

# Agilysys...



## Implementing Enterprise Analytics in Hospitality and Food Service Environments

How to Leverage Day-to-Day Data to  
Create a Competitive Advantage

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## Executive Summary

Over the past decade, hospitality and food service companies have spent millions of dollars on technology systems to optimize business processes. These systems generate enormous amounts of transactional data and provide detailed information for historical reporting and daily audit procedures. However, senior executives and operational managers are now asking for enterprise reports that correlate data from distributed systems across multiple periods.

From conversations with customers, Agilysys discovered that the most common way organizations generate reports is by manually creating highly complex spreadsheets. These spreadsheets are costly to maintain and may contain incorrect key performance data because of errors made during numerous revisions.

The Hospitality Analytics Solution by Agilysys enables businesses to access a complete view of data in near real-time while avoiding the proliferation of spreadsheets managed by many users. This solution provides a consolidated view of transactional data for analysis and reporting, which enables management to make fact-based decisions for ways to improve business processes and capitalize on revenue opportunities.

### **The software offers organizations four key features:**

- A distributed extraction, transformation and load (ETL) technology for organizations that may not have the resources to build a large-scale data store
- Common enterprise information models to create a complete, organization-wide view of the data
- Industry-standard, open framework using Microsoft® SQL Server® 2005 for seamless integration into existing network and security frameworks
- An easy-to-use, customizable interface to meet the needs of analytics experts and others in the organization who may just be starting to build analytics into their core business processes

Agilysys has 20 years of experience building software solutions for the hospitality and food service industry and now offers the Hospitality Analytics Solution by Agilysys as a tool to help organizations improve their bottom line. This purpose of this white paper is to help companies understand and resolve the challenges they have generating enterprise-wide views of data for use in launching new analytics initiatives.

*The Hospitality Analytics Solution by Agilysys enables businesses to access a complete view of data in near real-time while avoiding the proliferation of spreadsheets managed by many users.*

## The Benefits of Analytics

Over the past two decades, businesses have spent millions of dollars on technology solutions to collect data across their organization. Unfortunately, aggregate views of this data frequently are only available in meaningful form in cumbersome – and often inaccurate – spreadsheets that are not easily accessible throughout the enterprise. Companies today need more detail than these spreadsheets offer to remain successful. Real-time views of all of their transactional data would enable them to design a more aggressive business plan.

In order to gain a competitive edge, hospitality and food service companies want to do more than calculate simple statistics such as average revenue per check, average revenue per employee or average table turn by meal period. These companies want a single-system based on predictive analytics to help them: (a) revise business processes based on enterprise-wide comparative reporting, (b) compare financial results against industry standards and assist them in staffing their organization, and (c) make this data available in near real-time to as many end-users as possible. These challenges reflect the simple business reality that companies are increasingly competing – and winning – based on their ability to analyze their data. The *Harvard Business Review* agrees:

Organizations are competing on analytics not just because they can – business today is awash in data and data crunchers – but also because they should... And analytics competitors wring every last drop of value from those [business] processes. So, like other companies, they know what products their customers want, but they also know what prices those customers will pay... they know compensation costs and turnover rates, but they can also calculate how much personnel to [add] or detract from the bottom line... Like other companies, they know when inventories are running low, but they can also predict problems with demand and supply chains, to achieve low rates of inventory and high rates of perfect orders.<sup>1</sup>

Many hospitality and food service companies now have an opportunity to leverage customer and operational data to make fast and informed business decisions, identify operational inefficiencies and capitalize on previously hidden revenue opportunities.



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<sup>1</sup>Thomas H. Davenport, “Competing on Analytics,” <http://www.mcombs.utexas.edu/faculty/Maytal.Saar-Tsechansky/Teaching/Documents/Harvard%20Business%20Review%20Online%20%20Competing%20on%20Analytics.htm>, accessed on May 7, 2008.

