

The Future of Retail Banking

Legacy IT Transformation

A White Paper to stimulate debate and feedback



Executive Summary

The decisions which bank leaders make today will determine their future. As they reshape organisations which can compete, grow, profit and thrive, they must recognise the serious limitations that their aging IT systems will create. There are many solutions, however, and the purpose of the paper is to show how these can help banks to reshape their IT to pursue new opportunities and build a competitive future.

Most retail banks have significant legacy IT challenges, often from ageing IT topologies. Many also face IT integration challenges arising from mergers. The focus for IT decisions must not only be to cut cost, but also to enable banks to create greater technical and business agility. This will be essential for them to compete effectively and develop multi-channel, web- and mobile-enabled banking services and high-performing or tailored banking products. Consumers are changing: they demand more choice, service and flexible access. The evolution of mobile money standards and smart platforms mean banks must continue to adapt. Competitors with contemporary technology architectures are encroaching on the traditional preserves of the high street bank. While they work to retain or regain competitive advantage, banks are under financial pressure as well as scrutiny from markets and regulators. They need better and more cost-efficient operational and back-office IT systems. IT and data security challenges are ever-present.

Banking was an early IT adopter, which has contributed to its legacy of systems which are over-complex, out-of-date and dependent on increasingly scarce skills. Older systems were not designed to provide 360-degree customer views or rapid reconfiguration. Data resides in silos which were not designed to share or interact. A high mainframe cost-per-transaction was acceptable when transaction volumes were low and margins high. Today all this prevents the development of new and profitable banking products or provisioning of a multi-channel and integrated customer experience.

Some people assume IT modernisation is difficult, disruptive or drawn out – yet it can be done with a high degree of control and staged timing which avoids either risk or disruption. There are many potential routes and each organisation's path will be different. All have one thing in common: they help organisations move from monolithic, restricting legacy environments to those which are more open, flexible and productive.

Several steps may be required. Building open, service-oriented architectures opens up a new world of business possibilities. Data integration can optimise data movement and accessibility, and fundamentally change an organisation's relationship with its data to enable the development of new products focused on the customer. Applications can be replaced, re-hosted or migrated onto more cost-effective and powerful platforms while protecting their logic. Consolidation and virtualisation can help banks to optimise their infrastructure, cut costs and increase efficiency. Virtualisation of data centre resources and services can follow, helping IT use and cost align with the needs of the organisation.

Ultimately, retail banks will be able to take advantage of the same powerful computing models as other industry sectors, but for most some significant changes are needed. It is not a case of whether to act but how, when and in what way. What will be created, however, is a sector with greater agility, lower costs and more ability to compete and return to full organisational and financial strength once more. Oracle not only has a vast array of technologies and consulting experience for legacy modernisation, but a range of integrated systems developed specifically for retail banking, and a model for change which can deliver the results required.

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1. Today's Decisions Determine Tomorrow's Success

The decisions which banking organisations and their leadership teams make today will determine their future success. As the sector starts to shake off the shocks of the banking crisis and look to the future once more, critical decisions are being made within our industry players, and all have the same aim: to ensure that each organisation is more robust, cost-efficient and competitive than ever before, thus creating the conditions for a return to high profitability. This challenge is significant enough, and will be exacerbated thanks to a huge degree of change happening in the retail banking environment.

The aim of this paper is to stimulate discussion about the future of banking IT and look at the evolution, modernisation and change that will be needed in many banking systems if retail banks are not only to address their current challenges but create the agility and capability they need to pursue future opportunities. Unless our institutions make good strategic decisions now, and do so based on an honest assessment of their current limitations, it will be tough for many to overcome changes in the market and create the conditions for business success.

It is a time of seminal change and represents a transition from the old legacy banking world to the new. There are many opportunities for retail banking in the second decade of the 21st century. To pursue them the sector must regain control, despatch legacy drag-factors and find new opportunities and markets for growth.

The effective pursuit of these goals requires individual retail banks to make some smart and swift changes, develop new services and new competitive responses to help them not only to grow but to do so quickly, cost-effectively and profitably. Such agility is not always a natural step for banking organisations which have had to change their basic operational model relatively little in the past, when compared with other industries. Of course, some changes have occurred, but major transitions such as the shift to ATM banking and later to internet banking highlighted the difficulties that many retail banks have in adapting their systems to support changing demands.

At the crest of the wave of change sits the increasingly demanding and vital customer who must be retained, cherished, serviced effectively and grown in value. Banks must also cope with a changing competitive landscape with new market entrants encroaching on the retail banking space in non-traditional ways. The internet and mobile telecom sector

is birthing innovative e-commerce service and business models to target and support retail banking consumers. New markets for retail banking are emerging, such as in the mobile money sector. All of these present challenges – but they also present a tantalising potential for new growth, new markets, new partnerships, new banking products and new service models. They require banks, and their IT systems with them, to scale and evolve in entirely new ways and directions.

The reality is that most retail banking information systems, based heavily on mainframe operations and overlaid through the decades with many further system layers, were simply not created with the kind of agility and rapid change capability that will be needed in this new future. Relative to modern open systems they are too slow, too expensive and too cumbersome to support rapid reconfiguration and development of new products, services and channels on which future retail banking success will depend. Many retail banks are constantly constrained by creaking and aged IT systems which need strategic investment just at a time when spend is hard to justify unless in pursuit of cost savings. We believe that the sector has a significant IT modernisation challenge to address if it is to cope with change, respond to drivers and thrive in the future.

This paper aims to provide retail banking decision-makers with the understanding and ammunition with which to help their organisation to make the right IT investments for the right reasons. The paper will lay out the phases of change for IT modernisation and investment that can help banking organisations to create the agility they need. It aims to make a strong case for investment despite the current economic climate, and provide arguments which will help to create the basis for positive decisions.

We urge retail banking CIOs and business leaders to work to understand and integrate the pressing need for IT modernisation, flexibility and openness as a means to create the business agility needed for the future. IT modernisation is a critical success factor which enables them to create new business models and services, as well as to support the prevailing need to reduce IT costs. A narrow consideration of cost versus return alone cannot enable these vital changes. The real risk to banking businesses will come from a failure to respond to the customer, a failure to evolve fast enough, and a failure to adapt to enable new market development and growth – these are the keys to the future.

