

White Paper – Analytics Warehouse/Business Intelligence Solution

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“Analytics leverage data in a particular functional process (or application) to enable context-specific insight that is actionable.” - Gartner

Executive Summary:

In the E-commerce industry, it is extremely vital to understand our customers' business to be able to service their needs and contribute significantly to their business growth. However, translating our customers' needs into actionable insights that drive conversion is not an easy process: it requires sophisticated analytic capabilities that allow us to capture and analyze large volumes of data coming from many data sources and provide insights based on the data.

One of the most important features of any e-commerce business is its website and the navigation behavior through the website by its existing or prospective customers. The design of a website goes through a very time-consuming and taxing process which involves a lot of brainstorming, usability discussions, etc. to define the site navigation and how it will best suit the site user, hence benefiting the business.

Tools such as Google Analytics and Omniture help in mining data pertaining to the assessment of site optimization, a superior customer experience, e-commerce conversion and e-marketing performance. All web analytics tools also provide a set of standard reports and queries based on the data they collect, but by themselves they are often not able to produce very customizable or interactive reports and dashboards that aid in providing insights. Furthermore, little has been done to solve the complications that arise when you want to combine web-based data with conventional analytic environments. For example, because the sources of data can be so varied, many transformations are required when trying to integrate data from different sources such as Google Analytics, ad-servers, email marketing providers, spreadsheets, etc. and loading it into a single data warehouse which structures data for easy analysis.

In addition, it is often the case that substantial amounts of historic data need to be stored in order to provide accurate analyses. For example, retailers wanting to predict Christmas sales would normally require a minimum of three years' worth of data to support such analyses. Assuming such a business has an enterprise class Web Analytics implementation in place, having a solution that can gather all the marketing analytics data into a single location and providing a wealth of intelligence in the form of customized ad-hoc reports and interactive dashboards would help in gaining a competitive advantage.

In this paper, we will discuss these and similar issues we encountered in building our web warehouse business intelligence solution and we will begin by discussing some of the business challenges we faced prior to building the solution. Then we will go on to consider the sorts of requirements both from an analytical database and a data integration perspective and how the technologies we selected coupled together (i.e., Talend and MicroStrategy) met these requirements, thereby servicing our clients in a beneficial way by providing a holistic view of the information to make better operational business decisions.

Business Challenge:

Some of the more common problems companies face when trying to analyze e-marketing performance and gain actionable insights from their data are:

- Large volumes of data without the right tools or resources to synthesize it resulting in a culture of manual extraction and integration of data from various sources into spreadsheets to manually build static reports at defined times of the year.
- Lack of ability to integrate data into meaningful information from disparate sources.
- Time consuming and laborious efforts involved in the process of integrating data from various sources.
- Lack of automation in the process of extracting and uploading data at defined intervals.
- Absence of customized automation in the process of distributing scheduled reports.
- Limited type of visualizations to represent reports.
- Lack of filtering or drill-down abilities on ad-hoc reports.
- Lack of interactive dynamic dashboards and reports.

In order to address these issues for our clients, MaassMedia ventured into an initiative to design and build an automated Data Extraction, Integration and Reporting solution. The overall goals of the initiative were to:

- Develop and document a conventional repeatable process to address the data integration and reporting problems.
- Build an architecture to implement the solution we designed.
- Ensure the integrity of data is maintained.
- Collaborate with clients to help them analyze their business and our strategy of providing enhanced analysis and insights by understanding the use of KPIs and performance metrics into customized ad-hoc reports, dashboards, email subscriptions, alerts, etc.
- To provide an intuitive user interface along with rich customizations while interacting with dashboards that will help the clients understand the trends and issues within their environments.
- Automate the processes of loading the data warehouse with most up-to-date data, refreshing reports to reflect this updated data and distributing them directly into emails or file servers.
- Ensure that key-decision makers can instantly act upon insights across the business.

What We Offer:

The purpose of the solution we developed is to provide our clients a globally consistent, flexible, scalable and effective Data Integration and Business Intelligence platform that improves the efficiency of reporting and analyses in terms of extraction and integration of data from multiple sources, slicing and dicing, filtering and dynamic interaction capabilities.