## Analytics Selection Best Practices

Once the decision has been made to implement an analytics solution, decision makers are in the unenviable position of having to choose the technology that would be the best fit for their business. While cost is always a factor, it is most important for the solution to integrate tightly and easily into their current IT infrastructure. Another critical decision is whether to build the technology internally or to purchase an off-the-shelf product supplied by an industry expert. Making the wrong choice can lock companies into costly, legacy systems that do not keep up with day-to-day business challenges. The following is an overview of some of the differentiating factors of analytics solutions currently on the market.

### Extraction, Transformation, and Load (ETL)

To achieve a comprehensive view of information, analytics solutions use various technologies to extract transactional data from multiple systems into a data warehouse. This process is referred to as extraction, transformation and load (ETL). Data is extracted at the source location, transformed into the format required, then loaded into the data warehouse. Generally, analytics solutions implement one of two methods of ETL:

#### 1. **Data Replication with a Two-Step ETL into the Data Warehouse**

Using this method, data from each source system is continually replicated and stored in the data warehouse. ETL of the data is done multiple times within a pre-defined period, combining and scrubbing data as needed without affecting the performance of source systems. The downside of this method is the expensive storage requirements necessary to continually replicate and accumulate data, as well as the complexity of continuous, ongoing ETL processes.

#### 2. **Distributing ETL directly into the Data Warehouse**

With the Distributed Query method, data is extracted directly from the distributed source systems into the data warehouse. Analytics reporting is then available as soon as the ETL from the source is complete. It is important to note that the system only applies the ETL process to data within specified parameters. This more efficient process eliminates costly storage of unnecessary data, minimizes the impact on system performance and enables users to see data more quickly across multiple data sources.

Historically, organizations have preferred a data-replication based method of ETL for their analytics solution due to the performance overhead associated with direct queries to the source data system(s). However, continuing enhancements in server processing power and analytics software solutions have made the faster, more cost-effective method of distributed ETL a better option.

*While cost is always a factor, it is most important for the solution to integrate tightly and easily into their current IT infrastructure.*

## Integrating Analytics into Existing IT Environments

Businesses also need to ensure that the analytics solution they select precisely integrates into their existing IT environment. Below are some of the factors they need to consider:

### ***Common enterprise information models***

Analytics solutions incorporate system data from various distributed data sources to create a complete, organization-wide view of data. A common model should be available for mapping similar data elements from different systems such as payment types, product categorization and customer profile data.

### ***Industry-standard technology platforms***

An analytics solution should integrate into a company's existing IT framework and infrastructure easily in order to enable ETL of multiple data sources without lengthy and costly integration efforts. The analytics technology platform should also combine with the existing security model for authentication and authorization.

### ***Customizable, role-based options for displaying information***

The analytics dashboard has arguably become the most common method of displaying analytics data, but this view may only meet the requirements of executive or site level management that need daily performance data. Others within the organization may benefit from job-specific views of the data. The analytics solution should be able to support multiple, role-based views into the analytics data on an almost real-time basis. In addition, it should be fast and easy to generate customized queries.



## Best Practices for Launching Analytics Initiatives

Choosing an analytics solution is not limited to finding the best technology. There are organizational and process challenges that must be resolved as well. To maximize the benefits of an analytics solution, Agilysys suggests adhering to these industry best practices:

- Secure senior executive support that strongly advocates analytics and fact-based decision making
- Use predictive modeling and complex optimization techniques as well as descriptive statistics
- Encourage use of analytics across multiple business entities, functions and processes
- Present data in a way that is role-specific and explicitly meaningful for the corporate executive, business analyst, regional manager or property manager
- Promote an enterprise-level approach to managing analytical tools, data, organizational skills and capabilities
- Clearly define prioritization of the problems that will be solved with analytics in order to decrease the possibility of generating outputs with little actionable information

## The Hospitality Analytics Solution by Agilysys

Agilysys has developed an analytics solution that optimally integrates within your existing infrastructure and uncovers valuable data that you can use to help your business become more efficient, more profitable and more successful. The software enables you to gather information from all sources within your organization and use that knowledge to streamline areas such as customer service, pricing, staffing and more. The result is real-time insight into your business practices that helps you gain a competitive edge.