2. Comprehending the Changes

No decisions about the future shape or services of an organisation can ever be made without a full understanding of the market conditions and dynamic changes within it. The critical decisions that must be made about retail banking IT systems are very much influenced by some underlying changes in its environment. The potential exists for IT systems to unlock new business opportunity and be far more self-managing than today's support-intensive configurations. IT leaders, although they may have to focus on some very immediate pressures such as coping with merger IT or reduction of IT cost, must also work to understand the wider changes if they are to create systems which are fit for the future. It is just as important that business leaders understand how they affect and should influence today's investment choices, to enable IT organisations to support business and competitive agility.

2.1 Turbulent economic times continue

Inevitably, many necessary responses are being driven by the current economic conditions. It would be naïve to ignore the impact of the past few years' difficulties as a fundamental driver of change for this sector. Soon after the first wave of serious banking concern hit the headlines back in 2008, several British banking groups were put on the 'at risk' list by the Financial Report Review Panel, alongside the construction and retail industries – sending a shockwave through the media and markets. The banking industry's appearance on the list, compiled in consultation with the Bank of England and the Financial Services Authority, implied not only that the sector might be in trouble but that its reporting would deserve special scrutiny in the years to come. How prophetic that now seems.

The subsequent UK bank 'bail-outs' acknowledged the vital role of the sector and made the phrase "too big to fail" common parlance. The full- or part- nationalisation of some of our largest and most respected institutions was unprecedented. Trust in the banks, by the nation and by its consumers and businesses, was severely dented.

There seems little doubt that recovery is under way, but times remain very tough. Every banking institution is focused on creating strategies to help them survive, thrive and return to profitable growth, with a laser-like focus on the bottom line. The importance of creating or identifying and then grasping new opportunities has never been greater.

Despite the turmoil which has been a feature of the past few years, it is quite possible that the next phase will be more tumultuous still. The market for retail banking is quite likely to continue to feature a high degree of change. Finding new paths and potential in a time of such change makes it imperative to understand what is driving that change. We examine some of the major factors which demand responses from the retail banking sector and for which IT modernisation will certainly be required.

2.2 Consumers demand personalised service and products – everywhere, instantly, flexibly

Consumers are constantly changing and, as generation succeeds generation, the businesses serving them must necessarily evolve too. Today's banking consumers are not the stable, brand-loyal and undemanding group that perhaps they once were. This single factor has significant business and IT implications for retail banks.

Over the past few years consumers have learned from the retail and consumer services industry that they can expect (and therefore now demand) instant gratification in terms of information, support and services. Banks must respond. In some ways they started doing so with the adoption of ATMs, which effectively changed the face and consumer infrastructure of retail banking. Longer banking hours and provision of 24-hour and telephone support were responses too. Continuing to supporting this demand will undoubtedly require further new



infrastructure and will consist of more than simple provision of the same services on new platforms; it may ultimately transform customer service and communication models beyond recognition.

Generation Y has already grown up and is financially active and powerful; it barely remembers a world without the internet. Increasingly it will be this customer group upon which the sector depends, both as retail and business banking customers. The 'noughties' generation is racing up behind it; this is a socially focused group with more complex expectations still and, even more importantly, a huge expectation in terms of flexible, on-demand, technology-enabled service delivery. This group is mobile by default, and may largely bypass phone and PC-based internet banking in favour of mobile platforms. It sees nothing strange in accessing its banking services from a new virtual banking service provider such as MoBank, the fast-growing brainchild of First Direct and Egg's founders, who are marrying multi-bank account balance lookup with things like online shopping and mobile phone top-up services.

An increasingly consumer-choice driven world is creating an inexorable lowering of consumer brand loyalty. The changing customer brings a significantly increased likelihood and risk to institutions of customer churn. The relationship between a bank and its customer has changed not only because of lower loyalty; the development of competitive offerings has become an important part of the marketing strategy for all retail banks and there has been a burgeoning of consumer financial comparison sites encouraging provider switching for banking services such as loans, and other services such as insurance which banks have provided. Consumer comparison and choice portals such as Lovemoney.com are now attracting vast numbers of visitors as they compare and contrast current accounts in the same way as car insurance policies. A lack of trust in financial service providers is adding to the problem, and has been exacerbated by the recent economic downturn, creating a trend for consumers to have multiple banking relationships as they feel they need to spread their risk – but it also means that they are exposed to a vastly increased competitor marketing pressure.

A further contributing factor is now the basis on which consumers agree to do business with organisations. This is increasingly influenced by a sense of their corporate social responsibility, of which environmental practices and behaviours form a prominent part, increasingly so for the younger generations. Power-hungry IT equipment and high-emissions data centres are becoming increasingly visible and unacceptable to the consumer and to

businesses wishing to see a greener supply chain – as well as to government which is urging (even compelling) industry to clean up its act.

If banks are to respond to the changing customers and all their demands and promises then knowledge is power. Banks need to shape up to ensure they have a truly 360 degree view of their customer and understand their lifestyles at a fundamental level. Technology is no longer only for a bank's information needs but is a key enabler of consumer services both in branch and over the internet – and thus a competitive weapon in the battle for consumer loyalty and a potential differentiator in a historically poorly differentiated market.

2.3 Rapid adoption of mobile money and smart mobile platforms

According to the Lafferty Group report 'Retail Bank 2020: A Roadmap to the Future' there are three pillars which will form the foundation for future connected banking services. These are smartphones, the internet and intelligent banking applications. Although all high-street banks and building societies have moved significantly into internet banking and a few banks took the plunge in the second half of 2009 to create early iPhone internet banking applications, most have yet to scratch the surface of the potential of the smartphone as a platform. In future, banks will need to consider mobile as one of a multiplicity of service delivery platforms as a standard, and stay much closer to forthcoming technology steps which might impact them or offer new opportunities. A perfect example appeared in the form of projections which appeared in November 2010 about the potential mobile wallet capabilities which may appear in iPhone5.



