

zapthink foundation report

XML IN FINANCIAL SERVICES

THE WHATS, WHYS, WHOS AND HOWS



XML IN FINANCIAL SERVICES: *THE WHATS, WHYS, WHOS, AND HOWS*

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Abstract

The Financial Services Sector covers a wide range of businesses and industries revolving around the management and exchange of financial instruments. There are a number of factors that contribute to financial service's role as a leading implementer of XML technologies. The potential opportunities and pitfalls, and current ways in which XML is being used by this industry sector are explored in detail in this report.

Key Points:

◆ Market Overview

- Financial Services role as a high-value information sector with the pressures of integrating complex, heterogeneous systems, the movement to "T+1" processing, and financial document preparation makes adoption of XML in the near term highly likely.

◆ Facts & Figures

- The Financial Services sector spent over \$195 Billion (US) in IT in 2001, with \$985 Million invested on XML technologies in 2002.
- Expenditures on XML technologies in the Financial Services sector will grow to over \$8.3 Billion by 2005.

◆ Analysis

- Financial Services will seek to implement integration-centric XML approaches first, and content-management approaches second.
- The industry's focus on Straight-Through Processing and integration challenges will constrict IT budgets to XML solutions that specifically address these points.
- Budgets will greatly expand in late 2002 and 2003 for XML-based projects
- XML-based Content Management and Single-Source Publishing can reduce up to 75% of total publishing cost

◆ Future Trends

- The proliferation of XML-based formats for Financial transactions will cause unnecessary headaches in the short term. Consolidation around the ISO 15022 specification is expected.
- Toolset immaturity and the impact of B2B and Web Services standards will impact Integration efforts and possibly make some XML specification efforts redundant

◆ Decision Points

- Financial Services companies should seek to implement XML and Service-Oriented Integration to simplify STP and integration projects
- Financial Service Providers (FSPs) will need to have significant resources to invest in XML-based tools and technologies in 2002, although these needs will drop off in late 2003 as tools and technologies mature.

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I. Report Scope

There are two ways to look at emerging technologies: from the base of specifications, tools, and solutions being released, and from the implementations of those technologies as applied to specific problems. XML is no exception. While much has been written about the various specifications, tools, and technologies that encompass the current XML market, not as much has been written about the various fields in which XML can be – or has been – applied.

This report addresses the specific question of how XML is being applied to solve various problems in the Financial Services and related industries. In particular, this report covers:

- How XML is impacting different areas of the Financial Services industry including banking, securities, accounting, business reporting, investment research, and related industries
- Key drivers for XML adoption in these sectors
- XML-based solutions to the most common Financial Services challenges
- Analysis of key barriers to XML adoption in these sectors
- Key specifications and standards influencing the space including ISO 15022 XML, FpML, FinXML, MDDL, XBRL, IFX, OFX, IRML, and RIXML, among others.
- Market segmentation and sizing
- ROI analysis for implementation of various XML-based solutions
- Key vendors and technologies offering XML-based solutions in this space

It is our hope that by reading this report, you will gain a fundamental understanding of how XML can be successfully applied to Financial Services problems and the key challenges that XML faces in order to gain widespread traction in the industry.

II. Financial Services: A Market Overview

2.1 Definitions of the Financial Services Sector

The Financial Services Sector covers a wide range of businesses and industries including Equity and Fixed Income Trading, Commodities and Currencies, Investment Banking, Retail and Commercial Banking, Property, Casualty, and Life Insurance, Mortgages, Commercial Lending, and various accounting fields. A Financial Services Provider (FSP) deals primarily with financial instruments and their exchange. While the specific nature of each of these businesses differs, their main concerns are the same: how to improve informational representation and flow in order to improve profitability.

The Financial Services sector can be divided into five major industry segments: Capital Markets (including buy and sell-side equities trading, fixed income, commodities, currencies, and investment banking), Retail and Commercial Banking (including wholesale and central banking, cash management, and commercial loans), Insurance (life, property, and casualty), real estate (mortgages and commercial real estate) trade facilitation, and a variety of payment services offered over a variety of distinct, highly secure delivery channels.

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ZapThink is an IT market intelligence firm that provides trusted advice and critical insight into XML, Web Services, and Service Orientation. We provide our target audience of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

This document provides just a small glimpse of the intelligence ZapThink offers. To get the full picture, please visit our Web site at www.zapthink.com. You'll find information about the range of our research on XML, Web Services, and SOAs and more of our market insight. You'll also be able to sign up for our popular biweekly ZapFlash newsletter that can deliver our market-leading intelligence directly to your inbox.

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We hope that this document and our Web site help you understand the XML, Web Services, and Service Orientation marketplace better. However, our research is only a part of the value we offer our customers. For personal advice, press support, and competitive intelligence, subscribe to our ZapAccess research subscription service. Become a ZapThought Leader – let ZapThink help you understand the market-changing impact of standards-based, loosely coupled distributed computing, and use that understanding for competitive advantage.

For more information, please call us at +1-781-207-0203, or drop us an email at info@zapthink.com.

Figure 2.1: Representative Financial Services Industries

Capital Markets				Banking		Insurance		Real Estate		Accounting
Equities Trading	Fixed Income Trading	Currencies & Commodities	Investment Banking	Retail Banking	Commercial Banking	P & C	Life	Mortgage	Commercial Lending	Accounting

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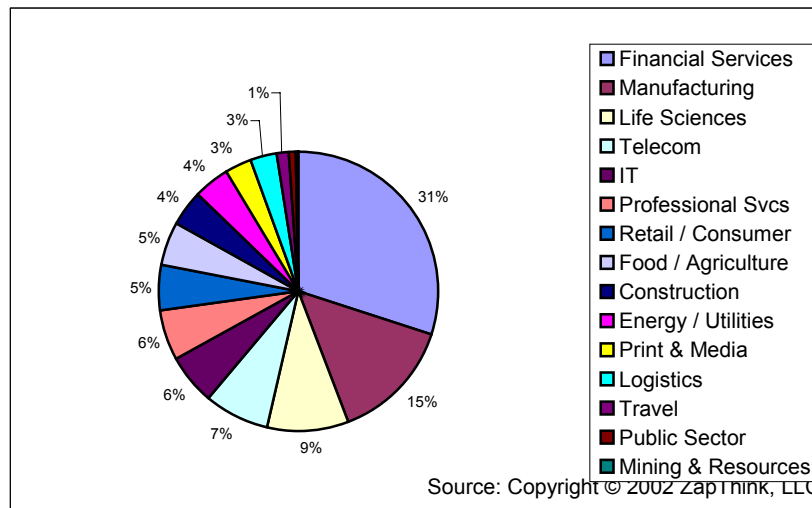
2.2 Financial Services Industries are Information Industries

There are a number of factors that contribute to financial service’s role as a leading implementer of XML technologies. First and foremost, Financial Services industries are information industries. Other than the cash that comes out of the ATM machine, there are few physical products in the financial services world. At the end of the day, account balances, stock positions, currency values, loan balances, and the vast majority of other financial products are represented in a variety of databases, repositories, and file formats. Not only are financial services companies dependent on information for their day-to-day operations, but also the information itself is highly valuable. Network or system outages, inefficient processes, or human-intensive operations can dramatically and critically injure a Financial Services Provider (FSP). On the flip side, any improvements in data storage, exchange, representation, and manipulation can greatly add to an FSP’s bottom-line.

2.3 The Financial Services Sector Spends over \$195 Billion in IT annually

As an aggregate industry, Financial Services industries spend more than any other industry grouping: over \$195 Billion US dollars. When examined as separate verticals, Banking, Insurance, and Financial Services are three of the top five vertical industries in general. This means that FSPs are large companies that are quite used to spending a considerable amount of their annual budget on IT infrastructure, technologies, solutions, and services. On average, FSPs spend 8% of their annual revenues on IT. With a total of almost \$650 Billion (US) spent on IT annually, Financial Services industries spend over 31% of the total US IT expenditure. This is shown below in Figure 2.2 and Table 2.1.

Figure 2.2: IT Expenditure by Industry as % of Total US IT Spending



Source: Copyright © 2002 ZapThink, LLC

The Financial Services industries are Information industries. Their main products and services are information.

The Financial Services industries spend an aggregate \$195 Billion (US) on IT technology, more than doubling the next largest aggregate vertical industry.

Table 2.1: Total IT Expenditure by Industry

Industry	IT Expenditure (\$ Millions)
Banking	72,817.30
Manufacturing	57,432.97
Insurance	55,458.49
Financial Services	53,664.97
Telecommunications	48,528.21
Consulting & Business Services	35,555.35
Consumer Goods & Retailing	33,083.44
Automotive / Aerospace	34,805.09
Food, Agriculture, and Beverage	32,543.06
Construction & Engineering	27,498.22
Health Care & Medical	23,734.69
Print, Media & Entertainment	20,983.53
Electronics	21,499.89
Logistics & Transportation	18,617.18
Biotechnology & Pharmaceuticals	17,128.20
Information Technology	16,934.78
Chemicals	19,847.71
Real Estate	13,099.35
Energy	12,178.58
Utilities	12,163.75
Hospitality & Travel	9,631.90
Public Sector	4,571.92
Legal	2,519.09
Mining, Metals & Natural Resources	2,466.63

Source: ZapThink, LLC

On average, Financial Service Providers (FSPs) spend 18% of their IT budget on new and emerging technologies

Of this \$195 Billion in IT expenditure, approximately 18% is spent on “new technologies,” which includes everything from Customer Relationship Management (CRM) systems to Wireless Delivery of assets (see Table 2.2 for expenditure detail). The rest of the budget is spent on IT Services, Research and Development, salaries, software applications, and other needs including hardware and network connectivity. It is clear that the Financial Services industries make considerable investments in new IT technology in order to better improve their businesses.

Table 2.2: IT Expenditure Detail by Type of Expense (% of Total)

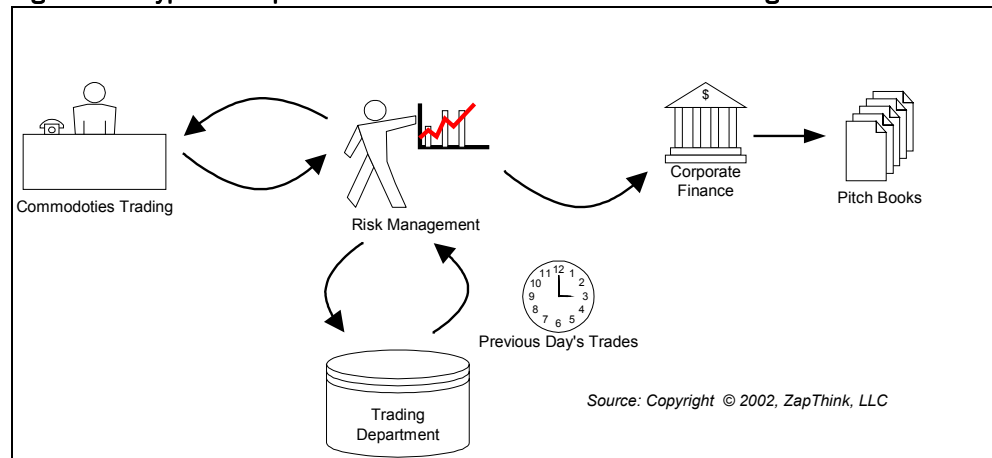
Financial Industry	New Tech.	IT Services	R&D	Salaries	Applications	Other
Banking	22%	11%	3%	32%	19%	22%
Insurance	18%	16%	3%	34%	18%	18%
Financial Services	16%	14%	5%	39%	15%	16%
Real Estate	18%	14%	4%	32%	18%	14%

2.4 Typical Information Requirements for Financial Service Providers

Financial Service Providers have complicated sets of interactions between departments, systems, and processes. A typical process flow for a Securities company is illustrated in Figure 2.3 below. In this example, a Commodity Trading department requires complex historical curve information to help make real-time, intelligent decisions on behalf of its customers and traders. The information for these decisions originates in the Risk Management Department, which works

together with the Commodity Trading department to define a “forward curve” based on their knowledge of the market. The Risk Management department manages and evaluates the risks of the assets and portfolio based on both the historical and forward curve. However, in order to ascertain these risks, the Risk Management department can only start a new evaluation after the close of market, downloading the previous day’s trade information from the Trading Department. Finally, the Corporate Finance department also utilizes the historical and forward curves in order to build “pitch books” and propose proper valuations for mergers and acquisitions. In many cases, these three departments have their own IT systems, each possibly using different storage architectures and methodologies. Furthermore, these functions may be outsourced to third-party firms, as is often the case with Risk Management.

