sas

BEYOND WEB ANALYTICS

A new generation of customer experience analytics: increasing sales revenue and improving service by gaining actionable multi-channel intelligence

THE POWER TO KNOW®

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Management Summary

Organisations recognise that understanding how their customers and prospects interact with their websites, together with all other touchpoints such as call centres and face-to-face interactions, plays a vital role in helping them achieve the strategic aim of enhancing the customer experience.

This is about understanding individual customers and their interactions rather than web servers or web pages; recording business events and customer experiences rather than web metrics. However, current approaches in web analytics are not up to the job, despite requiring significant investments and representing a major drain on manpower and resources. Further, results provided by web analysts are typically couched in terms such as page impressions and hits, making them far from digestible (and therefore actionable) by key stakeholders. Yet industry analysts have repeatedly identified the importance of accurate and timely measurement as a key requirement. For example:

"*Web sites that are increasing in strategic importance increasingly lack the depth and breadth of insight that they demand, thus limiting the business value of the organisation's investment*." – Gartner, 2005

The opportunity, the optimum solution, is an approach that combines dynamic real-time online data collection with industry-leading customer intelligence. Such an approach enables an organisation to see, measure and understand every aspect of a customer's experience – everything a customer sees and everything they do online, timed to the millisecond – and, in the process, gaining insight to drive value in all current and future interactions. Indeed, SAS has defined customer experience analytics as: '*The ability to know everything; what a customer saw, what they did, and didn't do, when they did it, how long it took them, where they came from … and predict what they will do tomorrow*.'

Potential benefits of the approach suggested in this paper include:

- Avoiding costly and labour-intensive tagging
- The ability to be proactive in understanding site performance, making improvements and tracking outcomes
- Optimising channel effectiveness and profitability
- Determining the optimum customers or groups to target with the right offers and campaigns at the right time
- Incorporating multiple data sources from across and outside the enterprise
- Ensuring total scalability for massive and growing volumes of complex data
- Using sophisticated visualisation tools to plan and deliver a richer, more profitable customer experience
- Empowering stakeholders across the enterprise with the information they need presented in a format they can understand and use, and at the right time – without needing back-up teams of analysts to pre-process data for them

This is about understanding individual customers and their interactions rather than web servers or web pages; recording business events and customer experiences rather than web metrics.

- Providing the opportunity for a broad range of stakeholders to interact with and drill-down into the data to allow them to apply their understanding of the business issues directly to the analysis of the data.

This paper describes the technology landscape leading up to the current demand for true, actionable multi-channel intelligence, together with the key elements required for a successful customer experience analytics solution.

The business context

Until now the vast majority of organisations have been prevented from capitalising on the true potential of the huge growth in data collection, made possible by the web and other channels, as a critical agent for profitable change – and with good reason. The technology available had reached an impasse.

'Never the twain shall meet'?

The first major issue is that web analytics vendors cannot access multiple data sources, a vital prerequisite in a multi-channel world, and they cannot provide the business intelligence that a true multi-channel environment (and associated strategy) demands. The web analytics market is one of low cost, narrow user-base, with 'out on a limb' look-alike solutions, mainly delivered via hosted services.

Web analytics vendors cannot access multiple data sources, a vital prerequisite in a multi-channel world, and they cannot provide the business intelligence that a true multi-channel environment demands.

Organisations not only need the data, they also require the capabilities to transform it into actionable insights. Superficially, web analytics solutions may appear to be competent decision support environments but they lack the breadth, depth and functionality provided by enterprise business intelligence systems. So, if that is one side of the equation, what of the other side?

The second major obstacle is that 'traditional' business intelligence providers have been unable to provide the speed and functionality required to gather accurate and timely interaction data. Moreover, such vendors do not typically provide the reporting and analysis capabilities that are required to understand online interactions correctly. For example, they lack:

- The ability to unravel online interaction data and to understand and visualise customer journeys in their true light, across all touchpoints
- The ability to integrate reporting with the specialised data models used to combine site interaction data with customer data for 'true analysis'
- Forward-looking analytics that are specifically designed to deal with web-based interactions
- Fourth generation client-side data collection.

High stakes

Yet the stakes are too high for this situation to go unchallenged, as online sales continue to rise and the opportunities presented to organisations including retailers and financial services providers continue to multiply.

For example, it was reported that Internet shopping among UK consumers leapt by almost 50% in the 10 weeks before Christmas 2006. Customers spent £4.98 billion online during the period, compared with £3.3bn for the same period in 2005. For 2005 as a whole, it has been calculated that spending over the Internet in the UK totalled £19.2bn, some 32% more than in 2004. But how much do retailers really know about these customers?

The same can be said of online operations in other sectors ranging from airlines and the travel industry to banks and financial services – the latter providing an ever-growing range of online services extending from account administration, loan applications and insurance quotations to providing high-end extranets and portal-based services for high-value clients and investors.

Research indicates that ebusiness analysts are demanding far greater flexibility in the reporting and analysis available to them.

Changing goalposts

Flexibility is also a big issue, as the business of online sales together with the technology environment, customer behaviour and the requirements of ebusiness analysts continue to develop and mature.

In particular, research indicates that ebusiness analysts are demanding far greater flexibility in the reporting and analysis available to them, based on more accurate site interaction data and the need to use additional external data sources to deliver ever-richer customer insight. Table 1 below covers these changing requirements. It is based on SAS' gathering and distillation of current analyst research on ebusiness analyst issues and BI requirements.