Mobile money is an excellent example of an area which promises opportunity but also a huge challenge for banks with less than flexible information systems. As global business reaches out into less developed areas of the world to create new growth, the banking sector is responding by extending the means to pay and handle money which was unimaginable a few years ago. Standards are still emerging, brokered by organisations such as the GSM Association (via forums such as www.mobilemoneyexchange.org), creating the likely emergence of alliances between banking providers and telecom providers to form new delivery platforms. The market is attractive not only to physical telecom carriers but also to the virtual network operators who simply buy their rights to bandwidth – making the emergence of virtual banking service providers almost an inevitability. The platforms and standards may be at an early evolutionary stage, but it is clear that once remote monetary transaction platforms exist independent of the location of either consumer or financial provider, a myriad of new opportunities will emerge domestically as well as internationally.

At the same time, the retail banking sector is continuing to need to keep pace as other transaction standards and platforms develop and change. The proliferation and evolution of electronic payment methods creates further challenges for existing IT systems as the sector copes with the multiplicity of models that must be supported. Banks must continue to develop their role as acquiring organisation and merchant services provider for business in addition to providing retail services. In addition to traditional cheques, debit cards and credit cards there are now prepaid cards, online and automatic bill payment and others to integrate.

New technologies and standards bring in new players, and new competitors, as well as potential partners, in an area which was formerly the pure preserve of the banking industry. For example, although banks and building societies were anticipating the launch of many electronic money services, the FSA had started to lay down planning for the integration of the EU's Second Electronic Money Directive into UK law by 30th April 2011. Their plans included lowering the capital barrier to market entry for new authorised e-Money institutions from €1 million to €350,000, as well as permitting electronic money institutions to carry out mixed business – thus opening the market up to all comers.

2.4 Aggressive new entrants are encroaching on traditional spaces

A range of new financial market entrants - either from entirely new banking providers or from overseas institutions eyeing the British high street – are approaching the market with squeaky clean, fresh out-of-the-box technologies and forward-looking IT strategies. Metro Bank was the first new UK high street bank to open its doors for more than 100 years when it opened on Holborn in July 2010. Its founder, Vernon Hill, cites plans to add 24 more branches by 2013 and grow to some 200 London branches within 10 years. Such growth and flexibility could not be supported by a legacy IT system, whereas an organisation such as MetroBank is likely to be based on a lean, modern, open IT architecture, with information managed and provisioned through an outsourced datacentre, supported by a single strategic IT service provider.

Such new entrants have been able to cherry-pick the best contemporary technologies to create IT systems which are focused on serving the needs of today's and tomorrow's customers – not their parents. They are in a better position to develop multi-channel strategies, experiment with higher-risk emerging technologies and integrate emerging electronic payment models - and often have the partnering mindset of an internet pure-play company which suggests that they may be in a more advantageous position in the emerging mobile money market.

The increasing number of non-financial institutions such as supermarkets moving into the banking space is similarly challenging. An entrant such as Tesco had the full weight of a major retail brand to leverage as it rolled out a wide range of services including travel and insurance. In October 2010 it was able to report a 92% rise in pre-tax profits, and a total of 6.5 million customers. The creation of banks from new industry sources will also increase pressure on banks to widen their scope of service provision and bring new, innovative services to market. Providers from other financial services sectors, such as charge-card giant American Express, are equally successful in selling insurance and other services, traditionally a valuable revenue stream of the banking sector.

2.5 Mergers are inhibiting flexibility and agility

During the economic turmoil of the past few years, a raft of bank and building society mergers and acquisitions have created a number of larger institutions with extra challenges to address. From an IT perspective, it has left some established banking organisations with an integration nightmare of disparate non-standard systems and an immense data integration and management challenge. Information silos are nested within information silos. Customer accounts are managed in multiple ways within the same organisation. Delivery of existing products across brand lines is clumsy and awkward. Banking products are contradictory and causing accidental internal competition, yet the creation of new integrated products is held back by unintegrated data and systems.

Newly configured organisations are uncovering massive duplication of IT systems, storage and services as the process of company integration moves forward. The configuration and geographic distribution of the retail banking sector also continues to evolve; with a divergence of service delivery ranging from the local high street for general teller transactions to loan and other applications for many items which are now effectively centralised, such as mortgages and credit cards. Internet banking has become a basic rather than an added-value service, requiring more complex structures than traditional branch services, involving centralised management, sometimes several call-centres and distributed data management using open systems. Such change was perhaps inevitable since the introduction of internet-only banks such as First Direct, but UK banks have been laggards at putting truly robust internet banking systems in place compared with many US institutions.

2.6 Consumers' demand for fairness threatens the bottom line

Banks are under intense scrutiny, both from the customer market and from financial and political influencers.

Today's customers are becoming intolerant of many of the practices which have been common across the retail banking sector. They are becoming vocal in demanding "openness" and "fairness," and the Financial Services Authority (FSA) and Financial Ombudsman have supported this stance. The fairness of charges has provided the media with a ping-pong ball issue for several years now. Along with having to provide free banking for consumers, banks are increasingly pushed to justify many of the other charges they have relied upon. Current account charges, online banking premiums and charges for automatic or online bill payments are a thing of the past for consumer banking although a few remain for business customers. Consumers are increasingly turning to the Financial Ombudsman to challenge the remaining sources of added income such as fines, overdraft fees and payment protection insurance (PPI), with the debate on these far from finished. Keeping customer churn down is vital when margins are tight, so winning in the competitive stakes is even more important. Creating new sources of revenue from new services and products is critical when traditional sources are squeezed.

2.7 Governments applying pressure and regulatory scrutiny

There is political pressure too. Ever since the banking crisis there has been pressure to revive lending, in particular to small businesses, to a degree often beyond the business ability of the banking groups. The retail banking sector is still at the sharp end of media and political comment about not helping small businesses to thrive – yet it also faces a downward pressure on its own margins thanks to its changing business environment.

All banking players know that regulatory change and increased demands for transparency are on the cards – so, flexibility in data reporting and analysis, as well as the creation of deep and complete audit trails, is becoming essential. These can present a huge problem for aged and inflexible systems based on silos



of information in proprietary formats and static configurations. Adaptation is the biggest challenge for older IT systems which must also cope with rapidly increasing data security challenges.

Corporate governance in general is a growing focus for media, investors and the government. Good governance has always been fundamental in the banking sector, however, these structures and accompanying practices are also under the microscope. Banking institutions are being forced to consider how to rebuild them in a way which satisfies the public as well as regulators – or face being compelled to do so.