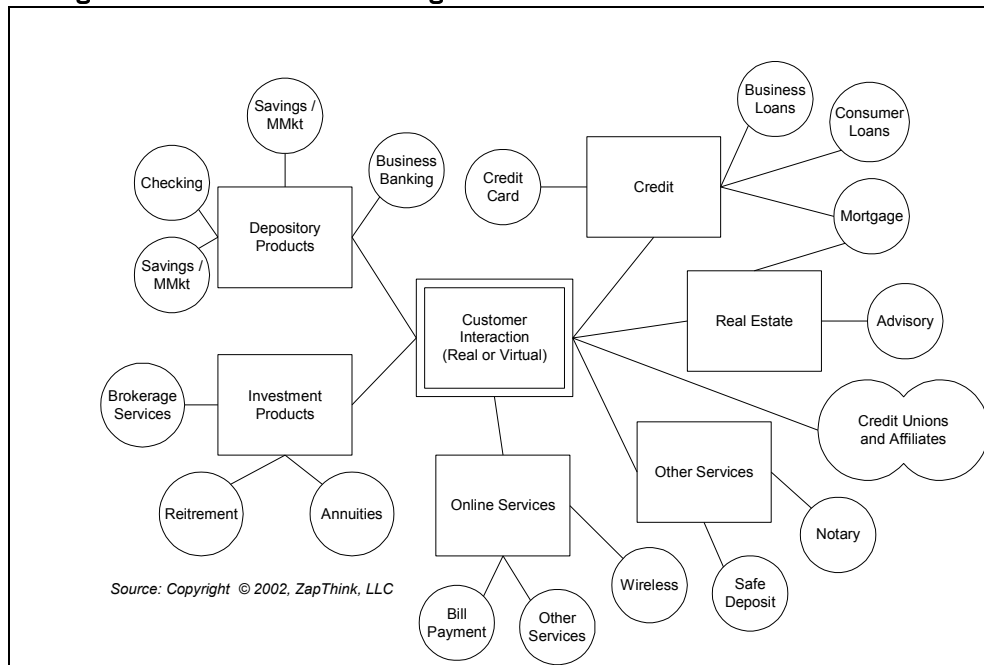
Figure 2.3: Typical Simplified Process Flow in Commodities Trading Firm



The Capital Markets industries rely on high-volume transaction-processing networks to provide the critical infrastructure for pre-trade decision support, order entry and execution, and post-trade clearing and settlement. Pre-trade decision-making requires that securities traders and investment managers have access to real-time trading and risk management solutions. In addition, a number of major initiatives have sprung up around accelerating post-trade processing of securities trading transactions. This includes the movement to next-day trade settlement (“T+1”) in the United States, and similar initiatives around the world.

A similar set of complex process flows exist in both the Commercial and Retail Banking sectors. Commercial and Retail banks offer a wide assortment of depository, credit, loan, and financial products, each with different data integration, storage, and archival needs. Real-world products, such as teller services and safe deposit boxes, are augmented by online services that “extend” the walls and reach of the bank organization. All of these products and services need to be offered in a seamless manner to bank customers, who should not be troubled with any integration or process flow challenges. Figure 2.4 shows the complex web of products and services offered by a typical bank.

Figure 2.4: Interaction of Banking Products and Services



Similar complexity exists at Real Estate and Insurance firms. These companies not only have an intricate set of products, but they also have complex processes that employees and customers must follow in order to obtain products and services. While many of these processes have been electronically enabled, many of them, especially mortgage and claims processes, are still primarily paper-based. Improvements in process and workflow efficiency at Real Estate and Insurance firms often result in dramatic improvements to the bottom-line.

Financial Service Providers have complex interactions of systems, processes, divisional units, and organizations.

III. Drivers for XML Adoption in Financial Services Industries

One of the constants in the Financial Services sector is rapid change. New technologies and techniques offer FSPs new channels to market, increased operational efficiency, and greater visibility into processes. At the same time, mergers and acquisitions, e-Commerce initiatives, fraud prevention, globalization, and the move towards real-time processing of financial transactions are creating new challenges and business opportunities, while at the same time accelerating the pace of competition. Complex, heterogeneous integration environments and dependency on aging, legacy systems further challenge implementations of solutions to these problems.

XML provides a basis for potent solutions to many of these challenges. A number of drivers, some of which are unique to the Financial Services industries, are providing the extra “kick in the pants” that many firms need to adopt XML in the next 6-12 months.

3.1 Integration and Interoperability

Since FSPs are so reliant on information for their day-to-day operations, they have implemented almost every known data storage, middleware, and exchange technology that has been created since the 1950's. These systems span many different operating system, application, and exchange architectures and are cobbled together to produce aggregated results that can be used to drive

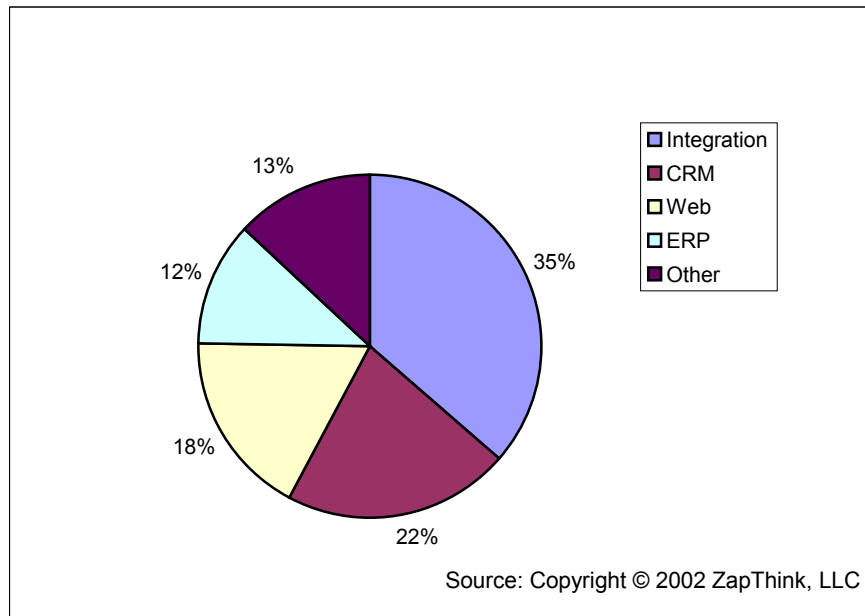
decision making and financial products and services delivered to customers. As a result, one of the primary costs in the Financial Service enterprise is that of integration.

The Financial Services sector, like many other industry groups, has three primary integration challenges to deal with:

- Internal, system-to-system or “Enterprise Application Integration” (EAI)
- External, business-to-business integration (B2Bi)
- Integration across vertical industries

As shown below in Figure 3.1, over 35% of the total IT budget for FSPs are spent on integration-related problems.

Figure 3.1: FSP Expenditure by Problem Area (% of Total Budget)



The need for internal integration is spurred by the desire to link multiple systems into a cohesive view of data that can power decision-making, customer interaction, and the delivery of integrated products and services. Due to the greatly inter-related nature of financial systems and products, internal EAI-type integration is a perennial challenge for FSPs. Counterbalancing the urgent desire to integrate systems is the fact that most of these enterprises consist of a mish-mash of heterogeneous systems and architectures that span decades of legacy systems, multiple hardware platforms, operating system versions, database storage technologies, network protocols, component object models, middleware platforms, programming languages, and file formats. Of course, what is needed is to turn these individual ingredients into a cohesive stew without fouling up the whole concoction.

Matched with the complexity of internal integration is the desire to connect supply chain partners, affiliate networks, distribution channels, and even customers. FSPs have been pioneers in the area of B2B integration (B2Bi) since the early days of EDI. To this day, most financial transactions occur using old network protocols such as SWIFT and FIX along with Financial EDI. The need to standardize integration protocols is tremendous, as the cost of supporting

FSPs have complex integration requirements due to highly complex, heterogeneous back-end systems used for day-to-day operations and decision support.

multiple exchange protocols, or even adding a new one, adds an inordinate amount of cost – especially since almost every component in the heterogeneous environment needs to support these protocols. Any significant change in communication protocol requires a cascading set of changes to back-end systems, resulting in very high support and development costs.

Commensurate with the need to simplify EAI and B2B integration is the need to integrate data across multiple vertical industries. While Financial Services can be considered to be a “vertical” industry in that it contains a focused set of businesses, in many ways finance is a “horizontal” market that needs to serve the needs of every other vertical. Every business and individual, whether profitable or not, needs to deal with Financial Service Providers such as banks, brokerage houses, and insurance companies. As such, FSPs need to be able to converse in multiple different “vertical languages” as possible. Even if a single B2Bi architecture was chosen, standardization is needed across these industries to reduce integration cost and simplify communication.

Simplifying integration challenges is not only on the “cost saving” side of the ROI curve, but also presents tremendous opportunity for revenue enhancement. Integration allows FSPs to quickly develop and deliver partnerships, more easily respond to emerging opportunities, and rapidly deliver product offerings or variations on existing product offerings. Thus, integration compresses the “time-to-market,” providing FSPs with greater profitability and competitive advantage.

This desire to simplify integration is one of the primary pressures and drivers for XML adoption. The main reason why XML is well-suited to solving the problem of all three of these different classes of integration challenges is that it is capable of representing data and processing information in an application neutral, open, and extensible manner. This means that vendors aren't locked into proprietary choices for integration technology. Vendor and platform “lock-in” is the primary reason for much of the integration nightmare that exists today. If there were a single open, extensible *architecture* (rather than platform) for data interchange, there wouldn't be as much of an integration challenge.

3.2 Straight-Through Processing (STP) and T+1

Unique to the Financial Services sector is the move towards next-day settlement of securities trades, called “T+1,” which is being promoted by the Securities Industry Association (SIA) and will soon become a requirement by the Securities Exchange Commission (SEC). Currently, trades take three days between trade execution and settlement. It is in the interest of all parties to shrink that timeframe to as close to real-time as possible. However, in order to move to the pie-in-the-sky T+1 goal, brokerages, exchanges, and clearing agencies will be required to migrate from paper to on-line handling of transactions, and from batch to real-time processing of trades. The settlement process is further complicated by concerns over multiple languages, currencies and legal jurisdictions. The notion of “Straight-Through Processing (STP),” in which firms will be able to seamlessly migrate a transaction across system and organizational boundaries while maintaining security and transaction integrity, is targeted at meeting this T+1 goal. While mainly initiated in the US, as can be expected, the results are daisy chaining throughout the world in the form of Global Straight-Through Processing (GSTP).

If the T+1 goal is met, there really is no reason why “T+0,” or almost instantaneous real-time settlement of trades, cannot be met. In order for any of these goals to be realized, there must be a complete, end-to-end integration of all systems and processes that occur in the trade processing chain. However,

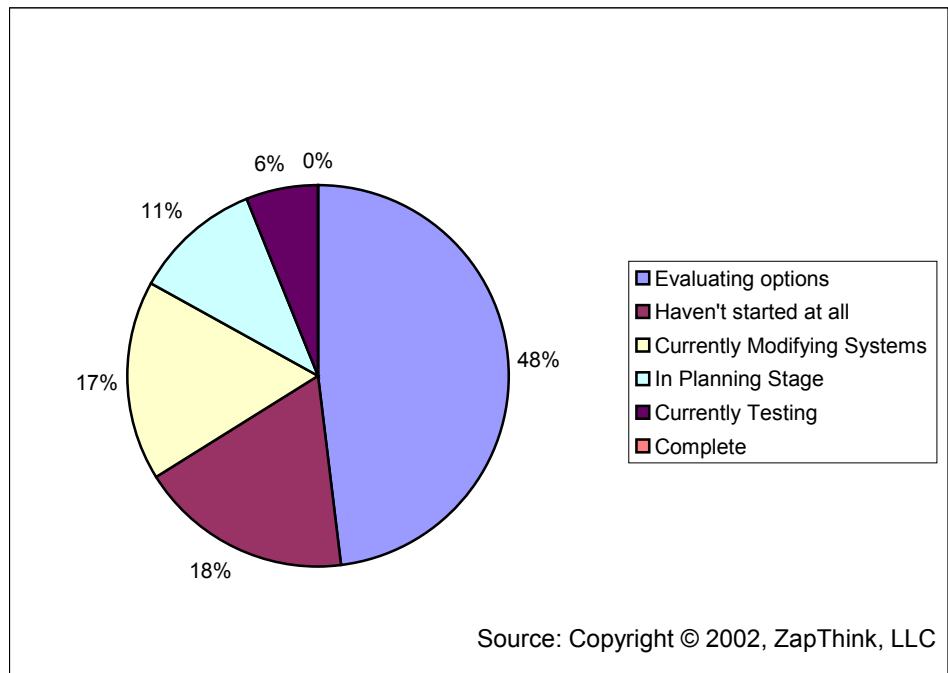
XML is well suited to integration since it represents data in a platform-neutral, open, and extensible manner, preventing lock-in with proprietary integration platforms. Vendor lock-in contributes to the majority of long-term integration problems.

The Financial Services Sector will spend over \$11 Billion (US) on STP through 2005.

this is a heady goal indeed since the real-time processing of millions of securities transactions, while simultaneously maintaining accurate and secure records of those transactions, require financial services firms to integrate all their back-end systems, deploy new applications, and provide secure and reliable business-to-business integration mechanisms. Many are comparing this endeavor to “Y2K” projects in which billions of US dollars were spent upgrading and simplifying back-end systems. Similarly, substantial investments must be made to insure that FSP systems will be STP compliant within the government-specified timeline. ZapThink predicts that over \$11 Billion will be spent by the IT industry by 2005 in meeting this goal. Much of this money will be spent on integration, process automation, and system security. These costs dwarf the next-largest FSP IT project, stock price decimalization.

Not only is integration a challenge, but companies must manage multiple data sources representing the same underlying data. This means that there is tremendous potential for data duplication and redundancy. In order to avoid this problem, there must be standards and safeguards to assure transactional integrity. Due to these complex challenges, it is no wonder that few FSPs have actually met the requirement to date. Figure 3.2 illustrates the current status (as of Q4 2001) of STP projects.

