Web Stress

A Wake Up Call for European Business

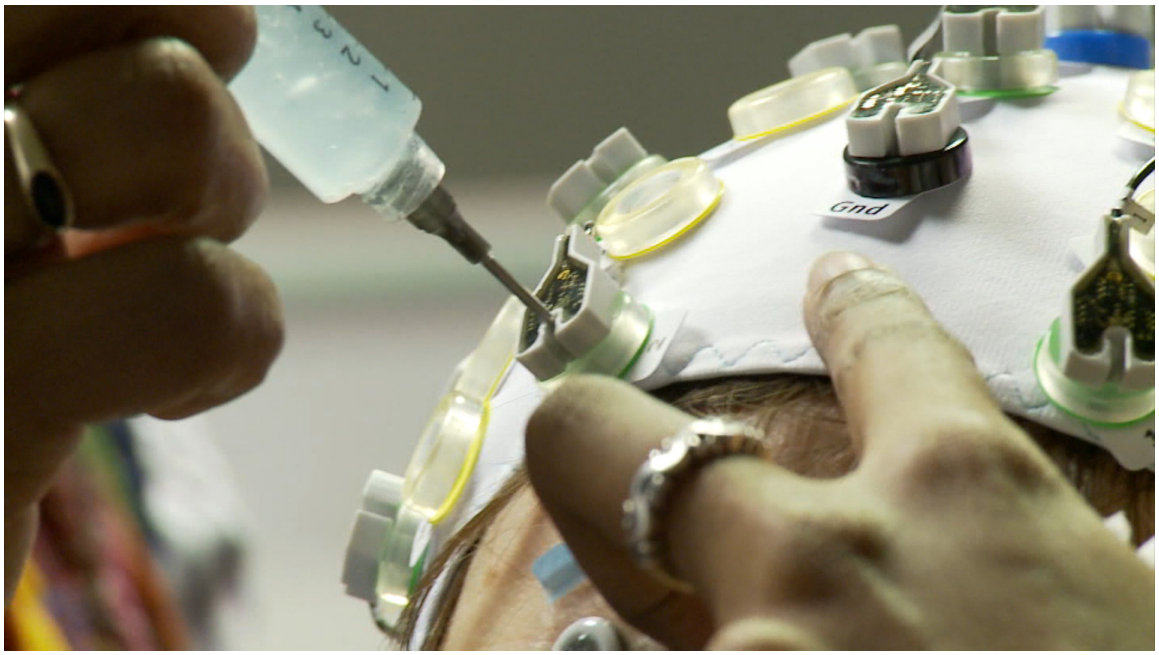
Study conducted by Foviance on behalf of CA

February 2010

foviance

Transforming
IT Management

Contents



Purpose of Study

As online shopping is predicted to grow in Europe to a record 323 billion euros by 2011, or an annual increase of 25% since 2007*, online retailers must deliver a flawless online experience if they are going to retain customers, attract new ones and ultimately survive and flourish during the economic recovery. The ability to buy products and services with just a few key strokes or mouse clicks and without the hassle of crowded shopping centers will continue to accelerate.

As part of CA's mission to help businesses understand how to ensure a good online customer experience, CA has partnered with Foviance - a leading customer experience consultancy - to explore 'Web Stress' in relation to application performance, and its impact on consumer behaviour and buying habits.

This white paper describes the CA 2010 Web Stress Experiment in more detail, provides insight into the impact 'Web Stress' has on consumers, and offers some advice on how companies can reduce 'Web Stress' and provide customers with the best possible online experience.

* BizReport : Ecommerce

Online retailers must deliver a flawless online experience if they are going to retain customers, attract new ones and ultimately survive and flourish during the economic recovery

Executive Summary

In January and February 2010 Foviance, on behalf of CA EMEA, conducted a series of experiments in laboratories at Glasgow Caledonian University. Thirteen volunteers were wired up to sophisticated neurological and physiological testing equipment, including an EEG (Electroencephalography) cap which was used to monitor brain wave activity. They then carried out a series of everyday online tasks such as searching for and purchasing a laptop PC and travel insurance.