2.8 The security threat is increasingly worrying

IT security in the financial services industry as a whole is a global issue. Consumer bank information and personal financial data present an increasingly valuable commodity for criminals and ensuring absolute security especially in open IT systems which are used to provision internet-based services is an understandable concern for bank leaders. In addition to hackers and data thieves, terrorists are in no doubt about the chaos value that might derive from a successful paralysis of the banking sector.

Demonstrating tight security is something which can help toward consumer trust, however, banks cannot go on ignoring the realities of business computing, for example by limiting internet and mobile access for bank managers – this will, ultimately, impact upon the customer service that can be provided. Security options today are more flexible than simply hiding behind a firewall, and modernised IT platforms are well able to integrate and manage system security. Legacy systems, on the other hand, often require a very basic handover of data between one and another, creating potentially gaping security holes which a determined attacker potentially could exploit.

It may sometimes seem that institutions are under attack from within too, as employees inadvertently add further data exposure – although it is only likely to be momentary lapses of good sense which cause them to take sensitive customer data home on a flash drive, such behaviours do need to be taken into consideration. Again, more modern systems are far more able to systemically lock such behaviours out.

2.9 Banks are businesses too

Banks facing all of the above have a further, vital challenge to address. Regardless of their external challenges, as organisations they must continue to recover from the financial shocks of the past few years and move back into a position of strong and dependable growth and profitability for their shareholders. Internal challenges are rife, whether this is executing uncomfortable restructuring, integrating newly merged or acquired brands and systems, or restructuring their own financial models.

Banks must not, therefore, neglect to look to their own enterprise IT needs, and ensure that their systems are fit for the future. According to IT analyst Ovum (Ovum 2010 Trends to watch: Retail Banking Technology) the need for better decision-making and risk management will be most important going forward. In a similar vein, a global banking trend survey from financial research provider Celent in January 2010 concluded that there would be a triumvirate of technology priorities in 2010: risk management, cost reduction, and improving channel delivery (Top Technology Trends in Retail Banking for 2010: North America, Europe, and Asia).

Responding to such organisational drivers, along with the pressing need to develop new revenue sources from fresh and differentiated services that not only deliver revenue but attract and retain both business and retail customers, will be an essential part of creating future-proofed business models. There is absolutely no doubt that these will be technology-enabled and mostly delivered through new online and mobile channels. Banking must carefully identify its IT priorities and adapt them as time moves forward. Retail banking IT systems have a lot riding on them.



3. Legacy IT Limits Adaptability and Agility

The previous section outlined many market imperatives for change, transformation and investment in banking IT. However, there are numerous technical imperatives too. Banks, just as other enterprises, are constantly presented with the potential business benefits of rapidly developing information technologies, whether these are emerging platforms such as smart-phones or new conceptual models for enterprise IT such as cloud computing or virtualisation.

Sadly, for many banks, they are many evolutionary stages away from being able to leverage these new ideas in a meaningful way.

The banking sector has a long IT history, being an early adopter of information technology relative to many other industries, in part owing to the fiscal nature of its business. Unfortunately this means that it is over-burdened by older systems in comparison to newer industries, creating a real disadvantage when it comes to future-proofing.

Layer upon layer of IT for up to 40 years in some companies has created over-complexity and inflexibility, and a system which is weighted towards mainframe systems which run ageing, proprietary legacy applications. Many fundamental systems and core applications were written in increasingly rare or obsolete third-generation programming languages, and often by in-house developers who have long since departed the business. It is not a huge stretch to state that most if not all such systems will have been modified so many times and by so many different people that no reliable documentation of the system can exist.

By continuing to use these systems, banks are increasing their exposure to the risks of dwindling 3GL programming skills. No longer actively taught or trained as core IT skills, as older IT staff retire – or perhaps become victims of a wave of back-office redundancies - those programming skills are simply disappearing. The millions of lines of legacy code, while they continue to keep banks running, are becoming a business risk which needs attention increasingly urgently.

Banks are now severely constrained by these ageing systems and, especially in the case of the largest and most established institutions, can in no way be described as technically agile. Yet technical agility is going to be one of the most critical success factors if they are to adapt to the changing consumer, competitive market and business and regulatory environment.

Why is technical agility going to be important? It is a precursor and inescapable partner of business agility, which is needed for many reasons:

- ◆ Serving customers effectively will require information about customers to be seamlessly and intelligently aggregated, mined and turned into services that appeal to them. Protecting the customer base will in future require IT systems to operate in a customer-centric way – yet banking systems have not traditionally operated in this way. Instead, most legacy systems are keyed around banking products, making a 360-degree view of a customer and a strategy for retention and growth impossible.
- ◆ The volume of data that banks gather is already increasing rapidly as the interfaces for interaction with customers multiply, and as customers increasingly turn to self-service transactions. To make meaningful deductions from this data requires faster processing of increasing amounts of information, especially if it is to support faster decision making. In a legacy mainframe environment decisions which one might wish to make in hours might take multiple days while information is batch processed both slowly and expensively. The real-time processing of data takes significant processing power, and processing data on the mainframe is extremely expensive when compared with alternative hardware platforms.
- ◆ As consumers and businesses demand a seamless, integrated experience no matter how they interact with a banking provider, it will be critical to make quick connections between information from one interface and another. Many customers will have experienced the frustration of time-lags of either financial or information transactions between internet and main banking systems. The problem with many banking legacy systems is that information is held in discrete and disconnected systems creating significant time-lags in transferring intelligence to where it is needed. If, for example, legacy systems supporting the ATM and those supporting a customer's internet transaction history are only loosely connected, the ATM could pay out in



error in some cases. Opportunities can be lost too, since it also loses the ability to deliver a personalised selling message to a customer based on their very recent behaviour. Many banks have exacerbated this discontinuity by building or acquiring internet banking operations on entirely separate systems from mainstream legacy banking operations, making it nearly impossible to provide transparency quickly from one to the other and creating a risk to the integrity and consistency of customer information.