Figure 3.2: Current Status of STP Projects (% of Survey Respondents)



Some of the reason for the delay in meeting the T+1 requirement is that there is a lack of standardization and compliance. The Financial Services sector needs to agree on a technical architecture for achieving STP. Even with consensus, it will take over a year for firms to modify their business process, integrate their back-end systems, adopt new standards, and test their systems. Fortunately (or unfortunately, depending on your outlook), the target date to meet those requirements was pushed back to more than three years away following the Sept. 11 attacks.

XML fits into this equation in two primary ways: simplifying integration, as mentioned above, and by providing the basis for new standards. XML has been used by an increasing set of standards bodies for their “*lingua franca*”.

3.3 Financial Reporting Requirements – XML Mandated by Governments?

Every organization, especially FSPs, have to deal with financial and business information in its many different forms. However, there are just as many formats for that information to be in as there are types of information. Thus, sharing financial and business information within and external to a business can often be a challenge. Preparing financial statements for filing, printing, or web display often means that this same information needs to be re-entered multiple times. Furthermore, once this information is published, searching and extracting components of the financial information can be a challenge. This is especially the case where individuals may be interested in small subsections of data, such as in regulatory and financial statement reports.

Companies who prepare financial statements need a more efficient means for preparation of financial statements that will be created one time and rendered as printed reports, on Web sites, as Edgar filings, or as other regulatory filings. Analysts, investors, and regulators need enhanced distribution and usability of existing financial statement information, automated analysis, and a significant reduction in the effort needed to transform financial information from one form into another. Financial publishers and data aggregators need a more efficient means to collect data and perform custom queries on this data. Financial tools vendors need a standardized means for exchanging, exporting, and importing financial data.

While manufacturing and other vertical industries have had data exchange standards for decades, there has never really been a digitization of financial reporting standards. Basically, there never has been an EDI for financial reporting data. This fact is both good and bad news. The bad news is that there is no existing data and experience with which specifications and standards can be created. The good news is the same – the financial reporting industry has a clean slate. With this clean slate comes the opportunity to get widespread adoption without having to deal with the “baggage” of old standards and business processes.

Simplification in financial reporting can be realized by the establishment of a new standard for financial reporting. However, this format must facilitate current practice and not change or set new accounting standards, while supporting changes to these same standards. Furthermore, since accounting practices are not limited to a single country or language, financial reporting standards need to be able to support multiple languages and financial reporting regulations. A financial officer in the US has different accounting policy standards and regulatory requirements than financial officers in Germany or Australia. Even the meaning of “cash” is different in different countries and industries.

XML, and especially the Extensible Business Reporting Language (XBRL) format, is rapidly becoming a regulatory requirement in the European Union for business reporting from 2005. As the use of XML spreads throughout the Financial Services sector, it is expected that the SEC will take a regulatory posture on XML within the next five years.

3.4 Risk Management

Financial traders have to keep track of dozens, hundreds, and sometimes thousands of positions in different kinds of financial instruments: stocks, bonds,

It is expected that the SEC will take a regulatory posture on XML within the next five years.

commodities, futures, options, currencies, derivatives, and other monetary formats. These traders depend on information feeds from many different systems and consolidate these feeds into a single view that hopefully gives them the information they need to make educated decisions. In a typical sell-side trading firm, individual traders sit at specific trade desks that specialize the different products such as bonds, futures, currencies, etc. Increasingly, financial products are getting more complicated and sophisticated, requiring traders to be familiar with a much wider variety of products than they may previously have been. As a result, they need to understand risks such as interest rates and currency fluctuations, and their exposure to these risks.

However, trading positions are split between many different trade capture systems, some of which are good at processing swaps but not bonds, and vice-versa. The end result is that they need a single report that has a current, consolidated view of risk. The best that many of these traders can do is to get an overnight view of this report. As such, there are legions of people in the “middle office” who pull together generated reports and see what their exposure was the night before, much of which is already obsolete. Typically, this report is a spreadsheet that has different data from different systems that adds up numbers in a useful way.

What is needed is a real-time, accurate, integrated, and efficient system for aggregating information from multiple sources. The system needs to hook up to lots of different trade capture systems, get the data out, run risk analysis and give answers to trader and management in near real-time. However, this is a complex problem as there are many different, heterogeneous trade capture systems, and the financial instruments themselves are quite complex. Real-time Risk Management requires the same level of integration as GSTP, since risk analysis requires volumes of information collected from disparate sources. One of the companies offering XML-based Risk Management systems is **Tamesis**.

The move towards real-time integration is enabled and simplified by XML, while also providing a neutral and “future-proof” technology base on top of which Risk Management can be performed.

3.5 Future-Proofing the High Rate of Technology Change

Regardless of integration, T+1, reporting, or risk management issues, FSPs constantly face the challenge of a high rate of technology change. It often seems that just as an implementation is released, it quickly becomes obsolete. Thus, CIOs and technology managers at Financial Services organizations are constantly chasing “yesterday’s problems”. This problem can be quite dramatic: with IT spending always lagging IT problems, there is an insufficient ability of the enterprise to adapt and solve new problems. In fact, many of the integration, STP, reporting, and risk management challenges mentioned above could be traced to the fact that the IT department is constantly *reactively*, rather than *proactively*, solving key business problems.

This IT spending-lag problem is made poignant by the fact that the majority of IT spending is focused on maintenance and post-installation application support, rather than on new application development. The only way out of this seemingly intractable quandary is by investing in “future-proof” technologies – namely technologies that support extensibility and modification in ways not previously considered. XML fits the bill quite well here, supporting almost limitless data extensibility while preserving existing data assets.

Vendor Focus

Tamesis

With IT spending always lagging IT problems, there is an insufficient ability of the enterprise to adapt and solve new problems.

The Financial Services sector is increasingly competitive and marked by shrinking transaction profit margins.

3.6 Competitive Advantage

The Financial Services sector is increasingly competitive and marked by shrinking transaction profit margins. With “future-proof” technologies, IT organizations are able to look forward to building applications that provide long-term competitive advantage to FSP organizations. Investment banks and other Capital Markets firms need to rapidly and consistently deliver relevant, useable equities analysis and research to clients, intermediaries and employees. This information needs to be delivered according to their specific requirements – whether in print, email, web, PDA, or mobile phone. There is tremendous competitive pressure to provide information in different formats while retaining the high quality and detail necessary to preserve the reputation of the company.

FSPs are also looking to build competitive barriers by improving customer relations through the use of interactive, online sites that provide considerable detail and visibility into the customer’s finances. In the case of the Banking industry, retail financial institutions can offer their customers a variety of internet-based products and services, including online account access, electronic bill presentment and payment (EBPP), and on-line loan origination. Of course, these products and services can now be delivered through mobile phones and PDAs.

Insurance companies also face increased global competition through the convergence between banks and traditional insurance companies. As a result, customers are demanding increased integration of insurance and banking products, resulting in greater IT costs.

One of the benefits of XML, from a content perspective, is that it can be easily repurposed and re-used. XML content can be created once and distributed and transformed in many different ways. This simplifies document creation as well as the ability to service customers in their every-changing needs for interaction.

3.7 Effective Distribution of Print Materials

Many FSPs, especially Capital Markets trading firms, derive much of their customer satisfaction and influence from the publication of analysis and reports. A typical global FSP will produce hundreds of pages of analysis and research per day. While these publications are of extremely high value, many financial institutions are still using word processing packages as their primary report and analysis creation tool. This 1980’s-era approach to report creation and delivery has a number of major drawbacks. The challenge is to manage and simplify the creation of this content. In particular, there is no repurposing of existing content. Information is often “cut-and-pasted,” causing content redundancy or even worse, conflicting information. In addition, this approach is an inefficient means for producing and delivering content. Once the content is produced, it can’t be effectively searched, transformed into alternate delivery formats, or reused in different publications.

Publications can account for up to 35% of FSP total expenses.

Publications can account for up to 35% of FSP total expenses. Thus, the challenge is to better distribute content in a variety of formats to a worldwide audience while maintaining typographical quality, data integrity, security and compliance. These documents need to contain high quality text, graphics, and charts, no matter how they are delivered – in print, PDF, online, or wireless. The information contained within these reports needs to be guaranteed to be authentic, and protected from unauthorized viewers. Financial documents exist in a heavily regulated environment that places specific conditions on how information should be detailed, distributed, and archived. In addition, the information needs to be delivered to a very large audience, imposing scalability,

low licensing cost, ease of use, cross platform, and multilingual requirements on the content.

In a typical FSP environment, document editors represent a small part of the overall organization that compile and author documents in concert with different organizational divisions. These document editors are familiar with word processing, spreadsheet, and graphics applications, but are not versed in structured document formats such as SGML or XML. They are often under the gun to produce content in just a few hours and therefore must be able to make edits with a minimal amount of process steps. The usual workflow involves revising the previous document files, creating new document text, graphics, and tables, and launching a new composite book for each client. In this process flow, new document pages are only created 10-20% of the time.

In addition to saving money on publishing processes, FSPs seek to derive additional revenue from their content by syndicating it across different delivery channels and destinations. In particular, opinions and other research can be syndicated to a variety of financially relevant web sites, allowing the FSP to derive revenue from content licensing or sale of additional reports. Syndication remains one of the largest sources of untapped revenue potential for any sort of content source.

In order to achieve these objectives, a Single-Source Publishing approach is needed that allows content to be created in a single, central repository, and later pushed out to different media and content destinations. In order to provide this sort of solution, content needs to first be created in a structured manner. However, to get non-technical analysts to use a structured editing system may be an almost impossible task. Consequently, the use of a standard markup language, such as XML, and standards-based content authoring tools would greatly simplify matters. XML enables structured document creation that can then be repurposed for other documents, transformed into different content representation formats, and syndicated to end destinations. As a result, publications can be delivered in “real-time” to end content users.

IV. Solutions to Key Financial Services Industry Problems

4.1 Web Services & Service-Oriented Integration (SOI)

One of the major problems solved by XML, and Web Services in particular, is the eternal computing challenge: getting systems to communicate and integrate. This integration challenge has been approached from many different fronts including message-oriented middleware, component technology, and even screen-scraping.

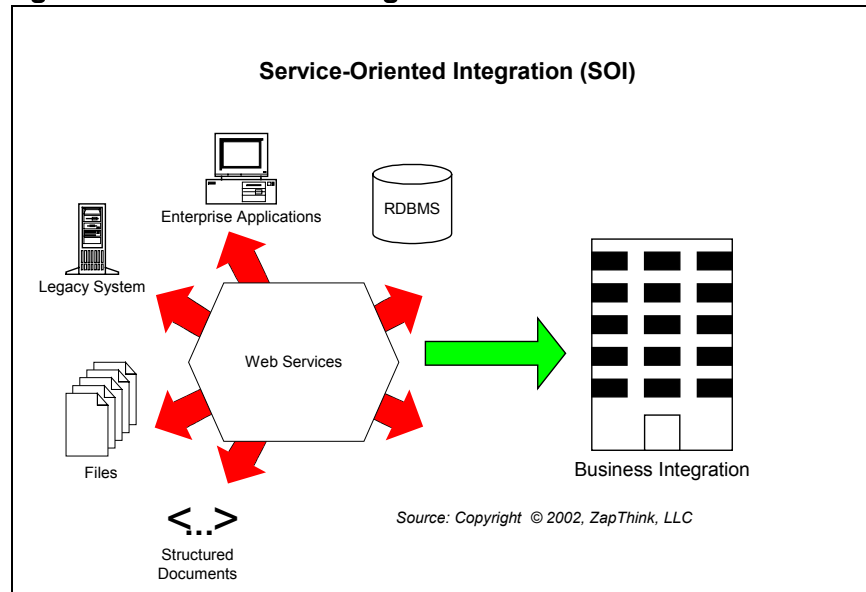
The evolution of Web Services has provided a new take on the problem and proposes to solve this challenge once-and-for-all by providing an “arms-length” means for systems to simply expose their interfaces while abstracting their internal processes. One of the unique opportunities that Web Services presents is its ability to be equally applied to internal integration challenges such as those solved by Enterprise Application Integration (EAI) and data integration vendors as well as external integration challenges addressed by B2B Integration (B2Bi) vendors. Thus, the terms EAI, B2Bi, and other expressions are not adequate to describe this new capability. It is in the context of this Service-oriented Architecture that Service-Oriented Integration (SOI) is born.

Service-Oriented Integration (SOI) uses a Web Service-based approach to abstract back-end systems, thus merging the concepts of EAI, B2Bi, and Data Integration.

The idea is quite simple: rather than requiring systems to understand the details of a system in order to extract information, we can merely expose that system as a service and make queries to the service to meet our needs. The idea isn't exactly new. We've been abstracting system interfaces for many decades. What is new is the fact that we're using XML and Internet technologies to accomplish this task. The use of open standards and ubiquitous networking protocols simplifies our task considerably by removing proprietary walls and complex interaction with an alphabet soup of technologies.

The key to integration is reducing the number of steps and maximizing one-to-many relationships. SOI implements service-oriented architectures based on Web services standards, and presents an open alternative to proprietary integration solutions, such as EAI brokers. In fact, the concept of Service-Oriented Integration (SOI) is merging different integration paradigms into a single solution set: integration between devices (from handhelds to mainframes), applications (such as Great Plains, SAP, and Siebel), B2B integration, and traditional EAI. Since all of these can be expressed as services, they can all be integrated under the SOI banner.

Figure 4.1: Service-Oriented Integration



However, the movement to Service-Oriented Integration is far from trivial. More than just a change in mindset, what is needed to accomplish this task is a platform for creation of Web Services or exposure of existing objects as Web Services, a means to describe and publish these Web Services, an application server environment for deployment of these services, and a means to continually monitor the performance of those services. Then, these various services need to be combined in manner that actually serves to integrate disparate systems and allow users to perform new tasks that would have been impossible without an integrated whole.