The stress levels of volunteers who took part in the study rose significantly when they were confronted with a poor online shopping experience, proving the existence of 'Web Stress'. Brain wave analysis from the experiment revealed that participants had to concentrate up to 50% more when using badly performing websites, while EOG technology* and behavioural analysis of the subjects also revealed greater agitation and stress in these periods.

The experiment builds on the CA 2009 Web Stress Index which found that more than three quarters (77%) of European consumers blame either website owner or the website host (which is in any case chosen by the website owner) when an online application fails. It also revealed that if consumers encounter problems online, 40% will go to a rival website and 37% will abandon the transaction entirely. Only 18% said they would report a problem to a company, which means organisations need to have their own measures in place to understand how their website is performing from the customer's point of view.

* In many visual experiments, EOG equipment is used to make sure that the subject's gaze is not wandering and that they are fixating on the target.

As a result of CA 2010 Web Stress Experiment and CA 2009 Web Stress Index, CA is calling for European businesses to wake-up to 'Web Stress'. Organisations need to focus on giving their customers the best possible online experience in order to retain customers, attract new ones and prosper during the economic recovery.

Experiment Methodology

Measuring the Customer Experience

Foviance used a combination of neurological measurements and behavioural analysis to evaluate the reactions of the experiment's participants when undertaking web transactions.

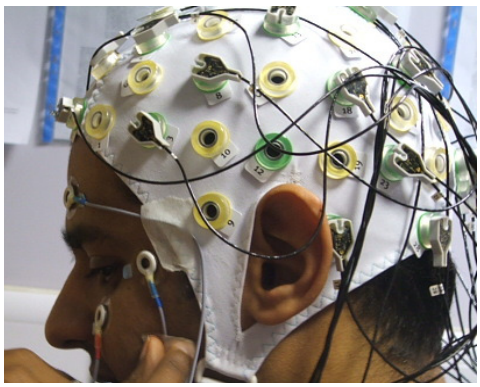
Electroencephalography (EEG) analysis

The lead technology of the experiment was Electroencephalography (EEG), a technique used to understand the user experience. EEG provides a measurement of the brain's Alpha waves, which can be an indicator of how relaxed a person is. A high level of Alpha waves indicates that somebody is extremely relaxed or asleep. Low Alpha levels are a good indication that somebody is alert and concentrating on what they are doing, and may be used as markers of periods of stress. Each of the participants wore a special EEG cap which positioned 32 electrodes on their head. This allowed any changes in brain activity to be measured, millisecond by millisecond. A modified montage of the International 10-20 system for electrode placement was used on each participant to ensure comparison of results within the group.

The EEGs collected were continuous and changing every millisecond. To enable some quantification of the Alpha waves, EEGs were subjected to Fast Fourier Transforms (FFTs). The EEGs were segmented into 3 blocks: pre, during and post task activity. The pre and post task conditions were used as controls.

Electrooculograph (EOG) analysis

As well as looking at brain activity, the experiment used Electrooculograph (EOG) technology to track eye movements and facial muscle movements. This technology uses four sensors fixed to the face (one on the temple at each side of the head, and one above the eyebrow and another below the eye on the same side of the face).