- ◆ The rapid development and delivery of new banking products and services is becoming business-critical as a means to return to dependable and profitable growth, yet many legacy IT systems are too inflexible to enable them. Mainframe-based IT carries with it an unavoidable dependency on time- and labour-intensive programming for every change that is required, making the very concept of rapid service development impossible and the cost of implementing any new product very high. 'What-if' processing of test data on older systems is a slow and expensive process in a situation which requires fast, low-cost testing. In a highly competitive and rapidly changing market, it will be imperative to be able to create new low-margin services which are highly affordable and attractive to consumers in order to create growth – but to make these profitable they will need to be conceived, tested and delivered very fast, and sold in high quantities through multiple channels in a short timeframe. Neither the development nor the delivery is feasible with many legacy systems. The costly processing on the mainframe of many small transactions such as micro-loans is simply unfeasible.

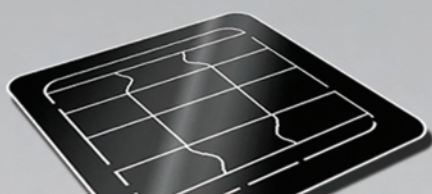
- ◆ Rapid market responsiveness will become a competitive issue for retail banks. E-commerce and other industry competitors encroaching on the previously protected banking space will often have highly modern and flexible business models and open IT systems which were created and predicated on the assumption of rapid speed-to-market. Banking systems need to be as responsive and reconfigurable as they are – but legacy systems are not.

- ◆ Complicating this is the further factor that consumer social power is increasing exponentially as social platforms gain momentum, and banks have no choice but to respond.

Customers in their thousands can compare notes, decide they are unhappy and vote with their feet if banks fail to listen, and to respond, when issues emerge through social networking sites. Equally, banks may miss major opportunities to develop new services and products around new needs that can emerge en-masse from the virtual consumer marketplace. That means that their banking and customer service systems need to be well integrated with the social web and with each other – yet this is an entirely alien aspect for legacy systems.

- ◆ Multi-channel and mobile delivery of services will become increasingly critical, as will collaboration with external delivery partners and allies from the e-commerce and telephony sectors. Open systems with accessible APIs and secure, agreed information exchange protocols must be standard issue if this is to work cost effectively for both sides – yet many banking systems are closed, proprietary, and so firewalled for security that the concept of allowing a third party behind them is unimaginable. Banks building alliances and marketing partnerships must be able to interface with these trusted third parties, and at present many would struggle to achieve this.

Taking a more proactive stance on technology modernisation in the future will provide banks with the agility they need to adapt to changing economic or market scenarios. Some organisations have already built new systems and applications in order to deliver internet banking and even more leading-edge smart-phone systems – yet in doing so may have actually added further complexity and created additional information silos. These systems, although new, cannot alone enable the next phase of change, and a more holistic approach is called for. To pursue the opportunities and address the challenges of the future, they must re-orient themselves properly around technical agility. That means modernising and enabling their core, legacy systems to make them more flexible and fit for current and future demands.



4. IT Modernisation Delivers Options

Replacement or modernisation of core systems will become increasingly vital for banks if they hope to compete in the challenging future environment. Many may assume that modernisation must be a difficult, long drawn out and highly disruptive process, yet that need not be the case. Whether it focuses on the modernisation of hardware, software, data storage and management or a combination of them all, it creates choices and options for the organisation which would otherwise be ruled out by aged system limitations.

The challenge of identifying what route to take can be daunting, and constrained by the fear of potential disruption or security breaches arising during transition, the sheer scale of the challenge and the potential cost and time it might absorb. The reality is that IT transformation can be progressive. It can be matched in an entirely individual way to an organisation's needs and timescales and managed in a way which addresses their particular concerns and mitigates against any risks.

There are a number of different routes to goal, but in essence they all share a core similarity: to move from a largely singular, monolithic legacy environment in which the cost of processing and of making changes is relatively high, to one which is more open, flexible and configurable in response to emerging needs. In doing so, you enable a transition from an environment in which fewer, expensive transactions form the backbone of the work, to one in which many more, individually much cheaper transactions can occur.

The key to successful IT modernisation is planning and executing change across the whole organisation, with strong checks and balances that ensure ongoing alignment with the bank's business aims and internal processes. There are several fundamental processes which mark steps on the path towards a modernised system. These can be implemented in a highly controlled and appropriately phased manner which is entirely in tune with the needs and aims of each individual organisation. Elements of each one are usually required in creating the most appropriate solution for any one banking customer, with different combinations and emphasis dependent upon the starting state and the goals of the modernisation process for a particular organisation.

4.1 Create an open architecture to unlock opportunities

Creating an open architecture is perhaps the most fundamental and enabling steps for retail banking organisations, given the challenges outlined earlier in the document, unlocking a new world of opportunities for product creation and delivery. Architectural changes aim to bring the underlying elements of the system up to maximum effectiveness and also make it highly reconfigurable through integration of an older system within an open Service Oriented Architecture (SOA) and coupling it with data integration to create a high degree of flexibility.

- ◆ Creating a Service Oriented Architecture is all about developing a loosely coupled, component-based architecture and an agile information architecture which makes existing systems work better together now and enables ongoing transformation in the future. In effect, the legacy application services are left in place but wrapped and presented as Web services. This provides immediate integration of legacy systems with others.
- ◆ Data Integration is a richly flexible platform that provides a layer for optimising data movement, improving data quality, managing data relationships and accessing data services.

Combining these two approaches can create a rapid route to releasing immediate value and tangible results, such as access to real-time information. This could quickly eliminate some of the time-lags usually experienced by banks in accessing and integrating information into a single view from different sources, or the ability to rapidly create new web-enabled products.

For retail banks, data integration is a particularly key step since it marks an essential move towards gaining a full and complete view of the customer. Within an open architecture equipped with good data mining and management applications, the ability to manage, manipulate and query that information from different perspectives is a powerful tool. Retail bank marketers or product owners today rarely have the ability to switch perspectives to understand information around customers, accounts or products as they choose. Gaining this ability is likely to be one of the keys to competitive survival and success.



4.2 Modernise mainframe applications to create flexibility

Retail banks rely extensively on the underlying business logic of heavy-weight financial applications running on the mainframe. The need for the functionality of these applications remains to support basic and vital financial transactions. Hence, modernisation also requires a balanced approach of increasing their flexibility and effectiveness alongside and in conjunction with other applications, some of which are less critical and can potentially bear a greater degree of change.

