

The Path to Web Intelligence Maturity

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Abstract—Web intelligence, if made personal, can fuel the process of building communications around the interests and preferences of each individual customer or prospect, by providing specific behavioral insights about each individual. To become fully efficient, Web intelligence must reach a stage of a high-level maturity, passing throughout a process that involves five steps: (1) Web site analysis; (2) Web site and advertising optimization; (3) Segment targeting; (4) Interactive marketing (online only); and (5) Interactive marketing (online and offline). Discussing these steps in detail, the paper uncovers the real gold mine that is personal-level Web intelligence.

Keywords—Web intelligence, web analytics, information technology (IT), interactive marketing.

I. INTRODUCTION

MOST of today's marketers are facing an enormous headwind: they need to increase marketing returns, but conventional marketing techniques are rapidly becoming ineffective. What's more, they are seeing unmistakable signs that even some online tactics are beginning to suffer from many of the same problems as traditional marketing tactics [1].

To improve returns, many marketers are focused on making their communications more timely and relevant to recipients. To do that, they need to build communications around the interests of each individual customer or prospect. Web intelligence, if made personal, can fuel this process, by providing specific behavioral insights about each individual.

This paper uncovers the gold mine that is personal-level Web intelligence. We shall try to identify the specific nuggets to mine for, and apply them to increase marketing returns at every stage of the customer life cycle, both online and offline.

II. THE FIGHT AGAINST DECLINING MARKETING RESULTS

For years, marketers have struggled with the growing ineffectiveness of conventional offline marketing techniques. Online marketers took comfort in the rapid growth and eager acceptance of their "new" media. But online is no longer "new," and online marketers are beginning to face many of the same challenges as their colleagues. They're encountering symptoms like [2]:

- Dwindling e-mail open rates
- Growing competition for search keywords that has driven up costs

- Lower online retail margins, caused by comparison-shopping engines
- The failure of innovations such as "buy online and pick up in store," to guarantee success.

Marketers recognize that increasing the relevance and timeliness of their marketing messages can help fight these trends. Whether you call it "personalization" or "behavioral targeting," the underlying idea is the same [3]:

When you present the right message to the right person at the right time through the right channel, it's far more likely to be heard, and acted upon.

It's a great vision. But how can marketers learn enough about individual customers to predict *which* messages will be perceived as most relevant, and *when*? Web Intelligence provides an unparalleled, new opportunity to help. Leading innovators are already using Web Intelligence to uncover a goldmine of insights about the interests of their prospects and customers current interests, as revealed by their individual behavior on the web. These innovators are increasing margins and profits by making Web Intelligence *personal*.

III. THREE USES OF WEB INTELLIGENCE

Conventionally, marketers use Web Intelligence at an aggregate level. They seek to report on the performance of their Web sites and online advertising, so they can adjust their efforts to improve the results. This is an extremely worthwhile application that can deliver excellent return on investment.

Some aggregate metrics that give marketers a big picture of their Web site performance are, e.g. [4]:

- *Visits*: represents the number of sessions on a Web site, the number of times someone interacted with the site.
- *Bounce*: the number of those visitors who left the Web site instantly.
- *Page Views*: how many pages were requested in those visits and how many in each visit, Pages/Visit.
- *Average Time on Site*: indicates how long did people stay on the Web site.
- *Percent New Visits*: shows how many sessions, interactions, were from people who visited the site for the first time.

However, marketers may be squandering a huge opportunity if they do not also leverage Web Intelligence as a rich source of behavioral insights on *individual* prospects and customers. Used this way, Web Intelligence can play a far more direct role in engaging customers, improving customer experiences, and increasing sales, by enabling companies to deeply personalize their communications and interactions.

