements include age, gender, location and any other related information.

Behavioral information about the game play can be indicative of future behaviors. Sonamine's extensive experience in telecommunications and financial services predictions has been transplanted to generate game behavioral data elements that are useful in predictions.

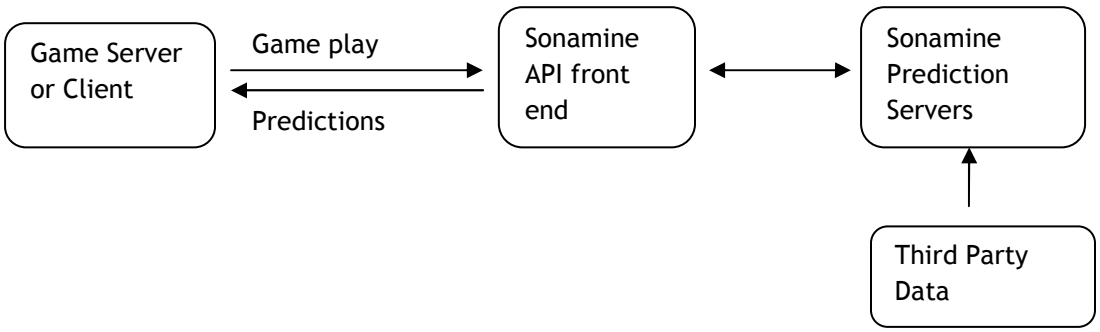
Sonamine has a patent-pending system that leverages the network of **social interactions** among players to generate predictions. These social interactions might be occurring either within or outside the game.

Finally, Sonamine integrates **third party data** where possible to extend the accuracy of the Sonamine predictions. Such third party might include census and credit data.

Data transfer and prediction APIs

Game developers can transfer the required game play data to Sonamine via real time APIs or a batch upload process. The Sonamine system combines the data with third party data, and refreshes the player predictions.

To act on the predictions generated by Sonamine, a game developer can access the predictions in real time via a prediction API.



Trying ConvertSoon™ and ChurnSoon™ for free

Sonamine offers a proof-of-concept (POC) package that includes data transfer and predictions for no cost. These POCs can be completed within 10 days after receiving your data. Please contact us at info@sonamine.com

[i] http://www.internetretailer.com/2010/04/01/follow-the-crowd-recommendations-boost-online-sales-at-sun-ski.
[ii] http://blog.kiwitobes.com/?p=58
[iii] http://www.sas.com/resources/solution-brief/104696_0810.pdf
[iv] Sinan Aral, Lev Muchnik and Arun Sundararajan. Distinguishing influence-based contagion from homophily-driven diffusion in dynamic networks. Proceedings of National Academy of Science, Dec 22, 2009 vol 106 no 51 p. 21544-21549.