Issues and challenges	Optimum solution
Diverse R&A applications - tools redundancy.	Multiple reporting and analysis options suitable for different user profiles in a single solution environment delivered via a portal.
Complex R&A interfaces prevent users with first hand business knowledge from interacting with data to gain new insight.	Provide R&A interactive interfaces appropriate to all levels of stakeholder and decision maker.
Poor R&A data accuracy.	Highly accurate data means accurate reporting.
R&A not reflecting business goals.	Data transformed via Information Maps to accurately reflect business goals - via business relevant metrics and KPIs.
Brick wall effect - no reach-through.	All R&A can drill down to individual customers or any other site visit attribute.
R&A flexibility - users want to be able to customise reports.	Multiple R&A options and interfaces.
R&A maintenance nightmares, multiple versions of the truth.	Single point of administration of users, reporting, data, etc.
MS Office integration - tools familiarity.	MS Office add-ons (Excel, Word, PowerPoint) - greater uptake and compliance from end users, more insight gained.
R&A distribution across departments.	Portal publish and subscribe ensuring the right users get the right information in the right format for their particular decision-making.
The need to drill down to individual customer details or any other session attribute.	Gaining the most complete and detailed view of the customer experience.

Table 1 – Addressing the requirements of ebusiness analysts in reporting and analysis (R&A)

In addition, a growing range of stakeholders now have a vested interest in the success of the online channel as well as other sales and service channels – which means a far wider range of information consumers to serve, possibly reaching right up to Board level. This step change has been recognised by analysts including Forrester and Gartner:

- "*Web sites that are increasing in strategic importance increasingly lack the depth and breadth of insight that they demand, thus limiting the business value of the organisation's investment*."
- "*Web Analytics is becoming Customer Analytics*."
- "*Web Analytics should become part of an organisations strategic information needs*."

So, how can ebusiness analysts and the organisations they work for 'square the circle'? In particular, how can they overcome the two major obstacles they face, namely *accurate and timely data collection together with proven decision support and customer intelligence* capabilities?

Challenges and solutions

Without true real customer insight, online sales can be likened to running a shop while you are locked inside the stockroom: you may hear the door bell and some footfall, possibly the odd glimpse of a customer, but that is all. Unfortunately, the best that web analytics can offer is the ability to peer through the keyhole to gain a very limited snapshot of unidentified customers entering and leaving. The solution and approaches described in this paper, however, are a way to place yourself inside the store at all times: to interact with customers, learn what you and they want to know, and to engage in true customer-relevant marketing.

Traditional thinking has placed web analytics as a separate discipline, isolated from the rest of a business; this is no longer acceptable in a multi-channel world. Quite apart from the time, costs and workload involved in activities like tagging, analysis typically stays in the operational realm of ebusiness and web analysts – gatekeepers who may lack an understanding of the important business drivers or are unable to translate the limited facts they glean into actionable insights.

Indeed, current solutions are typically aimed at 'web analysts' who deal in concepts such as page impressions and HITS – 'results' provided in such a form do not provide digestible and actionable insights for specific groups of stakeholders and decision-makers. By contrast, such actionable communications can include SMS alerts for the Operations team warning of poor performance, return on investment reports for marketing, or a set of go/no go indicators for senior management.

In their efforts to track customer activity, traditional approaches have failed in three main areas: data collection, data interpretation and decision support.

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The data collection problem

Web analytics remain trapped at an immature stage of development, with cumbersome approaches such as tagging and even more 'remote' methods like network packet sniffers and web log analysers. Implementation takes many months while maintenance is ongoing and costly – even then, the best an organisation can expect to receive are masses of aggregated statistics.

Such approaches are inflexible, fail to account for offline fulfilment, and require analysts to decide on the processes they want to measure before they can measure them. At the same time, concerns over detail and accuracy continue to be raised. For example, according to Forrester Research, "The truth is out there, but not in your web analytics package."

Data collection solved

Real-time Dynamic Data Collection™ technology has been incorporated within the SAS®9 data access, analytics and reporting platform.

As part of the SAS® for Customer Experience Analytics solution, a single 'Insert' on each web page automatically works out what is in that page and then collects data on whatever the site visitor does; gathering information on everything they see, every interaction. Users can even replay the customer's online session and their every action on video. Here, the page is the source of information rather than artificially added tags. The 'Insert' is identical on every page but, as the page loads, so does the Insert code, collecting dynamically defined data in real time. All data can be recorded, from the loading of a page to the movement of the mouse, from the clicking of a button to the content of a search list. Accuracy is assured and, because there are no third party issues to worry about, cookie blockers and firewalls are untroubled. Similarly, there are no security concerns because privacy, security and Data Protection issues are rigorously managed, particularly because this is an entirely 1st party solution.

Importantly, deployment takes a matter of hours, compared with many months of a costly and potentially inaccurate tagging process. The longer it takes to tag a site, the more out of date and less relevant earlier tags become – an emerging maintenance nightmare.

Although web data collection is fully supported, most organisations will still want to access data from other sources including customer information, offline transactions, third party marketing data, surveys, etc. SAS supports access to any commercial data file format you may want to include. The platform is designed to provide complete flexibility in data access to any source or platform, through platform independent support and a multivendor architecture, so supporting a multichannel strategy. Users can access multiple data collection formats and any other data, from systems anywhere in a business, plus external sources, as required – something no web analytics vendor can provide. For example, you have transparent read, write and update access to more than 60 data sources (including Oracle, Teradata and SAP). Additional support for integration through standards, including

ODBC, JDBC and OLE-DB widens data access opportunities even further.

The data interpretation problem

Raw data captured from user interactions with web pages is complex and reflects the unpredictable nature of such interactions – large numbers of untrained individuals each pursuing their own objectives and journeys. This fact has further complicated the analysis of web data, and has been used by web analytics providers to argue that they are uniquely able to interpret this data – while, at the same time, providing a barrier to business intelligence solutions successfully analysing online channel data.