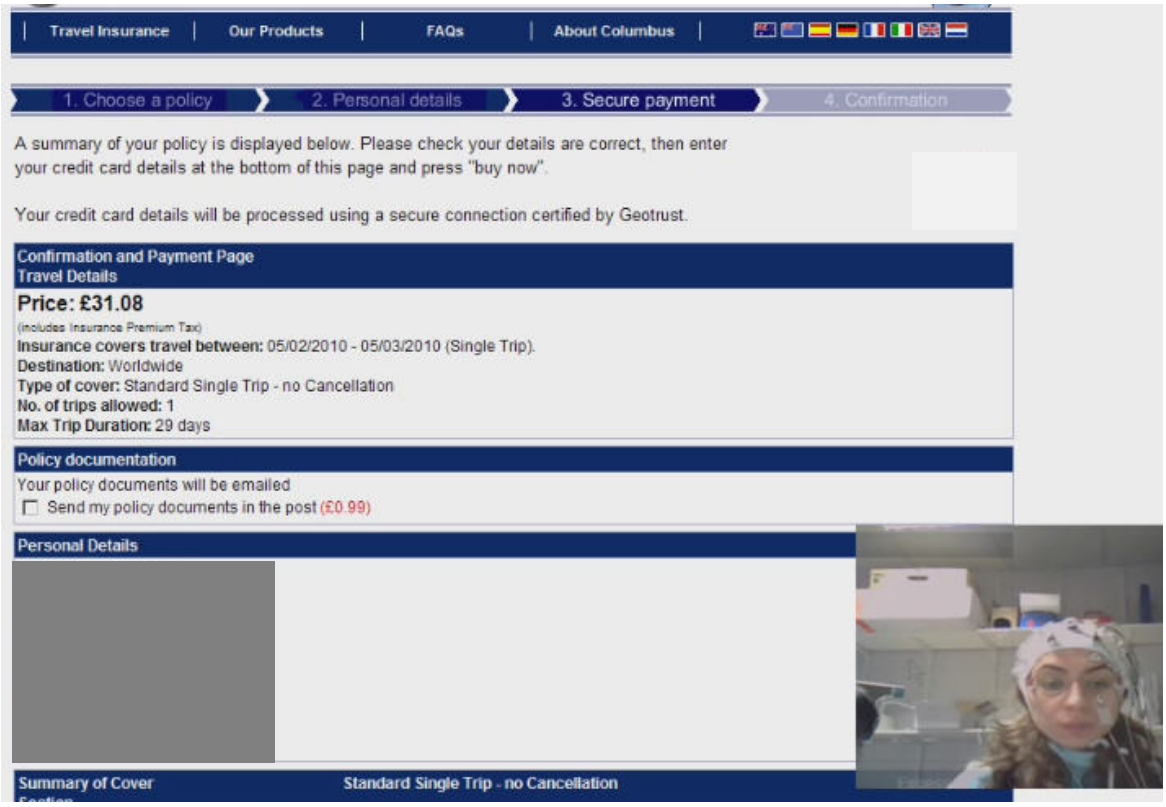
EOG sensors are fitted to the face of a participant who is already wearing the EEG cap

Experiment Methodology

Behavioural analysis

The participants' faces were filmed using cameras embedded into the PCs they were using for their online tasks. After the tasks were completed, the video footage for each participant was analysed by a behavioural psychologist to assess when they were exhibiting outward signs of agitation and stress. The de facto standard behavioural software Morae was used.

All of the neurological, physiological and behavioural outputs were recorded in real time, aggregated and time-stamped. This enabled the data to be compared at the same points in the participants' online journeys.



Participant filmed and the corresponding online screen activity captured together throughout the task.

When participants had finished their online tasks, they each completed a post-evaluation questionnaire about whether tasks were difficult or stressful to complete. This provided additional qualitative insight into how they felt when interacting with the sites to complement the neurological and behavioural data.

Experiment Methodology

The Online Tasks

Volunteers completed the same two online activities. For the retail task, they had to find and buy a laptop on a leading e-commerce site. For the insurance task, they had to find and buy personal travel insurance on an insurance website.

Participants completed tasks using a 5Mb web connection, or with a connection that had been artificially throttled to 2Mb using Soft Perfect software. Slowing down the Internet connection allowed Foviance to simulate the user experience of an unresponsive website hampered by poorly performing applications.

