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*Treasury Management  
Technology: Optimizing the Cash  
Cycle*

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## EXECUTIVE SUMMARY

Treasury is ascendant, and technological advancements are underpinning its rise. With many companies holding increasingly large amounts of cash on their books, treasury can have a greater impact on a company's bottom line. By effectively driving investment decisions, maximizing internal cash flows to minimize external funding requirements, and tightly managing banking transaction costs, treasury can maximize its role as steward of an organization's financial assets and add greater value to the organization.

Treasury's ability to impact the bottom line is gaining recognition at the C-levels of leading multinational organizations such as Microsoft Corporation and Honeywell International. Companies are striving to increase the visibility and the velocity of the cash flowing through their organizations as well as to optimize how this cash is deployed and invested. They face immense challenges, however, to realize these relatively straightforward goals. It is no simple task for a global corporation to collect accurate and timely information on its cash levels, debt, and investments around the world. Consequently, treasury departments are turning to more sophisticated and better integrated solutions for managing operations.

In parallel, treasury systems are finally catching up with current needs, providing corporations with more technology options than ever before. Banks, ERP vendors, and specialized treasury technology vendors are all working to provide practical, cost-effective solutions to address firms' treasury automation needs. The role of the Internet has become paramount, with both vendors and clients showing strong interest in moving away from traditional client-server treasury workstations toward a hosted or ASP model. Corporations are also seeking the ability to easily and quickly distribute application functionality across the enterprise, and the Internet is the medium of choice. The Internet is also the channel of choice for bank connectivity, with firms wanting to capture position information from global banking partners in an automated, standardized manner rather than over proprietary bank connections.

Relationships among the various technology providers are also in flux, with providers increasingly coexisting. Bank-provided solutions focused on connectivity and data aggregation can coexist with treasury workstations provided by either specialized vendors or ERP players, particularly within corporations that have not achieved the nirvana of a single ERP environment. Many bank solutions now offer increasing application-level functionality that in fact competes with treasury workstations, particularly when the target clients are midsize companies. Some financial institutions are working with specialized vendors via an OEM relationship, white-labeling these vendors' ASP solutions and integrating them within their broader wholesale banking and payments offerings—a trend that Celent expects will grow over the next three years. The most forward thinking financial institutions are building

multibanking data aggregation platforms that support integration into a company's ERP system.

The first section of this report provides an introduction to the corporate treasury market, looking specifically at the changing role of today's treasurer as well as key drivers for the adoption of treasury management technology. In the second section, we examine today's corporate treasury technology landscape, looking at the advantages and disadvantages of the various technology options available to firms. In the final section of the report, we take an in-depth look at the treasury automation initiatives at Honeywell International and Microsoft Corporation, two multinational corporations which have approached their treasury automation needs in dramatically different ways. As we'll see, there is no "one size fits all" when it comes to choosing the right approach to automating treasury functions. A company's chosen strategy will vary based on the scope of treasury's responsibilities, its level of involvement in operational cash flows, the scale of a firm's operations in terms of geography, the type and number of transactions executed, and the complexity of its banking relationships.

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## **INTRODUCTION**

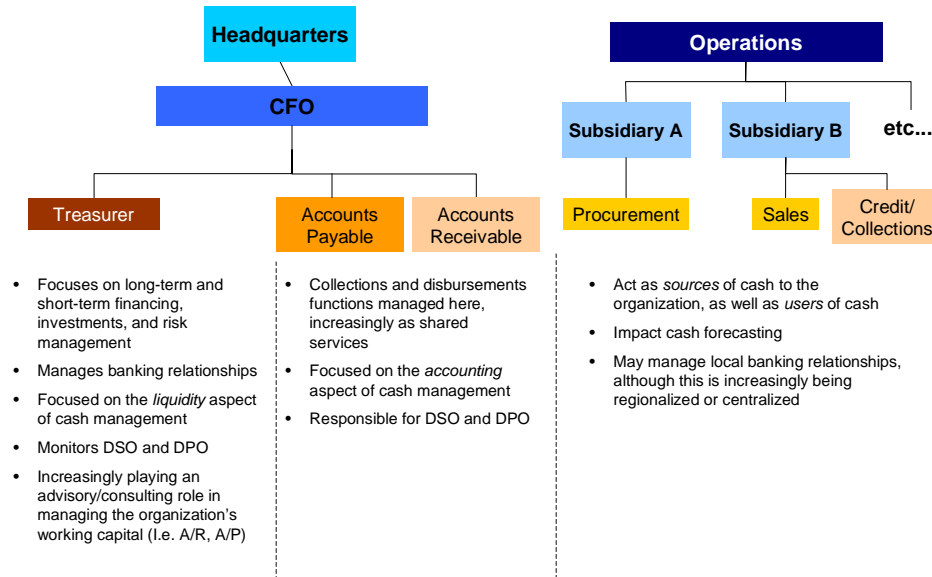
Treasury plays a critical role in an organization's financial operations, acting as the steward of the firm's assets and liabilities. The focus of treasury was historically on cash management, but today's treasurer is playing a more strategic, advisory role within the firm, working in partnership with operational groups to oversee an organization's financial supply chain. Treasurers are interacting with a greater number of internal and external constituents than ever before, and are increasingly relying on treasury management technology to gain accurate and timely visibility over their global cash position and to move toward a goal of straight-through-processing of treasury transactions.

### **THE CHANGING FACE OF TREASURY**

Treasury's role has traditionally been to act as the guardian of an organization's cash flows — ensuring that a company benefits from lower cost of funds, reduced debt and increased liquidity, while also controlling levels of risk. At the broadest level, the business of treasury is focused on liquidity and risk management and includes specific functions such as: cash forecasting, investing, debt issuance, foreign exchange, hedging and managing bank relationships (see Figure 1). Treasury also plays an important role in cash management, which is primarily focused on the functions of disbursement and collections (i.e., order-to-pay, invoice-to-cash), particularly in forecasting the amount and timing of these cash flows,

arranging funding to cover any expected cash shortfalls, and investing excess cash in order to maximize returns while minimizing risk.

**Figure 1: The Role of Treasury**



Source: Celent

While treasury has long been the hub of cash flow and banking information for an organization, the area of treasury management has also been undergoing significant change in recent years. Treasurers are moving beyond their traditional role as a funding, processing and investing staff function that is concerned mostly with the short-term cash needs of the organization. Instead, treasury is playing a more strategic, advisory role within the firm, working in partnership with operational groups to oversee an organization's financial supply chain. Treasurers are increasingly involved in managing a firm's working capital (i.e., AR, AP, and inventory) which essentially represents the *sources* and *uses* of cash within a firm. This broader mandate requires treasury to have greater involvement in the day-to-day business as well as timely visibility into the financial operations of the organization, across all subsidiaries and geographic regions.

Treasury is also playing a more prominent role in enterprise risk management. While treasury has long overseen liquidity, FX, and interest rate risk, today's treasurer is involved in managing risks associated with a broader range of cash flows such as commodity risk (e.g., energy, metals), credit risk, as well as market risk (e.g., risks associated with purchases, sales, or funding). In some firms, treasurers are taking an even more hands-on role, for example by managing the procurement of commodities whose prices must be hedged in response to market volatility. Whether acting as a consultant to the company's operating units or taking a

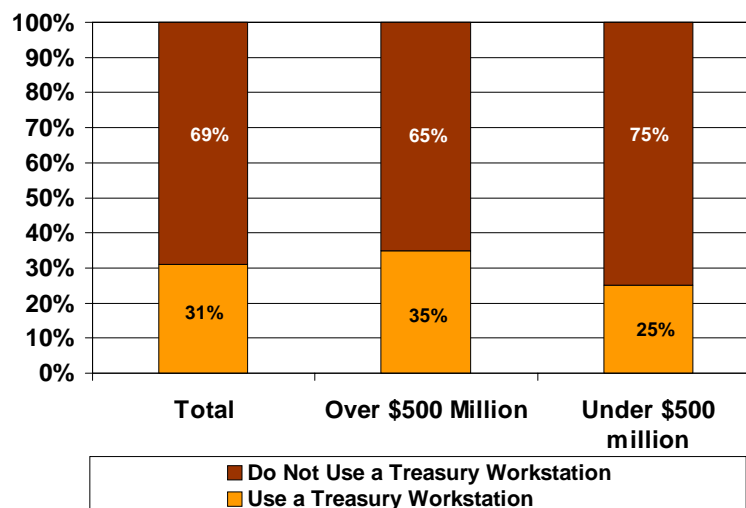
more hands-on role, effectively managing risk requires treasury to have greater visibility into and control over the firm's financial operations.

## TREASURY TECHNOLOGY ADOPTION DRIVERS

With many companies holding increasingly large amounts of cash on their books in today's market environment, treasury has a greater ability to impact a company's bottom line than ever before. By effectively driving investment decisions, maximizing internal cash flows in order to minimize external funding requirements, and tightly managing banking transaction costs, treasury can maximize its role as steward of an organization's financial assets and add greater value to the organization. Accomplishing this goal requires treasury to have accurate and timely visibility over the organization's cash around the world. The rigorous internal audit requirements imposed as a result of Sarbanes-Oxley also require treasury to control the risks associated with how this cash is managed and to be able to audit this activity. For organizations that are not as cash-rich, treasury has a particularly critical role to play in managing liquidity risk and ensuring that the firm has the financial capacity to meet short-term obligations.

Treasurers are in real need of automation solutions to facilitate these tasks. Yet, for a majority of corporations, spreadsheet technology remains the dominant liquidity tool. According to a survey of senior financial executives conducted by *Treasury & Risk Management* during 2005, a mere 31% of respondents reported making use of a treasury workstation technology (Figure 2 on page 7). Furthermore, the needle has barely shifted from year to year, with the same usage patterns emerging from corporate surveys dating from 2003.