This solution is automated for the tasks of extraction and uploading of data from various sources (Web Analytic tools, Spreadsheets, etc) into one location called the Data Warehouse. It is also set up for generating scheduled reports, dashboards and various threshold alerts along with the ability to deliver them into your email in any static or interactive format.

How It Works

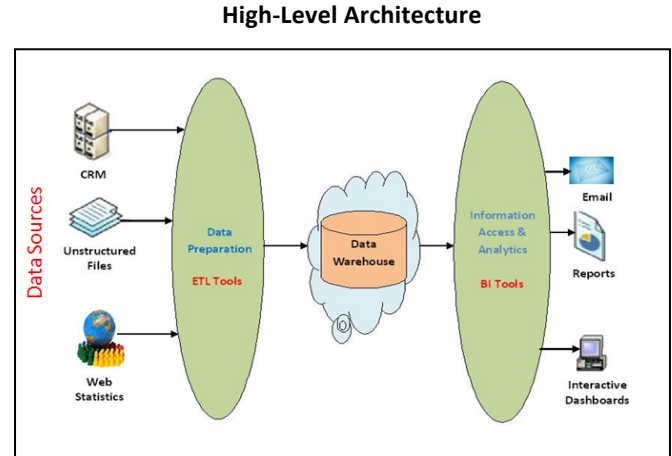
The web warehouse business intelligence solution uses an ETL tool to connect with various data sources such as Google Analytics, Spreadsheets, Salesforce.com, and extracts data on a scheduled basis, loading it into a data warehouse in a usable form, which resides on an Amazon Cloud Relational Database Service. A Business Intelligence tool is then used to connect to this data warehouse and generate ad-hoc reports, dashboards, alerts, automatically delivering this meaningful information for customer end analysis.

This 100% customizable, turnkey solution can help you automate the extraction of required dimensions and metrics from concerned data sources and then produce reports, dashboards and analytics with slice-and-dice and interactive capabilities updating them automatically at regular intervals by defined frequencies; as well as automate their delivery in your inbox in various formats like PDF, Flash file, excel, etc.

The data warehouse may be designed such that it is loaded with data integrated from multiple sources using the ETL tool, or this integration of data from various sources can also be done on the fly using the BI tool.

Some Business Question We Are Addressing

- What marketing channels bring in the most sales/visits?
- What marketing activities are resulting in the higher conversion rates?
- What are the net sales this fiscal year compared to the previous one on a monthly basis with the possibility of filtering by region?
- How can site traffic be segmented and targeted in the most efficient and profitable ways?
- Are some segments more valuable than others?
- Which sections or features of my site generate the highest ROI?
- How do sales to date compare to the sales goals/budget?
- How do you close the loop and get a 360-degree view of the customer experience?



Once the data is collected and integrated into the web warehouse we’ve built, it is analyzed by us via the BI tool we’ve implemented. The result of such analyses is understood by a selection of visualizations such as horizontal and vertical bar graphs, bubble charts, pie charts, area charts, scatter charts, combination charts - bar and line, bar and area dual axis, advanced charts - gauges, funnels, odometers, pareto, gantt charts and many more.

The BI tool also offers you a plethora of mathematical, analytical, statistical and predictive analysis functions to gain increased understanding and value from the structured information stored in the data warehouse. They aid in iterative exploration and investigation of past business performance to gain insight and drive business strategy.

(See Appendix - A for sample dashboards)

Solution Benefits:

