Software Review

Personalised web offer management

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ABSTRACT This paper describes one approach that has been used to manage personalised offers on websites. It covers personalised offers made to both registered and anonymous visitors to the website.

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BACKGROUND

Earlier in the year, I completed a project with a Resort and Casino in the United States. The project was concerned with building a new analytical customer relationship management (CRM) environment. The new environment consisted of

- Data warehouse
- Marketing data mart
- Campaign management
- Report development and deployment
- Integration with a variety of channels:
 - Direct mail
 - Telephone
 - Web
 - Kiosks
- Building and integration of a new website

This paper focuses on the building and integration of the website, and in particular the development of a simple web offer environment that supported personalised offers for Loyalty club members and anonymous visitors to the site.

BUSINESS OBJECTIVES

The key business objectives of the web sub-project were as follows:

- support the development of the Resort and Casino brand;
- re-enforce the Resort and Casino brand experience;
- increase gaming and non-gaming revenue generated through the site;
- reduce the costs of managing the patron relationship by increasing self-service activities on the site;
- enhance data available on patrons.

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BUSINESS TARGETS

The key business targets for the sub-project were as follows:

- Improve site visit behaviour
 - increase number of visitors to the site;
 - increase the average number of visits per visitor;
 - increase the number of visits;
 - increase average page view per visit.
- Improve conversion of Loyalty card members
 - increase number of visitors who convert to Loyalty card members;
 - reduce the average number of visits to conversion.
- Increase site usage – Ticket purchase
 - increase number of ticket orders;
 - increase number of tickets sold;
 - increase the value of tickets sold.
- Increase site usage – Room purchase
 - increase number of orders;
 - increase number of rooms booked;
 - increase the value of tickets sold.
- Increase site usage – Gift card purchase
 - increase number of gift cards sold;
 - increase value of gift cards sold.
- Increase site usage – Management of Loyalty card
 - increase number of Loyalty card members using the site;
 - increase number of Loyalty card transactions on site;
 - increase coupon redemption (offers and special events).

In each case, baseline business metrics were used to establish numeric targets for the above items.

FUNCTIONAL REQUIREMENTS

In order to support some of these business objectives and targets, a number of capabilities were added to the website and the supporting infrastructure. These included

- redesign of site to align with brand;
- deployment of a content management system to facilitate site maintenance;

- tighter integration with operational systems to improve user experience
 - Hotel management system (room booking)
 - Ticketing system
 - Gift card system
- integration of social network capability to drive more frequent site visit behaviour and build a stronger community;
- enhanced email delivery capability;
- enhanced offer management on the site.

PROJECT DELIVERY

The web sub-project was broken into the following tasks:

- Project definition
- Define business and system requirements
- Define systems architecture
- Deploy architecture
- Design site
- Build templates in content management system (CMS)
- Build web controls
- Set up web analytics
- Build web offer management solution
- Integrate social network functionality
- Test and deploy
- Monitor performance
- Project management

A joint team was created that consisted of

- Internal business and IT staff
- Design agency staff
- CMS consultants
- Campaign management consultants

The project took about 4 months to complete.

High-level design

Figure 1 describes the high-level design.

The key components of the solution were as follows:

- Web analytic solution – monitor site
- Content management system – manage content creation and delivery to site

Figure 1: Overall system architecture.

- Web data mart – store patron, web offer and web traffic data
- Marketing data mart – store patron gaming and non-gaming data
- Campaign management – define offers and target audiences
- Report development and deployment – monitor site and web offer performance
- Web analytics solution – monitor operational aspects of site

DESIGN OF WEB OFFER SOLUTION

The following section of the paper describes the design of the web offer solution in more detail.

CONTENT MANAGEMENT SYSTEM

A dedicated content library was created in the CMS to store Web Offers. The Web Offers were implemented in the content management system (CMS) Smart Forms and collected:

- Asset (image) to display

- URL of the landing page for the offer
- Category/categories of page(s) on which the offer should be displayed

WEB DATA MART

The web data mart was a database that was used to share information between the website and the data warehouse.

The following tables were implicated:

- Web offers
- Patron web offers
- Web patron offer outcome
- Anonymous web offers
- Anonymous web offer outcome
- Website traffic

MARKETING DATA MART

The marketing data mart was a database that supported a range of activities, including

- Campaign management
- Data mining
- Report development and deployment

It contained a wide range of data, including

- Patron
- Patron gaming profile
 - Daily summary
 - Trip summary
- Patron non-gaming profile
 - Hotel stay
- Marketing contact history
- Patron model scores
- Web visit behaviour
 - Summary
 - Visit detail

REAL-TIME DECISION MANAGEMENT

The real-time decision management (RDM) solution was created in MS .net controls. This application would monitor a visitor on the site. At the appropriate point, the RDM would query the web data mart and determine whether there was a personalised offer for the visitor. If this was the case, the solution would grab the content from the CMS and surface on the site. If no personalised offer was available, a default offer would be presented to the visitor.