**Figure 2: Use of Treasury Workstation Technology by Firms of Varying Size**



Source: Treasury & Risk Management, September 2005

However, corporations are increasingly realizing that using spreadsheet software to manage information on cash flows or banking information is an approach that is error-prone and difficult to audit. In addition to addressing such control weaknesses, companies are also looking to benefit from the operational efficiencies associated with greater straight-through-processing both within the organization and with external parties along the financial supply chain. More and more treasurers are realizing that they need to move beyond basic spreadsheet technology toward more sophisticated, and better-integrated automation solutions for managing their treasury operations. In parallel, treasury systems are finally catching up with current needs, providing corporations with more technology options than ever before. Celent expects that through 2008, the needle will begin to shift as corporations are driven to adopt more sophisticated treasury management tools. Key business drivers for the increased adoption of treasury management technology include:

### **Increased Globalization, Competition and Complexity**

- More companies are operating globally than ever before, resulting in increasingly complex treasury processes for a wider range of firms.
- At the same time, the ability to optimize cash flows and liquidity while simultaneously managing risk is becoming an important competitive differentiator.

### **Resource Constraints**

- Treasury departments increasingly need to do more with less.
- Yet many continue to spend large amounts of scarce time and expensive resources on manual practices such as: collecting basic data on cash and trading positions, re-keying information from system to system, and manually releasing payment transactions.
- In response, treasurers are seeking automation solutions to allow for STP both within the corporation and with external parties such as banks, data providers, and other members of the financial value chain.

### **Compliance & Control**

- Sarbanes-Oxley (SOX) legislation has made compliance a critical issue for treasurers.
- The trend toward global fair value accounting is expected to reach a greater number of financial instruments, requiring treasurers to

comply with an increasing number of accounting regulations, beyond FAS133.

- Treasurers are increasingly looking for the ability to proactively ensure compliance rather than simply reporting on noncompliance after the fact.
- Treasurers are seeking out automation solutions that allow them to exert greater control over a range of processes and ensure they are managed consistently across the company, without the need for manual intervention. Examples of such processes include: bank account opening and closing, account reconciliation, transaction execution and cash movement, access security, etc.

### **Enterprise Cash Visibility**

- Global liquidity management and optimization have always been a key priority for treasury. However, corporations are increasingly looking for more accurate, real time (or near-real time) visibility into cash balances worldwide.
- Treasurers are also seeking tools for analyzing their cash positions by various criteria (e.g., geography, date, bank, currency, etc.) with the flexibility to support their unique organizational hierarchy (e.g., business unit structure).

### **Corporate Systems Integration**

- Companies are increasingly adopting ERP systems for their general ledger.
- Best practice is for applications such as treasury to integrate directly into the general ledger in order to maximize STP and improve efficiencies.
- Internet-based access across the enterprise is the desired state, and companies are looking to both bank and nonbank providers, which are increasingly providing more web-based options.

### **Centralization and Concentration**

- A key trend in treasury is the desire for corporations to consolidate their banking relationships and to either regionalize or centralize their

treasury operations. The goal is to lower costs, reduce complexity, and improve controls.

- More innovative firms are taking centralization even further by implementing in-house banking for intercompany transactions and creating payment factories for the centralization of inbound and outbound payments.
- Accomplishing these goals requires treasury to make effective use of automation solutions to support everything from pooling and netting capabilities to tools for managing bank accounts and cash balances, to centralized collections and payments capabilities.

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## MARKET OVERVIEW AND TRENDS

The corporate treasury technology market is undergoing a period of rapid change and consolidation. The Internet has had a dramatic impact on the nature of treasury technology—the emergence of hosted or ASP treasury management applications provided by both specialized treasury technology vendors as well as banks is putting treasury automation within the reach of a larger number of companies than ever before. The emergence of ERP vendors, who have moved aggressively into the corporate treasury market over the past 3 years, is putting pressure on specialized vendors of treasury management technology. In response to these pressures and in an attempt to build solution breadth and scale, leading vendors of traditional client-server oriented solutions are focused on growing through acquisitions, winnowing the number of providers left in the market.

### AN OVERVIEW OF TREASURY MANAGEMENT TECHNOLOGY

Technology provides the essential infrastructure for treasury, and includes a range of hardware, software and network connectivity elements that provide the information needed to conduct treasury activities. There are many technology alternatives that firms employ to manage their treasury needs, ranging from the ad-hoc use of spreadsheets to fully integrated, best-of-breed treasury systems, with various options that fall in between these two extremes in terms of cost and complexity. The following table describes key characteristics as well as

advantages and disadvantages of the various technology options available to corporate treasury departments today.

**Table 1: Treasury Technology Options**

Technology Alternative	Characteristics	Advantages & Disadvantages
Spreadsheets	<ul style="list-style-type: none"> <li>Used for a range of functions from cash forecasting to bank account management</li> <li>Remains the liquidity tool of choice for a majority of corporations</li> </ul>	<ul style="list-style-type: none"> <li>Very flexible</li> <li>A low cost and ubiquitous tool. However, total cost of ownership can be high, particularly when considering the potential for errors, lost efficiency, and high development and support effort.</li> <li>Weak controls (e.g., poor audit trail, limited application, and user security)</li> <li>Limited automation beyond macros (i.e., no workflow tools, lack of data management, no multi-user capabilities)</li> <li>Typically not integrated with other treasury technology components, limiting the ability to achieve STP</li> <li>Poor knowledge continuity (i.e., staff turnover results in loss of knowledge regarding model design)</li> </ul>
Standalone Treasury Management System (TMS)	<ul style="list-style-type: none"> <li>Also referred to as treasury workstations, these systems typically provide a comprehensive set of functionality across the front, middle and back office, including cash/liquidity, debt, investment, and currency management</li> <li>Most provide the ability to interface/integrate with general ledger systems as well as external banking communication services such as SWIFT or ACH as well as other third parties such as market data providers.</li> <li>Mostly client-server based, however many providers are moving to a thin-client architecture or providing complementary web-based tools to support broader enterprise access</li> </ul>	<ul style="list-style-type: none"> <li>Depth of functionality due to vendors' treasury focus</li> <li>Extensive automation of labor intensive repetitive tasks and integration with internal and external systems to facilitate STP. Strong data management.</li> <li>Strong controls including: roles, limit definition, monitoring capabilities and a strong audit trail</li> <li>Availability of a wide choice of systems of varying cost and complexity</li> <li>The standalone nature of these systems makes implementation faster and less complex due to fewer dependencies with other corporate systems.</li> <li>Need to integrate TMS with G/L, which can be complex</li> <li>Greater volatility in the vendor marketplace due to past and expected future consolidation</li> <li>Greater reliance on vendor for implementation and ongoing support</li> </ul>

Source: Celent

**Table 1: Treasury Technology Options**

Technology Alternative	Characteristics	Advantages & Disadvantages
ERP-based Treasury Solution	<ul style="list-style-type: none"> <li>• ERP vendors have significantly improved the functionality of their treasury modules over the past 2 to 3 years, providing strong solutions that are tightly integrated with the G/L</li> <li>• Appropriate for corporations that have implemented an ERP system across most/all of the enterprise, ideally as a single instance of a fairly recent version of the application</li> </ul>	<ul style="list-style-type: none"> <li>• Fully integrated, enterprise-wide system</li> <li>• Strong functionality, particularly for back office functions.</li> <li>• Strong data integrity, process automation and controls</li> <li>• Standardized technology platform across the enterprise (i.e., for organizations that have an extensive commitment to their ERP solution) can result in lower support costs and higher corporate IT buy-in.</li> <li>• Weaker front-office functionality than many TMSs</li> <li>• Treasury has limited choice when it comes to functionality, which is tied to the company's chosen ERP vendor</li> <li>• More complex and time consuming implementation due to the enterprise nature of the platform and a greater number of system and process dependencies.</li> <li>• Difficult to make system improvements due to the relatively low priority given to treasury requirements versus broader organizational needs.</li> </ul>
"Best-of-Breed" Treasury System	<ul style="list-style-type: none"> <li>• This is a hybrid approach more likely to be favored by large organizations that may have an enterprise-wide ERP system but that need more complex capabilities than an ERP-based treasury solution can provide.</li> <li>• Involves building a "best-of-breed" system that integrates individual applications for various, typically front-office, functions (e.g., tools related to deal execution, confirmation and reconciliation across instruments) with back-end accounting systems and external partners.</li> </ul>	<ul style="list-style-type: none"> <li>• Leading edge technology for the most complex treasury needs</li> <li>• Very high degree of automation and control</li> <li>• Highly customized to the needs of the organization</li> <li>• High cost; typically within the reach of only the largest treasury departments</li> <li>• High implementation and support effort due to the integration of multiple applications from a range of vendors</li> </ul>

Source: Celent

**Table 1: Treasury Technology Options**

Technology Alternative	Characteristics	Advantages & Disadvantages
Hosted (ASP) Solution	<ul style="list-style-type: none"> <li>• Provided by both specialized vendors as well as banks</li> <li>• An increasingly attractive option for corporations that do not have the resources or inclination to implement and support an in-house TMS (e.g., midsize treasury departments).</li> </ul>	<ul style="list-style-type: none"> <li>• Strong functionality across most common treasury tasks (e.g., cash management automation, bank connectivity etc...), but with limited support for customization. However, most offerings are highly configurable to address the needs of many treasury departments.</li> <li>• Strong process automation, data integrity (in a shared environment) and controls</li> <li>• No capital investment; typically a low, cost, variable pricing model</li> <li>• Rapid implementation</li> </ul> <ul style="list-style-type: none"> <li>• May lack more complex functionality such as risk management tools, or support for accounting complexities. However, given the target market for these solutions, this is of lesser concern.</li> </ul>

*Source: Celent*

As postulated above, treasury technology is marketed by three main types of providers and is available in two primary delivery models.

### Category of Provider

- Specialized vendors of treasury management systems: Provide a range of solutions of varying cost and functionality in both client-server and hosted models.
- ERP vendors: Treasury is an extension of a broader set of enterprise applications, with tight integration and enterprise-wide access being key differentiators.
- Banks: Play a critical role in connectivity, data aggregation and normalization, but are also increasingly providing treasury applications, typically in a hosted (ASP) manner.