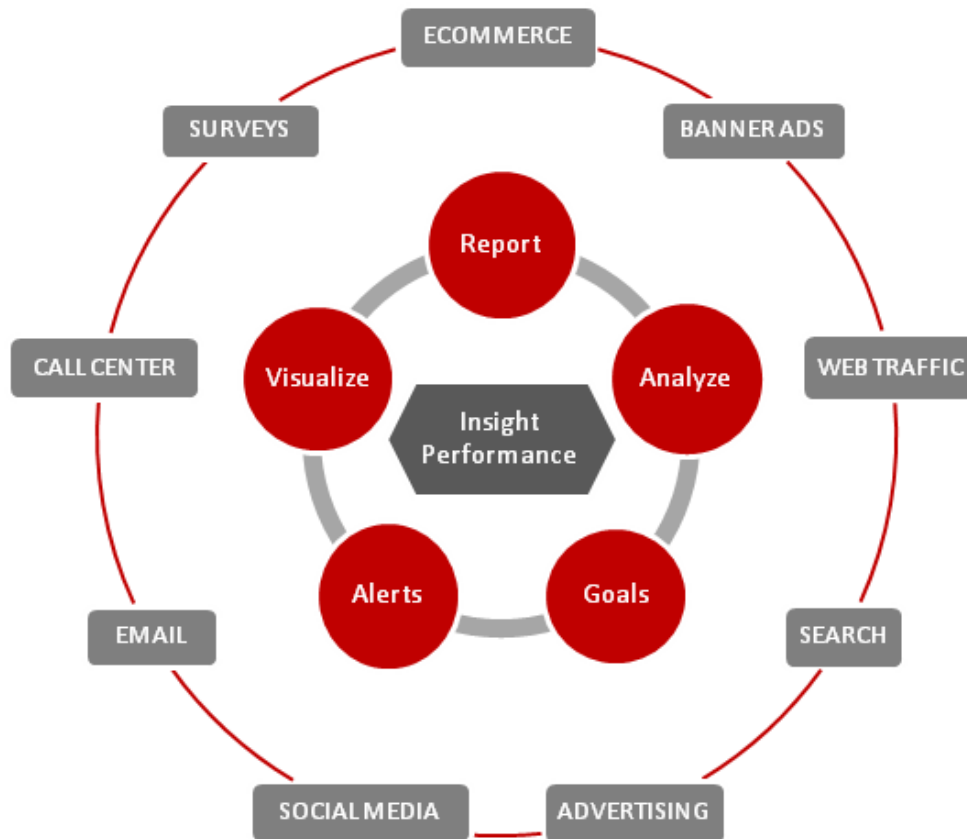
Understanding how users reach a web site and how they behave and use it once they are there allows for the improvement of the user experiences with the site. It also allows for the improvement of the organization’s ROI by increasing sales and increasing the "stickiness" of user visits.

The web warehouse business intelligence solution facilitates the ability for stakeholders to view information collected from a variety of sources, explore and analyze it and share it with managers and staff in conjunction with the following enhanced benefits:

- Fast to deploy, fast to build, fast to get analysts serving themselves, and fast to drive widespread adoption.
- Scalable and flexible solution – has the ability to grow with reporting requirements (integrate new users, reports, dashboards and data sources).
- Improved performance via the aptly indexed and structured data warehouse.

- Combining multiple data sources wherever they are (from Google Analytics to Excel spreadsheets) on-the-fly is the key to providing powerful insight.
- Provide comprehensive versions of business performance at-a-glance via dashboards and reports.
- Methods to easily and quickly interact with dashboards regardless of technical or analytic ability.
- Controlled access to users and analyst for reports and dashboards based on their roles.
- Automatic updating and delivery of data in the form reports, dashboards, alerts.
- Provide companies with valuable historical information (going back 2 or more years) that allows a straightforward comparison and capabilities to carry out predictive analysis.

Analytics Data Warehouse/Business Intelligence Framework



A Final Comment:

Having immediate access to the right data, in the right format, is no longer a goal – it’s an imperative. Our web warehouse business intelligence solution extends the web analytics reporting and analysis capabilities of your existing tools and helps organizations turn data into actionable information to drive performance. All this is achieved through the beauty of the structural design of our data warehouse in collaboration with the sophistication of the tools used.

Knowing how and where your brand is being evangelized is important. Tracking performance of marketing channels in terms of sales or visits they bring to your site helps you build a strategy for advertising or promoting your business the right way. Having mechanisms in place to alert your teams to thresholds passed, drill down to actionable specifics, and being able to act quickly on the data will help you save on costs and drive more revenue.

With our solution you get a strong foundation for better assessment of your organization’s website, e-commerce and e-marketing performance that helps you generate more customer insights, drive profitable growth and make better business and marketing decisions.

