

**Markets in Financial
Instruments Directive (MiFID)**
Establishing a Compliance
Information Architecture

*An Oracle White Paper
March 2006*

Markets in Financial Instruments Directive (MiFID)

Establishing a Compliance Information Architecture

EXECUTIVE OVERVIEW

Regulatory compliance and corporate governance must rank as two of the most significant drivers impacting today's securities and investments industry. A myriad of regulatory directives including Anti Money Laundering (AML), Know Your Customer (KYC), Basel II Capital Adequacy, Sarbanes-Oxley and International Financial Reporting Standards (IFRS) have resulted from corporate scandals, security and terrorist threats, identity fraud and increased competition as well as political and economic will.

The objective of MiFID is to introduce further safeguards for investors and allow firms to operate across the EU under the standardised rules of their home regulator. To comply with MiFID, firms will have to alter their marketing practices, rewrite customer contracts and assess client needs more carefully. Many firms will also need to ensure best execution for trade execution and those that trade securities outside regulated markets will need to set up internal systems providing continuous quotes. MiFID will allow firms to complete transactions internally instead of going through an exchange – a new market concept for many European countries if not for the UK.

Securities and investment firms are being forced to be knowledgeable about what they do and effectively manage their business much more tightly. The desire to minimise the risks associated with the dynamic change in regulatory compliance and corporate governance necessitates a level of knowledge and information integration that has not been required in the past.

INTRODUCTION

In a nutshell, what is MiFID?

The Markets in Financial Instruments Directive (MiFID) introduces a consolidated regulatory framework for European markets in financial instruments. It's purpose is to offer retail investor protection and provide an investment services 'passport' to market transparency. Under MiFID, market participants will be able to access the market in any EU country on the same terms and conditions as they transact business in their home country. MiFID is part of the EU Financial Services Action Plan (FSAP), one of the Lisbon 2000 Strategy reforms to create a single market for wholesale financial services and supercedes the EU Investment Services Directive (ISD). MiFID is due to come into force on November 2007 and is perhaps the most significant financial markets reform ever to be undertaken.

MiFID impacts a wide variety of businesses including securities and futures firms (asset managers, investment banks, brokerages, private banking, hedge funds etc.), retail banks and insurance firms conducting securities business, Multi-lateral Trading Facilities (including ATs and ECNs), and regulated markets and investment exchanges. Some organisations, such as sell-side firms, may be significantly impacted by many, if not all, MiFID provisions. Others, such as buy-side firms, may be subject to only Conduct of Business provisions (such as client classification, customer investment mandates and client reporting). Firms in certain regulatory jurisdictions may already be close to complying with certain elements of the directive (for example, transaction reporting or best execution) whereas firms in others may not. Therefore, the effort to comply with the requirements of MiFID for each type of firm and financial marketplace will vary.

Virtually all areas of the business will be affected including compliance, trading, portfolio strategy, research, custody, finance, marketing, human resources and legal. However, most significant impact will be across sales, client management and operational activities.

Similarly, the scope of financial instruments covered by MiFID is broad including equities, bonds, energy, derivatives and money markets, although for certain MiFID provisions, some assets classes will lead others. Additionally, cultural and taxation barriers are likely to impact the degree and speed of change among associated financial products and services.