### Delivery Model

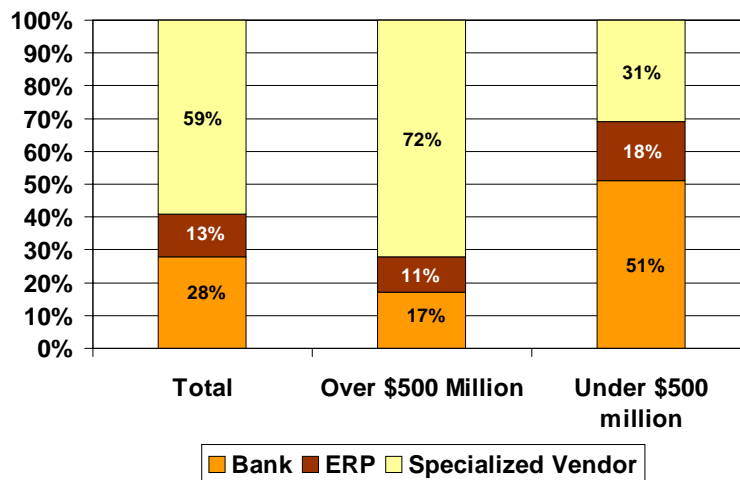
- Client-server: A unique instance of the application that is installed specifically for the client, either at the client's premises or in some cases, with the option to host the application at a third party hosting firm. Many providers also provide the ability to web-enable these

applications through the use of a web presentation layer that sits on top of the installed application, allowing wider enterprise access to the application for queries and other functionality.

- ASP: A hosted, multitenant application (where multiple corporations are running on a single instance of the application), which is configured to reflect the needs of each client. This can be a cost-effective option for less complex treasury needs and is increasing in popularity.

A company’s choice among these technology alternatives is driven by a range of factors including the size and scale of the organization, the complexity of its treasury operations, the breadth of its banking relationships, as well as its functional priorities. For example, a midsize treasury that is primarily focused on automating cash and position management, and with a limited number of banking partners as well as limited internal IT resources will do well by choosing an ASP solution provided by either its primary bank or a specialized vendor. On the other hand, a large multinational with a geographically dispersed and complex organization, a need for deep front-office functionality focused on best execution, and benefiting from significant IT resources, may opt to build a best-of-breed system. The following figures illustrate provider and delivery model preferences of US corporations based on a survey of senior financial executives conducted by *Treasury & Risk Management* in 2005. In general, smaller corporations (i.e., those with revenues under US\$500 million) are most likely to favor bank-provided solutions and also prefer ASP-based solutions over internal (client-server) ones.

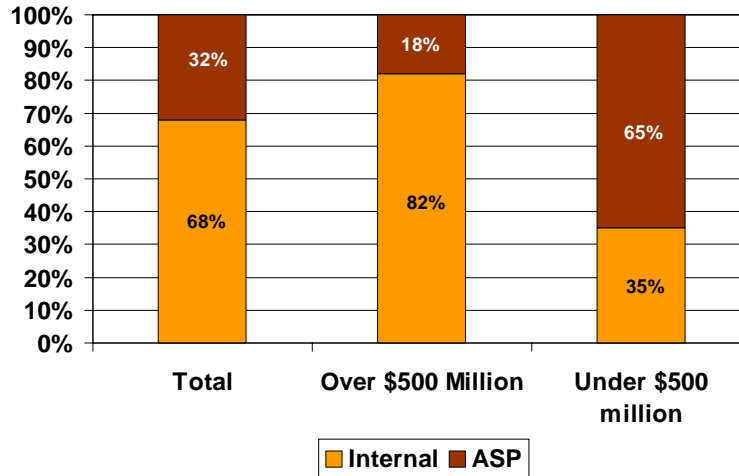
**Figure 3: Use of Treasury Technology Vendor Type by Size of Company**



Source: *Treasury & Risk Management*, September 2005

In particular, interest in ASP offerings is growing rapidly. Many corporations facing a

**Figure 4: Use of Delivery Model by Size of Company**



Source: *Treasury & Risk Management*, September 2005

replacement cycle for aging treasury workstations will consider ASP offerings, a situation considered virtually unthinkable a few years ago. Furthermore, this phenomenon is not limited solely to mid-market corporations. Many large corporations have found themselves operating multiple treasury platforms and general ledger applications as a result of acquisition-led growth. Rather than attempting to replace or integrate these solutions, such firms are considering newer, web-based ASP solutions to tie their multiple applications together and gain centralized visibility over their financial positions more quickly and cost effectively. The goal is to gain visibility over cash, investment and debt data in a centralized manner, even if the systems using this data are not truly “centralized.” Opting for a web-based solution that provides centralized connectivity to key external data is increasingly a viable scenario for corporations. Celent expects demand for ASP treasury solutions to be brisk over the next several years, with solution providers stepping up to the plate with a broad range of offerings. Specialized vendors will continue to expand their web-based/ASP offerings through acquisitions (e.g., Trema’s acquisition of Richmond Software and Thomson Financial’s acquisition of Selkirk) as well as through product development activities.

Banks also have a big stake in delivering web-based versions of treasury applications. Most banks estimate that roughly one third of mid-market and large corporations are seeking to lower bank fees, reduce their number of banking relationships, or both. With fee pressure being felt across a majority of their wholesale banking products, banks are looking for higher-value solutions to improve their value propositions. Advanced treasury workstation capabilities that are well integrated with a bank’s business-to-business payment products and

offered via a web portal fit the bill. Celent expects competition among leading treasury and cash management banks to heat up as they scramble to either introduce or improve their web-based treasury management offerings. We also expect to see a greater number of partnerships forming between banks and specialized vendors, with the former seeking best-of-breed functionality to integrate into their wholesale banking offerings and the latter seeking new channels to market their products, particularly to midsize corporations.

## **SOLUTION PROVIDER LANDSCAPE**

While there is no one-size-fits-all solution for automating a firm's treasury operations, there are some key trends driving the market. Firstly, the role of the Internet has become paramount. As discussed above, there has been strong interest in moving away from the traditional client-server approach to treasury workstation technology toward a hosted or ASP model, particularly for smaller treasury departments that may not have the resources to implement a relatively expensive client-server solution. Corporations are also seeking the ability to easily and quickly distribute application functionality across the enterprise, and the web is the medium of choice. The Internet is also the channel of choice for bank connectivity, with firms wanting to capture position information from global banking partners in an automated, standardized manner rather than over proprietary bank connections.

Secondly, the relationship between the various technology providers is in flux, with providers increasingly co-existing. Bank-provided solutions that are focused on connectivity and data aggregation may co-exist with treasury workstations provided by either specialized vendors or ERP players, particularly within corporations that have not achieved the nirvana of a single, corporate-wide ERP environment. At the same time, many bank solutions offer increasing application-level functionality that in fact competes with treasury workstations, particularly when targeting midsize companies. Some financial institutions are in fact working with specialized vendors via an OEM relationship, white-labeling these vendors' ASP solutions and integrating them within their broader wholesale banking and payments offerings — a trend that Celent expects will grow over the next three years. The most forward thinking financial institutions are building multi-banking data aggregation platforms which support direct integration into a company's ERP system.

Finally, specialized vendors are experiencing a period of turmoil. Vendor survival has emerged as an important issue for treasury managers facing replacement decisions for aging treasury workstations. This is because of a wave of consolidation over the past five years that has winnowed the number of specialized treasury technology vendors in the market. Specialist vendors are facing significant competition from ERP vendors who have dramatically improved their treasury offerings over the past two to three years, as well as from banks who are working to provide value-added treasury application functionality via wholesale banking portals.

The following table provides an overview of some of the leading providers of corporate treasury management software. Celent plans to analyze vendor offerings in greater detail in a future report.

**Table 2: Corporate Treasury Management Software**

Category	Vendor Name	Product(s)	Description
ERP	Oracle	Enterprise Business Suite (EBS) Treasury & Risk Management, PeopleSoft Enterprise Cash, Deal and Risk Management	<ul style="list-style-type: none"> <li>• Web-enabled</li> <li>• Provide front- to back-office functionality including cash management, deal management, treasury reporting, in-house banking, and interest rate and currency risk reporting functionality</li> <li>• Both solutions are fully integrated with the general ledger for back-office processing</li> <li>• Provide financial gateway functionality for centralizing payments and bank communications</li> </ul>
	SAP	mySAP ERP Financial Supply Chain Management (FSCM) suite	<ul style="list-style-type: none"> <li>• Web-enabled</li> <li>• Key treasury management components: SAP Cash &amp; Liquidity Management (capture inbound liquidity data, perform analyses, handle outbound payments), SAP In-House Cash (for centralizing intra- and inter-company payments), SAP Treasury &amp; Risk Management (for managing financial transactions and risks).</li> <li>• Pre-built data integration capabilities with other FSCM modules (e.g., credit and collections) provides visibility over finance &amp; accounting operations,</li> <li>• Fully integrated with general ledger for back-office processing</li> </ul>

