Online Profiling Project - Comment   P994809/
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2   *(www.appiancorp.com/awpr.asp), the most comprehensive source for information on the*
3   *technology, products and companies in the Personalization Industry. Appian is a consulting and*
4   *analyst firm specializing in E-Commerce Personalization and Data Warehousing.*
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6   Web Personalization is the art and science of dynamically altering the presentation of a

7   web site according to the preferences of the user. Customized presentation can take many forms,

8   but user preferences are typically used by web sites to filter or recommend the content and

9   navigation choices displayed to each user. Web Personalization is employed today at hundreds of

10   web sites across the Internet, including many of the most trafficked. Custom headers greet the

11   user by name. Custom advertisements target the user specifically. Custom content solidifies the

12   user's affinity with the site and custom recommendations encourage the user to purchase. The

13   average Internet-surfer will encounter personalization at retail sites, at portals, and sometimes at

14   news providers.

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16   Web Personalization is made possible by online profiling, content management, customer

17   analysis, and personalization software produced by over 33 technology firms. Appian has built

18   relationships with many of these vendors, relationships that have provided us with access to their

1 plans, strategies, and future technology development directions. As a group, these firms are

2 responding to the tremendous demand created by competition in the E-commerce market. This

3 competition is pushing retailers, publishers, portals, and business-to-business suppliers to create

4 dynamic, personalized experiences that accurately target individual customer needs to build user

5 loyalty. Large organizations are looking to database-driven technology that stores, tracks,

6 analyzes, and responds to millions of customer profiles in a personalized manner. In response, the

7 Web Personalization market has quickly become crowded with vendors promising to convert brief

8 electronic encounters into 'sticky' and profitable relationships.

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10 **How Does Web Personalization Work?**

11 The Web Personalization market has bifurcated into two different families of products:

12 **rules-based** engines and **collaborative filtering** engines. The methodologies differ in the way

13 they determine the optimal personalized content, but much of the core online profiling is similar to

14 both solutions. Both solutions seek to understand and capture user preferences and customize

15 content and recommendations based on analysis of these preferences. Both rules-based and

16 collaborative filtering-based systems may detect user preferences through manual means (user

17 states preferences in an online survey) and induction (user reveals preferences through her actions

18 and purchases). Both can access information from other databases to assist in the personalization

19 process, linking identifying customer information with non-identifying information contained in

20 transaction handling, order-processing, sales, and inventory systems.

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1   **Rules-based** personalization engines use business logic embedded in conditional (if/then)

2   statements to create content display. Under rules-based personalization, a user's known

3   preferences fulfill certain criteria, and corresponding content is served accordingly. A manager or

4   system administrator typically uses a visual interface to input if/then criterion, specifying each

5   condition and the content which should be recommended in response. The primary benefit of this

6   approach lies in its ability to directly link organizational strategy or policy to customer

7   interactions.

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9   Imagine a fictional online music store, tunes.com, implements a rules-based

10   personalization engine. Sarah User visits the site and places a copy of "The Three Tenors" into

11   her shopping cart, thus implicitly providing preference information to the rules-based engine. The

12   engine has been programmed to categorize each user into a spending-willingness bracket

13   according to her selections, and attempt to sell similar items with higher price tags. It queries the

14   product database for cross- and up-sell items to test the wallet of this presumed yuppie. The

15   engine recommends a collector's-edition Luciano Pavarotti CD and interview (up-sell), a portable

16   CD player (cross-sell), and a special 10-disk collection of Giuseppe Verdi operas (up-sell).

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18   **Collaborative filtering** engines, in contrast to their rules-based counterparts, use the

19   recorded preferences of all users in order to algorithmically find content that is likely to appeal to

20   the user. Web site users are grouped by their shared preferences, and it is through use of the

21   preferences database that the engine makes predictions. The engine locates people with

22   preferences similar to the user's, and recommends items that those people liked. The power of this

23   approach is its ability to constantly respond to changing user preferences and growing content

1   catalogs without requiring the creation of new personalization rules. Collaborative filtering also

2   allows sites to target recommendations to smaller groups than might otherwise be feasible with

3   rules-based engines. Due to the logical synergies between rules-based and collaborative-filtering

4   based personalization, many vendors are rapidly searching for ways to integrate both into their

5   products, further increasing the demand for comprehensive online profiling of consumers.