Data interpretation solved

A more mature and detailed analysis of this problem, however, reveals that any online application or web site contains common functions and elicits common types of behaviour. Therefore, the optimum solution can include pre-built behavioural and functional models to automatically analyse such functions and behaviours to generate a set of normalised behavioural and functional 'objects'. These objects reduce the apparent complexity of behavioural variability and individual application structure to provide a common data model, which can be used across many applications.

In this way the solution can, with minimal definitions of process metadata and site structure, provide a rich set of structured information about both the performance of the site, application or function, and also about the behaviour and interactions of each individual visitor. This object-oriented data is presented via summarised data tables plus transaction-based and visitor-based detailed data stores that underpin all the decision support components.

The decision support problem

Ebusiness analysts complain about a lack of breadth and depth in business intelligence – an area that that true customer experience analytics and reporting requires. Current solutions lack flexibility, have narrow usability and users quickly experience the 'brick wall effect' – there is little or no real intelligence to, for example, reveal business drivers plus no forward-looking capabilities, while reporting and information sharing are difficult and maintenance overheads remain high.

Decision support solved

SAS' capabilities in analytics and reporting, for true customer and business intelligence, are beyond question. Indeed, no other enterprise intelligence solution can match SAS in terms of end-to-end analytics, reporting and information sharing. For example, personalised portals enable the right information to be delivered at the right time to any given user, with the most appropriate interface, reporting and analytics capabilities tailored to specific roles.

Consequently, organisations can benefit from an accurate, complete picture of indi-

vidual customers and have an opportunity to optimise every customer touchpoint to, for example, increase revenue and reduce marketing spend.

The following section covers the SAS' approach to Customer Experience Analytics in more detail.

Understanding the online customer experience

Figure 1 below demonstrates the SAS approach to understanding the online visitor experience – in relation to the end-to-end ebusiness processes that support an organisation's online environments, and in relation to all other touchpoints required. This is not a technology solution per se, rather, it is a business solution that combines the best of both words – Dynamic Data Collection and Customer Intelligence – and, by doing so, becomes far more than the sum of its constituent parts.

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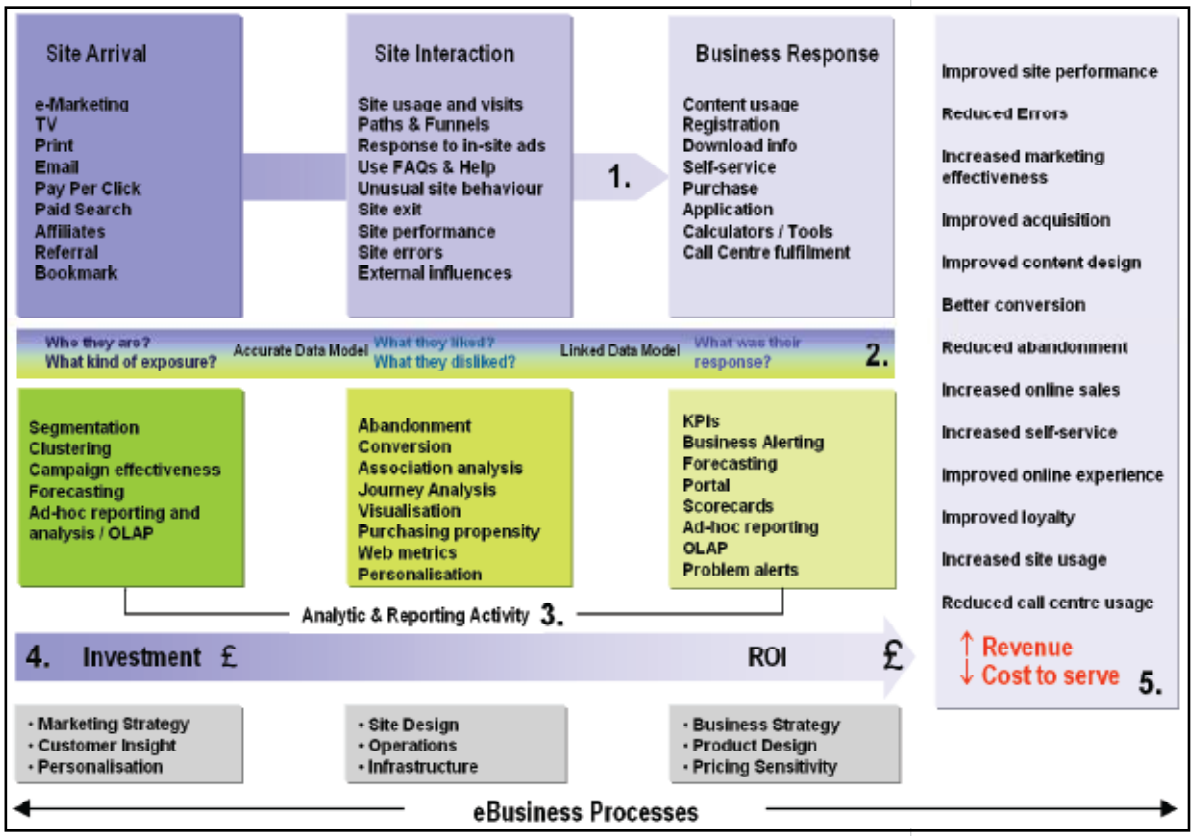

This approach provides the ability to measure, report on and forecast all aspects of customer interactions online, to quantify which aspects of their interactions are potentially underperforming and, importantly, what impact improvements would deliver in financial terms. For example, you could determine what degree of improvement in pay per click success, as opposed to an improvement in a product application process, is more likely to result in increased online recruitment and offline fulfilment.