For more information on how you can benefit from our turnkey solution or how we can help you build your own analytics data warehouse/business intelligence platform, please contact Aaron Maass at 267-702-5747 or email info@maassmedia.com.

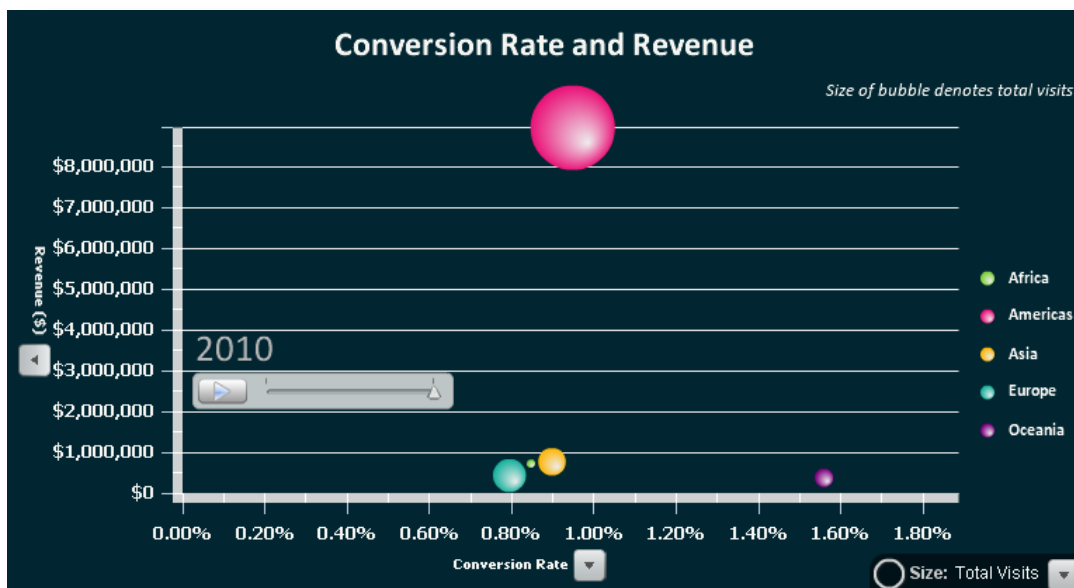
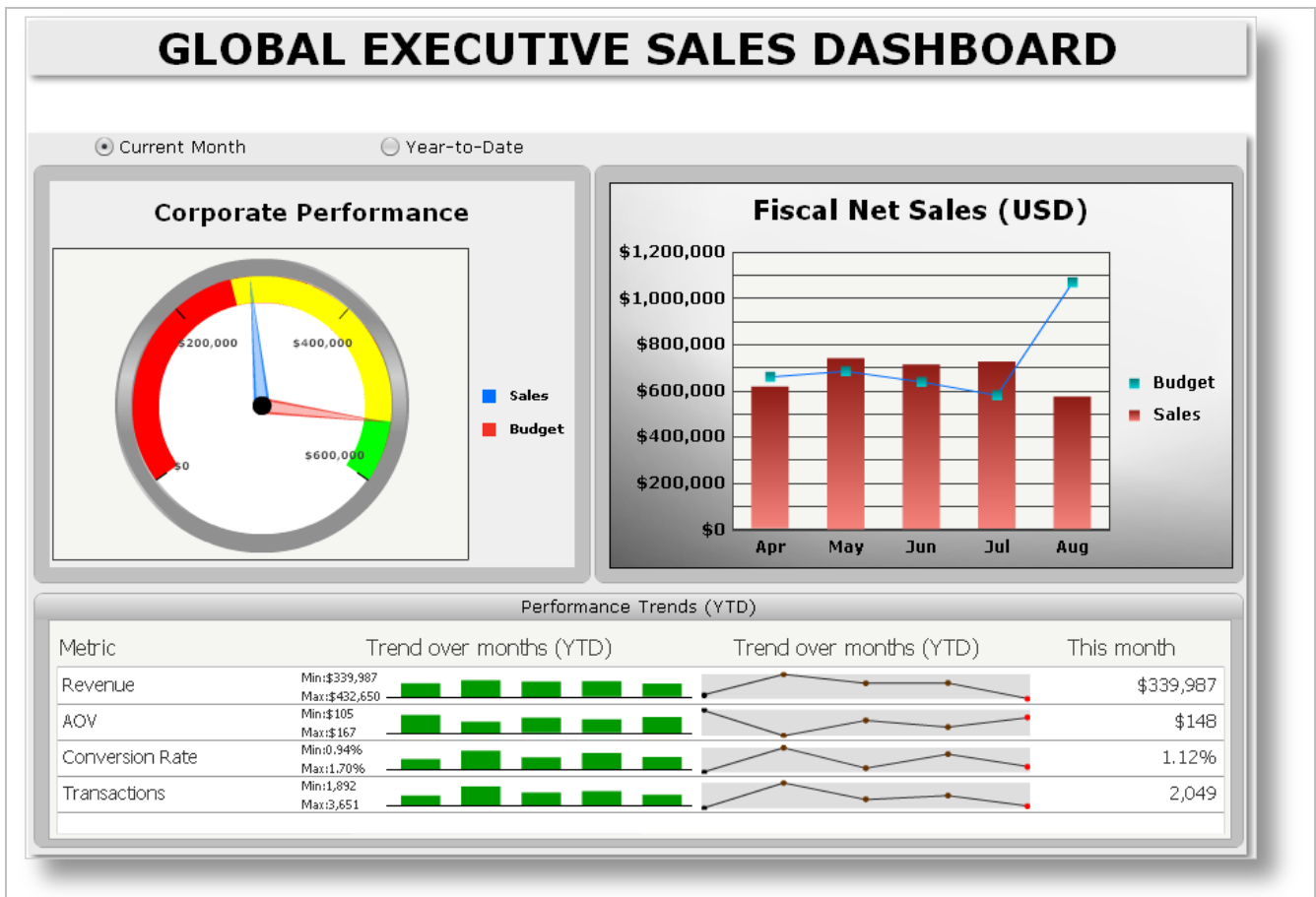
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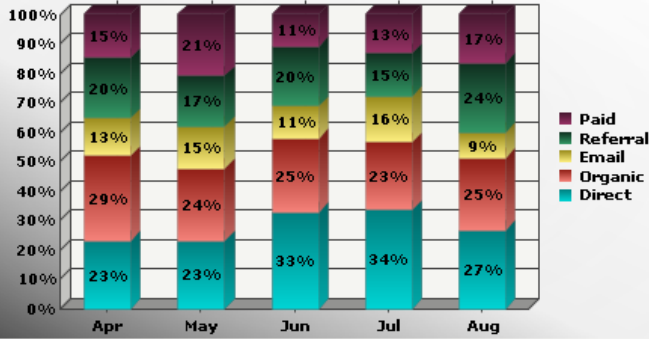
Appendix A – Sample Custom Dashboards/Charts