### Core Technologies

The analytics software offered by Agilysys is built around a set of industry-standard software application tools that consolidate data from distributed systems across multiple geographic locations into a single data source for reporting and predictive analytics. There are three core technology components within the analytics solution:

- Microsoft SQL Server 2005
- Analytics Cube Browser and Dashboard
- Simple Client Delivery

These technologies provide key features and benefits, including:

- A distributed ETL technology for organizations that may not have the resources to build a large-scale data store
- Common enterprise information models to create a complete, organization-wide view of the data
- Industry-standard, open framework using Microsoft SQL Server 2005 for seamless integration into existing network and security frameworks
- An easy-to-use, customizable interface to meet the needs of both analytics experts as well as others in the organization who may just be starting to build analytics into their core business processes

### Microsoft SQL Server 2005: Integration Services

SQL Server Integration Services (SSIS) efficiently extract data directly from the source without overloading the system with process-intensive queries. The data transformation pipeline performs all the steps of the ETL process in a single operation without staging data. This is in contrast to traditional ETL tools, which often require staging at almost every step of the warehousing and integration process.

### Microsoft SQL Server 2005: Analysis and Reporting Services

One of the challenges facing organizations implementing analytics is consolidating data from the multitude of systems in use by multiple departments such as operations, finance, human resources and sales. In addition, data might be stored in different geographic locations, perhaps even with different currency requirements. Each of these systems holds financial and customer data that is vital to the analytics initiative. SQL Server 2005 Analysis Services make it possible to perform advanced analysis against these existing systems with far less effort than was traditionally possible.

*The software enables you to gather information from all sources within your organization and use that knowledge to streamline areas such as customer service, pricing, staffing and more.*

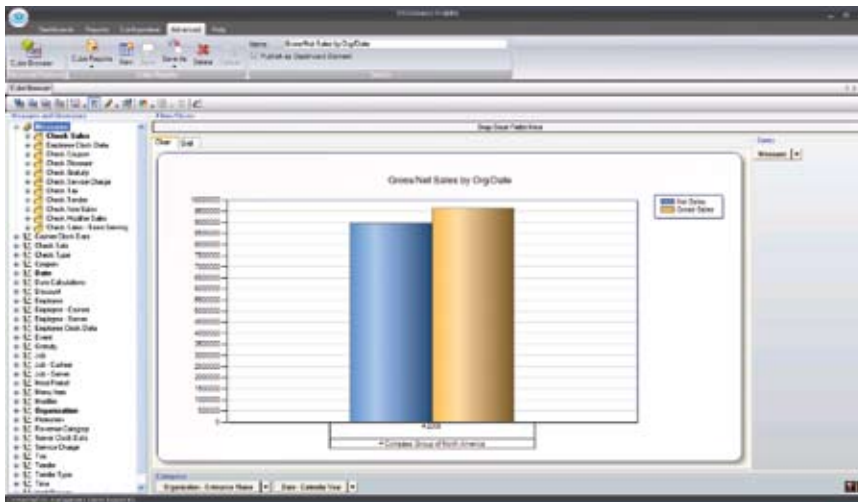


The underlying technology of this service is Microsoft's Unified Dimensional Model (UDM). The role of the UDM is to provide a bridge between the user and the data source to support interactive analysis, regardless of the size or geographical location of the data. In addition, the UDM captures business rules in the model that allow users to act upon the retrieved data.

### Analytics Cube Browser and Dashboard

The Analytics Cube Browser is one of the features that differentiates the Agilysys analytics solution from its competitors. This component offers a comprehensive toolset that gives users a direct interface to data from each source system. Users simply select measure (transaction data) and dimension (configuration data) elements by dragging them into the chart format where they can easily filter and sort information as needed. Users can quickly and easily create reports displaying simple daily operations reports, complex financial analyses or key performance indicators in an easy to understand graphic model.