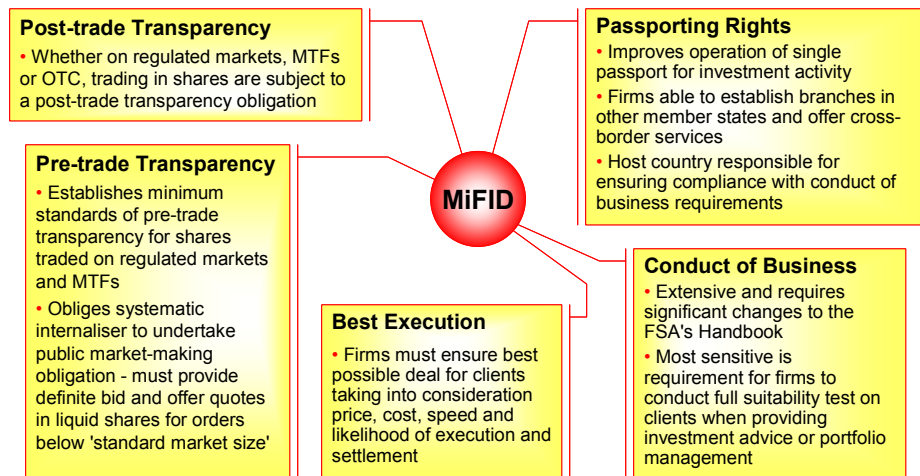


Figure 1 – The Five Principal Provisions of MiFID

With the European Commission (EC) having tabled formal draft proposals of the technical implementation details for MiFID, firms and vendors are arguably better equipped to evaluate the associated implementation issues. These technical implementation details (referred to as Level 2 under the Lamfalussy Process – an EC adopted process that aims to improve the efficiency of regulatory legislation), include both regulation, which must be implemented directly, and directives which must be imposed into national regulation by member states. Under the current schedule, Level 2 measures are likely to be adopted formally by the EU during the summer 2006. The national regulators are expected to formally publish regulatory rules (such as revisions to the UK FSA Handbook) early in 2007.

Open and Competitive Marketplaces

“We believe for those prepared to adapt and to make the necessary preparations, the opportunities in this new landscape of open and competitive marketplaces will be enormous”

“Firms should start preparing for MiFID: there will be a first-mover advantage”

Charlie McCreevy, EU Internal Market Commissioner.

Those firms that have assessed the business impact will be more readily able to seek competitive advantage by reviewing business models and driving new value propositions. Those firms will be more readily able to exploit new markets, instruments and geographies that result from improved market transparency.

RECOGNISING MIFID AS AN OPPORTUNITY

Industry and professional associations such as MiFID Joint Working Group and MiFID Connect (UK) have done much to improve industry awareness of MiFID and promote an understanding of its significance. Many securities and investment firms have now established programmes of work to understand the business impact, estimate implementation costs and answer the most significant question of all – is it possible for MiFID drive new business opportunity?

What is clear from the work of industry and professional associations is that MiFID has the potential to influence significant change in the way the securities and investments markets operate across Europe – MiFID is not merely a regulatory checklist. For the firms that participate in these markets, the implementation of MiFID is about business led change driven by a clear understanding of the impact and opportunity – MiFID is not about IT led change.

Industry observers widely accept that the net effect of MiFID will be reduced profit margins as a result of increased competition and consolidation. This may force firms to diversify so that they can demonstrate customer centric expertise in a specific demography. Whilst the benefits for investors are clear (enhanced transparency and choice on where to trade securities, lower cost of entry, higher level of protection and improved quality of execution) the benefits for firms are perceived less tangible (encourages pan European securities trading on the basis of home country regulation and establishes a coherent and risk-sensitive framework for order execution arrangements).

The real benefit will be for those firms that use MiFID as an opportunity to seek competitive advantage by reviewing business models and driving new value propositions by exploiting new markets, instruments and geographies and/or taking a proactive approach to managing regulation in order to reduce costs. For example, MiFID will make it easier to compete for new customers by rolling existing business models and processes into new markets – the winners will be those able to acquire significant volume and liquidity. At the same time, MiFID will bring to an end the cost of reporting to multiple regulators with inconsistent rules. Increased competition means that new business opportunity and operational

cost effectiveness are inextricably linked, particularly as certain markets become commoditised as a result of increased automation.

Ultimately, everyone will need to be ready for MiFID but some will be much better prepared than others with well understood investments in integrated technology. Those that invest by effectively supporting a business-led change programme are more likely to be able to take advantage of any resulting market uncertainty.