A. Individual Web Intelligence

Individualized Web Intelligence is not mere theory: many companies are already applying it to improve their marketing performance and profitability. Amazon.com, which has long leveraged Web behavioral data to make product recommendations, is one of the best known examples, but many other firms are also effectively leveraging individual Web data to personalize interactions, e.g.:

- eBay provides personalized suggestions of available items that traders may also be interested in, based on their recent searches, bids, and purchases. This feature has led to substantial increases in clickthrough rates [5].
- Leading travel provider, Collette Vacations, links web visitor insights with customer demographics to deliver marketing messages in inbound and outbound channels. By basing communications on *all* of its knowledge about individual customers, Collette has achieved a 10% increase in the number of leads sourced from its web site. Collette’s flagship on-boarding e-mail programs now perform 30% above industry averages for both open rates and clickthroughs [6].
- A leading online bank utilizes advanced Web analytics to identify customers that abandon an application process and delivers a multi-wave campaign that recaptures and converts a significant number of leads. The strategy leverages event triggers that start a communication stream when the online application is abandoned. It draws upon e-mail, direct mail, and even calls from relationship managers with whom a relationship already exists. The program has not just boosted conversion rates; by eliminating communication overlap and reducing contact fatigue, it has also enhanced customer loyalty [7].
- A leading auto manufacturer has improved the way it prioritizes leads that originate on its web sites. To prioritize leads more effectively, the auto manufacturer profiles the prospect’s interests based on site behavior and scores the prospect’s propensity for making a purchase. Leads marked as “hot” are twice as likely to close as “average” leads, and six times likelier than “colder” leads. Using this data, dealers can now focus on their best opportunities to drive sales when they’re needed most [8].

B. Identifying What Nuggets to Mine For

Individualized Web Intelligence can reveal actionable insights into individual prospects and customers, e.g. [9]:

- Individuals’ personal preferences and current product or content interests
- Where individuals stand within the buying or customer life cycle
- When they are most susceptible to being persuaded, converted, or up-sold
- When timely and appropriate action must be taken to retain them
- Which offers will be seen as most relevant and persuasive

- How much each individual will be willing to spend.
- These insights can be rather easily transformed into targeted marketing initiatives at every stage of the customer life cycle (see Fig. 1).

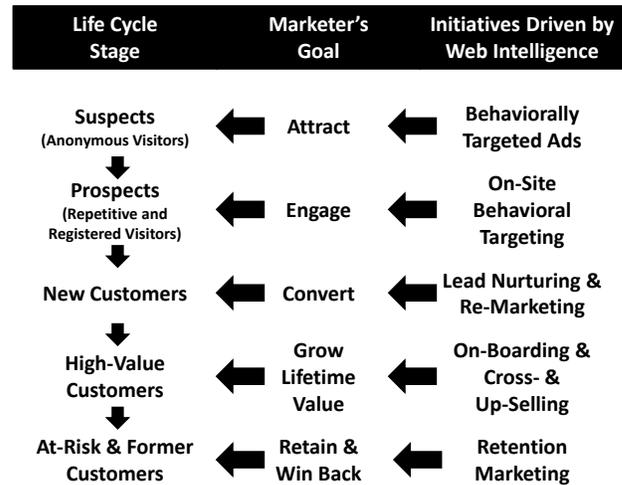


Fig. 1 Mapping lifecycle stages and business goals to marketing initiatives

The channels through which these initiatives can be executed (Web site, e-mail, offline, etc.) will depend on the level of each site visitor’s registration, ranging from anonymous browsers to recognized repetitive visitors, to registered, known customers (see Fig 2).



Fig 2 Actionable levels of visitor identification

Results of our survey show that marketers should look for different types of Web site events to trigger the marketing initiatives targeted to different industries (see Table I).

As an example, a fashion retailer can use Web Intelligence to profile customers based on the price categories and clothing styles they are browsing. Marketers can then use these insights to personalize e-mails with items that match these price levels and styles.