SOI allows vendors to pick a single technology platform that can be applied to internal and external integration challenges.

SOI addresses the integration challenges of the Financial Services sector by providing a single, cohesive architecture and approach for integrating internal resources as well as external resources. Rather than being locked into a proprietary solution as offered by a single vendor or vendor grouping, FSPs can be free to buy into the Web Services approach while leaving specific implementation details flexible. Even more potent is the fact that SOI allows

★ Vendor Focus

Attunity
CapeClear
IONA
SEAGULL Software
XAware

vendors to pick a single technology platform that can be applied to internal and external integration challenges.

A number of vendors are currently involved in providing SOI solutions to the Financial Services sector, among other industries. With integration being a major source of revenue, the number of vendor entrants in this space is increasing on a monthly basis. Some of the notable players include **CapeClear** and **IONA** from a Web Services Platform perspective, **Attunity** and **XAware** from an integration-centric perspective, and **SEAGULL Software** focusing on mainframe / legacy integration issues.

4.2 Financial Industry XML Vocabularies & Standards

A single integration architecture is not sufficient to guarantee interoperability among businesses and systems, some of which may be running a Service-Oriented Integration environment, while others may not. In order to facilitate interoperability without mandating architectural change, XML-based standards are needed.

Standards in the Financial Services sector are far from a rarity. The industry has seen decades of standards introduced, to varying degrees of success. Initiatives between investment professionals and brokerage firms resulted in the FIX standard; between brokerage firms and custodians, the ISITC initiative; between foreign exchange participants, the CLS system; between payment systems and international securities participants, the SWIFT network; between capital market participants, the ISIN standard; and amongst software vendors and their clients such as the OFX standard created by Intuit, CheckFree and Microsoft, Sungard Data Systems Network Trade Model (NTM) and Thomson Financial Service's OASYS ML. Many of these formats can trace their origins back several decades to efforts by major technology vendors to establish symbols that describe issues of securities that were later recast into country specific numbering systems such as CUSIP in the United States and Sedol in the U.K, and more recently ISIN as a universal numbering system.

The Financial Information eXchange (FIX) protocol was introduced to the equities trading market in 1993 as a joint project by Fidelity and Salomon Brothers. Now managed as a public-domain specification, FIX is a messaging protocol that enables real-time electronic exchange of securities transactions at the order-through-execution phase. The specification provides a format to describe both pre-trade and trade execution for equities and fixed income instruments by specifying messages such as "buy 100 July British Pounds," thus allowing brokerage firms to replace their human interactions with a data standard. The SWIFT protocol was created to meet similar needs for inter-bank communication and payment settlement. SWIFT also provides payment services to securities brokers and dealers, clearing institutions, and recognized securities exchanges.

While FIX and SWIFT are widely proliferated throughout the Financial Services sector, they are not XML based. This leads to inefficiencies in processing, transformation to other formats, and most importantly, a lack of extensibility. XML provides the capability to allow a specification format to expand to include new functionality and features that may not have been considered when the format was originally developed.

As a result, a whole gaggle of XML-based formats have been created to address various pain points on the financial supply chain. These formats can roughly be divided into two types: transaction-oriented specifications that are concerned with facilitating financial transactions, and reporting-oriented specifications that

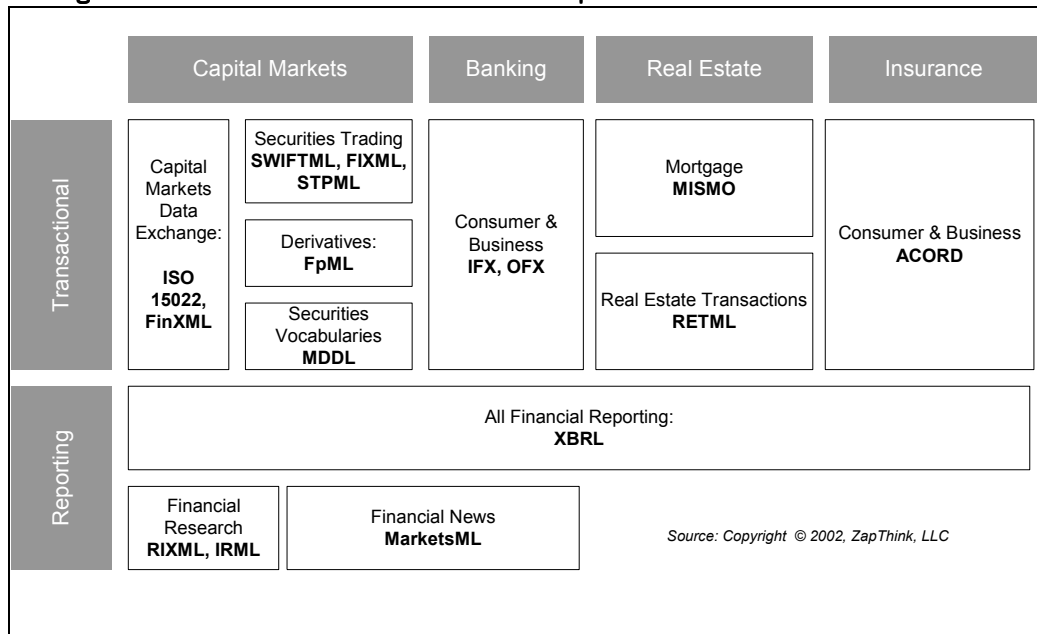
XML-based specifications can expand to include new functionality and features that may not have been considered when the format was originally developed.

are concerned with representing financial documents and reports of different types.

Due to the pressures brought about by Straight-Through Processing (STP) and integration, a large number of the transaction-oriented specifications relate to trade-to-settlement processes. These specifications include Capital Markets-specific formats such as ISO 15022 (which is an evolution of the XML versions of the FIX and SWIFT protocols), FpML, FinXML, MDDL, and STPML. On the Banking transactions side, IFX and OFX are the most popular specifications. Real Estate specifications include MISMO for mortgages and RETML for real estate transactions. ACORD is the most popular and notable Insurance-industry standard.

On the financial reporting side, XBRL is making serious headway as a general-purpose financial reporting specification. The only other reporting specifications of note are the two investment research specifications: RIXML and IRML. These specifications can be seen in Figure 4.2 below.

Figure 4.2: Financial XML Standards Landscape



Capital Markets Transaction Formats

Financial Information Exchange Markup Language (FIXML)

A natural attempt to “XML-ize” the FIX protocol was launched by the FIX Protocol organization in 1999. FIXML, as it became known, was an XML encoding of the proprietary FIX format. FIXML was thus designed to minimize the changes required in existing FIX-based systems by taking a FIX tag value format and representing it in XML. Resultant FIXML messages are then embedded within the traditional FIX headers and trailers, so that only the addition of an XML parser is needed to enable an existing FIX engine to communicate using FIXML.

However, soon after work began on the format, the group announced plans in July 2001 to work with the SWIFT organization to converge their message formats to create an XML-based version of the ISO 15022 protocol for securities message types, which is being developed by the International Standards Organization Working Group 10 (ISO WG10). [See below for more detail]

SWIFTML

Similar to the effort launched by FIX, SWIFT undertook an effort in early 2001 to XML-encode their proprietary format. The group sought to simply encode SWIFT messages in an XML format known as swiftML. Since the SWIFT group is closely aligned with ISO 15022, on which the latest set of SWIFT messages is based, it only made sense to work with FIX to produce a joint XML-based version of the ISO 15022 protocol. Consequently, work on swiftML has halted as of July 2001 in favor of the ISO 15022 activities.

ISO 15022 XML

The International Organization for Standards (ISO) has defined a set of electronic messages exchanged between Securities industry players descriptively named ISO 15022. This ISO Working Group consists of representatives from many key XML participants and industry infrastructure organizations including CUSIP/ANNA, DTCC, SWIFT, FIX, GSTPA, ISITC, FINXML, FpML, and Thomson Financial, among others. The group is working to evolve this standard to an XML format, spurred in part by convergence activities with the SWIFT and FIX formats, each of which had been preparing an XML version of their proprietary formats. This convergence, announced in July 2001, is a very good thing for the Financial Services sector. Collaboration between the different key standards used in different parts of the trade life cycle is good for simplification of integration challenges and movement to Straight-Through Processing (STP). FIX is used predominantly in the pre-trade front office, while SWIFT is used in the post-trade back office. The elimination of multiple, conflicting and overlapping formats will ease transition to the shorter settlement cycles demanded by STP and T+1.

ISO 15022 replaces older standards for securities industry electronic messages, including ISO 7775 for securities messages and ISO 11521 for inter-depository messages. The format also provides a general framework by which different communities can define message types specific to their processes. This overarching goal conflicts in some ways with the Market Data Definition Language (MDDL), which seeks to standardize an architecture for defining community vocabularies for securities prices, volume, bids and offers, and other trading concepts.

Due to the convergence around ISO 15022, Financial Service Providers should support and continue to monitor the activities of this group, and utilize the ISO 15022 XML specification, when it is announced.

Financial Products Markup Language (FpML)

Standards also exist for the trade of derivatives and other financial instruments. In this arena, the Financial Products Markup Language (FpML) provides an XML-based specification that is focused initially on over-the-counter (OTC) financial instruments directly traded between banks and other financial institutions. The specification, currently at version 3.0, includes trade execution syntax for OTC instruments such as forward rate agreements, interest rate swaps and options, equity derivatives, and foreign exchange, including spots, forwards, swaps, options, and option strategies.

Prior to FpML, the only mechanism by which OTC instruments could be exchanged was by phone with written confirmation. FpML simplifies the confirmation process by defining sets of default values for each document. The latest version of the specification includes the ability to define interest Rate Cap, Interest Rate Floor, Interest Rate Swaption (including European, Bermudan and American Styles; Cash and Physical Settlement), Extendible and Cancelable

Decision Point

Due to the convergence around ISO 15022, Financial Service Providers should support and continue to monitor the activities of this group, and utilize the ISO 15022 XML specification, when it is announced.

Interest Rate Swap Provisions, Mandatory and Optional Early Termination Provisions for Interest Rate Swaps, and FX Resettable Cross-Currency Swap.

While not formally included in the ISO 15022 XML specification, FpML is working closely with the group, and so we can expect any results to be closely aligned with the end results of the working group.

Market Data Definition Language (MDDL)

Sponsored by the Software and Information Industry Association (SIIA), the Market Data Definition Language (MDDL) provides a “generic” specification intended to describe a wide range of finance related information including financial instruments, corporate events affecting value and tradability, and market-related, economic, and industrial indicators. The goal is to simplify integration with data from multiple sources by standardizing market data vocabulary elements.

With its first beta version released September 19, 2001, the specification provides a common understanding of market data content by standardizing industry terminology and normalizes the relationships of various data elements to one another. Since MDDL is very new and it is not clear how other financial formats will influence its adoption, companies should take tentative steps to adopt this format.

FinXML

FinXML is developed by a commercial entity known as FinXML.org, and is aimed at providing a standard for facilitating electronic exchange of financial transactions within Capital Markets. The format is a wide-ranging specification that provides a framework within which vocabularies for capital markets can be defined, as well as a framework by which these vocabularies can be developed and deployed. In many ways, it represents a full-solution approach to transaction-oriented specifications that overlaps with the efforts of ISO 15022. However, since FinXML is also on the ISO 15022 working group, it would seem that some differentiation and competitive positioning will no doubt take place as the ISO 15022 XML specification is released.

FinXML currently supports a wide range of elements and attributes that represent financial transactions, reference data, market data, payments, settlements and confirmations. The format also supports a wide variety of financial products including interest rate, foreign exchange and commodity derivatives, bonds, money markets, loans and deposits, and exchange traded futures and options. Developed initially by Integral, the format is patent-pending, thus rendering it not an “open” specification. However, they have recently loosened their licensing agreements. It is not clear how FinXML will cooperate, compete, or enhance the ISO 15022 XML and other specifications as they are developed.

Straight-Through Processing Markup Language (STPML)

As its name implies, the Straight Through Processing markup language is aimed at supporting the requirements of Straight-Through Processing. First demonstrated in 1999 and developed by the Microsoft DNAs steering committee consisting of representatives from Microsoft, FMC, Merrill-Lynch, CSS, FIX, Infinity, Bridge, ILX, NASD, and Reuters, STPML is an XML-based specification that is meant to be a superset of existing protocols, including of FIX, SWIFT, ISITC, and DTC ID. As a result, it does much of what the newly converged ISO 15022 format plans to do.

Since the FIX Protocol group adopted STPML as a candidate for FIXML 2.0, and subsequently the format converged with SWIFTML to form ISO 15022 XML, it is expected that STPML will be folded into the effort as well, and its best practices and technology adopted by the ISO working group. As such, companies should look to support ISO 15022 rather than a direct implementation of the STPML specification.

Banking Transaction Formats

Open Financial Exchange (OFX)

Created by CheckFree, Intuit and Microsoft in early 1997, the Open Financial Exchange (OFX) is an XML-based specification that supports consumer and small business banking activities including electronic bill payment and presentment (EBPP), and investments, including stocks, bonds and mutual funds. Future plans call for adding other financial services, including financial planning and insurance. OFX supports transactional Web sites, thin clients, and personal financial software. As a result of its early predominance, OFX “greased the skids” of online banking by making it more compelling for financial institutions to implement online financial services.