PREPAREDNESS – THE IT MANDATE

MiFID is about business led change and it's about flexible IT infrastructure, as one of many pillars, supporting this business change. Unfortunately, mergers and acquisitions have dramatically increased the scale of IT operations, resulting in an infrastructure that is typically fragmented. In these complex trading environments data duplication is extensive, information is afforded limited access and is expensive to maintain. Many organisations are therefore looking for greater visibility and flexibility across complex, global operations.

MiFID promises to deliver pan-European market transparency that threatens to dramatically increase data volumes and introduce new data management challenges. The traditional approach of solving problems on a piecemeal basis with standalone solutions no longer works. Is your IT infrastructure sufficiently flexible to facilitate rapid business led change to support market-led solutions and drive competitive advantage?

Timescales for implementation are tight and there is a general concern that the associated IT systems design, build and test will be rushed as firms struggle to respond to both regulatory and potential competitive pressures. In this climate of enforced regulatory change and competitive pressure there is an obligation on IT – both within the practitioner and vendor community – to improve preparedness.

As a leading supplier of software for information-driven businesses, Oracle has reviewed MiFID provisions in order to improve preparedness by identifying potential data management challenges and aligning technologies that may be employed to improve the flexibility of IT infrastructures.

THE SIX ENTERPRISE DATA MANAGEMENT CHALLENGES OF MIFID

There has been much quantitative speculation on the IT implications and costs of MiFID compliance. Much of this speculation has been fuelled by the talk of the 'blizzard of data' and 'data management bonanza' in press articles and industry journals. However, one common theme is that information – how to manage it, use it, share it and protect it – appears to be at the very core of the MiFID IT agenda.

There is certainly credible evidence from the EC technical implementation measures and national regulator planning documents that MiFID will drive increased data volumes but it is difficult at this stage to quantify what percentage

MiFID Readiness Survey

The MiFID Joint Working Group (JWG) has been keen to develop a set of repeatable metrics tracking investment firms' readiness for MiFID. The MiFID Readiness Survey was the result of work commissioned by the MiFID JWG and co-sponsored by Oracle to help firms compare their own state of readiness with their peers as well as provide reference for discussions with the European Commission (EC), Committee of European Securities Regulators (CESR) and national regulators. The survey has also helped the JWG focus on the areas of MiFID compliance that are causing the most concern, such as information management. The survey was published in November 2005.

Key Data Management Drivers

Conduct of Business

- Client classification and investment strategy
- Revised Documentation
- Assessment of buyers motives and suitability
- Client reporting of all interaction

Best Execution

- New rules: orders, sequence, timing of execution etc.
- Full historical auditability
- New venues & instruments

Pre-Trade Transparency

- Pre-Trade Price and Limit Orders publishing
- Evolution of standards

Post-Trade Transparency

- Post-trade publication (external)
- Execution flow reporting (internal)
- Evolution of standards

data volume increases can be expected or indeed what increased volumes might be attributed to MiFID as opposed to quiescent year-on-year growth.

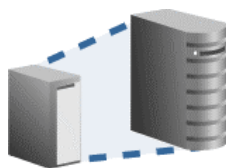
Industry and professional associations have done much to improve our understanding of this quantitative assessment as a measure of MiFID readiness. The MiFID Readiness Survey asked whether sell-side firms had a unified storage strategy for storing best execution data. Only 20% acknowledged that data attributed to a best execution policy was stored in unified systems. An International Securities Association for Institutional Trade Communication (ISITC) Conference asked an audience of approximately 100 members what impact MiFID would have to reference data management volumes. 82% believed that volumes would rise as a result of MiFID implementation.

Oracle's approach has been to complement this work by conducting a qualitative assessment of the data management challenges presented by MiFID. Perhaps not surprisingly, this assessment demonstrated that these challenges are not confined to data volumes. Indeed, six key data management challenges were identified – Volume, Latency, Lifecycle, Quality, Orchestration and Access. For any firm, the respective criticality of these challenges is dependent on the applicability of specific MiFID provisions and the flexibility of existing information management architectures.