A modernisation team would look at the possibilities to transition or transfer the logic of certain application functions to make them more robust, flexible or effective by:

- ◆ Re-architecting legacy applications to replicate their logic and operation but leave the original technology behind. This will generally focus on those applications which are most tightly aligned with the core financial activities of the bank, and take the form of building new applications which can ultimately replace the originals by recovering the content of the application but leaving the legacy technology behind. It recovers and reassembles the business-relevant code which drives the application's process interactions, data models and workflows but eliminates the redundant technical code originally included to enable legacy technical support which is no longer required. It can be cheaper and less risky than developing new replacement applications from scratch and is thus highly applicable to banking systems.

- ◆ Re-hosting legacy applications and data complete onto newer cheaper and more open platforms. This is mainly focused on migrating mainframe COBOL intact so that all the original logic and data can reside on open, lower-cost platforms on which processing and transactions are an order of magnitude cheaper. It can free up expensive mainframe space previously used by less critical applications, also potentially eliminating the need for upgrades. It does not in itself create any functional improvement, but makes the operation of existing functions faster and cheaper. For retail banks it brings the potential to manage and process high volumes of lower-margin products which would be cost-prohibitive on a mainframe, such as micro-loans.

- ◆ Automated migration of mainframe applications away from 3GL legacy code and obsolete syntax, decreasing dependency

on legacy skills and languages. In some cases, where the gap between the old architecture and the desired one is small, the process of modernising legacy applications can be automated and cost-effective. It works by taking the legacy code written in an older language (such as COBOL), running it through a parser to transform it into an abstract representation, then this is fed into a utility which generates the code in a new language (such as Java). It protects and future-proofs some baseline applications which need to continue to run, but adds no functionality.

- ◆ Other aspects of Legacy Application Modernisation can be complementary to the above – such as replacing some legacy applications with commercial off-the-shelf (COTS) or SOA-based applications which can take advantage of the new and more open architecture. Oracle's FLEXCUBE Fusion integrated suites for retail banking perform this function to some degree and many back-office applications can fall into this category.

- ◆ Mainframe modernisation also looks at ways in which some or all activities can be made faster and more cost-effective by consolidating hardware assets, caching data or offloading certain MIPS transactions away from the mainframe and onto faster, open hardware platforms.



4.3 Optimise infrastructure to reduce cost

Consolidation and standardisation are fundamental steps on the path to any integrated IT system, being core to reducing IT total cost of ownership (TCO) as well as reducing ongoing IT operating expenditure:

- ◆ **Consolidation.** Driving duplication out of any system is a positive step towards greater efficiency, driving out cost and potential for confusion. In the banking sector, following a period of industry mergers and acquisitions, many banks find themselves with duplicate IT services which need to be rationalised and consolidated before further meaningful IT change can be implemented. They often find a duplication of IT facilities including data centres, and strategic IT relationships, sometimes necessitating a revision of the entire enterprise IT supply chain. There is usually a need to consolidate across all IT hardware assets including mainframe systems.
- ◆ **Standardisation.** After consolidation it is possible to create a much clearer vision of what standard IT model, resources and services will best support the organisation. This is a stage when substantive choices and selections can be made and new platforms identified which will serve the organisation's future needs.

4.4 Outsource to drive further efficiencies

While outsourcing to fully hosted infrastructure and applications for banks may not be traditional, the benefits can be enormous and today's modern hosted data centre solutions are more than secure and flexible enough to support the rigorous demands of retail bank. Transitioning to hosted data centre solutions often takes place as part of the consolidation and standardisation process and enables streamlining of many data centre operations. Outsourcing the data centre to a major IT provider such as Oracle relieves banks of the burden of managing wholly owned facilities and or share many of the costs associated with them, such as power use and data security. Data is hosted on powerful servers in a highly secure facility, managed by expert IT staff and network security specialists. Taking such work out of internal IT organisations enables organisational streamlining, and leaves the business able to focus on the more important aspects of customer service.

4.5 Virtualise to unlock choice and potential

Only when retail banking organisations are fully supported by modernised, distributed and open systems will they be in a position to pursue some of the liberating enterprise IT models from which other industries are already benefiting. Starting to virtualise different aspects of IT hardware and operations can turbo-charge business agility and manage system usage on a real-time and cost-effective basis by making the rapid reconfiguration and reallocation of IT resources part of the core model. For example, an individual bank member of staff accessing the IT system or calling down on services only needs to see a virtualised representation of the system and resources available, and in the configuration and depth which is appropriate for them, while behind the scenes a powerful host system based on open standards can allocate, re-allocate or adjust the computing power or storage that they require to perform the task in hand.

Virtualisation enables banks to make the maximum use of hard assets such as data-centre resources. Having created an open, distributed computing platform, it is likely that a high proportion of the bank's IT services onto high performance servers sitting within a modern, secure and green data centre. The demands of data security and business continuity will almost certainly have necessitated a level of data replication and failover from main sites to secondary sites whenever necessary. Creating geographic redundancy is a common approach; however, this means that one of a pair of sites is effectively inert when not required. Taking the next step to virtualise resources at both sites makes the assets of both sites available and operational within the distributed computing environment. The infrastructure is used to a greater degree as less hardware is required to do the same work, availability is boosted and management is simplified. In a post-modernised open banking IT system many the banks applications will also be capable of deployment within a virtualised environment, meaning that the bank is also able to reap the absolute maximum business benefit in terms of flexibility and cost-effective operation from the new IT configuration.



5. Conclusion

The strategic decisions which bank business and IT leaders make now will start to create a new retail banking sector with new choices and potentialities. Every modernisation step which is taken unlocks benefit, whether in terms of technical flexibility, business agility, market growth or financial profitability.

For today's retail banks, if they are to reshape their organisations to fit the changed and changing future marketplace and consumer, it is not a question of whether to address IT legacy restrictions, but how, when and in what way.

Retail banking businesses must examine the potential routes, and take counsel from providers such as Oracle to create the route which is right for them and which maximises the availability of opportunities and choices. Oracle's consulting, modernisation, networking, hardware and application solution expert teams work together to create solutions and paths which help you define clear technology goals, create and implement strategic change to maximise business opportunity and agility.