TABLE I
TYPICAL VISITOR-LEVEL WEB INTELLIGENCE TRIGGERS BY INDUSTRIES

	Retail	Finance	Telecom	Publishing	B2B
<i>On-Site Behavioral Targeting</i>	Product categories or features studied, e.g., clothes colors, styles, and price levels selected on a fashion retailer's site	Products and educational content studied, e.g., Internal Revenue Assessment (IRA) calculators	Service details studied, e.g., regional coverage maps	Content categories preferred, e.g., type of sports	Products and educational content studied, e.g., Web pages covering technical details vs. business benefits
<i>Re-Marketing</i>	Contents of abandoned shopping carts	Abandoned online forms for quotes or opening accounts	Cross-sell offers received by e-mail or on the site, yet not clicked on	Subscription options studied but not purchased	When online lead form is abandoned, capture company name through IP address, and target by mail and/or phone sales
<i>On-Boarding</i>	Bad review rating given after completed product purchase; or failed site searches for accessories performed	Missing or failed events; e.g., no or unsuccessful online registration, or failed site searches	Same as Finance. Also, missing clickthroughs from marketing e-mails	After registration, visitors do not return to site, or read few content categories	Unsuccessful searches in the self-help knowledge base or keywords used that indicate issues with using the purchased content or product
<i>Cross- and Up-Sell</i>	Products viewed frequently together	Account options studied but not yet owned	Available service features studied on the site, e.g., e-mail access or any kind of self-service	Articles read in a category that the reader does not normally use	Products studied that customer does not yet own
<i>Retention Marketing</i>	Fewer product categories viewed, and/or less frequent visits	Repeated reviews of loan payoff amounts	Review of contract duration period, or clickthroughs from sites that compare competitors	Fewer content categories read, and/or less frequent visits	Reduced frequency of self-service logins to the customer support area, or searches performed in knowledge base with no results found

Similarly, these insights can be leveraged in other outbound communications or in inbound channels. For example, if a customer calls into the call center to inquire about a shipment, the company's IVR or CRM systems could suggest promotions that fit the same profile.

A. The Support/Self-Service Model

Enterprises today face the daunting challenge of simultaneously maximizing customer satisfaction and minimizing costs. The Web-based support/self-service model revolves around providing fast, accurate answers to end-users' questions. The result is reduced support costs for the organization. A study by Forrester reveals that the average cost per transaction using the traditional phone channel or call center is as much as \$33 compared to \$1.17 for the Web self-service site [10].

Based on this data, enterprises can achieve tremendous cost savings by deflecting phone traffic to the self-service channel. In this case, the optimization of the self-service Web site should revolve around serving the appropriate content to help deflect support calls. The remainder of this section will discuss topics on:

- Measuring the Self-service Site Volume
- Identifying Top Customer Issues
- Utilizing Web Intelligence to Deflect Call Center Volume

This section will then cover some specific Web Intelligence practices around each one of the areas mentioned above.

Measuring the Self-service Site Volume – One of the first things that managers can look into is the high-level metrics associated with their support or self-service Web site. To do

so, they have to treat their support site as its own entity so that they can accurately measure key metrics and benchmark them when needed. These metrics are often the same used in other site types, but one thing to consider is that the evaluation criteria are very different in this case.

For example, the user still needs to look at some key traffic trends such as visitors, visits, page views, and time spent on site, but often the goal is to lower some of these benchmarks, not increase them. For example, for a content/media site, the goal is often to increase visitor loyalty and time spent on site. For a support site however, the goal is to help customers as fast as possible, therefore a lower loyalty index and shorter time spent on the site are desirable.

Once the benchmarks are set, the goal is to monitor the benchmarks. The appropriate application can be used to create dashboards that include all the necessary KPIs for this business model [11].

For example, a manager of a support site wants to make sure that customers get answers to their questions in as short a time as possible. High-level measures to capture such trends include short visit duration, low loyalty and frequency indices, and a high percentage of satisfied compared to dissatisfied users. The latter can be achieved using the visitor segmentation functionality of the Web Intelligence solution. By segmenting users based on their satisfaction level, one can trend the satisfaction level with the Web site.