Standards were also cited as a critical data management challenge both in terms of data representation and financial messaging protocols. For example, market / source, instrument and entity identification are critical elements that need to be made public on a trade-by-trade basis - market and reference data standards will be a key enabler to a coherent pan-European MiFID implementation. MiFID will also create new business flows that will require messages to carry new types of information. The Standard Protocols, Reference Data and Real-Time Market Data groups of the MiFID JWG are co-operating to review data models and protocols that are able to address MiFID requirements.

The assessment also demonstrated that whilst most areas of the business are affected by these data management challenges, the most critical include client-facing operations such as sales, client service and front office, and the operational domains.

Volume



MiFID threatens to dramatically increase volumes of price, position, instrument and entity data required to support best execution, pre-trade and post trade transparency obligations. Market data, trade reporting, transaction reporting, client order handling and record keeping are all likely to drive demand for increased data storage and distribution placing increasing demands on existing data repositories and network infrastructures. Under the record keeping

Oracle OLAP

Oracle Online Transaction Processing System (OLAP), provides valuable insight into business operations and markets using features previously found only in specialised OLAP databases. Because Oracle OLAP is fully integrated into the relational database, all data and metadata is stored and managed from within Oracle Database providing superior scalability, a robust management environment, and industrial-strength availability and security for high volume transaction processing applications.

and reporting provisions alone, firms will be responsible for storing records of financial instrument transactions for at least five years.

The requirement for improved auditability of decision support activities is likely to burden existing IT infrastructures. Firms will be looking to improve the scalability and availability of repositories so that they are able to manage and analyse more data, more efficiently. They will also be seeking an approach that preserves investments in existing data management resources.

The three proven golden rules to scaling your data management platforms are:

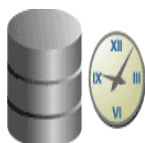
- Standardise on low-cost, modular servers and storage to lower costs
- Consolidate servers and storage using clusters
- Automate so you can manage the data management platform effectively as it grows

The underlying clustering tools already exist to support this three-step process and come under the general heading of GRID Computing. It enables the use of inexpensive, commodity technologies to get more out of existing data management assets. Oracle Real Application Clusters (RAC) is an option to the award-winning Oracle Database Enterprise Edition. Oracle RAC is a cluster database with a shared cache architecture that overcomes the limitations of traditional shared-nothing and shared-disk approaches to provide highly scalable and available database solutions for all your business applications.

Latency

Systematic Internaliser

MiFID defines a Systematic Internaliser as an investment firm which – on an organised, frequent and systematic basis – deals on its own account by executing client orders outside a Regulated Market or Multi-lateral Trading Facility (MTF). Systematic Internalisers must provide firm bid or offer quotes in 'liquid' shares on a continuous basis. Subject to certain waivers their quotes must represent a binding price for trades up to certain thresholds (defined as 'standard market size').



MiFID will encourage increased levels of automation, transparency and auditable decision support activity that drives demand for real-time data access. The prices quoted by Systematic

Internalisers for internally matched transactions (liquid stocks in particular) will have to be made public. These firm quotes must be made available on a regular and continuous basis so that they are readily accessible by the market. This places demands on both pricing engines and publication infrastructure that will need to process data with high levels of integrity and low latency. Even post trade publication of internalised trades will have to be made public in as close to real time as possible to exchanges, MTFs and market data vendors.

To comply with their best execution policies, firms will need to calculate transaction costs and monitor venues on a pre-trade as opposed to a post-trade basis obtaining information on different venues, instruments and entities to assist decision support activities – speed will be of the essence. Surveys suggest that the growth of algorithmic trading will accelerate as a result of MiFID, particularly amongst buy-side firms. These systems analyse data to trade in line with specific

Real-time Data Management

Real-time data management has two performance dimensions – response time and throughput. With Oracle TimesTen In-Memory Database, a transaction that reads a database record takes less than 20 microseconds (a microsecond is one millionth of a second), and transactions that update or insert a record take less than 40 microseconds. Consequently, throughput is measured in tens to hundreds of thousands of transactions.

algorithms or business logic applied for best execution. The increased level of automation is also driving demand for real-time enablement of existing data repositories, such as reference data hubs with front-end data caches.