Benefits Snapshot

- ◆ IT transformation can directly support growth of turnover rather than just cutting costs – although modernisation also drives down costs through more efficient platforms. It makes huge financial sense to extend the lifespan and capabilities of legacy systems alongside new IT integration, since this leverages a significant proportion of historical investment.
- ◆ Secure, flexible, open systems are capable of continuing evolution – where many legacy systems would struggle to cope.
- ◆ In an industry whose business model is in transition, agility will create competitive edge. Flexible, open systems can scale in size (up or down) far more easily than older ones and enable a tighter correlation between IT running cost and the value of the business it serves.
- ◆ Increased technical agility will enable a faster time to market with new financial services and service concepts – an order of magnitude faster.
- ◆ It will enable the rapid development, creation and rollout of new services and banking products, including those which are lower-margin than traditional services. Although unfeasible in the legacy environment, a transition to high performance processing platforms makes them practical.
- ◆ It enables differentiation of services, perhaps by providing a choice of delivery channels in areas which were formerly restricted to one – whether these are in branch, by phone, online, mobile or social platforms.
- ◆ Avoid cannibalisation or erosion of customer base by tech-savvy new market entrants.
- ◆ Attract next generation of customers with cutting-edge services and retain them by staying ahead of the game, keeping services evolving by things such as the smooth addition of new payment models and platforms e.g. contactless cards or mobile terminals.
- ◆ Better, deeper and more flexible access to business information across the enterprise. Most importantly, it will create ability to mine and analyse customer data and drive real understanding of what they want and need, and how they behave. Only with this information can banks attract them, retain them, and serve them better.
- ◆ Demonstrate to consumers, businesses and regulators alike that the organisation is adapting to a more responsible, environmentally aware world with systems which not only promote less wasteful behaviours but may have some measurable benefits such as reducing data centre emissions and reducing the organisation's carbon footprint.

6. Oracle Solutions Appendix

Oracle Modernisation Solutions

Oracle has a vast range of technologies which can be deployed within an IT modernisation programme. It is the only vendor to offer a complete, open and integrated technology stack, from applications to disk. It includes the world's leading database solution, a complete middleware family, the leading UNIX server and tape storage solution and the world's fastest OLTP and data warehousing system in Oracle Exadata.



Oracle delivers a broad range of integrated systems developed specifically for retail banking. It is an obvious choice for retail banking providers looking to shape up their IT for the future. It brings together legacy mainframe, application and data-centre modernisation expertise from teams around Europe to provide comprehensive support for IT modernisation challenges, then can apply the combined strengths of Oracle Financial Services, Oracle E-Business Suite, Siebel, and PeopleSoft to providing the broadest functionality for helping banks effectively grow their businesses and optimise performance. Oracle delivers a powerful combination of technology and comprehensive, pre-integrated business applications – designed specifically for banks, and built with open standards.

The products and solutions which may be applicable include but are not limited to those within this appendix, which aims to provide a representative view of key Oracle technologies which may be used in the modernisation process for retail banking.

Oracle FLEXCUBE Fusion Suite

Oracle FLEXCUBE Fusion is a complete banking services suite which includes applications to support all aspects of retail banking. The Oracle FLEXCUBE Integration Lab plays a key role in helping banks to transition to an SOA based architecture. Oracle FLEXCUBE Core Banking helps banks overcome the challenges of intense competition, reduced margins, and increased customer expectations by creating a unique competitive advantage built upon improved profitability and an extended customer reach. Oracle FLEXCUBE Direct Banking helps banks to serve customers across internet and personal devices (internet banking and mobile banking) and integrate services across delivery channels. Oracle FLEXCUBE Universal Banking, a SWIFT certified application, is designed to help business growth and competitive differentiation for banks, with customer-centric functionality helps them to help improve their reach by introducing new products and expansion into new geographies at a rapid pace.

Oracle Industry Reference Model for Banking is a powerful repository of pre-engineered processes for banking and capital markets, which often sits alongside Oracle FLEXCUBE implementation. It provides a process-centric approach for banking business and technology architecture which can help banks address challenges of agility and responsiveness, in order to adapt to changing markets and customer demands. It is a complement to the modernisation process and can help banks to:

- standardise business processes by replicating best practices across business lines
- redesign processes quickly and efficiently which can speed new products to market
- optimise and measure enterprise wide processes
- create greater transparency in processes, policies and workflows
- track and reduce operational risk
- triggers SOA initiatives
- reduce training and maintenance overheads



Oracle Database

Oracle Database is a powerful solution to increase the easy availability of data in a powerful database based on affordable hardware platforms. It provides industry-leading performance, security, reliability and scalability on a choice of clustered or single-servers running Windows, Linux, and UNIX. It provides comprehensive features to easily manage the most demanding transaction processing, business intelligence, and content management applications. It comes with many options and extensions, one notably being Oracle Exadata v2, also known as the Sun Oracle Database Machine. This is simply the world's fastest database machine and the only one which runs transaction processing applications, enabling unparalleled consolidation of previous database applications, massive storage, lightning-fast search along with many other benefits, all of which have direct relevance within IT modernisation programmes.

Oracle Fusion Middleware

Almost all modernisation solutions will rest on the firm foundation of Oracle Fusion Middleware. Oracle Fusion Middleware is a complete and open family of application infrastructure products which are seamlessly integrated with Oracle Fusion Applications and technologies to speed implementation and lower the cost of management and change. It provides a complete, integrated and unified design environment which can reduce the time-to-value of new applications and allows for central management of the application lifecycle, lowering the cost of ongoing administration. It supports close alignment of the organisation and its IT, and improves the overall IT responsiveness to address dynamic new organisational challenges.

Oracle Server and Storage Systems

Oracle's complete portfolio of Sun servers, storage, software, and networking products are engineered to work together to deliver record-breaking performance, simplified management, and cost-saving efficiencies. It offers systems built on open standards that work with your existing infrastructure, and the ideal infrastructure for Oracle and non-Oracle applications and solutions.

Oracle Exadata Database Machine

The Oracle Exadata Database Machine is the only database machine that provides extreme performance for both data warehousing and online transaction processing (OLTP) applications, making it the ideal platform for consolidating onto grids or private clouds. It is a complete package of servers, storage, networking, and software that is massively scalable, secure, and redundant. With Oracle Exadata Database Machine, customers can reduce IT costs through consolidation, manage more data on multiple compression tiers, improve performance of all applications, and make better business decisions in real time.