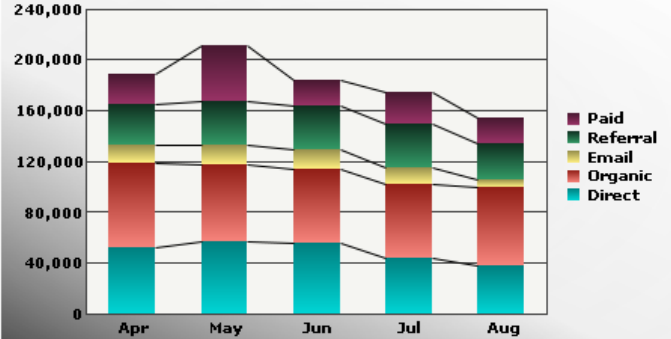
E-Marketing Overview

Select View: Global Americas Asia Pacific EMEA

Online Sales By Marketing Channel

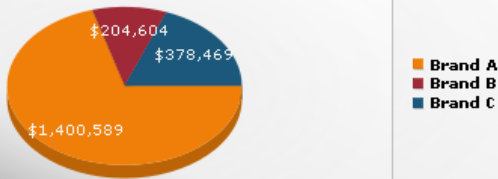


Visits By Marketing Channel

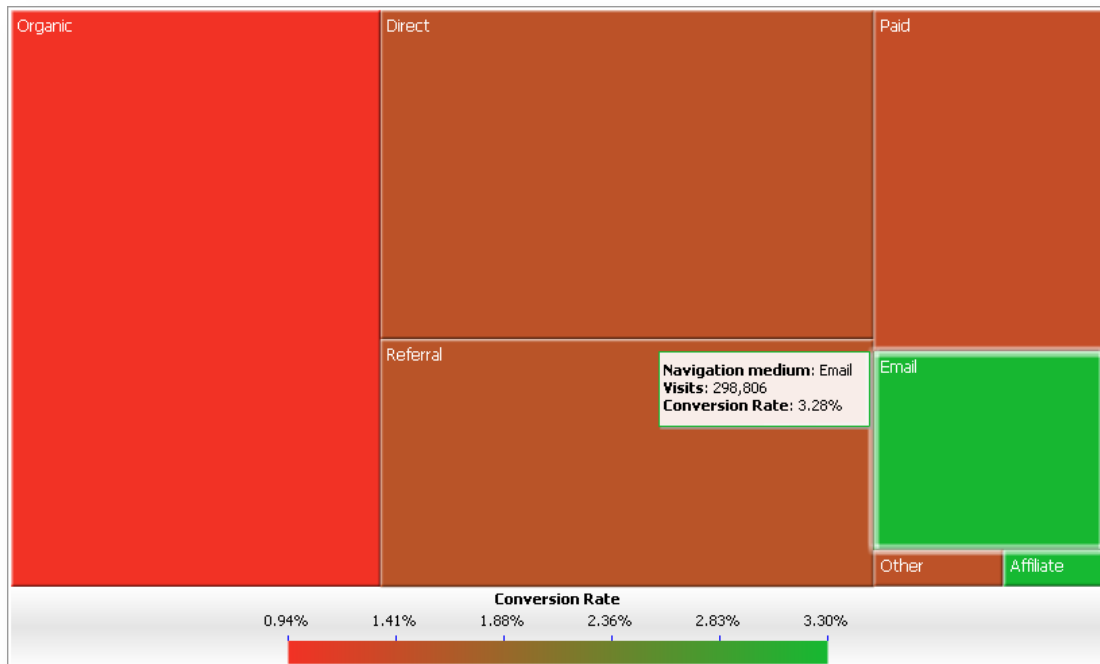
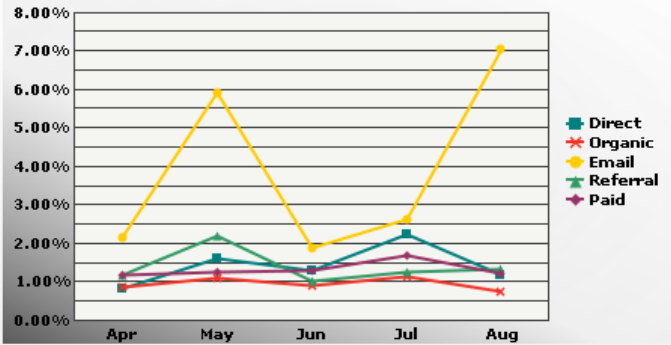


New Returning

Sales by Visitor Type (YTD)



Conversion Rate By Marketing Channel



Appendix B

TECHNICAL SPECIFICATIONS FOR ANALYTICS DATAWAREHOUSE /BUSINESS INTELLIGENCE SYSTEM

DEVELOPMENT TOOLS

- ETL Tool: Talend Integration Suite
- Data Warehouse: MySQL Amazon RDS
- Business Intelligence Tool: MicroStrategy Reporting Suite

PLATFORM SUPPORT

- Operating System: 8 GB or higher RAM
- Microsoft Internet Information Services (IIS)
- Apache Tomcat Web Services
- Visual SVN Repository
- Java
- Microsoft .NET Framework
- VNC Server

GLOSSARY OF TERMS

Term	Definition
ETL	Extract, Transform and Load (pertaining to data being extracted from data source, transforming it in a structured way to be loaded into the data warehouse.)
BI	Business Intelligence
KPI	Key Process Indicator