Oracle TimesTen In-Memory Database delivers real-time performance by changing the assumptions around where data resides at runtime. By managing data in memory, and optimising data structures and access algorithms accordingly, database operations execute with maximum efficiency, achieving dramatic gains in responsiveness and throughput, even compared to a fully cached RDBMS. Oracle TimesTen In-Memory Database libraries can also be embedded within applications, eliminating context switching and unnecessary network operations, further improving performance.

Lifecycle



Perhaps one of the most critical data management challenges presented by MiFID, is information lifecycle. Under the record keeping and reporting provisions, firms will be responsible for making available records of all financial instrument transactions to the regulatory authority in a timely manner. As the MiFID Readiness Survey concludes “storing best execution data is one thing, reconstituting it for audit purposes is another”. Reconstituting it with context and history to prove best execution as the result of a challenge up to five years after the event is going to be hard - particularly if the requirement becomes part of an auditable compliance process.

Under the best execution provisions, a reconstituted trade may comprise information sourced from multiple heterogeneous systems each with their independent data archiving policies (80% of firms surveyed by the MiFID JWG claimed that data required to support best execution obligations were not on unified systems). During the interval between the transaction and the audit for proof, underlying data schemas such as instrument identifiers for the monitored best execution venues might have changed.

The MiFID implementation measures specify what data must be retained, whether it can be changed, and for how long it must be held. Firms are advised to define how electronic data can be made secure from unauthorised access and changes, perhaps providing an audit trail of all changes to data and by whom. The data lifecycle challenge is to understand how data evolves, determine how it grows, monitor how its usage changes over time, and decide how long it should survive.

Critically, Information Lifecycle Management (ILM) classifies data according to its value to the regulatory process as well as business drivers such as performance, availability and information protection. ILM achieves this whilst ensuring the most appropriate storage for the job.

Other Database Options

Options such as Oracle Timeseries, Partitioning and Multi-Tiered Storage can enhance the manageability, performance, and availability of a wide variety of applications. The security features in the database ensure that data is secure from unauthorised access and data is always transactionally consistent. The Oracle Database provides total flexibility, therefore it can rapidly adapt to any change in requirements, which is extremely important as regulatory controls continue to evolve.

ILM tools are designed to address these issues, with a combination of processes and policies so that appropriate storage technologies can be used for each phase of the information lifecycle. Oracle Database is ready today for ILM. It is capable of storing many different types of data and is the ideal platform to implement an Information Lifecycle Management policy, because it has a number of unique features, which makes it very easy to implement:

- Fine-grained: managing data at individual row level
- Application Transparency: data classification is transparent
- Low-Cost: uses low cost storage to reduce costs
- Enforceable Compliance Policies

Quality



Both buy-side and sell-side firms will be impacted by Conduct of Business (COB) provisions for sales, trading and investment management. MiFID directs firms to revise new and existing customer agreements as well as reclassify clients (eligible counterparty, professional customer, retail customer) with associated suitability tests. Investment firms will be required to assess investor suitability by obtaining information about the client's profile, knowledge and experience of the associated product or service. The extent of the information required will depend on the product or service provided but the integrity of this data across geographic, departmental and product / service boundaries will be a critical factor in maintaining customer satisfaction and profitability. Firms will clearly need to demonstrate consistency in the quality of client and market information across analytical and operational sides of the business.

Oracle Content Services

Oracle Content Services enable enterprise customers to utilise one highly scalable, manageable, and usable application to manage all of their unstructured information. Oracle Content Services includes retention and disposition features to manage large amounts of electronic records for regulatory compliance. These capabilities provide a foundation for the comprehensive declaration, classification, storage, retrieval, disposition control, and life cycle management of electronic records.

Entity data hubs that manage information such as customers, clients and counterparties, will need to ensure suitable synchronisation with information held in accordance with MiFID's suitability and appropriateness tests. The challenge will be not only about adding a few additional fields to your reference data model. Associated transaction information must be stored for a minimum of five years and the synchronisation of this data with entity information will be critical. MiFID, and more specifically the Conduct of Business rules, will require the synchronisation of both structured and unstructured data such as documents.