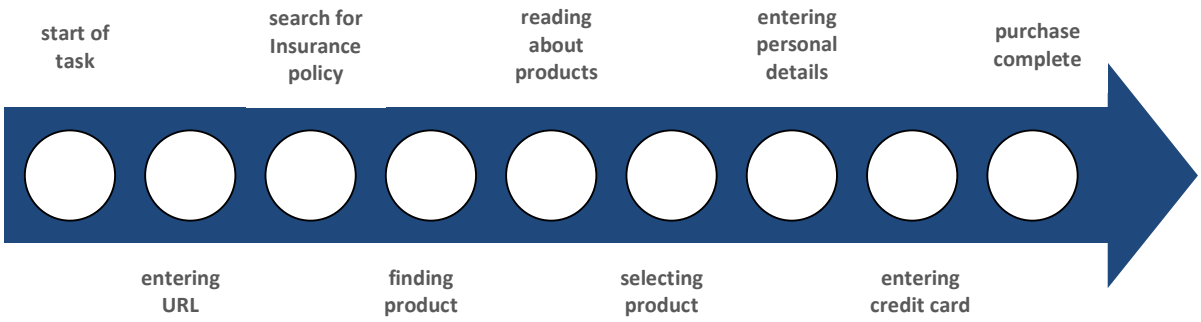
The Participants

There were eight female and five male participants, aged between 22 and 42. They were from the UK, Italy, Spain, France, and Germany.

Results

The experiment proved that the stress levels of volunteers rose significantly when they encountered a poor online shopping experience (caused by the throttled Internet connection).

For example, the insurance task typically followed this workflow:



Results – Underperforming (throttled) Web Site

A high level of Alpha waves indicates that somebody is extremely relaxed or asleep. Low Alpha levels are a good indication that somebody is alert and concentrating on what they are doing, and may be used as markers of periods of stress. Consumers experience 'Web Stress' when online and require 50% more concentration when using badly performing websites

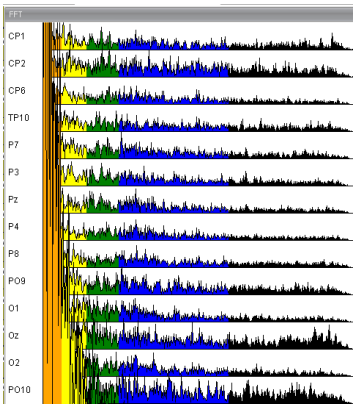
The EEG data was left to record for several minutes after the end of the test, and it took up to a minute for participants' Alpha waves to return to a relaxed state following a bout of web stress.

Graph 1 the period up until the participant began trying to find the product

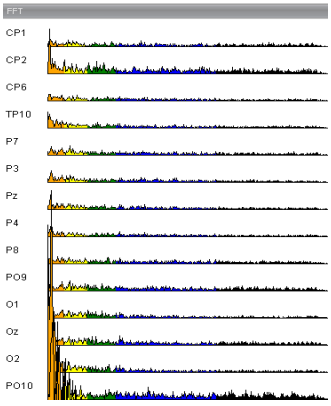
Graph 2 the main phase of the task*

Graph 3 EEG data after the credit card information had been entered.

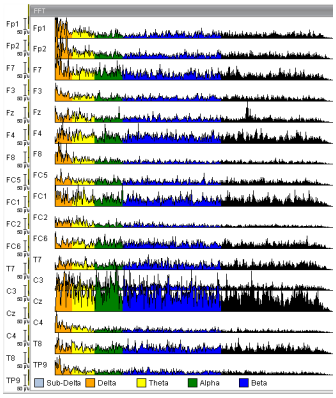
Graph 1



Graph 2



Graph 3



*The data above shows that Alpha waves depressed by as much as 50% during the main task when the website was throttled to be less responsive. This showed that greater levels of concentration were required to complete the same simple tasks, which indicated participants were under greater levels of stress when the website was slowed down. At the same time, the behavioural analysis showed clear signs of agitation.

Feedback from particpants

"The website was very slow so it took a really long time to load the book preview."
"What I liked least about the site is its speed."

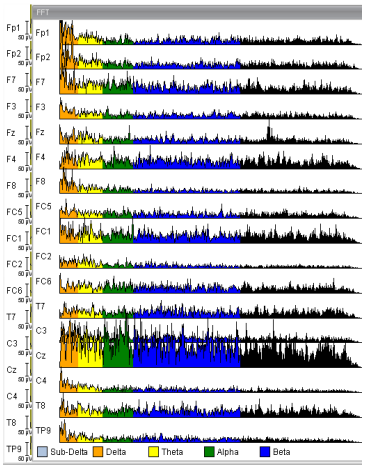
When asked what they liked most and least about the websites they were asked to use for the study, participants frequently cited their speed as a top concern.