Comprehensive supporting data model

Data accuracy and data richness are key aspects with respect to representing customer behaviour and their experience online as realistically as possible. The approach described here is designed to provide a highly realistic view of site interaction and its outcome(s), entirely from the customer's perspective. In addition, by incorporating other data sources such as customer demographic information and transactions, organisations develop a far greater breadth and depth of insight into customers' online behaviour than has previously been possible.

Solution schematic

This schematic shown in Figure 2 below represents a suite of integrated ebusiness intelligence reporting and analysis tools, supported by a scalable decision support platform in association with client-side data collection and normalisation.

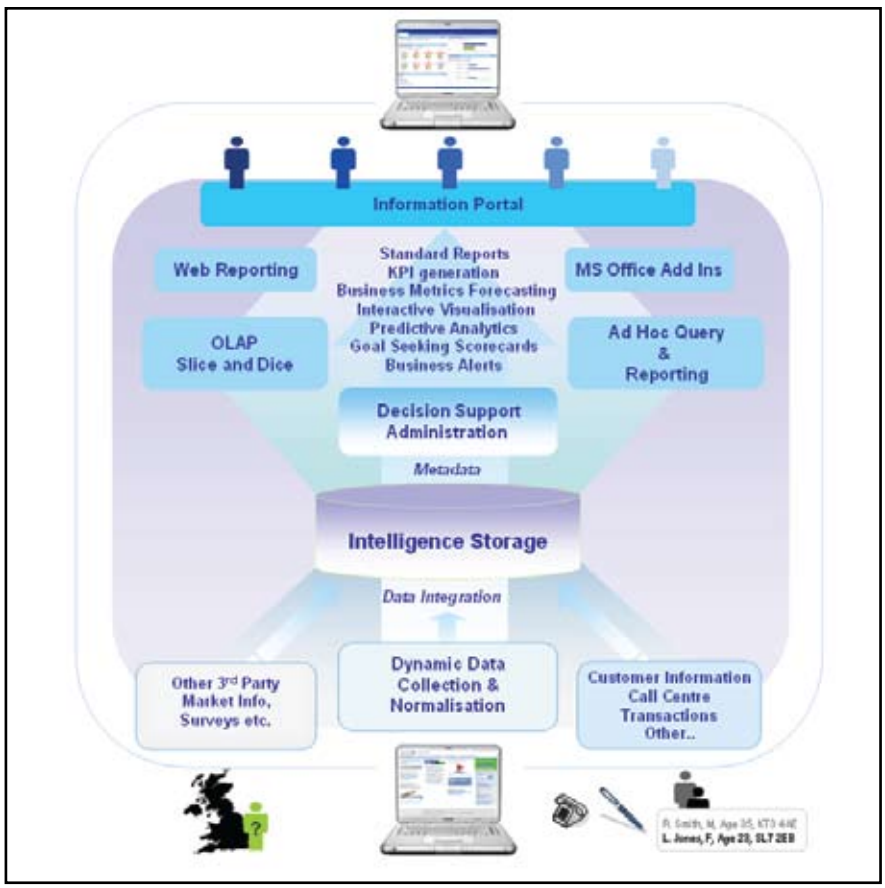

Figure 2 – Solution schematic

The objective, and real-life outcome, is to transform a single source of raw web interaction and site performance data into actionable intelligence. Crucially, all information required is delivered via a single access point, an information portal. This is designed for information consumers and decision makers at multiple levels who need easy access to intelligence that is filtered for their interests and also adheres to their security privileges – as illustrated in Figure 3.

The objective is to transform a single source of raw web interaction and site performance data into actionable intelligence.

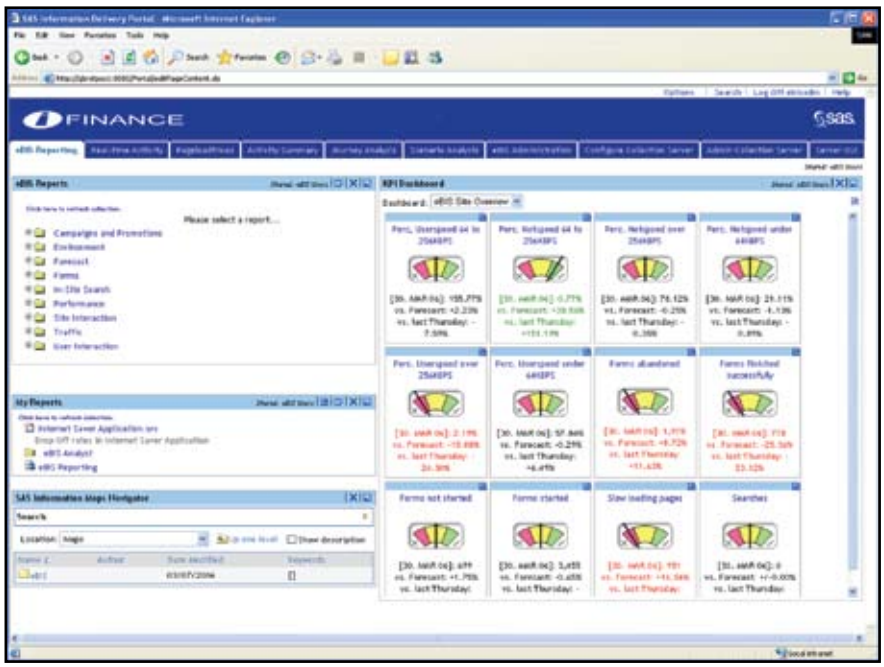

Figure 3 – The 'gateway' to all analysis and reporting: individuals create their own dashboards.