Source: Companies, Celent

**Table 2: Corporate Treasury Management Software**

Category	Vendor Name	Product(s)	Description
Specialized Vendors	Kyriba	KyribaTi	<ul style="list-style-type: none"> <li>• ASP solution</li> <li>• Complete cash and liquidity management solution that allows for the automated aggregation of banking and payment data through a central connectivity hub. Also provides an integrated bank relationship management module for account administration and fee analysis.</li> <li>• Product can be white-labeled by banks (it is currently white-labeled by one US bank and being piloted by another global bank).</li> </ul>
	Misys	Treasury Plus	<ul style="list-style-type: none"> <li>• ASP solution</li> <li>• Offers pre-trade (e.g., market data), multi-bank and multi-instrument trade execution, and post-trade (e.g., confirmation matching, netting) services</li> <li>• Also offers hedge accounting and financial risk management functionality (via a partnership with Reval)</li> <li>• Architecture allows for bank white-labeling of the solution</li> </ul>
	SimCorp	IT2	<ul style="list-style-type: none"> <li>• Installed client-server</li> <li>• Complete international/domestic treasury workstation with multiple modules targeting mostly mid-market companies.</li> <li>• Broad range of functionality including: cash, FX, debt and equity and commodities management, risk management, hedge accounting, as well as a web-based tool providing subsidiaries with access to treasury data.</li> </ul>
	Sungard	AvantGard GTM, AvantGard ICMS, AvantGard Quantum, AvantGard ResIQ, AvantGard Integrity, AvantGard ASP, AvantGard LEX (Liquidity Express), AvantGard ETX Connectivity, AvantGard APS 2, AvantGard Account Compliance, AvantGard CashPredictor, AvantGard Netting; AvantGard Risk	<ul style="list-style-type: none"> <li>• Range of solutions across installed client-server, web-enabled and ASP delivery models</li> <li>• Market-leading provider of multiple treasury solutions (many gained via acquisitions), all marketed under the AvantGard brand.</li> <li>• Applications address comprehensive treasury and accounting necessities, including treasury cash management, treasury risk management, foreign exchange, bank relationship management and debt and investment support, business communication, and in-house banking. Also provide connectivity with many of the world's largest banks, broker/dealers and information providers through the AvantGard ETX real-time messaging network.</li> </ul>

Source: Companies, Celent

**Table 2: Corporate Treasury Management Software**

Category	Vendor Name	Product(s)	Description
Specialized Vendor	Thomson Financial	Treasury Manager (TM), Treasura (via Selkirk acquisition), Treasury Anywhere	<ul style="list-style-type: none"> <li>Treasury Manager: Installed client-server; Treasura: Native ASP solution</li> <li>Treasury Manager is a comprehensive treasury platform including modules for: cash mgmt and forecasting, electronic payments, short and long term debt, investments, FX and commodities, hedge mgmt, intercompany loans, and general ledger capabilities.</li> <li>Treasura is a fully web-based ASP offering that is targeted to midsize treasury departments. It supports common treasury functions such as automated data gathering, cash position consolidation, and support for key treasury workflows.</li> <li>Treasury Anywhere is a white-label solution targeted to banks for resale to corporate clients</li> </ul>
	Trema <sup>a</sup>	TremaSuite, TremaOne (via Richmond Software acquisition)	<ul style="list-style-type: none"> <li>TremaSuite: Installed client-serve (web-enabled); TremaOne: Installed client-server and ASP versions</li> <li>TremaSuite is a high-end treasury workstation with strengths across the front, middle and back-offices. Functionality addressed includes: cash mgmt, portfolio and performance mgmt, transaction and risk mgmt, commercial loan mgmt, and regular and hedge accounting. Supports ERP integration and provides interfaces with banks and market data providers.</li> <li>TremaOne is an easy-to-use and install solution targeted to midsize treasury departments. Provides tools for cash position management and handles most day-to-day tasks of the treasurer</li> </ul>
	Wall Street Systems	Wall Street System for Corporate Treasury	<ul style="list-style-type: none"> <li>Installed client-server (web-enabled)</li> <li>Provide best-of-breed treasury workstation technology to large, global corporations</li> <li>Complete treasury solution – cross asset, trading, P&amp;L, position management, accounting, risk management, and compliance. Provide support for in-house banking.</li> </ul>
	XRT	XRT Enterprise Suite; XRT TWS Express (North America); XRT Universe (Europe and other regions); Business Exchange (XBE)	<ul style="list-style-type: none"> <li>Installed client-server (web-enabled, except for XRT Universe)</li> <li>XRT Enterprise Suite is a full-fledged treasury workstation with modules for cash/liquidity, risk, dealing (FX, debt and investment mgmt) and in-house banking. The solution is complemented by Business Exchange, a communications platform for exchanging data with banks and other external partners.</li> <li>For midsize treasuries, XRT TWS and XRT Universe offer low cost and easy to implement cash and treasury mgmt core functionality.</li> </ul>

Source: Companies, Celent

**Table 2: Corporate Treasury Management Software**

Category	Vendor Name	Product(s)	Description
Banks	ABN Amro	Access Online	<ul style="list-style-type: none"> <li>• Web-based portal</li> <li>• Supports cash mgmt (payment execution and balance/transaction reporting), liquidity mgmt, (i.e., money market deposits and loans execution), foreign exchange execution and reporting,</li> </ul>
	Citigroup	TreasuryVision	<ul style="list-style-type: none"> <li>• Web-based portal</li> <li>• Allows clients to aggregate and normalize cash position information across multiple banks; manage treasury related reporting, request and approval processes; and perform cash, investment and debt analytics.</li> </ul>
	JPMorgan Chase	Insight	<ul style="list-style-type: none"> <li>• Installed-software treasury workstation application</li> <li>• Provides: multi bank information retrieval, storage and inquiry capabilities; domestic, global and multi bank electronic funds transfers; foreign currency payments and trading; investment and debt management; and decision and support capabilities and reporting.</li> </ul>

*Source: Companies, Celent*

- a. On August 1, 2006, a group of financial executives, backed by global private equity firm and investor in financial technology Warburg Pincus, acquired both Wall Street Systems and Trema. The combined firm will operate under the Wall Street Systems name.

**ERP Vendors.** The emergence of ERP vendors as serious contenders in the corporate treasury technology space is a relatively recent phenomenon. Although the vendors have offered treasury management modules for several years, early iterations of the solutions were brought to market quickly and were not fully formed. However, over the past 2 to 3 years, ERP vendors have expanded their treasury functionality and integrated these applications more tightly with their financial applications suite. Like supply chain management or procurement, functions that were once the domains of specialized vendors but which have become absorbed into the vast ERP umbrella, treasury management functionality is now a core part of the ERP suite. The ERP system already captures many of the sources and uses of cash within an organization's operations such as payables, receivables and payroll. Including treasury functions such as cash and liquidity management, or intra- and inter-company payments is seen by vendors as a natural extension that will allow corporations to gain better enterprise-wide control and visibility over their working capital.

ERP vendors have a few things going for them in capturing more treasury clients. Firstly, corporate IT policies in many firms favor incumbent ERP vendors as part of a push toward IT standardization, with treasury departments being asked to prove that a specialized treasury solution is justified. Secondly, treasury modules are often "included" as part of a broader software licence, creating an additional hurdle for specialized vendors positioning software-

based solutions to corporations. ERP treasury offerings also offer a number of functional benefits key to corporates (Table 2 on page 18). Chief amongst these is the potential for a direct interface between treasury and the general ledger, allowing corporations to move closer to the goal of STP through to the back-office. A case study of Microsoft Corporation's implementation of SAP treasury functionality provides an illustrative example of this approach and is presented beginning on page 31.

However, there are also limitations. For a corporation to benefit from an ERP treasury offering, they must have already achieved the goal of having a single, corporate-wide ERP platform in place. Yet, according to a survey conducted by gtnews.com in May 2006, among corporates with revenues between US\$1-10bn, only 54 per cent have a single vendor/version global implementation of an ERP system. For corporations that continue to operate multiple, disparate general ledgers, a specialized, multi-bank treasury solution remains the preferred option. A case study of Honeywell's implementation of the SunGard AvantGard Quantum workstation provides an illustrative example and is presented beginning on page 26.

**Specialized Treasury Management Vendors.** The world of specialized treasury technology vendors is in rapid flux. Over the past two years, mergers and acquisitions have taken place at a torrid pace. SunGard acquired Integrity, Thomson Financial acquired Selkirk, and Trema acquired both Alterna and Richmond Software. Private equity owners are also targeting the space, with SunGard being taken private during 2005, and most recently on August 1st, 2006, a group of investors backed by Warburg Pincus acquiring both Wall Street Systems and Trema. The combined company will operate under the Wall Street Systems name and with revenues of approximately \$120 million, will become the second largest treasury technology vendor after SunGard.

A key driver of this M&A activity on the part of vendors is the desire to build product breadth in a slow growing market. With only a finite number of large, global corporations needing treasury workstation technology, vendors are eager to address a broader scope of firms' working capital management needs. SunGard's acquisition of GetPaid Corporation, a provider of accounts receivable and collections management software, is a prime example. Vendors are also eager to target the relatively untapped market of midsize firms seeking to improve their treasury operations. The emergence of ASP, or "software as a service" (SaaS), offerings with their low up front fees and monthly usage-based pricing is key to this strategy. Vendors offering ASP treasury solutions include Kyriba, Misys, SunGard, Thomson Financial, and Trema.

Given the current wave of consolidation in the treasury landscape, vendor survival has emerged as an important issue for treasury managers facing replacement decisions for aging workstations. Celent predicts that vendors with the greatest scale, product breadth and financial backing will benefit during this period of uncertainty. Laggards will lose ground to stronger specialized vendors, as well as to banks who are increasingly offering more extensive cash and treasury management solutions for both large and midsize corporations.