CAMPAIGN MANAGEMENT

A campaign management application was implemented against the marketing data mart. This application was used to

- define target audience for the web offers;
- maintain campaign and offer reference data.

DATA FLOWS

Figure 2 shows the integration between the various components.

The web offer content web service was used to provide reference data on the content to the campaign management

Figure 2: System data flows.

application so that the users got a pick list of valid offers.

When the Campaign Manager (CM) user creates a new Web Offer they associate it to a CMS content element. The CMS content elements are represented as a single selection dropdown list (Text = Business Name and Value = CMS ID) and will be populated from a web service hosted on the CMS authoring server which accesses a dedicated CMS content library.

The web offer import passed a list of patrons and their eligible offers to the web data mart.

The Web Offer Import will

- copy Web Offers from the marketing data mart to the Web Offers and Anonymous Web Offers table in the web data mart; and
- copy the Web Offer patron list from the marketing data mart to the Patron Web Offers table in the web data mart.

The nightly web offer outcome passed the offer outcome data back to the marketing data mart. These outcome data were used to monitor the campaigns and define target audiences for follow-up campaigns (either on the web or by email).

The Web Offer Outcome Export copies the Web Offer Outcomes and Anonymous Web Offer Outcomes table nightly. Once the data has been copied, it will be purged from the Web data mart.

The nightly log file export passed the web log data back to the data warehouse, where it was used to monitor web traffic and build patron visit and visit summary data used in the marketing data mart.

The Web Traffic Log Export process reads the IIS log from each front-end web server servicing the website.

The standard-format IIS 6.0 log is composed of the various space-separated fields, in the following order:

Column name	Sample data
Date	8/11/2008
Time	0:06:07
s-sitename	W3SVC385111541
s-computername	IOWA3
s-ip	192.168.225.44
cs-method	GET
cs-uri-stem	/Default.aspx
cs-uri-query	—
s-port	80
cs-username	—
c-ip	70.135.210.163
cs-version	HTTP/1.1
cs(User-Agent)	Mozilla/4.0+(compatible; +MSIE+6.0;+Windows+NT+5.1; +SV1;+.NET+CLR+1.1.4322) s_vi=[CS]v1 481202DB00001412 -A000B8D00001FF4[CE]; +member
cs(Cookie)	Login=memberNum=00292948
cs(Referer)	—
cs-host	www.casino.com
sc-status	200
sc-substatus	0
sc-win32-status	0
sc-bytes	12 163
cs-bytes	422
time-taken	375

PERSONALISED WEB OFFERS

Behaviour-based tiles throughout the Casino site present personalised content. The content is based on a user's past and present behaviour both on the website and at the property and whether they have authenticated with the Loyalty Club areas with their account number and PIN.

PERSISTENT CLIENT COOKIES

The site writes a persistent cookie to the user's computer to track their current session and make their previous online behaviour available on future website visits. The cookie contains the following pieces of information:

- *cookieID* – an identifier used to uniquely identify the user on this computer.
- *loyaltyNumber* – loyalty account number, if the user logs onto the loyalty area on this computer.

- *lastVisit* – date/time of the user's last visit to the website on this computer.
- *visitCount* – counter that is incremented each time the user visits the site on this computer.
- *i<CategoryName>* – counter that is incremented each time the user visits a page assigned to category *<CategoryName>*.

SESSION INITIALISATION

When a website visitor initiates a session with the website, web offers are retrieved from the web data mart and stored in the ASP.NET session for the duration of their visit, based on whether or not a Loyalty Account number exists in the cookie on their computer.

PAGE LOAD

Each time a new page on the site is displayed to the website visitor, information in the cookie on the user's computer is updated to reflect their interactions with the site as follows:

- *lastVisit* is set to the current date and time.
- *i<CategoryName>* for the *<CategoryName>* assigned to the current page is incremented by 1.

LOYALTY MEMBER AUTHENTICATION

When a member identifies himself/herself by logging into the Loyalty area with their

account number and PIN, their personalised web offers are retrieved from the web data mart and stored in the ASP.NET session for the duration of their visit. The cookie on their computer will also be updated with the account number with which they are logged in.

AUTHENTICATED MEMBER TILE SELECTOR

Website visitors who have identified themselves with their account number and PIN will receive personalised Web Offers based on their online and on-property behaviour.

UNAUTHENTICATED VISITOR TILE SELECTOR

Website visitors who have not identified themselves as members receive general Web Offers based on past and present behaviour online and whether they have logged into the Loyalty area on a previous website visit.

CONCLUSION

The development of the personalised Web Offer environment has increased the performance of the Web Offers for Loyalty club members by a factor of 8 to 10. In the case of anonymous visitors, the uplift is between 3 and 4 times that for the control groups.

We have still a lot to learn about the types of offers that work best on the site, but as with all journeys this is just the first step.