While OFX has been widely supported within Inuit and Microsoft small and medium-sized business accounting packages, the Interactive Financial Exchange (IFX) format described below will soon replace the format as a more complete and comprehensive banking industry standard. However, in the interim, OFX and IFX are “competing” at some level for implementations and adoption. Within three years, it is expected that IFX will replace OFX as the predominant XML-based specification for retail and commercial banking.

Interactive Financial Exchange (IFX)

Built upon previous industry experience, notably the Open Financial Exchange (OFX) and the IBM/Integrion Gold specifications, the Interactive Financial Exchange (IFX) Specification allows financial institutions and associated service providers to access account information, download credit card statements, transfer funds, process consumer and business payments, enable bill presentment, and improve customer service. The specification supports a broad range of client devices, such as any standard Web browser software, personal computers with personal financial manager (PFM) software, voice response units (VRUs) that provide bank by phone services, automated teller machines (ATMs), consumer handheld devices, or mobile telephones with data capabilities.

The current version of the specification, version 1.2, contains functionality covering the following capabilities:

- Retrieval and query of bank account balances, account information, and statement download for deposit and loan accounts
- Download of credit card statements
- Funds transfers, including recurring transfers
- Individual and Recurring Consumer payments
- Individual and Recurring Business payments
- Bill presentment
- Account-related customer service

There are also some prominent overlaps with the OFX format. The group hoped to “retire” the OFX format in favor IFX, but there are still companies, notably Intuit, who are still developing and using the format. Thus, there is a danger of OFX slowing IFX adoption.

Within three years, it is expected that IFX will replace OFX as the predominant XML-based specification for retail and commercial banking.

Financial Reporting Formats

Extensible Business Reporting Language (XBRL)

The Extensible Business Reporting Language (XBRL) is an open, freely licensed specification that uses XML to describe financial statements for both public and private companies. The format provides a standard format in which users can prepare business and financial reports that can be subsequently presented in a variety of ways. XBRL also specifies how this financial information be exchanged between different applications and how it can be searched, extracted, and automated. The specification was created to facilitate exchange of general as well as extremely detailed business reporting information such as financial statements, financial information, non-financial information, general ledger transactions, and regulatory filings such as annual and quarterly financial statements. An XBRL-based financial statement is a digitally enhanced version of paper-based financial statements, which include the balance sheet, income statement, statement of equity, statement of cash flows, and the notes to the financial statements as well as the accountant's report.

XBRL is meant to benefit all users of the financial information supply chain: public and private companies, the accounting profession, regulators, analysts, the investment community, capital markets and lenders, as well as key third parties such as software developers and data aggregators. The format first aims to specify the format of information that would be reasonably expected in an electronic format for securities filings by public entities. Secondly, they hope to facilitate business reporting in the long term, not just limited to financial and accounting reporting. Their application and presentation-neutral format hopes to avoid the use of bold, italics, and other stylistic techniques that distract the end-user from the true and fair presentation of results. XBRL is not about establishing new accounting standards but is about enhancing the usability of the ones that already exist. In particular, XBRL will not require additional disclosure from companies to outside audiences.

Key uses of XBRL include representation of financial statements of all sorts, specification of items filed on tax returns, support for regulatory filings, management and accounting reporting such as all the reports that are created by accounting systems, and descriptions of accounting-related authoritative literature published by the AICPA, FASB, ASB, and others.

XBRL has also sought to make the format an accepted part of the way business is done by approaching organizations and governmental bodies for regulatory approval and enforcement. The premier national professional association for CPAs in the United States, the AICPA, is playing a major role in promoting XBRL. Other bodies expressing support for XBRL include the Australian Prudential Regulation Authority (APRA), and the Singapore financial regulation authority. Software and services vendors that have announced support include ACCPAC, Caseware, eKeeper, Enumerate, FRx, Hyperion, IB Matrix, Navision, and SAP, among others. Companies expressing support for XBRL include Microsoft, Toshiba Finance, EDGAR, KPMG, PriceWaterhouseCoopers, and Bank of America, among dozens of others.

There is a good chance that XBRL will be mandated by governments in the near future as the only acceptable XML format for submission of regulatory financial information. Since there is no credible "competition" to this standard, companies should look to adopt XBRL in the near future for financial reporting needs.

Decision Point

There is a good chance that XBRL will be mandated by governments in the near future as the only acceptable XML format for submission of regulatory financial information. Since there is no credible "competition" to this standard, companies should look to adopt XBRL in the near future for financial reporting needs.

Research Information Exchange Markup Language RIXML

A tremendous amount of financial industry research is produced daily, and this information needs to be routed, filtered and consumed by buy-side and sell-side firms. The Research Information Exchange Markup Language (RIXML) is an open XML-based format that aims to provide tags for any piece of research content, in any form or media, with enough meta-data information for consumers to search, sort and filter through publisher research and quickly provide highly relevant information to their decision makers. The specification is developed and managed by RIXML.org, a consortium of buy- and sell-side firms.

The RIXML format allows companies to share research data by using a common XML-based format that can be easily published on the Web, print, or on wireless devices. This language covers the area of investment research, documents written to provide an investment opinion or outlook on specific instruments (stocks, bonds, etc.), companies, governments, industrial sectors, geographic regions or markets and economies in general.

While the first version of RIXML deal mainly with investment research documents, future versions will leverage other XML formats including XBRL and NewsML to describe additional content around research data. In many ways, RIXML competes with another format called Investment Research Markup Language (IRML), but both groups claim that their user communities are distinct, and as such, non-competitive. However, they aim to solve the same set of problems, and so companies looking to adopt a specification will be forced to choose between the two, or at worst, support both.

Investment Research Markup Language (IRML)

Similar to RIXML mentioned above, the Investment Research Markup Language developed primarily by Multex.com Inc., is an XML-based format for specification for tabular investment research data, such as that supplied in morning notes, or in the front matter of full investment reports. As with RIXML, the standardization of this information will greatly simplify data integration and communication, and will enable more detailed and comprehensive search capabilities. Also, a standard format for investment research will allow aggregation and automated comparisons between different firms, and will enable syndication of investment research content. These capabilities would allow users to combine research information from a range of analysts and combine them with preferred weightings to get a broader and more balanced view.

Since RIXML and IRML are both complimentary and competitive, it is not clear which format will end up becoming supported by the majority of companies in the long run. It is possible that both formats will continue to exist or a merged version will surface. As such, it is difficult to “place a bet” on either of these formats at the time being.

MarketsML

Reuters, the largest financial information supplier in the world, has produced a number of XML-based formats for specification of news and other content. In this vein, the company has released a format called MarketsML that aims to specify financial information and transactional information. Since this information is very much provided in a Reuters-specific format, the intent is to simplify the process by which companies obtain Financial News and reporting information from news feeds such as Reuters, and provides a simple way to integrate this information with other XML news formats, especially NewsML.

MarketsML has yet to obtain any support beyond Reuters, and as such should be used by companies that already have a relationship with the company.

Insurance Industry Formats

Association for Cooperative Operations Research and Development (ACORD)

The insurance business is driven by data, and the Property & Casualty (P&C) business is no exception. In the drive to utilize the Internet as a means for real-time exchange of insurance information between producers, carriers, rating bureaus, and service providers, the Association for Cooperative Operations Research and Development (ACORD) created an XML format for defining message-oriented P&C transactions. Leveraging the existing Interactive Financial Exchange (IFX) specification as a “base protocol,” ACORD is defining an insurance industry format that contains transactions for Personal and Commercial Lines, Surety, Claims, and Accounting transactions. As a result, Most of the business message structure, data types, and documentation conventions were borrowed from the IFX Specification.

The organization was actually formed in 1970 for the development and promotion of standards for the insurance industry. ACORD’s first XML standard to pass approval was its ACORD Property & Casualty and Surety (P&C and Surety) specification developed in late 1998 and approved in 2000. Their follow-up to this was the development of the ACORD Life insurance standard known as XMLife. A key aspect of the ACORD standards is its dependence on the Interactive Finance Exchange (IFX) standard and its support of the e-Business standardization effort ebXML. It also extends Automation Level 3, an EDI standard adopted in the insurance industry.

ACORD specifies all the aspects of the insurance lifecycle, from customer acquisition to claims fulfillment. These are divided along the lines of Property & Casualty, Life, and Surety insurance. ACORD specifies a very large and thick Document Type Definition (DTD) around the vocabulary and exchange mechanisms designed to meet these needs.

Due to its longevity and reputation, ACORD has the support of over 1,000 insurance carriers and groups, 25,000 agencies, the majority of software services and vendors, non-profit organizations, and the CPCU society. This, combined with its excellent efforts in the form of its XMLife and Property & Casualty standardization efforts contribute to its excellent changes of success in surviving any battles with conflicting insurance industry standardization efforts. For security, ACORD relies on channel-level encryption such as SSL or SMIME for privacy and data integrity. ACORD contains built-in mechanisms for authentication of user parties and transactions, but does not provide any mechanism to protect privacy and guarantee data integrity between end-points. As a result, the implementation relies on channel-level facilities for this functionality. Since ACORD follows the same architecture structure of IFX, it supports batch and interactive styles of communication and is application protocol independent, supporting HTTP, FTP, SMTP, or emerging protocols for transport.

The ACORD Global Standards Strategy Committee has also announced a project called “eMerge” that aims to integrate existing ACORD Standards into a single common standard. This new and evolving format will develop a single view of financial services by partnering with other standards bodies globally in an effort to facilitate Straight-Through Processing (STP). Increasingly, the lines between insurance and the other financial services sectors are becoming blurred by virtue of increasingly shared data and implementations. Adoption of a common data exchange structure will simplify and streamline data transfer within and external to an enterprise.

Real Estate Industry Formats

Mortgage Industry Standards Maintenance Organization (MISMO)

Much of the paperwork and documentation in the real estate industry is actually around the mortgage, credit, and loan process rather than in locating and describing real estate property listings. The process for purchasing a home through a credit agency is both rigorous and paper-ridden. But the Mortgage Industry Standards Maintenance Organization (MISMO), under the auspices of the Mortgage Bankers Association (MBA), is seeking to simplify this task by providing a single repository of XML DTDs for use in real estate finance transactions from origination through servicing.

The mechanism for these automated transactions is quite simple, in comparison. For example, one company will send another a standard MISMO Credit Request to another participating company that in turn responds with a standard MISMO Credit Response. These transactions include all data that each company would require to process the exchange. MISMO has defined three deliverables to accomplish these goals. The first deliverable is a mortgage *data dictionary*. This dictionary includes the data elements present in MISMO Standard transactions. The dictionary also contains corresponding definitions, XML tag names, data requirements and sources for the definitions of the supplied terms. The second deliverable for MISMO is an XML architecture that leverages the web as its transport. The final deliverable is a relational Data Model that is provided to explain the relationships between the defined data elements, and the necessity of those elements in a particular transaction.

MISMO set out to standardize information regarding loan data that is sent between two organizations, and is relevant to a specific point in time and can span multiple transactions between trading partners. However, the intention of the specification is not to provide a means for archival of loan data, although companies can archive the files as they are sent back and forth within the industry. Specifically, the data structures were not designed with archival in mind, but rather stateful data relevant to a particular instance in a transaction between organizations.

Key elements of functionality in the specification include credit reporting, loan boarding, applications, service orders, underwriting, and supporting activities. MISMO has published specifications that support mortgage insurance applications, mortgage insurance loan boarding, secondary, bulk pricing, real estate services, credit reporting, and underwriting process areas.

Real Estate Transaction Markup Language (RETM)

The Real Estate Transaction Standard (RETS) provides an XML-based standard for exchanging real estate transaction information. RETML incorporates approximately 140 commonly used fields that are found in some variation on most Multiple Listing Service (MLS) systems, providing a substantial subset of the property information that will be highly useful for a number of typical applications. However, in the words of the group, "RETM does not attempt to be comprehensive or to provide a basis for a stand-alone XML-based MLS system, nor does it support the update transaction that is part of RETS. In fact, a compliant system need not even maintain all of the fields in RETML, although in response to a query it must pass meaningful data to inform the client that the requested field is absent."

★ Vendor Focus

Clareon
Fidesic

Only 15% of the content delivered daily by FSPs is “new” content. The remainder would be greatly simplified by content reuse.

It is not clear what activity is going on with RETML and how it will integrate with MISMO. Although, indications from MISMO have shown that there is interest in increased integration between the two specification formats.

Vendors Providing Financial Standards-based Solutions

There are quite a few vendors that are now providing XML Financial Standards-based solutions. Two worth mentioning are **Clareon** and **Fidesic**, with their XML-based electronic payment systems. Clareon is focused mainly on the medium-to-large sized business, while Fidesic is aimed at the small-to-medium sized enterprise.