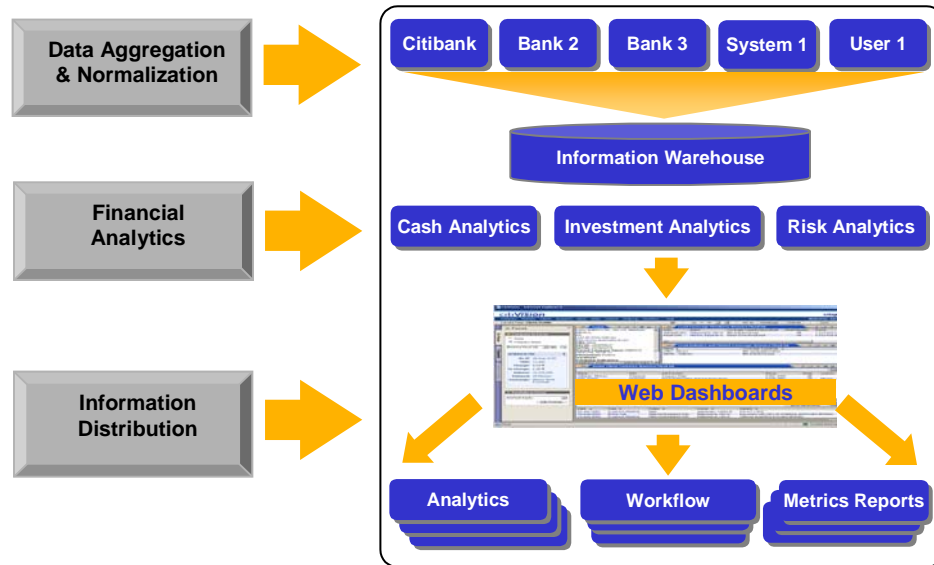
**The Role of Banks.** A significant priority for many corporations is the rationalization and simplification of their global banking relationships. Frustrated with the inability of smaller banks to provide real-time data, many large corporations are increasingly concentrating their global cash and treasury management needs with a handful of financial institutions who are stepping up to the plate with multi-bank and multi-asset solutions for a company's cash and treasury management needs. Banks such as ABN Amro, Citigroup and JP Morgan Chase are building both intellectual property and scale in cash and treasury operations and are increasingly displacing smaller regional/national institutions.

Bank-to-corporate communications is a key area of focus. Treasurers want more and richer information from their banks. They also want to phase out proprietary bank software, instead adopting emerging standards (e.g., SWIFT messaging) that will ease multi-bank connectivity. With front-office portals and interfaces rapidly becoming commoditized and with large corporates keen for more STP, a key differentiator for banks is providing more flexible back-office messaging solutions. Banks have traditionally viewed their interface with corporate customers as a retention mechanism, making it hard for corporate clients to use other financial institutions. But with corporate clients increasingly willing to bypass banks altogether in order to set up multi-bank, back-office connectivity via third parties, forward thinking financial institutions are gradually changing their position.

Citigroup's TreasuryVision platform is one example of a web-based multi-bank solution that provides a consolidated view of a firm's cash, investment and debt data (Figure 5 on page 24). Built on Microsoft's .NET technology, the solution provides data aggregation and normalization capabilities, allowing clients to identify, collect and classify balance and transaction data from Citigroup and other third party banks, as well as data from other payment and information systems (e.g., ERP). Users can also manage treasury related reporting, request and approval processes (e.g., bank account management, liquidity and currency risk reporting, bank guarantee management etc....). The solution's analytics capabilities allow a firm to drill down on cash, investment and debt positions by region, business unit, currency and other filters, as well as perform trend analysis to enhance cash

forecasting. Finally, TreasuryVision's portal-based access makes it easy to deploy across an enterprise.

**Figure 5: TreasuryVision Architecture**



Source: Citigroup

Interestingly, Citigroup does not position TreasuryVision as a replacement for a treasury workstation. Instead, for corporations that find themselves operating multiple treasury platforms and general ledger applications, TreasuryVision can be a time- and cost-effective solution for gaining centralized visibility over the firm's financial positions. In this model, information is exported from TreasuryVision to the TMS or ERP for recording of transactions and further processing. However, for midsize corporations that have not yet automated their treasury operations, a solution such as TreasuryVision in combination with the firm's general ledger application can provide a fairly comprehensive solution for its treasury management needs. In many ways, we are at an inflection point when it comes to the issue of where corporate payments will ultimately be managed. According to Gary Greenwald who is the Global Head of Cash Management Information Platforms at Citigroup Corporate and Investment Banking, "We're seeing a convergence toward a universal, multi-banking front-end that is tightly coupled with or even embedded in a company's ERP system. Banks have an opportunity to come in behind the customer's firewall, providing industrial strength connectivity solutions for both inbound and outbound communications, as well as providing web-based functionality in areas such as analytics, bank account management, and risk management for firms that are unwilling or unable to implement such capabilities internally." Celent expects that banks, hoping to mitigate the loss of traditional wholesale payments revenue, will increasingly implement this type of value-added functionality in order to strengthen their relationships with corporate clients.

In response to the competitive threat from large banks, some smaller institutions are fighting back by focusing on their own innovations. One path to innovation is to work with specialized vendors via an OEM relationship, integrating the vendor's solution within the bank's wholesale banking and payments offerings. An example is Lasalle Bank which is white-labeling Thomson Financial's Treasury Anywhere solution for its CashPro Workstation. This platform offers small and midsize corporations core treasury functions such as cash management and forecasting, reconciliation, electronic payments, investments, debt and reporting. CashPro Workstation is also fully integrated with the bank's CashPro Web online banking system, ensuring that any cash-impacting financial transaction or payment entered via CashPro Web is automatically incorporated into the cash forecast built within CashPro Workstation. Celent expects such OEM relationships to mushroom over the next three years as regional financial institutions work to strengthen their wholesale banking product portfolios with best-of-breed treasury management functionality.

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## CASE STUDIES

The following case studies illustrate how different organizations of various size and complexity have opted to address their treasury technology needs. As we'll see, there is no "one size fits all" when it comes to choosing the right approach to automating treasury functions. Approaches vary based on the scope of treasury's responsibilities, treasury's level of involvement in operational cash flows, the scale of a firm's operations in terms of geography, the type and number of transactions executed, and the complexity of its banking relationships.

In the first case, we explore the situation at Honeywell International, a typical multinational characterized by multiple locations, decentralized accounting and general ledger functions handled by the business units, and a treasury group that is primarily focused on corporate finance responsibilities. The firm has a large number of bank relationships and poor cash visibility across its accounts — a problem it sought to resolve by implementing a treasury management solution provided by SunGard, a specialized treasury technology vendor.

In the second case, we take a look at Microsoft Corporation, another global multinational which has taken a different approach to solving its treasury challenges. Needing to gain better visibility over its cash and liquidity position, Microsoft also operates a centralized treasury management department, but has taken this effort a step further by creating an in-house cash center as part of its centralization effort. Having already put in place an enterprise-wide SAP platform for its ERP needs, Microsoft also opted for an SAP-based solution for global treasury management and, in a sign of things to come in the treasury technology space, is currently working to implement direct SWIFT-based connectivity with a number of its bank partners, moving closer to a vision of STP from the point of bank connectivity through to the general ledger.

### **OPTIMIZING CASH VISIBILITY ACROSS GLOBAL OPERATIONS: THE CASE OF HONEYWELL TREASURY**

Honeywell International is a diversified technology and manufacturing firm serving customers worldwide with aerospace products and services; control technologies for buildings, homes and industry; automotive products; turbochargers; and specialty materials. In the late 1990s and early 2000s, Honeywell grew and changed as a result of a number of acquisitions. AlliedSignal acquired Honeywell in 1999 and subsequently changed the combined company's name to Honeywell International. The old Honeywell was characterized by highly decentralized international businesses, each with its own accounting systems and banking relationships. At the same time, driven by a more centralized culture at Allied Signal,

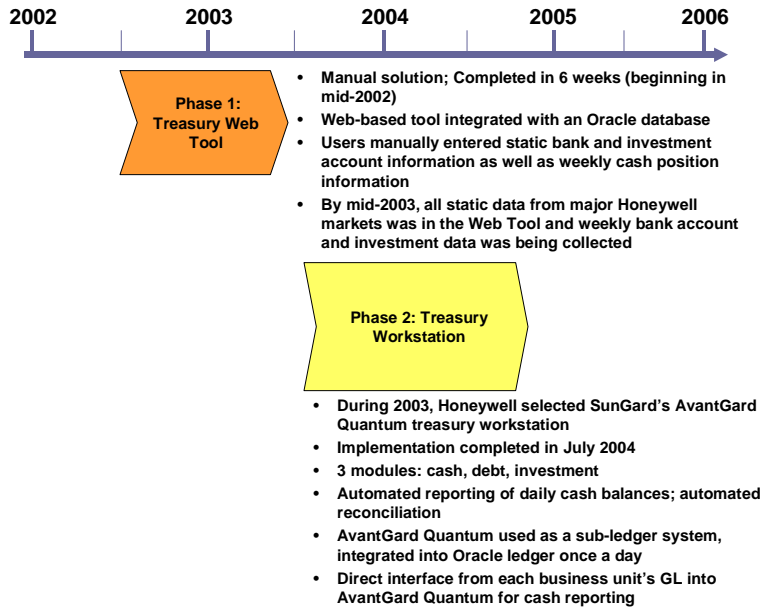
there was a push toward greater corporate-level control over key functions, with the Treasury group being centralized as a result. Treasury is primarily responsible for all corporate finance activity including cash management, debt issuance, and investment management. During 2002, the recently centralized Honeywell Treasury group realized that it had insufficient visibility into its banking activity around the world and initiated a project to address this gap.

**Background.** Honeywell wanted to achieve daily cash flow visibility across its widely dispersed operations in order to gain better control over cash and maximize investment returns. This would involve identifying the location of over \$2 billion in cash and cash equivalents in 46 currencies across over 60 countries. It was apparent to Treasury that such a task could not be managed through the use of e-mail and spreadsheets, and that some level of automation would be needed to do the job. However, Treasury was also under pressure to find a quick solution to enhance cash visibility. The company wanted to seize the opportunity to repatriate overseas profits using a one-time tax break made available under the Homeland Repatriation Act. This would mean finding a quick solution for capturing information on cash positions from across its far-flung operations.

**The Solution: Phase 1.** In order to reconcile the need for a quick solution against its longer-term automation goals, Honeywell opted for a project that would be implemented in two phases, as shown in Figure 6 on page 28.

The first phase of the project involved creating an in-house application called the Treasury

**Figure 6: Honeywell Cash Visibility Project**



Source: Honeywell, Celent

Web Tool which was implemented in just six weeks. In this phase, data was captured manually rather than in an automated manner. This application included a user interface made available via the company's Intranet which was linked to an Oracle database in the back-end. Up to 200 users in its businesses around the world would access this tool to provide an initial "census" of all static bank and investment account data, including information such as the name and location of the financial institution, the type of account, the account number, etc. Then, on a weekly basis, users would be required to input balance and transactional information related to cash positions, short-term investments and external debt.