The Cube Browser also enables users to view data in a table format that can be expanded or collapsed on the fly without having to regenerate data. As an added benefit, any report created within the Cube Browser can be saved as a private or public report, and then published as a dashboard for daily review by users.



Agilysys recognizes that business analysts, senior executives and operational managers all require something unique from an analytics solution, which is why the Cube Browser and Dashboard were designed to allow each user to customize their view to meet their individual needs.

### Simple Client Delivery

Another component of the Hospitality Analytics Solution is Simple Client Delivery (SCD), which enables the software to integrate seamlessly with an organization's existing Microsoft Active Directory environment. Users are authenticated through the permission group setup function within the application. The software delivers a user-friendly interface with maximum speed and functionality by utilizing Microsoft® .NET Framework 2.0. In addition to 64-bit platform support and Web 2.0 support, the software implements "one-click" upgrade capability. The client side of the application is replaced with the newer version as soon as the back-office application is upgraded without requiring reinstallation or reboot of the program.

*Simple Client Delivery (SCD) enables the software to integrate seamlessly with an organization's existing Microsoft Active Directory environment.*



## Return on Investment

The primary method for calculating the value of a technology solution is Return on Investment (ROI), meaning how much value in either lower costs or increased profit will be generated in excess of the total cost of investment.

A typical Analytics software model requires the process of replicating data from source systems into a data warehouse, and then executing an ETL to populate the analytics cube. This model requires significant investments in hardware and software. In contrast, the Agilysys Analytics approach of distributed ETL enables a rapid ROI based on hardware storage cost savings alone.

There are three additional ways for hospitality and food service companies to generate rapid value from implementing the Hospitality Analytics Solution:

- 1. Eliminate Manual Spreadsheets**

With the Hospitality Analytics Solution, you no longer need to depend on the plethora of spreadsheets that are manually managed by different functional areas of your company. Additionally, the proliferation of these spreadsheets leads to multiple versions of key indicators tracked by an organization. Many standard reports are pre-delivered with the Hospitality Analytics Solution, automating the process and ensuring the accuracy of the data. This results in a measurable decrease in cost and increase in productivity.

- 2. Remove Resource Constraints in IT**

Customized reports and data exports from one or multiple systems drains the resources of your IT department, and it can result in a waiting game as IT prioritizes which requests to fulfill. In contrast, the Analytics Cube Browser puts the data directly in the hands of the user, allowing each department to create made-to-order reports without the assistance of IT.

- 3. Provide Complex Reports for Predictive Analytics**

For most organizations, predicting customer attrition or revenue is a process of single dimensional reporting, internal knowledge and gut business instinct. With predictive Analytics, you can make an informed management decision and know how to maximize revenue and enhance guest services.



## Hospitality Analytics Solutions Use Cases

Traditionally, each functional area of an organization operates in isolation, using their own specialized skills, tools and perceptions to access business intelligence for their division. It becomes a challenge to find a way to share technology when every department relies on an interface unique to their individual requirements. Agilysys has designed Analytics software that centralizes your data yet enables customized interfaces and report delivery to each area of your enterprise. The following are some examples that illustrate the effectiveness of this solution.

### Executive Manager

#### **Situation**

An executive team at a global gaming and resort company is struggling to unify reporting and Key Performance Indicators (KPIs). Important customer and financial data is stored on multiple servers and is collected via different operational procedures. Further, each executive has his or her own analyst building spreadsheets to show KPIs. Consequently, not only are the KPIs different between groups, the inaccuracy inherent in spreadsheets leads to unreliable values. In order to effectively manage the organization and drive change where needed, it is imperative that managers can quickly access accurate KPI data.