It provides an example of a critical satisfaction index that the site manager can use to quickly measure and benchmark against past site behaviors. A downward trend (development of more dissatisfied users compared to those satisfied) should be used as an alarm that overall customer satisfaction is deteriorating and should cause further investigation into the support site.

Identifying Top Customer Issues – One of the most widely used areas of Web Intelligence in the support/self-service model has been to use clickstream data to identify the top customer issues. This includes determining what products require the most assistance, what are the top issues relating to each product, and understanding where customers are facing the most difficulties. This is an area that can be easily uncovered with Web Intelligence.

For example, by matching the Web content hierarchy to that of the support site, one can easily find what are top categories and sub-categories. The information provides managers with the insight they need to determine how much budget they should allocate to each product line, what areas they should consider within each product line, and what issues are customers increasingly facing. The information can be used in a number of ways.

First, products with high number of customer support issues should be highlighted more effectively. Site optimization initiatives should help make these issues more accessible. Second, the information should be forwarded to the call center so that they are better prepared to address customer calls. Because the Web channel is an effective medium for collection

of visitor and customer interactions, it can be leveraged to provide timely feedback to other channels.

For example, by observing a spike in traffic to pages relating to a product, one can also expect an increase in call volumes for that product. Organization can use Web Intelligence to isolate the issue and be better prepared to address customer calls.

A well-known practice by many support sites is to directly ask users for their feedback on the support content. This information can be directly captured in the Web Intelligence package and utilized to assess the effectiveness of individual content. This ranking can then be used in different ways [12].

First, managers can start by determining the average ranking of all support site content. Next, they can assess ranking of individual content and compare it to the overall average ranking. Contents that get below average ranking should then be improved to be more specific to what the user wants to achieve.

This practice should be repeated with the goal of increasing the overall content ranking. As the overall average improves, a new set of content(s) will surface with below average ranking. By optimizing those, a continuous improvement loop is created that will provide way to increase site effectiveness.

Utilizing Web Intelligence to Deflect Call Center Volume - The entire support/self-service business model revolves around deflecting calls from the call center. This is done through a better understanding of customer concerns. For example, how one could identify the contents with the most negative feedback so that they could be improved? What if such information is not available? What if visitors do not bother providing this information? In this case the information has to be deducted from the click-stream activity. More specifically, the measurement should be around contents that do not provide the users with what they need.

IV. FIVE STEPS TO WEB INTELLIGENCE MATURITY

Many organizations, however, struggle to capture, organize, and effectively leverage individual Web data to drive marketing programs. We have outlined a five-step path to help marketers progressively mature their capabilities and expand the use of Web Intelligence from aggregate-level reporting to leveraging individual-level insights to fuel interactive marketing. These are:

- Web site analysis
- Web site and advertising optimization
- Segment targeting
- Interactive marketing (online only)
- Interactive marketing (online and offline).

Graphical presentation of the process leading to the Web Intelligence maturity can be found in Fig 3.

A. Web Site Analysis

At most organizations, Web Intelligence begins as a site analysis solution, intended to monitor site health, report on site activity, and prove return on investment for the online channel.

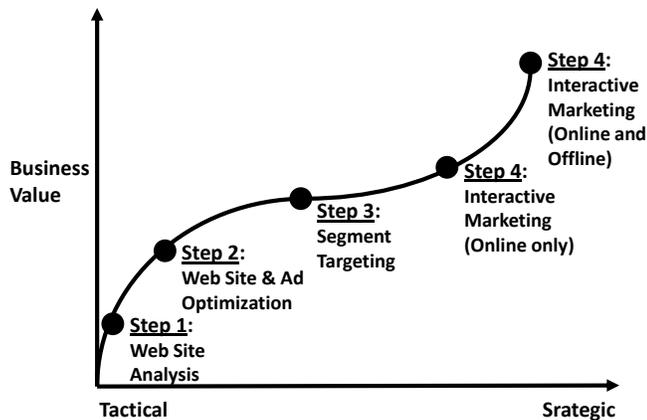


Fig 3 Steps to Web Intelligence maturity

In this step, Web Intelligence answers basic questions such as:

- How many visitors are coming to our site?
- How are visitors finding it?
- How are visitors using it?