Oracle offers the most complete range of hardware and storage options available including enterprise and carrier-grade servers, blade servers and networking technologies. Its range of Sun SPARC and x86-based systems are optimized to run Oracle Solaris, Oracle Linux, Oracle VM, and other leading operating and virtualisation platforms. The range includes many proven, leading products; Sun X86 servers hold over 140 world record benchmarks and Sun SPARC servers over 70. Oracle also offers the industry's broadest storage portfolio, including Flash, Unified Storage, enterprise disk, tape, storage software and storage networking.

Oracle Tuxedo

Oracle Tuxedo provides a means for re-hosting mainframe applications on distributed systems while maintaining high scalability and transaction rates and keeping excellent connectivity with the mainframe. Oracle Tuxedo is the industry's No.1 platform for distributed transaction processing. It provides mainframe-class scale and performance on open, distributed systems for software written in C, C++, and COBOL, and is the premier platform for rehosting mainframe applications on mainstream hardware. Oracle Tuxedo provides cost-effective reliability, extreme scalability up to hundreds of thousands of transactions per second, and investment preservation by extending the life of existing IT assets as part of modern architectures such as SOA. Oracle Tuxedo is Oracle Fusion Middleware's strategic transaction processing product. Other aspects of the Tuxedo family include Oracle Tuxedo Mainframe Adapters which make it easier to integrate mainframe applications running on IBM or Unisys environments with other applications within your enterprise, and with e-commerce applications across the Web.

Oracle Application Integration Architecture

The most complete integration solution for orchestrating agile, user-centric business processes across enterprise applications. Oracle Application Integration Architecture (AIA) is built on Oracle Fusion Middleware's market-leading SOA (Service Oriented Architecture) and BPM (Business Process Manager) products. These products deliver a comprehensive SOA & BPM infrastructure for connecting heterogeneous applications and business partners, managing structured and unstructured business processes and advanced management via a unified framework for governance and monitoring. Within the modernisation process Oracle AIA allows for the co-existence of new and legacy applications and the integration of packaged and custom processes, giving the organisation unimagined flexibility.

Oracle Master Data Management (MDM) Suite

A suite of products that consolidates and maintains complete, accurate, and authoritative master data across the enterprise and distributes this master information to all operational and analytical applications as a shared service.

Oracle Service Oriented Architecture (SOA) Suite

This is an integrated suite of products that aids the very rapid design, assembly, deployment and testing of adaptable business applications. It acts as the middleware between legacy and new systems. As a modernisation tool it helps enable the organisation's business processes, open up the lines of communication between all applications and the data that support them, and create a framework which enables the application set to be evolved further in the future.

Oracle Data Integration (ODI) Suite

Oracle Data Integration (ODI) suite is a comprehensive solution for modernisation using Data Integration and SOA, and consists of data management components for building, deploying and managing enterprise-wide data integration solutions. This enables data to be unified, managed and distributed appropriately across the organisation and plugged into business processes as required. If data can be made more accessible and flexible then in many cases applications do not have to move yet the data is opened up for more powerful, flexible and timely use. An additional layer of abstraction can enrich, monitor, manage and route the data.

Oracle Golden Gate

Oracle Golden Gate is also often part of a data integration solution. It is a comprehensive software package for enabling the replication of data in heterogeneous data environments. The product set enables high availability solutions, real-time data integration, transactional change data capture, data replication, transformations, and verification between operational and analytical enterprise systems.



Oracle Coherence

Oracle Coherence comes into play for management of the newly distributed data within a data integration modernisation approach. It is a data grid solution which provides replicated and distributed (partitioned) data management and caching services on top of a reliable, highly scalable peer-to-peer clustering protocol. It is highly robust and suitable for critical government applications; it has no single points of failure; it automatically and transparently fails over and redistributes its clustered data management services when a server becomes inoperative or is disconnected from the network. When a new server is added, or when a failed server is restarted, it automatically joins the cluster and Coherence fails back services to it, transparently redistributing the cluster load. When it comes to re-hosting legacy applications, Oracle Tuxedo in combination with Oracle Database deployed in Oracle's Maximum Availability Architecture on Oracle software technology provides a new environment, ensures availability and performance that is equal to or better than a mainframe and provides significant scalability advantages at a fraction of the cost.

Oracle Tuxedo is a key component of Oracle Fusion Middleware, and hosts the re-hosted COBOL and C/C++ code; while Oracle WebLogic hosts the related business logic. Both provide a high degree of SOA capabilities and integrate with the Oracle SOA Suite technologies that form the Services Infrastructure Layer. Oracle Database provides the cornerstone of the Data Management Layer.

Oracle Policy Automation (OPA)

Oracle Policy Automation (OPA) is a suite of products which is used to help model and define business rules within an organisation's applications and then automate their implementation consistently and correctly. These business rules define how the organisation operates and within what constraints, and are vital to ensuring that applications serve the organisation's needs effectively. They ensure, for example, that new web services deployed within an SOA architecture to replace an old citizen service delivery model perform just as well as older solutions as well as allowing for future evolution. Policy automation involves incorporating the rules and policies into the processes that are performed by the applications, to deliver accurate, consistent and auditable outcomes – this might apply to the calculation of something such as benefit policy payment amounts or tax credits, or make decisions about social housing eligibility, as examples.

Oracle Business Process Analysis (BPA) Suite

Oracle Business Process Analysis (BPA) suite is often part of any SOA integration process, and moves the discussion on from technical change to the business process management that needs to accompany it. It provides a complete suite of tools to design, model, simulate and optimise business process and turn them into executables. It helps to bridge the gap between business process design and implementation, helping ensure that the IT environment is responsive to the organisation's changing needs. Oracle has a wide range of applications which can act as replacements for legacy solutions. Examples might include Oracle's Siebel CRM which offers a complete set of customer centric applications which can play a role in managing the interface between government and its citizens and other stakeholders and help them manage real-time intelligence. Oracle's PeopleSoft Enterprise applications may also be applicable, being designed to address the most complex business requirements whether for human resource, financial, asset lifecycle or supply chain management.

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