#### **Solution**

The Hospitality Analytics Solution enables the organization to implement a business intelligence solution in which all data and KPI measures are being gathered and calculated using the same information, ensuring the integrity of cross-property and cross-system data. Analysts build reports using the Analytics Cube Browser, which allows departments to work together to build high-level dashboards outlining the information that each executive requires on a daily basis. As a result, Executive Managers receive the time-sensitive information they need to make informed business decisions on ways to improve customer service and increase revenue.

### Director of Food & Beverage

#### **Situation**

A Director of Food & Beverage (F&B) at a high-end hotel corporation has purchased software that provides detailed information on customers so the hotel can offer highly customized guest service. With this system, they hope to increase overall guest satisfaction as well as assure that each dollar spent managing the guest experience results in the best ROI. The challenge is predicting which customers are the most profitable to the company and which customers they might be in danger of losing.

#### **Solution**

By implementing Analytics, the F&B Director is able to track each customer's spending habits and known preferences. The data also shows when a customer is above or below their normal spend for a specified period while taking into consideration secondary factors such as time of year or weather conditions. Capitalizing on predictive analytics, the Director of F&B can effectively manage the experience of each guest by suggesting specific services instead of simply providing a list of available services.



	34.59	33.73	2.53	0.86	34.58
	62.41	61.09	2.15	1.32	62.39
	92.95	90.99	2.15	1.96	92.94
	62.28	61.23	1.73	1.06	62.26
	19.20	18.95	1.29	0.25	19.19
	15.53	15.34	1.24	0.19	15.52
	55.00	54.42	1.07	0.58	55.00
	114.72	113.63	0.95	1.08	114.69
	21.65	21.43	1.00	0.22	21.64
	83.17	82.39	0.95	0.78	83.16
	115.32	114.31	0.88	1.01	115.30
	5.16	5.12	0.78	0.04	5.15
	38.97	38.56	1.05	0.41	38.96
	84.47	83.70	0.91	0.76	84.45
	105.06	104.49	0.55	0.57	105.05
	72.53	71.99	0.75	0.54	72.53
	152.38	151.52	0.57	0.86	152.37
	82.22	81.75	0.57	0.47	82.20
	18.22	18.14	0.50	0.09	18.21
	12.21	12.16	0.45	0.05	12.21
	31.58	31.43	0.46	0.15	31.57
	48.03	47.86	0.37	0.17	48.02
	35.70	35.63			

## Regional/Division Manager

### **Situation**

The Regional Manager of a successful food service management (FSM) company is attempting to standardize operational procedures for 10 different locations. Each branch has specific KPI requirements and the manager needs a daily/weekly progress report for each location. Each unit manager creates a spreadsheet for financial data and sends it to the Regional Manager for consolidation into a master spreadsheet. Sometimes the unit's report is late or it contains errors, so the Regional Manager spends an inordinate amount of time managing and analyzing the data in order to implement changes.

### **Solution**

Analytics software from Agilysys offers timely submission, accuracy and a single source view of all transactional data. The Regional Manager is able to generate a custom dashboard view using the Analytics Cube Browser and now receives a daily performance summary for each unit. When performance anomalies show up on the dashboard, the manager can drill down to specifics, create on-the-fly reports and make effective decisions for operational change for each unit.

## Outlet Manager

### **Situation**

The manager of a successful mid-level restaurant needs a complete picture of the restaurant's financial performance, including staffing costs, success of promotions and popularity of all menu offerings. Generally, it takes about a week to pull numbers from a variety of POS reports and combine them into a master spreadsheet.

### **Solution**

The Hospitality Analytics Solution enables the manager to build custom reports and create a monthly dashboard to review and analyze data on the first day after month's end. On demand, reports are generated for:

- Employee hours worked by gross and net revenue production, including gratuity amount
- Total employee hours by gross and net revenue for the restaurant, allowing quick calculation of average revenue per employee
- Promotion item revenue by time period
- Top 20 sellers against gross revenue
- Top 20% sellers against gross revenue

The restaurant manager can effectively manage staff scheduling as well as build the most profitable menu based on time of year or specific promotional event period.