Enterprise intelligence platform

This solution is based on the SAS® Enterprise Intelligence Platform, which is designed to integrate individual technology components into a single, unified system. The result is an information flow that transcends organisational silos, diverse platforms and niche tools, delivering actionable business insights. The platform includes: Data Integration; Intelligence Storage; Analytics; and Business Intelligence.

All components and services are managed from a single point, reducing the administrative effort for maintenance of applications, users and security. Any other data from sources inside and outside the business, from all channels, can be easily incorporated. For example, this might cover customer product propensities, customer profitability data, offline transaction fulfilment data, and customer socio-demographic information.

Client side dynamic data collection

1. *Data accuracy and completeness*
Using the approach described here, data is captured from the users' browser ensuring the data is intrinsically accurate and complete. The system's lack of reliance on Java or Plug-ins means that virtually every action in every page from every visitor is available for collection. The system will gather data from script-enabled browsers from PDA to Digital TV, and will capture, classify and track every session whatever its source.

2. *Dynamic capture*
A single data collection 'Insert' is added to web sites using either in-house content management systems, server-side includes. This means it is the least invasive, maintenance free and fast to implement data collection method available. Initial reports covering navigation, performance and traffic are available as soon as the collection starts.

3. *Easy configuration*
Because of the system's simple configuration via wizards or XML files, standard installations and configurations of typical sites can be accomplished within a single day.

4. *Infrastructure independence*
The data collection system is independent of the way a web site is structured or built; the use of JSP, ASP, XML, static or dynamic HTML are all supported, as are SSL pages. At the same time, a Custom Event facility allows pages using Flash, .NET sparkle, Java or C# client-side scripting solutions to generate application-specific events for inclusion in the session record.

5. *Normalisation*
The normalisation process undertakes the processing of raw collected 'event' data into processed 'results' and detailed data store databases. This data is surfaced as business information via the interfaces described previously. Conversion of raw event data to these results is accomplished by:

- Models – a range of pre-built behavioural and functional models through which the raw events are processed to extract the valuable/significant information that is required for subsequent analysis into data objects.
- Patterns – a set of pre-built patterns process data from the model objects and then write the results and detailed data-store databases. They also provide an open-API for further custom development to provide an open-ended set of functionality.
- Classifiers – classifying a visiting session based on behaviour or other criteria, including information from the model objects or features of the raw data (events); classifiers are used to efficiently characterise the sessions they are processing. Again the system provides a suite of pre-built classifiers for the most common applications, with an open API to support extension by customers.
- Aliases – a set of in-built aliases can be used to perform translation of events, URLs or other captured data; they can be used for many purposes but, commonly, are used to translate URLs into meaningful names and groups for reporting. Again, open API's are provided.

6. *Administration*
The collection and normalisation processes, providing complete remote administration and monitoring interfaces, allow complete service management and delivery of high availability services at minimum cost.

Assured data quality

Data quality can be the biggest obstacle to achieving ROI from sales and marketing activities. SAS is one of the few vendors to provide an end-to-end integrated infrastructure that fully addresses quality issues by integrating data extraction, transformation and loading (ETL) and data cleansing with business intelligence and front-end information delivery. When SAS processes are combined with accurate interaction data provided by Dynamic Data Collection™ technology, data quality is assured.

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Addressing different user types: comprehensive portal approach

Organisations employ many different people, with varying data and technical skills, across different business disciplines – all with different information needs. These needs can be met through targeted, role-based interfaces that ensure all users can access, manage and present information in a way that is easy and appropriate to them: for groups ranging from senior executives, decision makers and power users to information consumers, business analysts and IT users.

A concept called 'information mapping' is used to translate source data table structures into organisation-specific business terms. At the same time, power users still have access to underlying data for more sophisticated ad hoc queries and analysis. Capabilities available range from self-service analysis, forecasting and configurable reporting to guided analysis, while Microsoft® Office integration enables users to leverage the power of customer experience analytics using familiar desktop tools, directly from Microsoft Office (MS Word, Excel and PowerPoint) via integrated menus and toolbars.

Proven analytics

SAS for Customer Experience Analytics works seamlessly with other proven customer intelligence solutions provided by SAS, helping close the loop in multi-channel sales and marketing activities. These solutions include:

- Behavioural filtering
- Campaign management
- Customer acquisition
- Customer insight
- Customer profitability
- Customer segmentation
- Digital marketing
- Fraud detection
- Interaction management
- Marketing optimisation and e-mail
- Response triggering.

Forecasting

For a customer experience analytics solution to deliver true value, it has to be forward-looking and provide powerful predictive capabilities, including analytical scorecards and goal seeking analysis. Such scorecards are designed to show the performance and forecasted values of all key metrics influencing the KPIs that drive an Internet business. Every business metric is measured against a forecasted value. The goal-seeking component shows how increases or decreases in metrics will affect the value of the target business objective, for example increasing online loan sales.

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OLAP slice and dice

The integrated OLAP viewer is a data exploration tool that allows greater insight into increasing levels of detail. The user can link to graphs to gain greater insight into trends, traffic lighted exceptions, and opportunities.

Powerful reporting

Web-based, easy to use report interfaces should be specifically designed for general users who want to view, design and share reports through the web. Such a capability empowers decision makers to be self-sufficient, driving faster and more focused business decisions while freeing IT staff, minimising administrative overheads and maximising resource utilisation. Capabilities required typically include:

- Standard and one-off reports
- The ability to organise reports in hierarchical folders for easy navigation (including search) and consumption and store in private or shared folders
- Access to OLAP slice and dice reporting
- MS Office integration
- Role-based wizard-driven report authoring and design
- Conditional highlighting to define exceptions.