B. Step 2: Site and Advertising Optimization

To begin generating substantial business value, Web Intelligence must evolve at least to Step 2: site and advertising optimization. In this step, Web analysts and designers seek to identify bottlenecks, e.g., Web pages that aren't performing well. Marketers run experiments to identify and assess opportunities for overcoming these bottlenecks, and thereby increasing returns. Marketers are asking:

- How can we improve our Web site's structure and content to increase conversion rates?
- How can we reallocate online advertising spend to attract more profitable customers?

C. Step 3: Segment Targeting

In Step 3, marketers realize that there is no such thing as an "optimized page" because different groups of visitors come to the same page with different goals in mind. Therefore, in Step 3, marketers use Web Intelligence to define their most valuable customer segments, and identify the dynamic content that is most effective with each segment. To anonymous Web site visitors, this content may be delivered on the site through behavioral targeting. Registered online visitors can also be targeted via personalized e-mail or SMS

Questions that can be answered include:

- What are the most valuable visitors segments for my business, grouped by common click behavior along with other information we possess about them?
- What content or promotional offers are best suited for targeting each segment on the site?
- How can we begin leveraging what we learn on our site to improve my other communications?

D. Step 4: Interactive Marketing (Online Only)

While marketers who move to Stage 3 are laying crucial groundwork for interactive, customer-centric marketing, they typically find ROI temporarily flattening out. There are limits to the amount of value that can be generated through segmentation. Reigniting improvements in business value requires following the examples of innovators, such as businesses that have made their web data personal.

In Step 4, marketers refine targeting beyond the group level to the level of individual site visitors. They use individualized web analytics to fuel interactive marketing; i.e., to build a dialogue on each visitor's past and current interactions. To achieve this goal, marketers ask and answer questions such as:

- What is the most effective Web site, e-mail, or SMS content for each individual, based on his or her prior site interaction and other online interactions?
- Should we reach out online to an individual customer right now, with messages aimed at on-boarding, cross-selling, or retention?

E. Step 5: Interactive Marketing (Online and Offline)

Finally, in Step 5, marketers extend the interactive marketing dialogue with identified cross-channel customers to include offline as well as online channels. Supported by Web Intelligence, offline communications – for example, promotional offers that are delivered through a call center IVR system – build on all past and current customer behavior. In addition, insights from offline customer transactions are used to extend the web or e-mail content deemed most relevant to each customer.

Whether interactions are outbound or inbound, Web Intelligence can answer questions like [13]:

- What is the best way for us to continue ongoing sales dialogue with this individual?
- Based on what we know from this individual's prior interactions and transactions across all channels, what is the best offer or communication we can make next?
- When should we make that offer?
- What if the customer does not accept our offer?
- Should we make additional efforts to persuade him or should we make completely new offer?

V. CLIMBING THE 5-STEP GROWTH PATH

The question of all questions is: How to move up the Web Intelligence maturity process we have outlined, rapidly and cost-effectively?

Table II defines the specific organizational know-how and technology requirements needed in each step.

Capabilities outlined in Table II need not always be built out sequentially. For example, even if a company is now using Web Intelligence only for aggregate reporting, they may already have some of the capabilities they will need to gain the individualized insights they are looking for.