There were a number of technology and business challenges that Honeywell faced in deploying the first phase of the project. First, Honeywell needed to implement an access control process to ensure only authorized users could utilize the Treasury Web Tool. Unfortunately, Honeywell did not have a global list of intranet users that it could use to facilitate this, and therefore had to maintain a global user database within the tool itself. The tool provided users with the ability to create their own userids and manage password resets. The user information captured in the Treasury Web Tool also formed the basis for creating users in the Treasury Workstation deployed during phase 2 of the project.

Because users were located around the world, they would be entering data in their local currency and the Web Tool would have to perform currency translation into USD. This required the Web Tool to be linked to third party provided exchange rate data. Static bank and investment account data entered by users needed to be validated for accuracy, requiring data tables to be built for fields such as SWIFT codes, country codes, and internal business unit codes. The latter effort involved changes in internal processes rather than technology. Prior to this project, different departments within corporate (e.g., treasury, controller, tax) had their own internal codes to describe the various Honeywell business units. During Phase 1 of the project, Honeywell Treasury led the drive to harmonize these codes so that a single identifier would be associated with each Honeywell business unit and that this identifier would be used by all corporate groups. This change was a pre-requisite for allowing a direct interface to be established between the Treasury Workstation deployed in phase 2 and each business's general ledger and financial systems.

Despite its manual approach to capturing data, the Treasury Web Tool was a critical first step and was a success because it allowed treasury to begin the process of rationalizing Honeywell's bank relationships, eliminating and consolidating accounts as appropriate. Today, the bank's policy is to work with "one bank per country" wherever possible.

**The Solution: Phase 2.** Although pleased with the early benefits from using the Treasury Web Tool, Honeywell's goal was to ultimately replace this tool with a full-function treasury workstation, including electronic bank feeds of balances and transactions. After considering treasury workstations from three different specialist vendors, Honeywell opted for the SunGard AvantGard Quantum workstation, implemented in conjunction with the SunGard AvantGard eTX solution through FIDES Information Services, a third party consolidator that provides aggregated global reporting of global bank account balances and transaction details. Honeywell's decision criteria was based on the company's need for a truly global solution—SunGard was chosen because of its extensive and proven global track record. Phase 2 of the project, called the Honeywell Global Treasury Workstation, began in January 2003 and took over one year to complete. In July 2004, help desk responsibilities were officially handed over to the SunGard team, ending the implementation period and transition from the Treasury Web Tool to the treasury workstation. The following table describes the

key capabilities of the SunGard AvantGard Quantum treasury workstation that Honeywell implemented during Phase 2 of the project.

**Table 3: Treasury Workstation Functionality Implemented at Honeywell**

Functional Area	Capabilities Implemented by Honeywell
Cash Management	<ul style="list-style-type: none"> <li>Bank communication and account reconciliation: Honeywell conducts daily bank statement reconciliation in an automated manner.</li> <li>Support for tiered bank account and interest rate structures within the treasury workstation</li> <li>Cash position management across all global accounts</li> <li>Cash pooling and sweeping from subsidiary accounts</li> <li>Cash forecasting</li> </ul>
Debt and Investment Management	<ul style="list-style-type: none"> <li>Both short- and medium-term liquidity management including: short-term cash/money market funds; CP, CDs and other discounted securities; mutual funds; and various bond and other debt instruments</li> <li>Access to up-to-date market data through a rate feed interface</li> </ul>
Currency Management	<ul style="list-style-type: none"> <li>Honeywell business units input FX exposures and transaction requests via a home-grown browser-based application.</li> <li>However, execution of FX payments and receipts via integration with an external FX dealing platform (FXAll), takes place through the treasury workstation.</li> </ul>
Process and Security Controls	<ul style="list-style-type: none"> <li>Administration controls (e.g., over bank accounts) to address Sarbanes-Oxley requirements</li> <li>Ability to run system audits</li> </ul>

*Source: Honeywell, SunGard, Celent*

Today, Honeywell has over 1000 bank accounts from more than 500 banks in 45 countries automatically report balance and transaction data daily into the Honeywell Global Treasury Workstation. Data is either sent from the banks directly into the workstation or to a consolidator who transmits the data to the Global Treasury Workstation. The Web Tool is still used for accounts in some developing countries where banks do not offer automated file transmission services.

Looking to the future, as Honeywell moves to a corporate-wide ERP, the company hopes to extend the benefits of treasury automation to its individual businesses, integrating individual business ledgers into the Global Treasury Workstation (today, cash debits are manually entered into business general ledgers).

**Results & Benefits.** As a result of its Cash Visibility project, Honeywell is able to identify the exact location and investment yield on over US\$4 billion of cash worldwide, a task that would simply not have been possible prior to implementing its Treasury Web Tool and Global Treasury Workstation. When the program began in mid-2002, only 5% of the company's cash and cash equivalents were being reported via the Web Tool. Today, using the Global Treasury Workstation in conjunction with the Web Tool, Honeywell has visibility into over 97% of the

cash and cash equivalents on its balance sheet. Because of this improved visibility, Honeywell was in a position to take advantage of the one-time tax break available for repatriating overseas profits, representing millions of dollars in tax benefits.

Having more timely and accurate visibility on cash and cash equivalents has also been invaluable to Honeywell in the planning of mergers and acquisitions (i.e., by providing the ability to mobilize cash when and where it is needed), as well as for capital planning and more opportunistic investing. With all cash, debt and investment data managed in one place, Honeywell is also able to evaluate its investment portfolio on a regular basis to ensure compliance with its corporate investment guidelines.

The company has also been able to gain control over its banking relationships around the world. Honeywell knows how many bank accounts are owned by its businesses in each location and uses this information to optimize and rationalize the bank structure in each country. Also, by moving to a policy of one bank per country wherever possible, Honeywell has established relationships with best-in-class banks in each region that can leverage better systems to provide Honeywell with better quality and more timely transaction data. Honeywell has also experienced a reduction in bank fees because of the greater volume of business being conducted with fewer financial institutions.

## **MICROSOFT: IMPLEMENTING AN ERP SYSTEM FOR GLOBAL TREASURY MANAGEMENT**

With 2005 revenues of \$39.8 billion, sales in over 200 countries, subsidiaries in over 100 countries, and more than 60,000 employees worldwide, Microsoft is one of the world's largest multinational corporations. Since its inception in 1976, Microsoft has experienced phenomenal rates of growth both in the US and internationally, resulting in an increasingly complex operational and financial environment. To manage this growing complexity, Microsoft began implementing an SAP-based general ledger (GL) system for corporate finance in 1996. By early 2004, the company had reached the goal of having a single enterprise-wide finance platform, with over 200 of the company's subsidiaries worldwide live on a single version of SAP. Meanwhile, on the treasury front, Microsoft was using a standalone treasury workstation for cash and FX management that was near the end of its life. The solution had reached the limit of its transaction processing capability and provided no direct integration capabilities with the company's SAP-based GL. The system also suffered from lack of integration with Microsoft's banks — inbound bank statement data was received via cumbersome dial-up connections, while treasury staff had to use individual bank applications to approve and release wire payments. In late 2003, Microsoft Treasury was faced with a replacement decision, and the choice was between another best-of-breed treasury management system (TMS) or an ERP-based solution.

## Microsoft Treasury Background.

Microsoft currently operates a centralized treasury department from its Redmond headquarters with 140 staff members. Treasury has a broad mission within the organization — it is tasked with ensuring the value of the company’s financial assets, providing the capital needed to drive the company’s business while balancing and optimizing the risk and return on its assets. The department’s scope of responsibilities includes global cash and liquidity management, foreign exchange, corporate finance activities, risk management, and credit and collections. Ultimately, treasury’s goal is to increase the visibility and the velocity of the cash flowing through the organization, and to optimize how this cash is deployed and invested. Figure 4 on page 32 lists key characteristics of Microsoft’s treasury operations and illustrates the scope and breadth of the company’s treasury management challenges.

**Table 4: Microsoft Treasury: Key Characteristics**

Characteristic	Details
Number of banking partners worldwide	~100
Total number of bank accounts	~1000
Number of bank accounts managed directly by Treasury	~400
Number of bank accounts managed by subsidiaries	~600
Number of direct bank data feeds	~455 accounts from 7 partner banks via direct connectivity with 3 banking partners
Number of currencies used for settlement purposes	Over 25 currencies across more than 100 countries
Number of FX transactions	More than 700 per month
Total settlement volume	Monthly transaction volume of over US\$38.5B
Size of treasury operations staff	7
<i>Source: Microsoft</i>	

**Project Scope and Priorities.** From the start, Microsoft approached its treasury workstation replacement decision from a very broad perspective, viewing the initiative as an opportunity to re-engineer its treasury processes based on a global strategy of centralized cash management. Rather than approaching the project merely as a technology upgrade, Microsoft was focused on streamlining and consolidating its back-office systems across a broad range of treasury functions, aptly assigning the project the code name BOSCO (i.e., Back-Office Systems COnsolidation). The scope of the initiative covered all key areas of treasury, with key priorities including:

- Global cash position management and liquidity forecasting

- Management of payment transactions including support for both repetitive and free-form wires from a single system
- Bank communication (both inbound and outbound)
- Bank account reconciliation in an automated manner
- Creation of an in-house cash center to manage and process intercompany payments
- Tight integration with the company's GL in order to automate the accounting of: cash movements, intercompany transactions, accruals and deferrals, etc. as well as providing support for FASB133 hedge management accounting.
- Management of foreign exchange transactions
- Market risk management including market data management and analysis tools (e.g., NPV, what-if scenarios etc.)