Results - Un-throttled Web Site

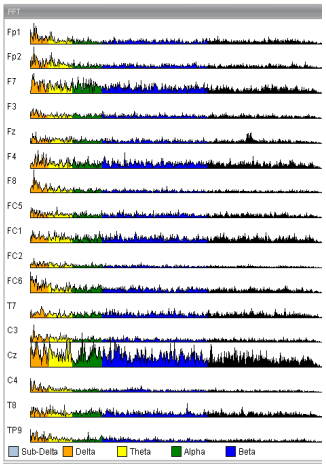
Acceptable Performance (unthrottled) Web Site

The following three graphs show the EEG output for one participant during this task, using an unthrottled website. Graph 1 shows the period up until the participant began trying to find the product; Graph 2 shows the main phase of the task; and Graph 3 shows the EEG data after the credit card information had been entered.

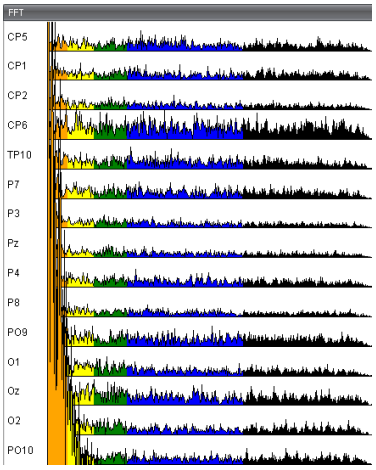
Graph 1



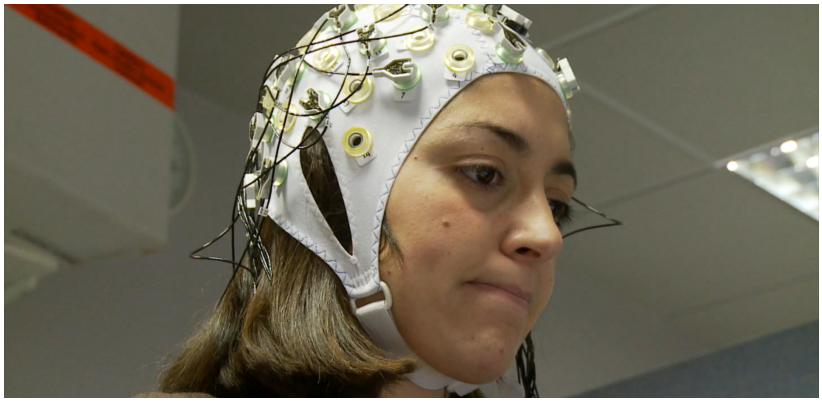
Graph 2



Graph 3



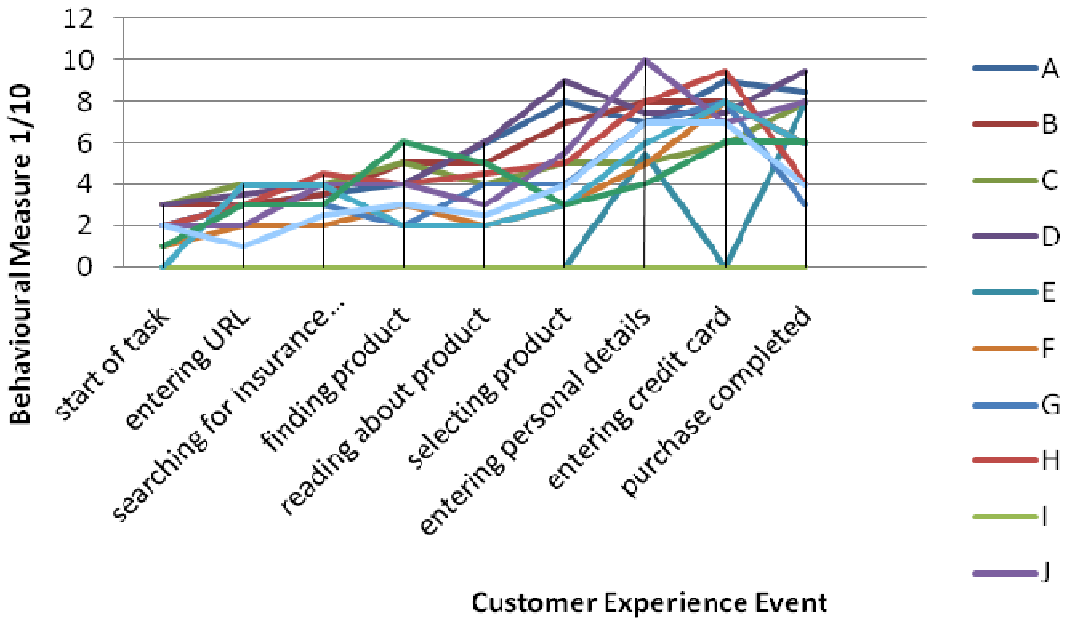
It is worth noting that the speed difference was caused by artificially limiting the internet connection, but it became a defining characteristic of the websites visited in the minds of some participants. People think of a website through their experience of it, without much regard to any externalities that might be causing those problems. Most businesses have no insight into the actual speed with which customers experience their web applications because they test their website at server level. It is essential that companies have a clear understanding of how their website applications perform from the customer's perspective, and that these are optimised to eliminate web stress.