Oracle's Data Hub products enable you to synchronise information in a single central location, from all systems throughout your enterprise — to get an accurate, consistent 360-degree view of your company's data, whether from packaged, legacy, or custom applications. Oracle Data Hubs provide a real-time, consistent, single source of truth, for highest data quality. Because Oracle Data Hub is based

on open standards, you can easily integrate it with any third-party software, as well as with modules of Oracle's Application Suite.

For example, Oracle Client / Counterparty Data Hub is a fully integrated data management solution that centralises, de-duplicates, and enriches your client and counterparty data, continuously synchronising with all your data sources, to give you a single view. As new data comes in, reporting accuracy grows, analytics become more valuable, employee productivity increases, and day-to-day client and counterparty relationships improve.

Orchestration



MiFID requires that firms expose their order execution policies to clients and make them auditable for the regulator. This means providing appropriate justification for the execution venue selected for an order and then substantiating it with secure regulatory reporting. Organisations will need to execute these policies with flexible business rules so that best execution can be demonstrated based on cost, speed, likelihood of settlement and clearing etc.

It is also argued that the competitive pressures introduced by MiFID could lead to the redesign of front office processes as firms attempt to automate procedural activities and consolidate resources around added value functions. The focus on auditable process and cost efficiencies will also drive many organisations to improve straight-through processing (STP) rates. The complexity and volume of the market are making manual processes unsuitable and expensive.

Many have already recognised, a flexible service-oriented process framework offers the capability of supporting an increasingly dynamic regulatory environment. Under MiFID we need to:

- Provide full auditability of conduct of business and best execution data processes
- Improve agility and business performance
- Automate volume and focus on high value exceptions

Oracle Fusion Middleware is a portfolio of leading, standards-based and customer-proven software products that offers complete support for development, deployment, and management of Service-Oriented Architectures (SOA). At the heart of the Oracle Fusion Middleware is Oracle Application Server – a comprehensive solution for developing, integrating, and deploying your enterprise's applications, portals, and Web Services. Based on a powerful and scalable J2EE server, Oracle Application Server is the only platform designed for grid computing offering unmatched scalability, availability, manageability, and security. Oracle Fusion Middleware also includes Oracle BPEL Process Manager –

a comprehensive and easy-to-use infrastructure for creating, deploying and managing BPEL business processes. BPEL is emerging as the standard for assembling a set of discrete services into an end-to-end process flow, radically reducing the cost and complexity of process integration initiatives. For data and applications that require the highest level of security, Oracle Fusion Middleware supports identity management and strong authentication mechanisms to improve auditability service oriented processes.

Oracle BAM

Oracle Business Activity Monitoring (BAM) gives business executives the ability to monitor their business services and processes in the enterprise, to correlate KPIs down to the actual business process themselves, and most important, to change business processes quickly or to take corrective action if the business environment changes. Oracle BAM is a complete solution for building real-time operational dashboards and monitoring and alerting applications over the Web. Using this technology, business users get the ability to build interactive, real-time dashboards and proactive alerts to monitor their business services and processes.

We have to accept that the securities and investment market remains fragmented in terms of geographies, STP rates and technology adoption. Each domestic market is likely to retain its own idiosyncrasies. The questions arises, how can you implement a pan-European process but at the same time allow for these differences? Business Rules have become very attractive for applications subject to frequent changes such as regulatory processes that may be adopted across multiple business units and regulatory domains. Business rules can be thought of as the agility enabler for data management processes.

Oracle Business Rules provide a fast and efficient infrastructure for development and deployment of Business Rules thus allowing organisations in today's highly volatile markets to quickly take advantage of new market opportunities or to stave off competitive threats while enjoying significant development cost reductions.