Interactive clickstream visualisation

Two types of clickstream analysis – Interactive Funnels and Interactive Pathing – enable you to explore all aspects of customer interaction across all sites. Any session related attribute (customer, customer segment, company, affiliate, page or event, for example) can be used to subset funnels and paths.

Interactive Funnels: an interactive funnel report provides a detailed description of any sequential process on your web sites, such as a sequence of web pages visited or events completed (e.g. registration, product applications or calculator interaction). It provides the ability to define a series of pages or events to track usage through in an ad hoc fashion.

Interactive Pathing: this provides patterns across all aspects of the visitor journey on your web sites – across multiple sites and across brochure and secure sites. It provides the ability to determine the most effective paths from any start point, end point, or between any two points.

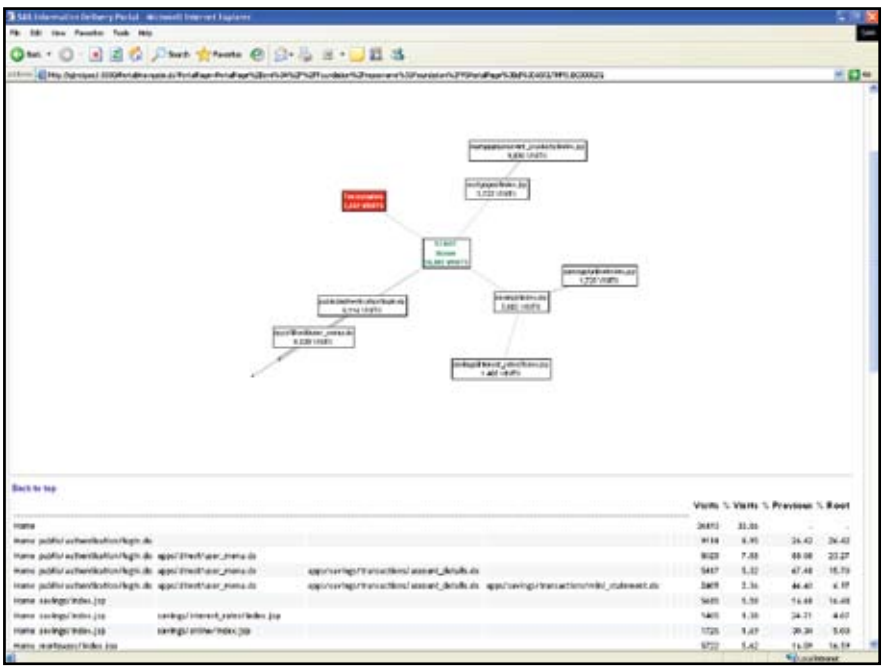

Figure 4 – Example of the tree viewer output of customer site journeys

Capabilities include:

- Interactive, hierarchical tree viewer of the directory and associated pages or events
- Analytically removes noise of casual viewers to see how people are truly navigating the site, identifying drop-offs and pay-offs from event to event
- View cumulative conversion information through a series of defined events and local conversion from event to event, for example registration pages and product applications
- Tabular output provided within the visual interaction.

Ad hoc query and reporting

Figure 5 provides an example of an ad hoc generated report, enabled via a Windows client point and click interface. Interactive dialog boxes are used to guide users through a wide variety of query and reporting tasks. Reports can be distributed on a regular and/or periodic basis to targeted groups of users.

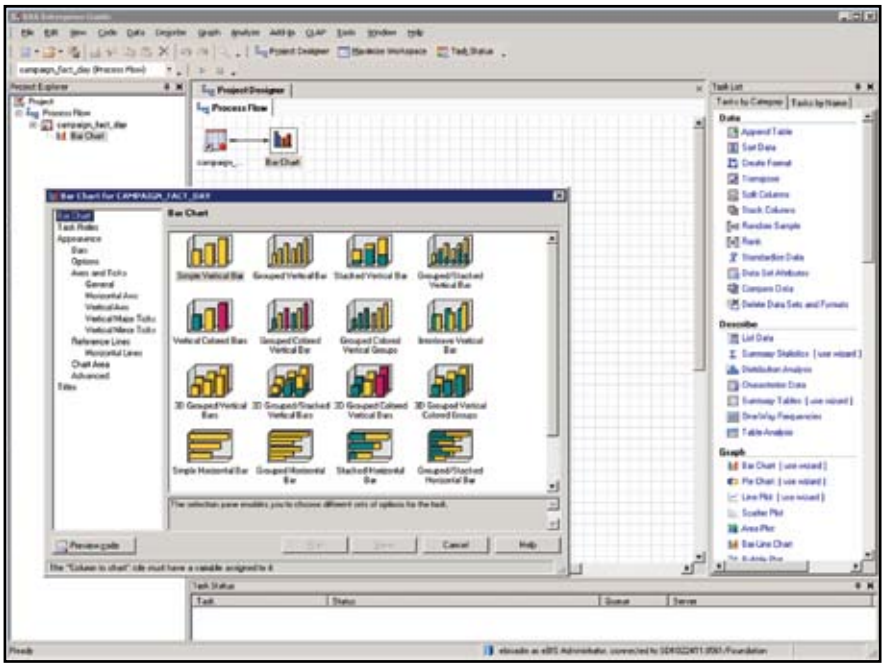

Figure 5 – Powerful ad hoc reporting and analysis

In reporting, typical capabilities include:

- Results delivered in HTML, RTF, text and PDF format
- An intuitive process flow diagram and access to information maps to guide users
- Multiple wizard-driven, descriptive reports and analysis
- Powerful graphical query builder
- Seamless link to OLAP slice and dice
- Report scheduling, distribution and sharing.