Results

Level of difficulty

Although different users experience difficulty at different points of the customer journey, some similarities were seen across all participants. Plotting of the data reveals that customers tend to experience more stress as they progress through the shopping process of finding products, selecting them, entering their personal information and concluding the sale. This graph shows the insurance task but similar results were in the retail task too.



Level of difficulty assessed for each participant

Blending this behavioural analysis with the data from the EEG and EOG testing, CA and Foviance identified two points in the sales cycle where people are most likely to experience heightened levels of stress – the 'search' and 'checkout' stages. Both of these are crucial to a good customer experience.

The video footage of the tests was studied by a behavioural psychologist, who assessed how much difficulty and stress each participant exhibited throughout their online journey. This analysis identified which stages of the sales cycle were causing users the most frustration.

Results

Search as a pressure point

For most websites, search is one of the primary navigation features. It enables customers to find products they need quickly, and provides an opportunity for retailers to suggest other products they might like to try based on an understanding of what they are already looking for. When the product range is vast, or where the product itself is complex, good search functionality is vital if customers are to serve themselves and find answers to all their queries.

In the experiment, participants were visibly frustrated by inadequacies in search engines, which made it difficult for them to complete the tasks.

Stress

Heightened levels of concentration and stress were also exhibited towards the end of the shopping process, when customers were entering their personal information and payment details. Participant comments corroborated the data.

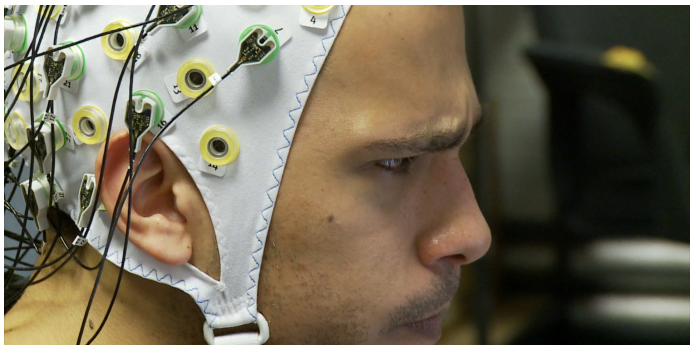
"I was unable to find the product"

"Logging in and using the credit card to pay was not as straightforward as I had expected"

"If it stresses me, I'm less likely to use that website again"

" If it doesn't work, I move on"

"I thought the site was difficult to use when it didn't accept my address"



For the purposes of the experiment, participants persevered and completed the purchase. However, in reality, more than three quarters of customers will abandon the site**.

** The CA 2009 Web Stress Index

Conclusions

The findings of this neurological and behavioural study should act as a wake-up call to European businesses.

1. 'Web stress' exists, and it is most acute when web applications are underperforming. Consumers think of a website through their experience of it and if their experience is negative, they blame the website owner, regardless of the externalities that might impact its performance and problems.