4.3 Single-Source Publishing

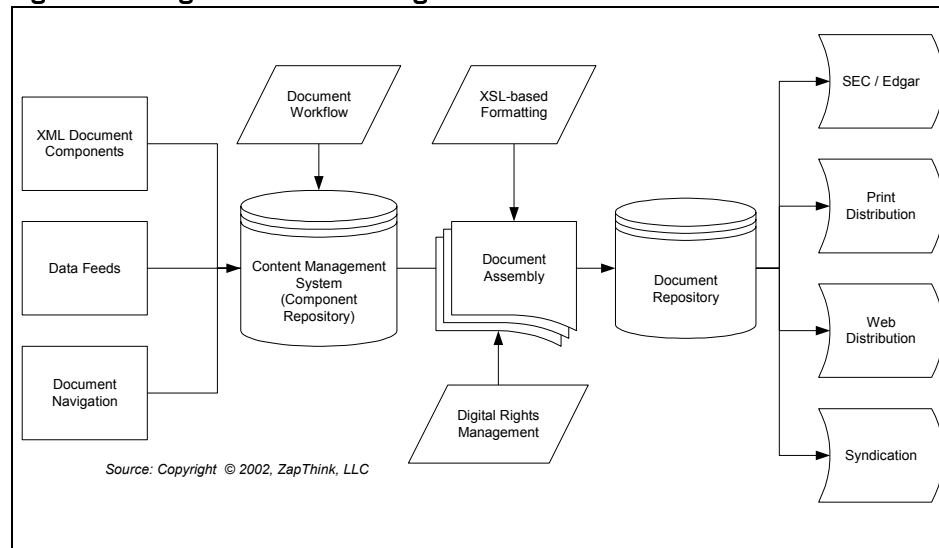
XML offers an organization the ability to reuse content, enforce document validity, provide a means for content management, and enable document searching. Clearly, plain old Word documents provide unstructured text that cannot take advantage of any of these capabilities. Typically, content authoring is decentralized and inefficient, with authors unable to cooperate effectively for multi-author document creation. Content is often re-created, resulting in redundancy, lowered productivity and inefficiency. XML is required to “componentize” text into chunks that can be validated, assembled, stored, and searched in a standardized manner.

Many FSPs are not only financial trading enterprises, but also publishing companies. They derive much of their revenue, influence, and customer satisfaction from the publication of financial reports, analysis, and other materials. However, the desire to publish these documents in as many formats as customers require is pulling FSPs to spend an inordinate amount of money on document creation, assembly, publication, distribution, and syndication. Part of this cost is that for each delivery mechanism and distribution channel, the content needs to be repurposed, and in many cases recreated.

In an XML world, there simply is no reason for content to have to be recreated. An average of only 15% of all content created by FSPs on a daily basis is “new” content. This means that profitability would be greatly improved by more efficient reuse of document content. The key to providing this reuse capability is the deployment of a Single-Source Publishing approach.

Enabled by XML, Single-Source Publishing allows content developers to develop content in componentized “chunks” that can be stored, searched, and later assembled on demand to a variety of output formats. In order to realize this goal, the various document component elements therefore need to be created in XML. These XML components are augmented by news and data feeds, possibly from other Financial and News XML formats such as XBRL, IRML, RIXML, and NewsML, and then stored in a central Content Management system. In this system, document editors, authors, and managers can approve or edit document sources, access library capabilities such as check-in, check-out, and versioning, and then dynamically compose a document, based on XSL style sheets or PDF-based formatting objects. The final document is stored in a document repository, which can distribute this content to a variety of sources on demand or in a push fashion. This process flow is illustrated in Figure 4.3 below.

Figure 4.3: Single-Source Publishing for Financial Documents



The optimal solution for the Financial Services sector is a system by which XML document creation is transparent to the user, the layout retains its premium WYSIWYG styling, and content authoring is assisted by the use of DTDs or XML Schema. FSPs can realize an extra benefit from XML content componentization since authoring becomes a greatly sped up process, with fewer layout decisions and document choices being presented to the user. This “guided authoring” allows automatic insertion of content, layout, and document navigation elements, while still allowing normal deviations in document content and styling. The resultant delivery of documents is not only made considerably more efficient, but also becomes incredibly consistent, with new styling and formatting decisions able to be applied to all an FSP’s publishing product lines, not just the most recent ones.

There are a number of major vendors that are producing tools and products to address Single-Source Publishing issues. Since content needs to first be encoded in XML to obtain any value from these efforts, XML Content Authoring tools are needed. There are two major types of authoring tools: XML editing environments such as those offered by **ArborText** and **SoftQuad**, and “embedded” XML authoring environments such as **HyperVision** and **i4i** that operate within tools like Microsoft Word. Once content has been created in XML, it can be captured in a Content Management system such as those offered by **Documentum**, **Interwoven**, and **XyEnterprise**. Finally, this content can be published and syndicated using these same tools or through **Adobe**, or Progressive Information Technology’s **Vasont** tool set, among others. All of these tools, technologies, are described in detail and evaluated in ZapThink’s “XML in the Content Lifecycle Technologies and Trends” Report. Also, you can read more about these specific products in ZapNotes that are detailed in Appendix B.

FSPs that produce a considerable amount of published content can realize an immediate, and significant, Return-on-Investment (ROI) by implementing a Single-Source Publishing approach. On average, FSPs can reduce their publishing expense by 46% by adopting an XML-centric means for document development, assembly, and distribution. See ROI section below for further analysis.

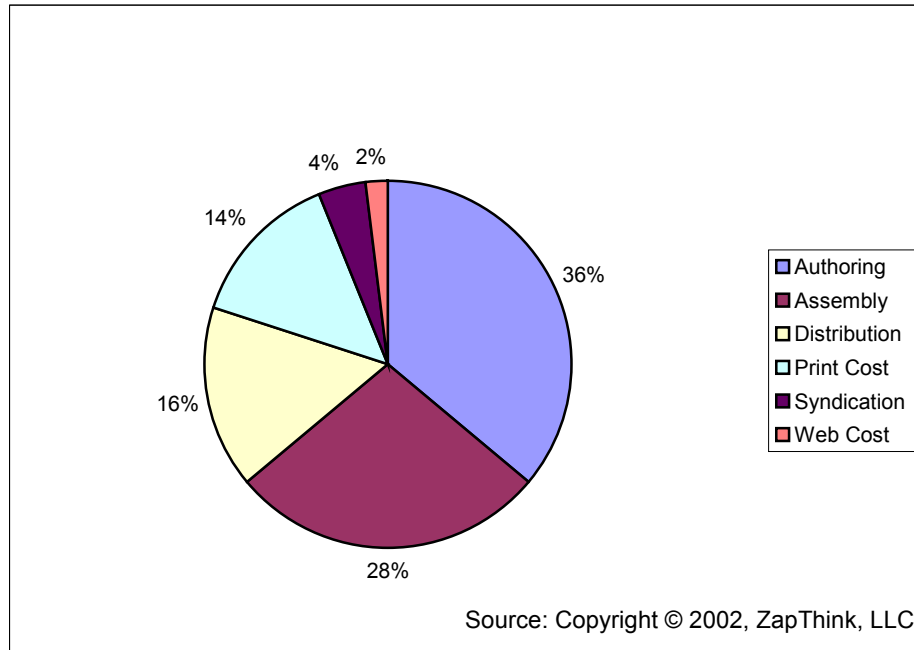
★ Vendor Focus

- Adobe**
- ArborText**
- Documentum**
- HyperVision**
- i4i**
- Interwoven**
- SoftQuad**
- Vasont**
- XyEnterprise**

★ Decision Point

FSPs that produce publications that must be delivered in multiple formats can realize almost immediate ROI from XML-enabling their content and reusing the elements through a Single-Source Publishing methodology.

Figure 4.4: FSP Publishing Costs (% of Total)



V. ROI for XML-based Financial Services Solutions

Companies in all industries will be adopting XML in a variety of levels, in many cases invisible to the end user. Since XML will be an embedded solution, the Return on Investment (ROI) analysis really follows specific implementations and applications of XML rather than XML per se. In fact, one could argue that there is no ROI for encoding data in XML by itself. Rather, encoding in XML is the “Investment” part of ROI. The Return portion comes from actual application of XML to specific business problems.

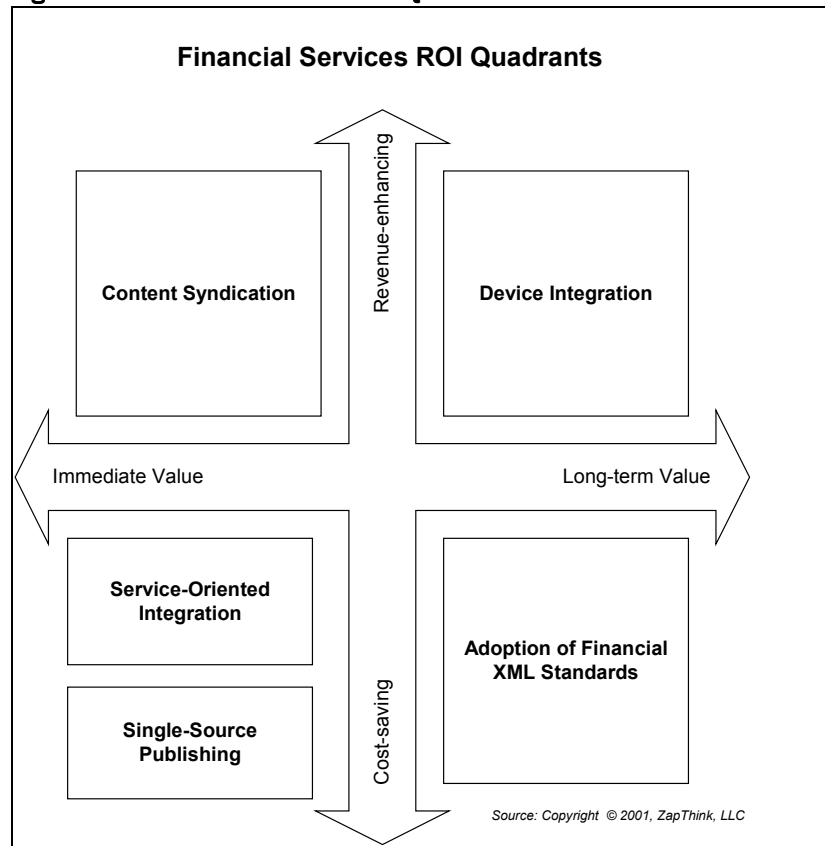
As explored above in Section IV, there are a few major applications of XML that have mainly cost saving, revenue enhancing, or competitive advantage ROI. While all solutions have elements of other ROI benefits, this report analyzes the main ROI from each solution type.

Table 5.1: ROI classification for different types of XML Application

Cost Saving	Revenue Enhancing	Competitive Advantage
Service-Oriented Integration	Content Syndication	Device Integration
Adoption of XML Standards		
Single-Source Publishing		

A chart illustrating these different application ROI classifications is illustrated below in Figure 5.1.

Figure 5.1: Financial Services ROI Quadrants



Decision Point

FSPs can realize immediate and significant ROI by adopting an XML-centric or Web Services-centric approach towards integration.

ZapThink estimates that in 2002-2003, mainly medium to large FSPs will have the resources to invest in Service-Oriented Integration.

5.1 Immediate and Significant ROI: Service-Oriented Integration

FSPs can realize immediate and significant ROI by adopting an XML-centric or Web Services-centric approach towards integration. By wrapping system functionality in Web Services standards, companies can integrate machines using an open, platform-neutral, and future-proof technology platform. Service-Oriented Integration (SOI), which takes this approach, allows companies to use a single architectural approach to perform both internal as well as external integration. SOI's simplicity as a cohesive technology architecture, rather than a hodge-podge of different technologies, will greatly simplify integration efforts, thus reducing integration cost, time, and long-term support.

Companies should realize that the Investment portion of any XML-centric integration approach is not insignificant. Fidelity Investments, recently announced that it invested tens of millions of dollars in order to eliminate up to 75% of its spending on middle-tier processing and make it significantly more agile in delivering new products. The returns are very significant, but so are the investments.

ZapThink estimates that in 2002-2003, mainly medium to large organizations will have the resources to invest in this type of integration, with the smaller players investing in mid 2003-2004, as STP pressures become increasingly more evident, and the "big guys" have proved that SOI is a viable methodology.

An ROI evaluation of Service-Oriented Integration technologies can follow the same lines as an evaluation of EAI or B2Bi integration technologies, however,

one can make a single investment in SOI and achieve a return in both types of integration. EAI costs include architecture, integrations, and operations. Architecture costs include integration development, execution and operations environments, and consist of license costs, new hardware required to develop, run and monitor integrations, and the cost to implement architectural software and hardware. Around 80% of architecture costs are incurred within 6 months of implementation while additional expenses may be incurred for hardware or licenses as usage spreads. With SOI, the architectural costs are driven by the availability of SOI approaches and the number of nodes that are capable of being exposed as Web Services. An SOI implementation requires a higher initial architectural investment than does a custom solution, but is much lower than typical EAI solutions.

Integration costs relate to the development of interfaces and collaborations between systems. This is the area of primary savings with SOI, while EAI efforts have shown that integration costs are 25-40% lower than custom integration efforts, Web Service enablement has shown great economies of scale, allowing up to a 60% savings from custom integration efforts and up to a 40% savings from EAI efforts. The main reason for this is that while EAI came bundled with adapters to early architectures, SOI systems can not only leverage these adapters but also provide means to integrate a wider range of data and application functionality. Since all applications communicate using a common methodology, far fewer interfaces need to be developed.

Since ongoing operating costs generally are driven by the number of interfaces that need to be maintained and rise as more interfaces are put into production. SOI provides greater ROI over time over EAI or custom integration solutions. Experience has shown that EAI generally provides a 50% to 80% reduction in application maintenance cost by reducing the number of interfaces that need to be maintained, but since an SOI approach provides a single interface, the Web Service, companies can expect to save up to 90% on ongoing maintenance and operations cost.

The economic benefits of SOI are so significant that it can often be justified in a single project and provide substantial additional benefits from that point forward.