Business alerts

To provide actionable insights, flexible business alerts available should range from simple traffic lighting in dashboards and scorecards, to real-time alerts of recorded metrics that are out of a specified or forecasted range. It should also be possible to issue alerts using a variety of mechanisms such as e-mail, alert 'portlets' within the information portal and SMS (text) messaging for real-time operational alerts.

Real-time decisions

Due to the dynamic and rapid response of online interactions, real-time interaction decisions can be used to influence online behaviour. For example, tailored content (pages, banners or other content) based upon individual customer, customer segment or anonymous online behaviour, detected by your solution could be delivered to influence the customer's interaction. It is also important that your chosen platform includes interoperability standards that enable you exploit other technologies (e.g. CMS systems) plus middleware to drive these responses.

To drive forward a multi-channel strategy, it is also essential to have the ability to track customer behaviour across multiple touchpoints in real-time, regardless of channel platform. A customer's current behaviour can be compared to that individual's previous behaviour, in order to identify a change in the way they are interacting with a given touchpoint. For example, if a high value customer's regular online viewing of statements ceases or they make a large value online balance transfer, this would indicate a change of circumstance that could be addressed by some form of appropriate communication. The type of communication can also be optimised, for example a particular customer segment may respond well to a promotion when logged-in to secure Internet banking while others may respond better to personalised e-mail.

Decision support administration

With a decision support administration console included in the solution, you have a single point of control for performing all administrative tasks, with a wizard-driven approach that guides users through tasks including:

- Designating access to resources by users or groups of users and associated attributes
- Managing data libraries and data security
- A single point of control for all business data descriptions
- Integration with other in-house applications.

To drive forward a multi-channel strategy, it is also essential to have the ability to track customer behaviour across multiple touchpoints in real-time, regardless of channel platform.

Summary

From visitor arrival through web site interaction to the business response, SAS for Customer Experience Analytics is designed to enable organisations to tailor every customer contact and optimise value at every opportunity. Benefits gained include the ability to:

- Understand the complete customer experience and drive targeted action to maximise ROI across all channels
- Acquire more customers, improve relevance, minimise attrition, improve conversion rates and increase revenue – including the ability to build optimal revenue from different customer groups and channels
- Bring down costs by reducing cost per sale and cost to serve
- Achieve assured completeness, accuracy and quality for all data gained from your online sales presence
- Learn from past experiences, both successes and failures, and forecast customer behaviour to tailor offers and plan more targeted campaigns
- Detect fraudulent activity and so plan appropriate action
- Access and use all other data to support a true multi-channel strategy: for example, if bricks-and-mortar outlets or call centres work better in some areas, you can further improve revenue and reduce costs by driving relevant visitors to those channels.

Moreover, this approach has already been implemented and proven in demanding ebusiness environments. In short, technology is now available that enables organisations to take an integrated view of all of their customers' transactions. Feedback includes:

Retail banking group: "*The SAS solution is impressive and seems to provide reliable and incredibly rich data capture with the ability to easily turn this data into management information that enables all levels and functions in the organisation to run the business more effectively*." – Head of Online Banking

Online UK bank: "*This is an excellent solution – there's nothing else like it out there*." – Head of e-Channel Marketing

Major telecoms retailer: "*SAS has a credible e-business intelligence approach and has moved web analysis from a specific, tunnel vision affair in the domain of e-Marketers and Site Designers to one of general eBusiness Intelligence across the organisation – meaning that a company's website becomes another area of activity to look at in the context of the entire enterprise rather than something in isolation*."

This approach has already been implemented and proven in demanding ebusiness environments.

Key advantages

Dynamic Data Collection™

- Significant risk reduction – by eliminating the need for traditional tagging methods that are prone to error

- Significant cost saving in both implementation and maintenance – single, identical and once-only install of a small Java script client-side adaptor
- Works against all secure, dynamic and framed sites with any type of content engine or server architecture
- Can track visitor activity across all an organisation's sites
- Auto-discovery of all content delivered to every visitor
- Automated production of behavioural and functional analysis, avoiding the need to deal with raw event data for many applications.

Comprehensive portal delivery of insight and intelligence

- Simple interface – users can access, manage and present information in a way that is easy and appropriate to them
- Configurable and extensible reporting
- Next generation capabilities for more detailed analyses – goal seeking and forecasting, for example
- Business alerting via SMS, web, email, etc. to changed operational activities, for example slow pages.

Ability to seamlessly incorporate and use additional data sources

Existing customer information can easily be made available to reports, for example inclusion of customer product propensities, customer profitability data, offline transaction fulfilment data and customer socio-demographic information.

Real-time decisions, closed loop marketing and integration with other customer intelligence solutions

- Real-time data collection
- Behavioural filtering
- Response triggering
- Customer acquisition
- Customer insight
- Campaign management
- Customer profitability
- Fraud detection
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APPENDIX 1 – DATA COLLECTION STRATEGY

A comparison between Dynamic Data Collection™ and other data collection methods.