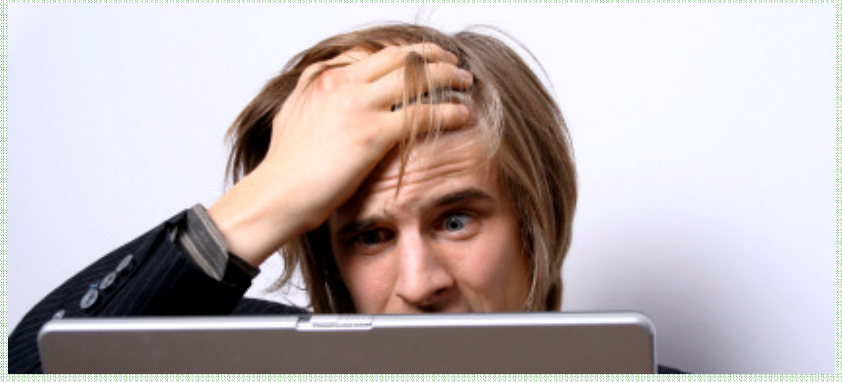
2. Not only does 'Web Stress' impact brand reputation and loyalty, but it has a huge impact on sales - more than three quarters of consumers will go to a rival site or abandon the transaction entirely if they encounter problems.

3. The majority of businesses have no real insight into how customers are experiencing their web site and its supporting web applications.

4. Organisations need an Application Performance Management (APM) solution which provides critical visibility into the user experience as well as proactively managing the performance and availability of these applications.

5. If companies fail to reduce the 'web stress' associated with their web channel, they risk losing customers and sales.

6. Those that tackle the issue, and deliver customers with a fulfilling online experience, will prosper from the growth of ecommerce that is a defining characteristic of the global economy's recovery.



Tips and Advice to reduce the impact of Web Stress

CA, the world's leading independent IT management software company and market-leader in APM solutions, and Foviance, the leading online customer experience consultancy, combine their knowledge to share some tips for reducing 'Web Stress':

1. Without visibility into how users experience your on-line service, it is extremely difficult to improve the online conversion-rate. Minimize customers' stress, and maximize their satisfaction by placing comprehensive visibility of their experiences, and the associated transaction performance, at the center of your service assurance strategy. Couple that with the right tools and practices so you can pre-empt, or react quickly to rectify, any threats to retention, attraction, and related revenue streams.

2. Implement an APM solution which manages the performance and availability of critical Web applications and the end user experience. A good solution will provide 24x7, real-time, end-to-end monitoring of all transactions in complex web application services environments. This will provide real insight into how customers are experiencing your website as well as proactively managing the performance and availability of these applications.

3. Take responsibility for the speed and availability of any hosted applications. Ensure that hosting companies meet their service level agreements, and that these guarantee the high standards that your customers expect.

4. Consider where customers are in the purchase cycle, and what the reward is for waiting. Customers will lose patience waiting for a homepage, but will be happier with a slight delay if it enables them to access content they have requested inside the site. Customers won't mind waiting to download a video they've requested, but might be annoyed if you delay them by forcing an unsolicited advert or giant logo on them.

5. Ensure that forms are logically designed, and are able to cope with the full range of inputs customers might wish to provide. In particular, ensure that address fields can cope with valid address formats in all countries the company ships to.

6. Split up the checkout process into manageable chunks, and save the status at each step. If contact details are collected early in the cycle, the company can follow up abandoned sales by offering assistance.

7. Only request essential data. Customers can find long forms intimidating. Companies should collect information essential to satisfying the customer's purchase requirements, and incrementally increase their marketing data one field at a time on subsequent visits.

8. Use usability testing and feedback from customers to ensure that the website, and in particular the pressure points such as search and check-out, are as intuitive as possible.