5.2 Immediate and Significant ROI: Single-Source Publishing

As illustrated previously in Section IV, FSPs can expect immediate and short-term ROI by encoding their publishing content in XML and storing that content in a Content Management system for later assembly and transformation to end content formats. On average, FSPs can reduce their publishing expense by 46% by adopting an XML-centric means for document development, assembly, and distribution.

There are three main sources of investment for Single-Source Publishing (SSP): document creation, content management, and document publishing and distribution. Document creation is the area where the greatest cost savings can be realized, however it is also the area where the greatest investment is needed – operator training (unless an “embedded” XML authoring tool is used), document encoding, and software license costs all add to costs that would not be incurred using a standard Word Processor-based approach. However, the return comes from the ability to reuse, repurpose, and search that content once stored in the content management (CM) system. The CM system will be potentially the greatest source of license cost for SSP, but also should be chosen carefully to be able to provide the ROI necessary.

Decision Point

FSPs that have first implemented some encoding and storage of their content, or have implemented full-blown Single-Source Publishing can realize “easy revenue” by implementing Content Syndication.

Vendor Focus

3Path
eNow

Decision Point

FSPs looking to adopt XML-based standards should not expect any short-term (6-12 month) returns on investment, since they operate by the “network effect”.

5.3 Medium-term ROI: Content Syndication

Once content is stored in a CM system or an SSP system has been implemented, content that once has just been sitting idly or was associated with an expense line can be exposed to provide additional revenue opportunity for the FSP. FSPs should seriously consider implementing Content Syndication as it provides a tremendous capability for extra revenue without much additional investment.

Content syndication is not really a viable possibility for companies that have not previously encoded their content in an easily repurposable form. Thus, FSPs that have first implemented some encoding and storage of their content, or have implemented a full-blown SSP can realize “easy revenue” by implementing Content Syndication.

Some companies offering Financial Services-oriented syndication products and services include **3Path** with their desktop-delivery tool and **eNow** with a content aggregation and delivery service.

Not covered in detail in this report but of importance to those considering Content Syndication, the Internet Content Exchange (ICE) protocol is a key XML-based specification that will help to standardize how syndication is performed between machines. Users interested in ICE should read the ZapThink “XML in the Content Lifecycle Technologies and Trends” Report and the ICE ZapNote. See Appendix B for more information.

5.4 Long-term ROI: Adoption of Financial XML Standards

Longer-term cost savings can be realized by adopting Financial XML standards such as ISO 15022 XML, XBRL, IFX, MISMO, or ACORD. Standards, by their nature, take years before they take hold, and the primary means by which companies realize ROI on standards adoption is by cost savings. Typical cost savings is not from internal implementation of standards, but rather in external, B2B-type integration efforts. As a result, standards exhibit the “network” effect; if few companies implement the standards, there are little cost savings, however as the number of implementers of a standard increase, the resultant cost savings increase dramatically.

Without exception, XML-based Financial Services standards are currently very immature and nascent. There are a few early leaders and implementations are increasing daily. In the long run, some of these will be very successful. However, companies looking to adopt these specifications should not expect any short-term (6-12 month) returns on investment.

5.5 Long-term ROI and Competitive Advantage: Device Integration

Another source of long-term ROI is the integration of data sources with devices, such as mobile phones, PDAs, interactive TV, and other presentation forms. While some revenue can be realized by the additional licensing of content, subscription fees, or transactional revenue to these channels, much of the value is actually realized by presenting greater customer retention and increased competitive advantage.

Early adopters of Palm, Handspring, Blackberry, WAP, iMode, and other technologies have seen their services become more widely used, thus retaining or expanding their customer base. However, while there are these tentative early “wins,” there is no established and proven business model for device integration, and so it remains a longer-term ROI until a defined usage and business pattern exists.

VI. Barriers to XML Adoption and Growth Inhibitors

6.1 Service-Oriented Integration Pre-Supposes Interoperability

One of the challenges with implementing a Service-Oriented Integration (SOI) approach is that the standards and technologies that the approach is based on are very immature and nascent. There is no doubt that SOI technologies including SOAP, WSDL, UDDI, and others will mature over time. However, one of the assumptions that SOI makes is that all Web Services implementations will be interoperable. This is definitely hoped to be the case in the long-term, but in the short-term, a number of issues do exist. The Web Services Interoperability Organization (WS-I) is aiming to fix these problems by setting “profiles” that specify which combinations of standards versions will be applicable in given scenarios.

One of the primary challenges with interoperability is not the base-level messaging syntax, but with assumptions about security, reliability, and transaction control. All three of these considerations are extremely important to the Financial Services sector, and as discussed below, are considerably immature to be widely adopted by the Financial Services sector. While it is expected that improvements will be made in all these areas by the end of 2002, current misalignment of security, reliability, and transaction control standards will cause interoperability issues with SOI implementations.

Until that happens, SOI will still be an “early adopter” or “innovator” technology and not quite move to become an “early majority” technology, which is required for mass adoption by the Financial Services sector.

6.2 Lack of Standardized Security, Reliability, and Transaction Mechanisms

One of the challenges with adopting XML in general is that there aren’t widespread, standardized mechanisms for security, reliability, and transaction control. Sure, there are a number of major proposals, and some seem well-poised to succeed, but companies looking to implement these specifications now will be challenged by early adoption type issues. This includes a lack of tools that support security specifications, application server environments that don’t use robust, reliable transport protocols, and B2B integrations that lack overall transaction control.

These problems will most likely be solved in the medium term (12 months), but companies looking to implement integration projects now will have to invest larger amounts of resources in building security, reliability, and transaction systems of their own, with the possibility of having to dismantle these as the standards evolve.

6.3 External Integration Challenged Due to Lack of Control of End Points

In many cases, external integration is challenged due to the fact that FSPs do not own both ends of the integration pipeline. As standards emerge and proliferate in the marketplace, this issue will no doubt subside, but for the time being FSP organizations will have to deal with a greater number of disjoint integration efforts and the possibility that they will have to subsidize the entire cost of integration with their partners.

ZapThink predicts that between 2003-2004 only the medium to large-sized FSPs will have implemented key financial specifications, while the small to medium-sized organizations will have implemented them by end of 2005.

It is expected that external integration issues will take longer to resolve as the current focus of SOI and other integration architectures are internally, rather than externally, focused.

6.4 The Need to Support Multiple XML-based Specifications

While convergence of some standards will occur, FSPs will need to support multiple Financial XML specifications and standards within its systems in the short-term future. ZapThink predicts that between 2003-2004 only the medium to large-sized FSPs will have implemented key financial specifications, while the small to medium-sized organizations will have implemented them by end of 2005. Therefore, FSPs that have large B2B integration footprints will have to support multiple XML specifications until at least the end of 2005.

Constant fluctuations in the standards are also making adoption of any one specific format difficult, at best. While it seems that ISO 15022 will be the protocol that may end up winning out over the long-term, there currently exists a hodge-podge of standards and formats that must be supported in the next 6-12 months. These include SWIFT, FIX, FpML, FinXML, IFX, OFX, and others. It is unclear how these specifications will end up converging with ISO 15022. This convergence will probably not happen until 2003 at the earliest.

Furthermore, as FSPs branch out and communicate with multiple other vertical industries such as Automotive, Information Technology, and Health Care, they may be responsible for communicating in those industry's vertical vocabularies. This will result in the need for FSPs to support many XML formats and specifications.

6.5 Impact of Web Services and B2B Vocabularies on Industry Standards

To further complicate the XML standards landscape, it is unclear how the various horizontal, business-oriented specifications, or even the Web Services vocabularies themselves will impact Financial Services sector specifications. Will Web Services obsolete the need for vertical vocabularies such as FpML, or will there be a need for vertical industry standards? Furthermore, how will the efforts of ebXML, RosettaNet, and other industry specifications impact the long-term adoption of ISO 15022 and other specific protocol formats.

Since it seems highly unlikely that ebXML, RosettaNet, or Web Services will specify the detail necessary for the Financial Services sector, it is likely that the specific formats will continue to exist, but there is a high likelihood that their underlying transport frameworks and other assumptions may change as these horizontal specification layers proliferate. At the moment, the Financial Services Industry organizations mentioned above are not using Web Services as the basis of their conversation frameworks, but it is likely that over time this will change.

6.6 Single-Source Publishing Requires Sophisticated Document Authors

One of the challenges with use of Single-Source publishing techniques is that document authors need to be savvy XML document creators. In many cases, this is not a likely possibility. So, who are we talking about here as far as document creators? Many of the documents of value created within an organization come from those that work directly with customers or end users. This includes lawyers, accountants, real estate agents, insurance brokers, and financial industry workers. These workers are responsible for creating the "meat and potatoes" of their industry, but they are not technical document creators. Lawyers bill by the

★ Vendor Focus

**Hypervision
i4i**

hour, and the last thing they want to do is waste time learning a new document creation tool.

Thus, the challenge lies in allowing users to create documents that take advantage of XML without requiring them to use a new, unfamiliar tool set. This challenge can be reasonably solved by providing the power of XML creation within their existing tool suite, in a manner that is transparent to the user. Along this vein, companies such as **HyperVision** and **i4i** are approaching this problem by providing XML “plug-ins” to popular word processing applications, such as Microsoft Word. These plug-ins would allow central document administrators and editors to “push” to end users a set of valid document templates that users can use in their normal manner, but end up creating valid XML documents along with the normal word processing document.

6.7 XML May Not be Suitable as a Long-term Archival Format

Most FSPs have a strict, government mandated archiving requirement that documents must be readable for a minimum of ten years time. This time frame is longer than that of XML’s entire existence. Large document collections have presented the problem of data archival for some time, and have been faced by organizations such as the Library of Congress and of the Department of Defense. Thus, any content produced by FSPs that falls under the archival regulations must be retrievable to meet compliance and reference business needs.

As a result, XML can often only be an intermediate format for data representation, with long-term storage taking the form of PDF or other document formats. While XML is undeniably the best encoding for long term text content archiving, FSPs must be able to retrieve exactly what the client has shipped to be compliant, and therefore it fails the “document imaging” requirement. Organizations are left with PDF as the only viable choice for long-term archival since it maintains exact document layout and imaging requirements for both text and graphics, is widely used across many platforms, has a publicly specified format, and supports a large set of the world’s languages. A combination of XML and PDF supports full text search, document linking, individual page loading, compressed file size, interactive forms, low Total Cost of Ownership (TCO), and also prints extremely well.

6.8 Toolset Immaturity

In a recent non-ZapThink market research survey almost half of the respondents identified lack of mature tools as a key barrier to using XML. This is clearly a challenge for most companies. Without mature tools, vendors are left to fill the gaps, investing in custom development and support that could be offloaded to software development companies. Only medium to large-sized FSPs have the resources required to make these investments, contributing to a significant barrier to entry by small and medium-sized FSPs.

Without mature tools, vendors are left to fill the gaps, investing in custom development and support that could be offloaded to software development companies. Only medium to large-sized FSPs have the resources required to make these investments.

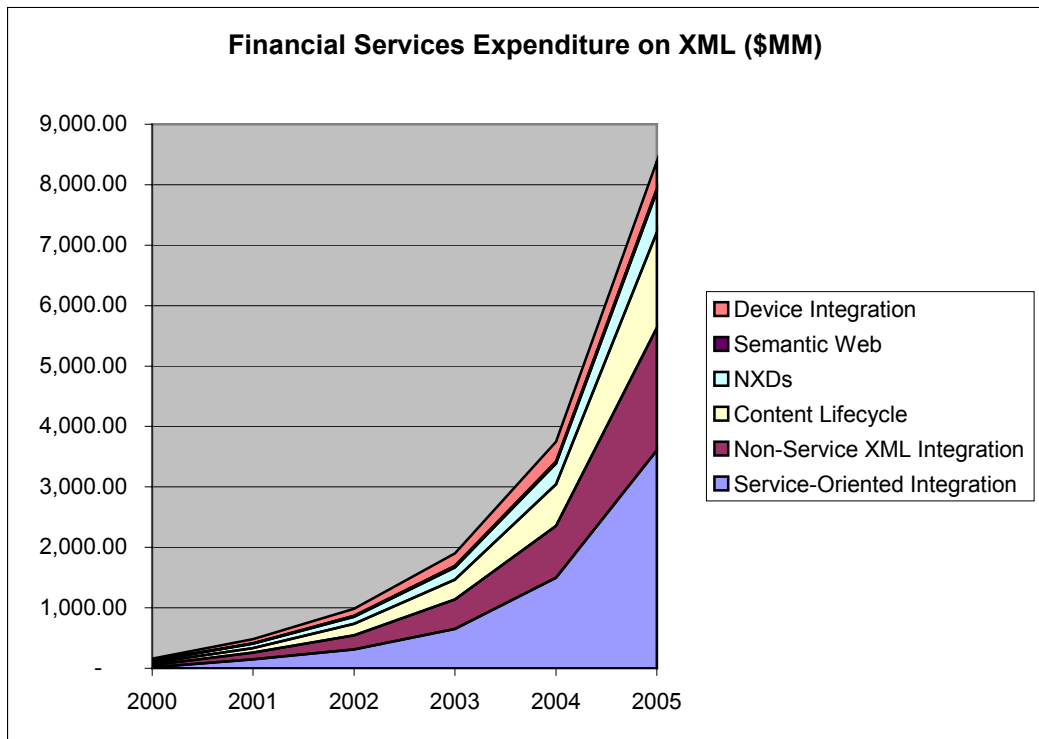
ZapThink estimates that the Financial Services sector will spend \$985 Million (US) on all XML technologies in 2002, expanding to over \$8.38 Billion (US) in 2005.