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7   Imagine that tunes.com decides to use a collaborative filtering engine to match users with

8   content. When Will User arrives online, he's asked to name his three favorite artists. He lists Jimi

9   Hendrix, Janis Joplin, and Jefferson Airplane. The collaborative filtering engine then searches for

10   people in its database who have similar preferences. Finding a list of several thousand, it queries

11   that list to determine their favorite music, and recommends the findings back to Will. His next

12   screen has a tie-dye background, a banner advertisement for the new Volkswagen Beetle, and

13   recommended merchandise like a Carlos Santana album and a Woodstock Live recording. As

14   preferences change, the collaborative filtering engine will automatically account for this and

15   reflect it in changing recommendations. Should the Peace & Love generation show a propensity

16   for Kenny G, the engine will recognize it (and be making the right recommendations) long before

17   most people realize the trend.

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19   No single Web Personalization architecture is optimal for all Web sites. Recognizing this,

20   collaborative filtering and rules-based personalization vendors have established partnerships

21   offering varying levels of technical integration between the two systems. We expect the Web

22   Personalization market will undergo continuing convergence that will eventually render rules-

1   based vs. collaborative filtering debates moot. The leading products in the industry will offer the

2   most effective method of personalization: a mixture of both.

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4   Our discussion has so far focused on the collection and use of online profile data through

5   the World Wide Web. This is because the primary output from profiling systems today is through

6   the Web, but we can already perceive a shift towards pervasive and potentially ubiquitous

7   application of profiling and personalization technology throughout business and society. The

8   Internet and the Web greatly accelerate the distribution and acceptance of information technology

9   and the personal information that makes it useful to individuals and organizations, but online

10   profiling is not just a "Web issue". Personalization vendors are aggressively adapting profiling and

11   personalization technology first designed for the Web to the entire spectrum of consumer

12   interactions, including email, wireless devices, telephones, fax machines, and even live customer

13   service call centers through tailoring the information displayed on operator screens. As a

14   consequence, the regulatory climate surrounding online profiling will have far greater economic

15   and social repercussions than just Web-based E-commerce.

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17   **The Web Personalization Market**

18   The following chart shows the operating income and revenues in millions of dollars for

19   eight companies covered by the Appian Web Personalization Report. The figures for 1999 cover

20   only the first six months of the year:

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	1998		Six Months, 1999	
	Revenue	Operating Income	Revenue	Operating Income
Accrue*	2.95	(6.68)	1.93	(2.09)
Andromedia	1.97	(9.68)	2.62	(8.63)
ATG	12.14	(2.74)	10.65	(2.35)
Broadvision	50.91	1.92	41.94	5.48
E.piphany	3.38	(10.61)	5.12	(9.46)
Exchange Apps	24.78	(0.97)	18.36	1.46
Net Perceptions	4.48	(5.03)	4.71	(6.31)
Vignette	16.21	(26.37)	24.01	(30.68)

*Accrue's 1999 figures are for April-June 1999 only. All figures are in millions of dollars.

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4 The revenue figures for these companies are indicative of the trends in the personalization sector.

5 Four of these companies have exceeded in the first half of 1999 their total 1998 revenue, and all

6 are on pace for substantial revenue growth. Nonetheless, the figures are also in line with other

7 technology sectors in that these companies are running with significant operating losses and have

8 no expectation of reaching profitability in the near future.

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2 The following chart shows the market valuations of the publicly-held specialist web

3 personalization vendors covered in the Appian Web Personalization Report:

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5   As it has with all Internet-related companies, the stock market is granting Web

6 personalization companies substantial valuations relative to revenue. We mention this because

7 these companies participate in a part of the Internet space which is more akin to enterprise

1 software than to Internet retailing. Web personalization solutions are packaged applications,

2 bundled with services such as consulting and training. Like other significant enterprise software

3 applications, web personalization implementations can be time-consuming, complex, and very

4 service-intensive.

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6   We estimate that the online personalization industry will grow to $1.3 billion in the year

7 2000. By the year 2003, we forecast a $5.3 billion market. These estimates include services

8 revenue, and are not limited to corporations whose primary business is web personalization. These

9 estimates do not include non-personalized e-commerce applications. We expect that for several

10 years into the future, a major component of the revenue of the online personalization industry will

11 be custom development and independent consulting.

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