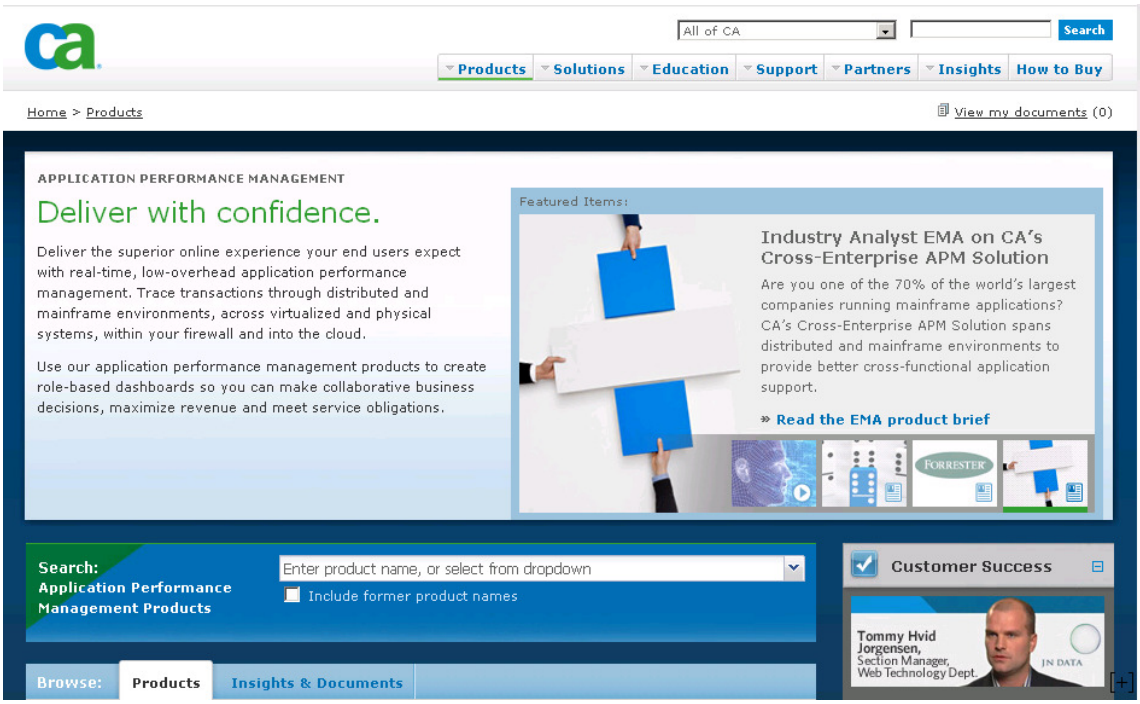
Resources to reduce the impact of Web Stress

To find out how you can reduce Web Stress and improve your customers online experience with 24x7, real-time, end-to-end monitoring of all transactions in complex web application services environments please visit:

http://www.ca.com/us/application-performance-management.aspx

You can also follow our blog at:

http://community.ca.com/blogs/apm/default.aspx



About CA www.ca.com

CA (NASDAQ: CA), the world's leading independent IT management software company, helps customers optimize IT for better business results. CA's Enterprise IT Management solutions for mainframe and distributed computing enable Lean IT—empowering organizations to more effectively govern, manage and secure their IT operations.

About CA Wily Application Performance Management solutions

With more than 1200 customers worldwide, CA Wily is the market-leading provider of Application Performance Management solutions. The CA Wily APM solution manages the performance and availability of critical Web applications and the end user experience. This enables organisations to measure the business value of each user's online experience, proactively identify and prioritise problems based on business impact, and triage and resolve problems across complex and heterogeneous application environments before they affect users, customers and business. This means better customer service, more stable revenue streams and higher IT productivity. For further information on CA Wily APM, visit www.ca.com/apm

About Foviance www.foviance.com

Foviance is a leading customer experience consultancy that works globally with some of the world's best known brands to deliver measurable improvements in performance. Founded in 2000 and with a heritage in website usability and data analytics, Foviance delivers consultancy to its clients about the effectiveness of their individual channels, such as mobile, web and call centre and how they combine in a cross-channel environment. For many clients, insight is provided not only in their home market, but also internationally through Foviance extensive alliance network.

Foviance engages with its customers wherever they are in their product lifecycle, and provides insight so they understand how to improve, create and deliver excellent customer experiences. Foviance boasts 43 of the UK FTSE 100 companies among its client roster, including Barclays, BSkyB, and Sainsbury's. In addition Foviance works with International brands such as AstraZeneca, Dell and Nokia.

Trademarks