VII. Market Size and Future Trends

7.1 Predicted Financial Services Expenditure on XML

The Financial Services sector is the most aggressive implementer of XML technologies, by sheer virtue of the amount of money being invested in XML-based technologies and tools. ZapThink estimates that the Financial Services sector will spend \$985 Million (US) on all XML technologies in 2002, expanding to over \$8.38 Billion (US) in 2005. This growth is not unusual, seeing as the Financial Service sector plans to spend \$11 Billion (US) on Straight-Through Processing (STP) technologies alone. In addition, the Financial Services sector accounts for over 35% of all IT spending in the US, and possibly a greater amount worldwide.

Figure 7.1: Financial Services Expenditure on XML (\$ Million US)



Most of the XML expenditure from 2002 onwards is on integration-related technologies. While Service-Oriented Integration (SOI) is a recent phenomenon, it will experience rapid growth, accounting for over \$3.6 Billion (US) of the total \$8.3 Billion spent on XML technologies. Non-Service XML integration technology, such as XML virtual DBMS systems and direct data integration will account for another \$2 Billion (US) of this expenditure. Expenditure on Content Lifecycle technologies, already strong in 2001, is expected to continue a strong growth rate through 2005, powered by FSP publishing needs. Native XML Data (NXD) stores, an emerging market, will continue to gain traction, and already accounts for \$116 Million of Financial Service sector expense in 2002. The Semantic Web and Device Integration markets are continuing to evolve, and will show signs of emergence near the end of 2005, with Device Integration taking off in 2003. Table 7.1 below illustrates these conclusions.

Table 7.1: Financial Services XML Expenditure (\$ Millions)

XML Technology	2000	2001	2002	2003	2004	2005
Service-Oriented Integration	17.55	147.79	310.35	651.74	1,500.03	3,605.99
Non-Service XML Integration	35.10	110.84	232.76	488.80	857.16	2,028.37
Content Lifecycle	42.12	84.98	193.97	325.87	685.73	1,577.62
Native XML Data Stores	39.31	83.13	116.38	203.67	342.86	676.12
Semantic Web	3.51	7.39	15.52	24.44	34.29	45.07
Device Integration	35.10	66.50	116.38	203.67	325.72	450.75
<i>Total (\$MM)</i>	<i>161.46</i>	<i>480.31</i>	<i>985.37</i>	<i>1,898.19</i>	<i>3,745.80</i>	<i>8,383.93</i>

VIII. Conclusions

In the Financial Services sector, XML adoption is well underway. A number of accelerating factors including the need to better integrate, regulatory and reporting requirements, and the desire to simplify content publishing processes will help make XML become pervasive in this market sector by 2005.

While there are still major issues to be resolved, with mainly the larger FSPs able to effectively deal with them, the majority of the industry will be compelled to invest in XML technology in the next three years. According to many sources, the majority of the industry is still on the sidelines and hasn't adopted many of the Financial XML specifications and standards. This seems to imply that there are many waiting on the sidelines to see what the bigger players are doing. This is certainly true, since the top 30% of FSPs are driving 70% to 80% of all XML purchasing. As a result, the efforts of this group will "make or break" the sector. Judging from previous technology efforts in this community, the odds are high for "make".

In 2001, the effects of a slowing economy and September 11 contributed to widespread belt-tightening and budget scrutiny. This has led many FSPs to examine internal initiatives that can provide immediate ROI above more long-term initiatives. Fortunately, the market seems to have rapidly recovered in the first quarter and companies are using their internal integration experiences to guide wider-scale efforts. In any case, XML is playing a significant role in solving short-term ROI issues such as integration and content management.

In general, many of the players in the Financial Service sector are keeping their eyes on the ultimate prize of institution-to-institution interoperability, automation, and true straight-through processing (STP). Since XML is very well suited to providing solutions to each of these problem areas, vendors and providers of XML solutions should look for continued investment and expenditure through 2002 and beyond.

The net conclusion is that through 2002 and early 2003, the Financial Services sector will be looking to invest intensely in internally focused XML projects, expanding their integration efforts externally from late 2002 through 2003. Standardization efforts at that point will continue to pick up speed and provide additional ROI opportunities for capitalizing FSP players.

The top 30% of FSPs are driving 70% to 80% of all XML purchasing.

8.1 Key Notes

- *The Financial Services industries are Information industries. Their main products and services are information.*
- *The Financial Services industries spend an aggregate \$195 Billion (US) on IT technology, more than doubling the next largest aggregate vertical industry.*
- *On average, Financial Service Providers (FSPs) spend 18% of their IT budget on new and emerging technologies*
- *Financial Service Providers have complex interactions of systems, processes, divisional units, and organizations.*
- *FSPs have complex integration requirements due to highly complex, heterogeneous back-end systems used for day-to-day operations and decision support.*
- *XML is well suited to integration since it represents data in a platform-neutral, open, and extensible manner, preventing lock-in with proprietary integration platforms. Vendor lock-in contributes to the majority of long-term integration problems.*
- *The Financial Services Sector will spend over \$11 Billion (US) on STP through 2005.*
- *It is expected that the SEC will take a regulatory posture on XML within the next five years.*
- *With IT spending always lagging IT problems, there is an insufficient ability of the enterprise to adapt and solve new problems.*
- *The Financial Services sector is increasingly competitive and marked by shrinking transaction profit margins.*
- *Publications can account for up to 35% of FSP total expenses.*
- *Service-Oriented Integration (SOI) uses a Web Service-based approach to abstract back-end systems, thus merging the concepts of EAI, B2Bi, and Data Integration.*
- *SOI allows vendors to pick a single technology platform that can be applied to internal and external integration challenges.*
- *XML-based specifications can expand to include new functionality and features that may not have been considered when the format was originally developed.*
- *FIXML and SWIFTML are converging to create an XML version of the ISO 15022 protocol.*
- *Within three years, it is expected that IFX will replace OFX as the predominant XML-based specification for retail and commercial banking.*
- *Only 15% of the content delivered daily by FSPs is “new” content. The remainder would be greatly simplified by content reuse.*
- *ZapThink estimates that in 2002-2003, mainly medium to large FSPs will have the resources to invest in Service-Oriented Integration.*
- *ZapThink predicts that between 2003-2004 only the medium to large-sized FSPs will have implemented key financial specifications, while the small to medium-sized organizations will have implemented them by end of 2005.*
- *Without mature tools, vendors are left to fill the gaps, investing in custom development and support that could be offloaded to software development companies. Only medium to large-sized FSPs have the resources required to make these investments.*
- *ZapThink estimates that the Financial Services sector will spend \$985 Million (US) on all XML technologies in 2002, expanding to over \$8.38 Billion (US) in 2005.*
- *The top 30% of FSPs are driving 70% to 80% of all XML purchasing.*

8.2 Decision Points

- *Due to the convergence around ISO 15022, Financial Service Providers should support and continue to monitor the activities of this group, and utilize the ISO 15022 XML specification, when it is announced.*
- *There is a good chance that XBRL will be mandated by governments in the near future as the only acceptable XML format for submission of regulatory financial information. Since there is no credible “competition” to this standard, companies should look to adopt XBRL in the near future for financial reporting needs.*
- *FSPs that produce publications that must be delivered in multiple formats can realize almost immediate ROI from XML-enabling their content and reusing the elements through a Single-Source Publishing methodology.*
- *FSPs can realize immediate and significant ROI by adopting an XML-centric or Web Services-centric approach towards integration.*
- *FSPs that have first implemented some encoding and storage of their content, or have implemented full-blown Single-Source Publishing can realize “easy revenue” by implementing Content Syndication.*
- *FSPs looking to adopt XML-based standards should not expect any short-term (6-12 month) returns on investment, since they operate by the “network effect”.*

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- Table 5.1: ROI classification for different types of XML Application
- Table 7.1: Financial Services XML Expenditure (\$ Millions)

IX. Profiled Vendors

This report is aimed at figuring out how XML is impacting and affecting the Financial Services market, and as such doesn't spend much time analyzing offerings by various vendors. However, the report does mention a few vendors of note. Readers interested in learning more about these vendors and obtaining a detailed analysis of different product and service offerings should read the following reports and ZapNotes. In general, technology-centric reports will evaluate vendor offerings, while market-centric reports will evaluate market conditions and provide usage / adoption analysis rather than vendor analysis.

9.1 Service-Oriented Integration

The following is a listing of the Service-Oriented Integration (SOI) vendors featured in this report. This is by no means a complete, or even adequate list. Readers interested in looking at the full SOI market should read ZapThink's "Service-Oriented Integration Technologies and Trends" report.

Attunity

Please see ZapNote ZTZN-0138.

Cape Clear

Please see ZapNote ZTZN-0120.

IONA

Please see ZapNote ZTZN-0140.

SEAGULL Software

Please see ZapNote ZTZN-0160.

XAware

Please see ZapNote ZTZN-0154.

9.2 XML Content Creation

The following is a listing of the XML Content Creation vendors featured in this report. This is by no means a complete, or even adequate list. Readers interested in looking at the full market should read ZapThink's "XML in the Content Lifecycle" report.

ArborText

Please see ZapNote ZTZN-1061.

HyperVision

Please see ZapNote ZTZN-0249.

i4i

Please see ZapNote ZTZN-1049.

SoftQuad

Corel has acquired SoftQuad. Please see Corel ZapNote ZTZN-0118.

9.3 XML Content Management

The following is a listing of the XML Content Management vendors featured in this report. This is by no means a complete, or even adequate list. Readers interested in looking at the full market should read ZapThink's "XML in the Content Lifecycle" report.

Documentum

Please see ZapNote ZTZN-1031.

Interwoven

Please see ZapNote ZTZN-1054.

XyEnterprise

Please see ZapNote ZTZN-1110.

9.4 Single-Source Publishing

The following is a listing of the Single-Source Publishing vendors featured in this report. This is by no means a complete, or even adequate list. Readers

interested in looking at the full market should read ZapThink's "XML in the Content Lifecycle" report.

Adobe

Please see ZapNote ZTZN-0164.

ArborText

Please see ZapNote ZTZN-1061.

Progressive Information Technologies (Vasont)

Please see ZapNote ZTZN-1080.

9.5 XML Content Syndication

The following is a listing of the XML-based Content Syndication vendors featured in this report. This is by no means a complete, or even adequate list. Readers interested in looking at the full market should read ZapThink's "XML in the Content Lifecycle" report.

3Path

Please see ZapNote ZTZN-1000.

eNow

Please see ZapNote ZTZN-1036.

9.6 XML-based Risk Management

The following is a listing of the XML-based Risk Management vendors featured in this report. This is by no means a complete, or even adequate list.

Tamesis

Please see ZapNote ZTZN-0229.

9.7 XML-based Financial Services Companies

The following is a listing of the companies providing entirely XML-based solutions for financial service that are featured in this report. This is by no means a complete, or even adequate list, but aims to provide an idea of what companies are doing in this space.

Clareon

Please see ZapNote ZTZN-0236.

Fidesic

Please see ZapNote ZTZN-0183.

A. Related Research

Reports

- *Web Services Technologies and Trends Report (ZT-WEBSRV)*
- *XML in the Content Lifecycle Report (ZTR-CL100)*
- *Service-Oriented Integration Report (ZTR-WS101)*
- *XML Data Store Technologies and Trends Report (ZTR-ST100)*

ZapNotes

- *ACORD ZapNote (ZTZN-0270)*
- *ICE ZapNote (ZTZN-0153)*
- *IFX ZapNote (ZTZN-0155)*
- *IONA ZapNote (ZTZN-0140)*
- *MISMO ZapNote (ZTZN-0133)*
- *NewsML ZapNote (ZTZN-0206)*
- *XBRL ZapNote (ZTZN-0130)*

B. Supporting Resources

ebXML web site: www.ebxml.org
FinXML web site: www.finxml.org
FIXML web site: www.fixprotocol.org
FpML web site: www.fpml.org
GSTPA web site: www.gstpa.org
IFX web site: www.ifxforum.org
IRML web site: www.irml.org
ISO 15022 web site: www.iso15022.org
MDDL web site: www.mddl.org
OFX web site: www.ofx.org
RIXML web site: www.rixml.org
SWIFTML web site: www.swift.com
XBRL web site: www.xbrl.org



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About ZapThink, LLC

ZapThink is an IT market intelligence firm that provides trusted advice and critical insight into XML, Web Services, and Service Orientation. We provide our target audience of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink's role is to help companies understand these IT products and services in the context of SOAs and the vision of Service Orientation. ZapThink provides market intelligence to IT vendors who offer XML and Web Services-based products to help them understand their competitive landscape and how to communicate their value proposition to their customers within the context of Service Orientation, and lay out their product roadmaps for the coming wave of Service Orientation. ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into how to assemble the available products and services into a coherent roadmap to Service Orientation. Finally, ZapThink provides demand intelligence to IT vendors and service providers who must understand the needs of IT users as they follow the roadmap to Service Orientation.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOAs by vendors, end-users, and the press. They are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry.

ZapThink was founded in October 2000 and is headquartered in Waltham, Massachusetts. Its customers include Global 1000 firms, public sector organizations around the world, and many emerging businesses. ZapThink Analysts have years of experience in IT as well as research and analysis. Its analysts have previously been with such firms as IDC and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, CPExchange, ebXML, EIDX, and CompTIA.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how XML and Web Services impact your business or organization.

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