With such a broad project scope, Microsoft Treasury realized that a successful outcome required dedicated resources from across the company, deep business process knowledge, as well as strong project management skills. Business requirements needed to be gathered from the various impacted groups around the world. Tax and legal requirements had to be considered. The company also realized that the re-engineering of treasury along global lines would result in major changes to existing business processes, impacting employees globally and requiring a well-defined change management program to be put in place. Fortunately, Microsoft benefited from strong executive sponsorship for this initiative within both Treasury as well as the broader organization — allowing Treasury to rally the resources required to tackle an effort of this scale.

**Implementing an ERP System for Global Treasury Management.** When Project BOSCO first began, its stated vision was the “management of Microsoft’s global cash management structure through a *single* platform.” Microsoft was in the relatively unique position of having completed a global implementation of a single ERP platform, a feat that only a small proportion of corporations can boast of. However, to ensure it made a truly measured replacement decision, Microsoft considered both best-of-breed TMS offerings as well as SAP’s treasury solution. The company realized that there were trade-offs to be made — a best-of-breed approach could address specialized functionality, such as trade execution more effectively than could an ERP-based solution. Many best-of-breed solutions also provided aggregation solutions for bank connectivity and messaging. But ultimately, the desire to leverage its recently completed enterprise-wide ERP platform, combined with the capabilities supported by SAP’s technology, led the company to choose the SAP R/3

Corporate Finance Management (CFM) solution for its treasury needs. Microsoft felt that the SAP-based solution would address most of the project’s functional requirements from a single platform that was already accessible across the enterprise. It would support Microsoft’s goal of having an integrated treasury platform, allowing integration of the treasury sub-ledger into the company’s general ledger, while also supporting integration with other operational areas, as well as with banking partners. Data consistency and integrity would be assured because of the use of a single database across corporate finance and treasury processes. Microsoft was also looking for a solution that was scalable and reliable, and provided by a vendor that would be around for a long time. In the end, SAP met the key criteria established by Microsoft for its technology replacement decision.

Implementation of the SAP treasury functionality began in September 2003, with the solution going live in August 2004. Figure 5 on page 34 summarizes the SAP functionality that Microsoft is currently using, while Figure 6 on page 34 contrasts the company’s treasury technology environment before and after the implementation of the BOSCO project.

**Table 5: SAP Functionality Used in Microsoft Treasury**

Functional Area	Details
Cash Management	<ul style="list-style-type: none"> <li>• Capture and manage bank account transactions and balances</li> <li>• Execute high-value wire payments (free form and repetitive) both domestically and internationally</li> <li>• Automate cash concentration sweeps from multiple bank accounts</li> </ul>
In-House Cash Center*	<ul style="list-style-type: none"> <li>• Used to manage inter-company transactions</li> <li>• Concentrate excess cash balances in the overall portfolio</li> <li>• Automatically post inter-company transactions to the SAP general ledger</li> </ul>
Foreign Exchange	<ul style="list-style-type: none"> <li>• Automated trade integration with FXall</li> <li>• Provide FAS133 hedge accounting for FX hedges</li> </ul>
<p><i>Source: Microsoft</i>                      *Discussed in greater detail on the following page</p>	

**Table 6: Microsoft's Treasury Technology: Before and After BOSCO**

Key System Characteristics	Before BOSCO	After BOSCO
Number of Applications	<ul style="list-style-type: none"> <li>• 11+ applications including: treasury workstations, forecasting tool, FX trade entry tool, 3rd party banking applications, system scheduling &amp; automation applications</li> </ul>	<ul style="list-style-type: none"> <li>• SAP</li> <li>• FX trade entry front-end and back-end query tool</li> <li>• BizTalk Server (for messaging)</li> <li>• Wire Message tool (for tracking wire status from banks)</li> </ul>
<p><i>Source: Microsoft, Celent</i></p>		

**Table 6: Microsoft's Treasury Technology: Before and After BOSCO**

Key System Characteristics	Before BOSCO	After BOSCO
Architecture	<ul style="list-style-type: none"> <li>• 2-tier architecture; SQL 6.5</li> <li>• At 15,000 transactions per month, had reached the limit of its transaction processing capability</li> </ul>	<ul style="list-style-type: none"> <li>• 3-tier architecture; SQL 2005 64-bit, 64-bit Windows Server 2003, BizTalk Server</li> <li>• Capable of processing over 1 million transactions per month</li> </ul>
Bank Connectivity/Integration	<ul style="list-style-type: none"> <li>• Communications with banks using dial-up modems</li> <li>• No STP between treasury workstation and banks</li> <li>• Use of multiple banking applications for the approval and release of wire payments</li> </ul>	<ul style="list-style-type: none"> <li>• Seamless integration between SAP and external banking partners using XMLS over HTTPS via BizTalk Server and EDI exchange</li> <li>• All wire approval and release activities performed within the treasury workstation</li> </ul>
Other Integration Capabilities	<ul style="list-style-type: none"> <li>• Integration with other systems performed via file transfers</li> <li>• No direct integration between sub-ledger systems and G/L</li> </ul>	<ul style="list-style-type: none"> <li>• System integration performed with SAP's .NET connector, allowing for the rapid creation of re-usable web services</li> <li>• Integration of sub-ledger into the G/L</li> <li>• Automatic posting of a small proportion of accounts (currently about 7%) directly to the G/L</li> </ul>
Application Support	<ul style="list-style-type: none"> <li>• Multiple applications, with no enterprise-level application support.</li> <li>• Greater cost and complexity to support Treasury's IT needs</li> </ul>	<ul style="list-style-type: none"> <li>• Enterprise-level application support across a common global platform.</li> <li>• However, must grapple with many more dependencies across enterprise systems</li> </ul>

Source: Microsoft, Celent

**An In-house Cash Center for Intercompany Processing.** In an attempt to gain greater control over their global cash operations, improve investment performance and control banking costs, many of the world's leading global corporations are increasingly conducting some level of internal banking, managing a range of transactions between internal operating groups and subsidiaries. Microsoft is one such example. One of Microsoft's key goals with the centralization of its treasury operations and the implementation of the BOSCO project was to better manage the funding and repatriation of cash to and from the company's subsidiaries. For tax reasons, Microsoft was mandated to pay the full amount of its sales commissions to its subsidiaries. This money then had to be repatriated back to head office for investment purposes, a cumbersome and resource intensive process that often resulted in

excess cash being left with subsidiaries as well as increased transaction volumes and bank fees. In order to address these issues, the company created an In-House Cash Center (IHCC) which is a centralized operation to initiate and manage inter-company payments via internal bank accounts. The goals of the IHCC are to:

- Minimize the supply of (idle) cash in the subsidiaries' control
- Reduce the cost of inter-company payments and transfers
- Reduce the volume of (external) payment transactions and associated bank fees
- Keep cash in the investment portfolio for as long as possible in order to maximize returns

Within the IHCC, inter-company payments are booked as balances in internal virtual accounts which accrue interest, where allowed by local tax law. Each subsidiary prepares its monthly cash forecast, which remains a decentralized function that is typically executed using spreadsheet technology. The cash planning group within treasury then analyzes the cash forecast and initiates funding from a master IHCC account. The IHCC also supports currency conversion in cases where the currency of the incoming payment order differs from the currency of the target account. Any cash not required for a given month's operations remains in the IHCC account earning interest (again, where allowed by local tax law), allowing the company to optimize investment returns.

**Results & Benefits.** Implementation of a revamped, centralized treasury management system has provided Microsoft with significant benefits across its cash positioning, FX settlement, and subsidiary cash netting functions, which are the three main areas that were addressed by Project BOSCO. The project also represented a first step toward greater integration with Microsoft's bank partners for capturing transaction and account information.

The company currently has a single resource managing all global cash positions as well as settlement of all wires and FX transactions. Microsoft has visibility of all bank accounts held at 7 partner banks, is able to approve and release wire payments and can also actively track the status of payment transactions, all from a single system which allows for much greater efficiency. Treasury also benefits from the automatic system validation of all cash concentration transactions, representing additional time savings for staff.

On the FX side, the company's trade confirmation process is now fully automated, resulting in greater accuracy and significant time savings. The settlement time for FX transactions has dropped from 4 hours to under 15 minutes, excluding exception items. Exception items account for under 5% of FX transactions, and settlement errors are now at less than 1% and rapidly declining to a goal of 0%.

Some of the most dramatic savings in terms of treasury staff effort have come from the implementation of the IHCC. The settlement of subsidiary cash netting transactions was previously a slow and laborious process. Now that these transactions have been automated within the IHCC, processing time has dropped from 16 hours to under 30 minutes. Microsoft's goal was to eliminate 100% of manually entered inter-company payments. Today, roughly 90% of inter-company payments are managed from within SAP in an automated manner, resulting in the elimination of settlement errors.

On the bank communications front, Microsoft has also seen some gains. Prior to implementing the SAP solution, the company received roughly 125 bank statements from 4 partner banks in a straight-through manner. These were accounts managed directly by treasury, rather than subsidiary accounts. Today, Microsoft is managing an increasing number of subsidiary accounts and is now receiving 400 bank statements from 3 partner banks via direct feeds. Treasury is seeing the power of having greater visibility over bank balances and being able to manage these accounts more actively. However, the company has still not achieved 100% visibility over its global banking activity. Microsoft realizes that while direct connectivity is feasible with a small number of banks, it is simply not scalable to the over 100 financial institutions that the company currently works with. Eager to take its treasury transformation to the next level, Microsoft's next challenge is to link its SAP-based corporate treasury application to all of its global banking partners over SWIFTNet.