Access



MiFID introduces obligations to prove that your business is operating with a consistent view of operations. For example, under the record keeping and reporting provisions, firms will be responsible for making available records of financial instrument transactions to the regulatory authority in a timely manner. This will include information relating to the transactions including clients, instruments, quantities, dates, times etc.

Based on information gained in the suitability test, firms will be responsible for evaluating whether a product or service is appropriate for the client. Best execution obligations will mean that firms will need to take factors such as cost, speed, likelihood of execution and settlement into account when selecting venues for the best execution. The order handling obligations will need to ensure that this process is executed promptly and fairly. Visibility of the combined order book across the venues as well as access to internal analytics (e.g. Trade Cost Measurement) will be critical.

Access is all about providing employees and clients with comprehensive reporting, query, and analysis capabilities they need to plan, execute, and measure. For those looking for differentiation, access is also about driving new business by rapidly redefining execution capabilities through innovative distribution channels.

Oracle Business Intelligence allows you to rapidly develop and deploy data warehouses and data marts with an integrated array of query, reporting, analysis, data integration and management, desktop integration, and BI application development capabilities. Oracle Reports enables businesses to give immediate access to information to all levels within and outside of the organisation in an unrivaled scalable and secure environment. Oracle Discoverer is an intuitive ad-hoc query, reporting, analysis, and Web-publishing tool that empowers business users at all levels of the organisation to gain immediate access to information.

CONCLUSION

MiFID is about business led change – IT is one of many strands that need to support this business change. With the European Commission having recently tabled formal draft proposals (Level 2 regulation and directives), securities and investment firms as well as vendors are arguably better equipped to ascertain the associated implementation issues.

At the time of publication, many securities and investment firms are in the process of establishing MiFID programmes of work and assigning full time staff to evaluate business impact. The early adopters are recognising that there is an opportunity to seek competitive advantage by reviewing business models and driving new value propositions by exploiting new markets, instruments and geographies and/or adopting a proactive approach to managing regulation in order to reduce costs.

Timescales for implementation are still tight – the process for delivering the regulation is drifting (we are not likely to see updates to the FSA’s handbook until January 2007) but the implementation date remains. There is a general concern that many associated IT procurements will be rushed as firms struggle to respond to both regulatory and potential competitive pressures.

MiFID introduces a plethora of data management challenges including volume, latency, lifecycle, quality, orchestration and access. These challenges are not insurmountable and the technologies exist to address them. These technologies are common components of the Compliance Information Architecture – a pre-integrated, standards-based IT infrastructure that provides the flexibility to support business led change resulting from dynamic regulatory controls.

The Oracle Compliance Information Architecture (ref: Addendum) supports market-led solutions, protects existing IT investments, achieves sustainable compliance and secures competitive advantage by coherently addressing issues of:

- Increased information volumes and complexity of relationships
- Information integrity and data quality across structured and unstructured assets
- Auditability and increasingly complex information lifecycle management and security

NEXT STEPS

Oracle is actively engaging in data management consultation processes resulting from MiFID. This includes thought leadership on the data management challenges and contribution to industry and professional associations as well as impact analysis on existing and proposed customer projects.

Oracle has also established a MiFID Partner Community focused on the provision of MiFID solutions through improved preparedness. The MiFID Partner Community builds on the work of industry and professional associations and includes a number of proactive services and activities such as workshops, research, marketing and business development.

To speak to Oracle about helping define your information management strategy for MiFID please contact:

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ADDENDUM: ORACLE COMPLIANCE INFORMATION ARCHITECTURE

The Oracle Compliance Information Architecture is all about providing high quality information to everyone in your organisation. This includes the decision makers and business analysts who define the business processes, and the staff who execute them. The Oracle Compliance Information Architecture is the result of nearly 30 years of experience creating the infrastructure software and services that help organisations share the most up-to-date and accurate business information.

Enterprise information management is about simplifying the IT infrastructure to maximise efficiency. In short, the Oracle Compliance Information Architecture ensures everyone in your organisation gets timely access to accurate and consistent information by connecting staff, customers and partners with the organisation's high quality information assets.