TABLE II
REQUIREMENTS OF THE 5 STEPS TO WEB INTELLIGENCE MATURITY

	Step 1 Web site analysis	Step 2 Web site & advertisement optimization	Step 3 Segment targeting	Step 4 Interactive marketing (online only)	Step 5 Interactive marketing (online & offline)
<i>Organizational maturity</i>	Define Web site and marketing goals clearly, so they can be translated into Web Intelligence Key Performance Indicators (KPIs)	Set improvement goals, and manage toward them; prioritize testing above subjective opinions	Identify key segments relevant to the business, and see the company/Web site through the eyes of representatives from each segment	Commit to personalization and relevancy as the paradigm of doing business online (vs. “spamming”)	Commit to a customer-centric business strategy that encompasses and integrates all channels
<i>Know-how and skills</i>	Measure what matters, instead of attempting to measure everything	Design and run tests, understand their statistical significance, and act on the results by adjusting Web sites or advertising spend allocation accordingly	Discover meaningful behavioral segments from click data and visitor registration information using Web Intelligence, particularly data mining techniques	Link site visitors to their registered customer information and identify the life cycle events that are actionable for marketing	Link the identity of customers across online and offline channels and identify the life cycle events that are actionable for marketing
<i>Technology for customer awareness</i>	Self-service access to personalized metrics for each role in the organization	Advantages/benefits analysis for Web site and online advertising	Segmentation analytics (e.g., in Web Intelligence via data mining solutions) for both click data and registered customer data	Web data warehouse that provides open, secure access to granular data on each individual’s Web site interaction history	Web data warehouse for online interactions, as well as access to offline history of transactions, campaigns, and responses
<i>Behavioral targeting/decisioning technology</i>	N/A	Assign Web site visitors randomly to test groups	Define business rules for targeting segments, and use self-learning mechanisms to refine targeting	Select the most effective content for each individual online customer in real time, reflecting past and current click data, customer insights, and business rules	Choose the most effective marketing communication or offer for each customer, reflecting past and current interactions both online and offline
<i>Technology for delivering targeted content</i>	N/A	Advantages/benefits test automation for Web site & advertising	Deliver targeted content to each segment via site ads, recommended content or products, e-mail, SMS, MMS, or other means	Deliver targeted content to each individual via personalized site content, e-mail, SMS, MMS, or other means	Cater targeted content to each individual regardless of the inbound or outbound channel each interaction occurs in

VI. BRINGING TOGETHER THE MARKETING TEAM

Many marketing organizations have virtually all the skills they need to begin applying Web Intelligence for targeting personalized online and offline messages. However, these capabilities are often spread across the enterprise in disconnected teams; e.g., separate teams for online vs. relationship marketing.

To succeed, marketing organizations must make it possible for these siloed resources to work together. They must also overcome some widely-held misconceptions about Web Intelligence [14].

For example, some relationship marketers still hold beliefs about Web Intelligence that might have been accurate years ago, but no longer are:

- “*Web Intelligence is just summary-level knowledge; it is not useful for customer-centric marketing.*” Today’s best Web Intelligence solutions now provide behavioral profile data at the visitor/customer level in a readily accessible Web data warehouse or data mart.
- “*Click data is too much unstructured: you cannot make sense of every single click.*” Successful marketers have learned how to focus on a subset of online events that are most likely to be significant.
- “*Web Intelligence is only interesting to the Web team, not our team.*” Marketers that ignore Web data about individual customers are disregarding an indispensable resource.

Online marketers also have their own misconceptions:

- “*Marketing is primarily about ‘acquire, convert, retain.’*” This misses the urgent importance of growing each customer’s Lifetime Value (LTV) – a concept that is only incompletely expressed by “retention,” and can only be achieved through a more customer-centric approach.
- “*We could not possibly look at each individual visitor.*” It cannot be done manually. But the company’s relationship marketers should have tools that can automate analysis and action at the level of individual customers.

VII. CONCLUSION

The Web Intelligence approach is that of gradual changes and improvements or a continuous improvement loop consisting of three simple steps: track, analyze and optimize. Web Intelligence optimization and maturation can be labeled as continuous evolutionary improvements, and not drastic modifications to the Web site. It is therefore important for managers to constantly monitor their site behavior, but more importantly, their site changes and improvements over time.

Finally, site changes should be mapped to their effect on the company’s end goal of customer conversion, retention or deflection of volume from the call center.

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