KEY
- Problem/Disadvantage
- Benefit/Advantage
- Neutral/dependent on application

ACTIVITY	LOGGERS/SNIFFERS	TAGGING	DYNAMIC COLLECTION
	HYBRID		
Tag Insertion	N/A	While some solutions offer solutions which are labelled 'single tag' or 'auto-insertion' they ALL require customisation/variables to implement campaign, basket, e-commerce, form, search or page identification… this cost is often overlooked or underestimated. Deployments typically start at three person-weeks, and extend to many months.	One insert, server or client-side – job done. Typical deployment – initial results within 30 minutes, complete e-commerce deployment in single day.
Tag Maintenance	N/A	The problems of Tag insertion are accentuated when you look at lifetime costs, as they become an ongoing expense. Each new campaign or site re-design requires re-tagging. Typically tagging for a new campaign deployment is 2-3 person-weeks for a full e-commerce solution for a typical site	One single tag that never changes. The tag can be automatically included by using a server-side include (SSI) or a content management system. Collection can be deployed in minutes, and there is no further tagging work to be done.
Analysis, Mining and Classification	Because server logs are analysed and turned into report data, they can be re-analysed using (for example) different report parameters (such as user groups or campaign sources). However lack of strong session identity makes visit classification unreliable.	These systems rely on tag variables to classify user groups, campaign sources or other parameters when a page is loaded/compiled. (you see this where tags have 'variables' or 'slots' that you can set). This means that it is often impossible to re-analyse the data, because the tag has already determined classification of that page or session when it was put in the page.	Dynamic Collection avoids this problem by making NO assumptions itself. All the relevant attributes of the page or session are sent to the data server, and can consequently be re-analysed using different parameters at any time.
Raw Data or Results	Raw Log data captured but no in-page or 'activity' data is available. So detailed analysis is not possible.	Pre-configured tags mean that 'results' are collected not the raw data, therefore re-analysis is impossible.	Raw data on pages, in-page data and activity is gathered so re-analysis always possible.
Campaign Tracking	Limited due to problems in linking user behaviour to campaign source. Also impacted by caching problems.	Can provide a full information set, but require specific tagging, making deployment costly. Also problems when 3rd party cookies are used or when multiple campaigns use some landing or purchase pages.	Complete implementation – every arriving session or visitor is attributed to campaign based on automated business rules. As a session progresses relevant events are attributed to campaigns, providing profitability data, audience data, etc. Dynamic Collection reports on the documents own referring URL rather than that of the HTTP header (which is what personal firewalls often block), which provides much more accurate referral/campaign data.

Caching	When pages are cached, either by the local client browser or by an intermediate ISP, no record is received by the server. This can result in significant undercounting, particularly as those pages most likely to be cached by ISP caches are those that are requested most often. Cache Busting techniques improve accuracy but impact user/site performance.	These solutions result in non-cacheable requests being sent to either the web-server or to a separate data server for analysis. This enables 'true' session tracking. Solutions using cache busting to ensure counting impact page load times and user performance.	Dynamic Collection solutions work much like tagging solutions except that, because they are part of the page, they do not require third party cookies to enable true session tracking or need to use Cache Busting. Also the fact that the insert is static and common on all pages means that it is cached reducing monitoring overhead.
Cookies	Cookie data can be gathered. It will often be necessary to implement cookies to perform sessioning. This can be a problem for some visitors.	When using a separate data server, third-party cookies are used to track unique and returning visitors. This introduces inaccuracy caused by end-users not allowing third-party persistent cookies.	First-party cookies in the documents own domain can be used to determine unique and returning visitors. The systems do not require permanent cookies to operate successfully, so good for sensitive sites and audiences.
Firewall Issues	Logging solutions do not have issues with firewalls.	Firewalls can remove or restrict tags and can mask referring URL data.	Dynamic Collection is part of the page and operates within the domain of the page. There is no requirement for 3rd party reference, so they are untouched by firewalls.
In-page Errors	Cannot provide information about pages that go wrong once they arrive (such as script errors that occur in the page).	Do not report in-page script errors..	Dynamic Collection solutions report on in-page errors, providing full information on error, location and preceding event to help design teams in analysis.
End-user Performance	Logging solutions can track server bandwidth usage and will report server performance, but cannot report client performance.	Tagging and hybrid solutions do not typically report on performance.	Dynamic Collection solutions can report on the actual performance of the site as experienced by the end-user, 'from click to receipt'.
Spiders and Robots	Logging solutions track robots and spiders. This provides information on search engine activity, but also confuses real and robot visitors and results in over counting.	Typically do not track spiders and robots	Typically do not track spiders and robots.
Broken Links	Logging solutions provide information about requested pages that are unfulfilled (also know as '404 errors').	Tagging and hybrid solutions do not typically report broken link reporting without explicit custom tagging	Report internal and external broken links (via site's 404 page). Using standard/default insert.
Identification of pages from in-page Content	Impossible.	Impossible or requires more custom tags.	Automatic.
Flash and Rich Content Monitoring	Only page load.	Page load automatic. Tracking of in-movie activities via script inclusion.	Page load, unload and performance all automatic. Tracking of in-movie activities via script inclusion.
Dynamic Page Support	No dynamic page support – single URL sites impossible to analyse.	No Dynamic content support without explicit tagging.	Automated capture of dynamic content, no explicit tagging required. Support for single URL sites via in-page content.
Secure Pages / Content	Automatic logging of page load only.	No support also risk of insecure access to collected data sent via 'IMG' tags.	Automated encryption of all collected data and SSL encryption for secure pages, automated privacy rules to control mixed mode pages and complete collection control to avoid collection of sensitive information as required.
Browser Support	Not important – no browser data available.	Systems vary – some are specific to browser type, and some require Java support in the client to operate.	Dynamic Collection uses simple JavaScript to operate and is tested and targeted to support the broadest range of browsers – if Java environments are available then this will be used to advantage.
Session Replay	No Session replay of in-page events, some 'slide-show' implementations, no support for dynamic content.	No Session replay – some 'slide-show' implementations, no support for dynamic content.	Session Replay possible even from dynamic sites, using captured page content and captured in-page data.

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