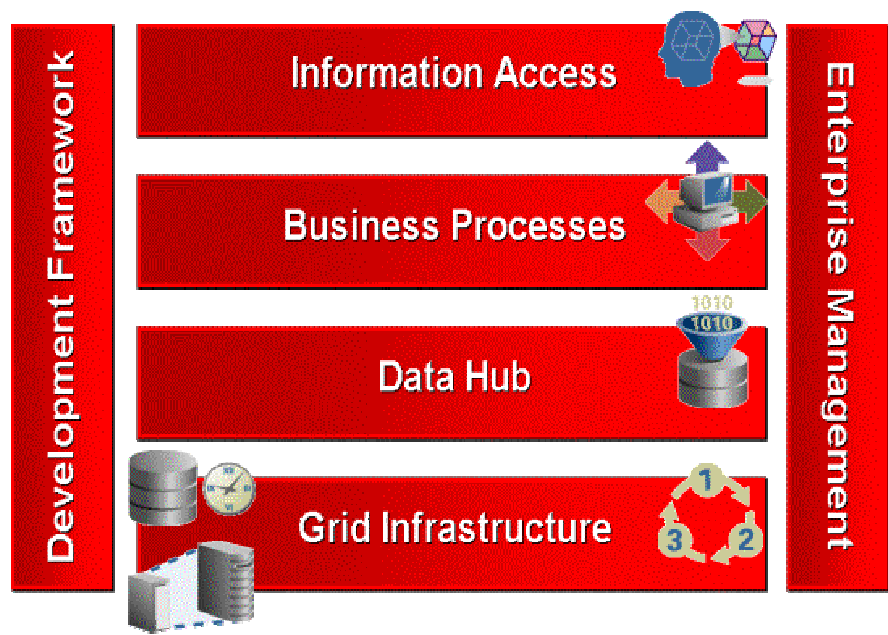


Figure 2 – The Oracle Information Architecture (OLA) with MiFID Technology enablers highlighted

The Oracle Compliance Information Architecture provides the standards-based platform on which our customers and partners are building MiFID market-led solutions. Our six data management challenges highlight core technologies that are critical components of this Architecture.

- **Information Driven: Grid-Infrastructure**

Grid computing is the foundation of the information-driven enterprise and the core of Oracle's Compliance Information Architecture. Grid computing makes it possible to handle the exploding amount of information that financial services

organisations need to face every day by pooling large numbers of inexpensive servers and storage. A grid-powered architecture continually analyses computing demand and adjusts supply accordingly.

- **Information in One Place: Data Hub**

The success of all business processes depends on the availability of accurate master data to everyone who needs it. But information about the business may exist in several disconnected systems. Oracle's Enterprise Data Hub model helps you create a central repository that keeps key information about your business continuously synchronised. Although data may be stored in many application-specific databases, the data hub provides the master record, ensuring accurate, consistent data about your assets, instruments, products, services, positions, clients and counterparties.

- **Information in Action: Business Processes**

The best information in the world doesn't do your business much good unless you can apply it. Oracle's Business Process platform provides a single view into your enterprise business processes so that you can see where your business is missing opportunities to lower costs and increase revenue. With business process management functionality, Oracle Business Processes automate paper-based processes and incorporate human workflow. Oracle Business Processes provide views of critical business events and allow you to monitor business processes within your organisation to quickly detect and correct inefficiencies. You can compare current and historical process execution data with key performance indicators of your business, and identify where corrective action is needed.

- **Information on Demand: Information Access**

Without all the facts, you're pressured to make critical business decisions and assess risks and opportunities based on guesswork, resulting in financial losses and missed opportunities. Oracle's Information Access tools provide users with comprehensive reporting, query, and analysis capabilities they need to plan, execute, and measure all your business operations. Oracle provides a set of integrated communication and reporting tools that let employees communicate anytime, anywhere, with any device, bringing together the essential components of collaborative productivity. Oracle delivers a complete, pre-integrated technology foundation to reduce the cost and complexity of building and deploying enterprise business intelligence.



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