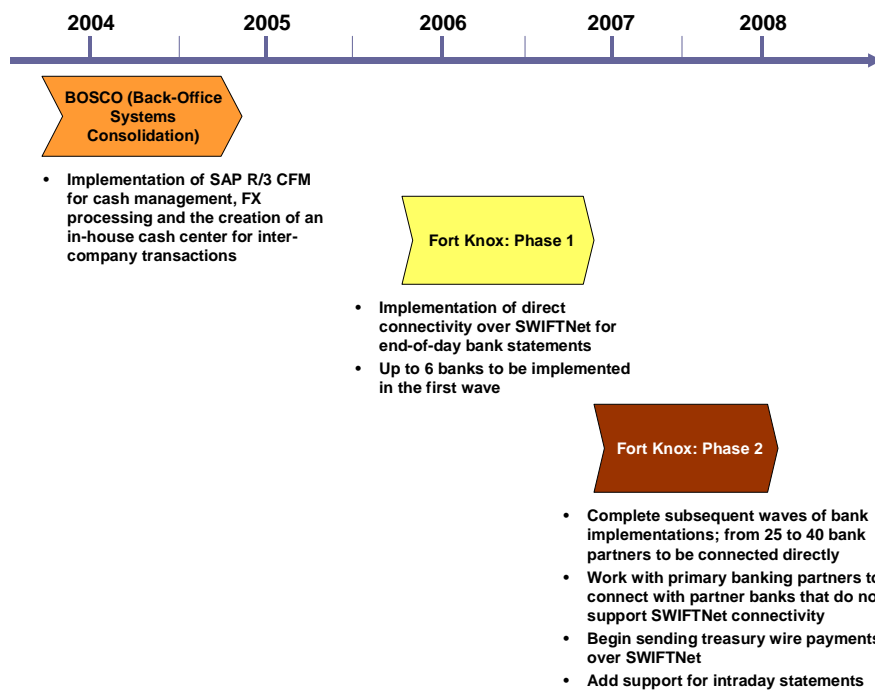
**The Next Phase: Tackling Bank Connectivity using SWIFTNet.** In Fall 2006, Microsoft launched Project Fort Knox to link its corporate treasury department with its global banking partners over SWIFTNet. SWIFTNet, launched in 2002, is the SWIFT organization's TCP/IP-based network and messaging infrastructure, offering banks and corporates a more standardized, reliable and secure connectivity option in an open-standards-based environment. Microsoft saw an opportunity to leverage SWIFTNet as a central portal for communicating with a large number of its banking partners, allowing the company to avoid the overhead of managing multiple proprietary bank connections. Microsoft's goal with this project is to enable the receipt of daily bank account balance and transaction data electronically from all its banking partners, via their SWIFT connections, directly into its SAP CFM solution. Ultimately, the plan is to automate the entire posting and reconciliation process from the point of bank connectivity through to the general ledger, allowing the company to close its books in a more timely and accurate manner. Microsoft plans to take a hybrid approach to bank connectivity, expecting to connect directly with 25 to 40 of its banking partners over SWIFTNet while using the multi-banking and account aggregation services of its primary banking partners to connect with its remaining bank partners.

For this initiative, Microsoft is leveraging its own technology, using Microsoft BizTalk Server and Microsoft BizTalk Accelerator for SWIFT in order to interface with its bank partners over SWIFTNet. This approach will also allow Microsoft to take advantage of SWIFT messages that are not natively supported within SAP (e.g., inquiry message, inquiry response,

or free-form e-mail), with treasury staff using Microsoft Sharepoint Server and InfoPath productivity software to manage these messages. This approach also lays the foundation for supporting other value-added SWIFT messaging services (e.g., FileAct and InterAct) as well as emerging messaging solutions (e.g., XML-based cash reporting, cash management and exceptions and investigations) over SWIFTNet with partner banks.

Project Fort Knox is currently in the development phase. As shown in Figure 7 below, Phase 1 will see Microsoft receiving end-of-day bank statements from its partner banks, with the treasury department managing the on boarding of each bank on behalf of the company's subsidiaries, signalling a shift to fully centralized management of the company's banking relationships. Microsoft expects to go live with an initial 6 banks in Fall 2006, with another 10 to 15 banks being brought on board in a subsequent wave planned for 2007. In parallel, the company will work with its primary banking partners to establish connectivity with a number of its partner banks where direct SWIFTNet connectivity is not supported. In Phase 2, Microsoft will begin sending treasury wire payments over SWIFTNet rather than directly through its banks as is currently the case. The company also expects to receive intraday bank statements for select accounts during this phase.

**Figure 7: Microsoft Treasury Transformation Projects**



Source: Microsoft, Celent

## **The Transformation of Microsoft's Treasury: Critical Success Factors.**

Microsoft's efforts to streamline its corporate treasury have been ambitious. Despite an extremely broad project scope, the company has managed to integrate treasury technology into its enterprise in a systematic and measured way. By identifying priorities clearly up-front and by breaking up the larger task into separate, well-defined projects, Microsoft is managing to address its treasury transformation goals. Critical factors for the success of both projects include having strong executive sponsorship and project management in place, following a rigorous requirements gathering process that involves key internal constituents, ensuring a solid change management program is established, and involving Microsoft's bank partners early in the process.

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## LOOKING AHEAD

Treasurers are moving beyond their traditional role as a funding, processing and investing staff function that is concerned mostly with the short-term cash needs of the organization. Instead, treasury is playing a more strategic, advisory role within the firm, working in partnership with operational groups to manage a firm's working capital. To accomplish this, treasurers are moving beyond basic spreadsheet technology toward more sophisticated, and better-integrated treasury automation solutions. In response, providers of treasury technology including banks, ERP vendors and specialized vendors, are all stepping up to the plate to provide corporations with more technology options than ever before. Looking ahead, Celent expects several key trends to emerge in the corporate treasury technology space:

- Through 2008, we will see broader corporate usage of treasury technology. A key driver of this increased adoption will be greater usage of ASP treasury solutions, primarily by midsize treasury departments. However, large corporations who find themselves operating multiple treasury platforms and general ledger applications will also opt for web-based solutions that provide centralized connectivity to key treasury data.
- Consolidation in the specialized vendor space will continue. Only vendors with the greatest scale, product breadth and financial backing will survive. Laggards will lose ground to stronger specialized vendors, increasingly competitive ERP offerings, as well as to banks who are offering more extensive cash and treasury management solutions for both large and midsize corporations. Specialized vendors will increasingly leverage the Internet, building out their web-based solutions in an attempt to appeal to a broader customer base.
- Innovative banks will adapt their offerings to meet the unique needs of their corporate clients. Large corporate clients with diverse bank relationships will increasingly leverage their ERP platforms and integrate bank feeds directly into these platforms, using banks for little more than connectivity and payment processing (e.g., Microsoft is heading in this direction). The most forward thinking financial institutions are building multi-banking data aggregation platforms which support direct integration into a company's ERP system. This will ultimately allow corporate clients to access their various banks' solutions from one location. Smaller treasuries, characterized by fewer bank relationships will turn to banks for ASP solutions.

- Competition will heat up among leading treasury and cash management banks hoping to mitigate the loss of traditional wholesale payments revenue and strengthen their relationships with corporate clients. Banks will scramble to either introduce or improve their web-based treasury management offerings. Celent expects to see a greater number of partnerships forming between banks and specialized vendors, with the former seeking best-of-breed functionality to integrate into their wholesale banking offerings and the latter seeking new channels to market their products, particularly to midsize corporations.

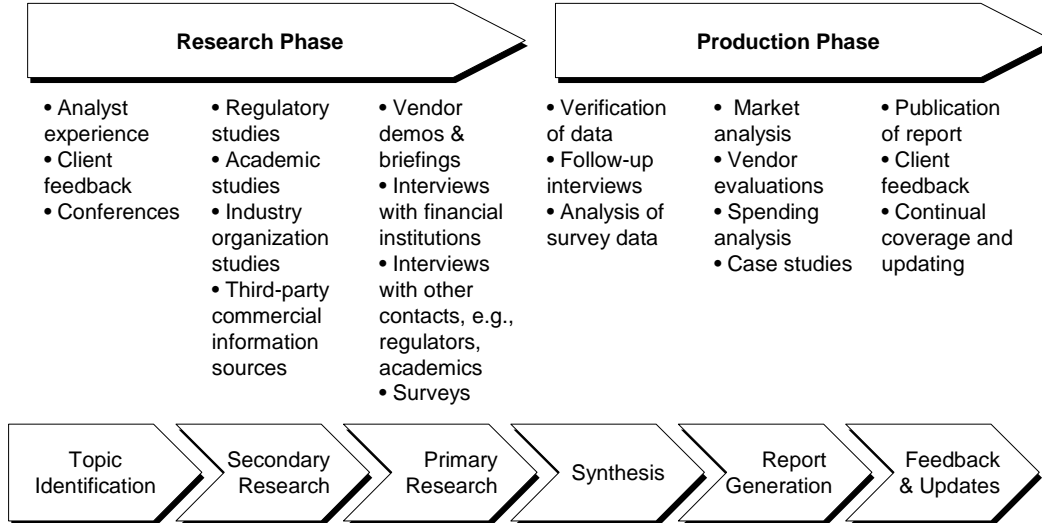
Over the next five years, treasurers will continue to put pressure on technology providers, be they banks and/or other third parties to “show them the money” across accounts and geographies, seamlessly and in real-time. Innovative banks will continue to build out their wholesale banking platforms with additional treasury functionality. ERP vendors will make increased headway with ever-improving functionality, but will struggle to present a credible ROI to the large number of corporations that still operate disparate ERP platforms. Only a handful of specialized vendors that can build scale and product depth will ultimately survive the increasing rigor in the RFP process.

## OBJECTIVITY AND METHODOLOGY

**Objectivity.** Celent is an independent, privately owned research and consulting firm that provides technology and business strategy advice to the financial services industry. Celent provides unbiased insight into industry trends, competitors in the market, and market sizes. Celent’s research reports are written by in-house analysts with extensive experience at a variety of top global financial services firms, technology vendors, and consultancies.

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## ABOUT CELENT

Celent is a research and advisory firm dedicated to helping financial institutions formulate comprehensive business and technology strategies. Celent publishes reports identifying trends and best practices in financial services technology, and conducts consulting engagements for financial institutions looking to use technology to enhance existing business processes or launch new business strategies. With a team of internationally experienced analysts, Celent is uniquely positioned to offer strategic advice and market insights on a global basis.

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