*Agilysys has designed Analytics software that centralizes your data yet enables customized interfaces and report delivery to each area of your enterprise.*

## IT Systems Manager

### *Situation*

A global cruise line company spent millions of dollars leveraging satellite networks and building a detailed customer relationship management (CRM) database. Customer data is collected at every point of interaction. The organization is using an analytics solution to replicate data from each source system to send to an onshore data mart for analysis. The challenge for the IT Systems Manager is the processor and time intensive procedure of replicating data from each source system considering the relatively short period that a ship has reliable Internet connectivity.

### *Solution*

By leveraging the feature of distributed ETL in the Hospitality Analytics Solution, the IT Systems Manager is assured of regular ETL that does not drain system resources. Data is automatically collected and disseminated to the data mart and various departmental managers and executives.

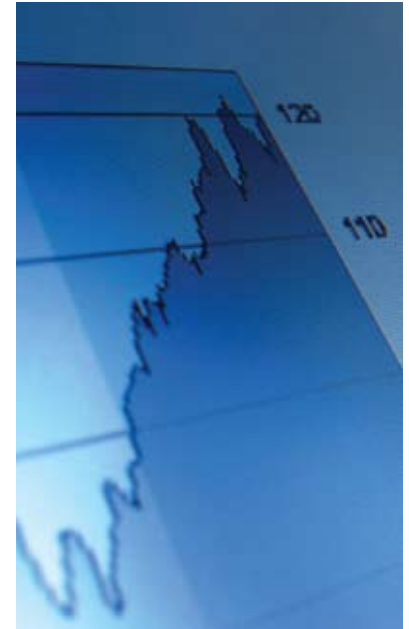
## Business Analyst

### *Situation*

A large hospitality organization has collected a vast amount of data from multiple systems. To put that data to the best use, the company hires a team of business analysts to analyze transactional data and create reports to help management make fact-based decisions on process improvements. Most of this data is contained either in complex spreadsheets or, in cases where analytics software is in place, via complex queries requiring intensive knowledge of databases and query language. Reports are generated based on data supplied by a variety of spreadsheets from different resources that may contain errors and result in inaccurate conclusions.

### *Solution*

The Hospitality Analytics Solution eliminates the proliferation of spreadsheets and complex database queries. The Analytics Cube Browser places data directly into the hands of the Business Analyst through a simple drag-and-drop user interface. Performance data is presented in a near real-time format and new KPI measures are accurately identified.



## Conclusion

The value of the Hospitality Analytics Solution by Agilysys is that, by efficiently and effectively consolidating data from multiple systems and different vendors, organizations gain key competitive advantages. These may include knowing where to cut costs, predicting a customer's next purchase or providing the highest level of customer service possible. Implementing analytics enables companies to see benefits that move beyond improved business processes. Some of these benefits include:

- Eliminating the proliferation of manually created spreadsheets in order to consolidate query, reporting and analysis applications
- Capturing data from multiple systems with ease
- Improving the integrity of source data and calculation, reducing costly decisions that are based on incorrect data
- Eradicating the problem of multiple KPIs from different departments
- Creating powerful dashboard views that show meaningful data for each area of the organization, leading to faster decisions and the ability to capitalize on revenue opportunities
- Removing the complexity of data gathering and empowering users to create complex reports
- Reducing report distribution requirements and printing costs by providing data in a simple Smart Client application
- Improving data consolidation time to provide near real-time views of data by key decision makers
- Uncovering business issues like fraud or poor performance

To remain competitive, organizations must adjust business initiatives and leverage collected data to make informed decisions that will improve company performance and increase their bottom line.

*Implementing analytics enables companies to see benefits that move beyond improved business processes.*

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Cleveland, OH

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HS10028 10/08