

Piggy Bank – IPL proves technology for next generation Internet Banking



To re-engineer or not to re-engineer?

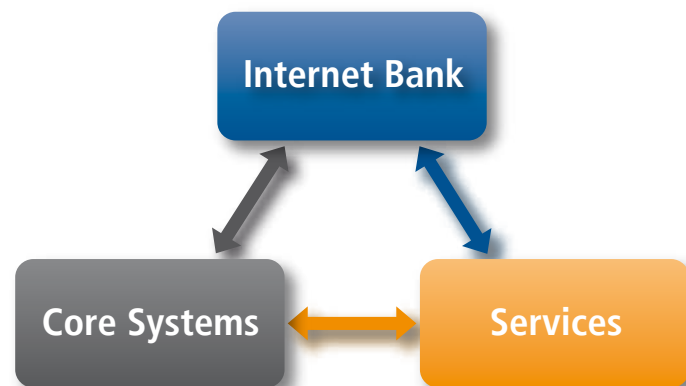
The problem

Internet Banking (IB) is over a decade old now and most of the current solutions were thrown together in the dot com boom of the mid 90s. It's a sad fact that today most IB sites are looking a little tired and dated. Behind closed doors almost all the current IB providers are looking to refresh their web presence; indeed some have already done so, to a greater or lesser extent. Whilst it is relatively easy to change your public sales site by changing the CMS solution, updating any IB application is inherently more difficult. Whether driven by cost restrictions or purely by the need to fix it quickly, most updates will still be based on the original platform and technology they selected.

Tactical or strategic

The choice is between "re-skinning" or "re-engineering". Re-skinning gives that glossy 21st century look that users have come to expect of modern web applications. It is a quick win on the existing platform, and can usually be achieved simply by altering the stylesheets (CSS) of the web site, changing the look of the site without altering the underlying functionality. However, this has limited impact and is simply cosmetic surgery for an ailing application. Re-engineering, on the other hand, is clearly not an easy undertaking, but when done correctly can provide a flexible platform for perpetually changing business needs. It can provide the necessary visual impact and intuitive usability that is required for a modern IB site.

Often the challenge faced by IB providers is creating a Service Oriented Architecture (SOA) that integrates with their legacy systems. The following diagram illustrates a typical IB setup in use today where the IB is tightly coupled to the core systems by direct calls. There may be some service calls resulting in a variety of interface types, and access points to the same core systems. Such tight coupling is inflexible and leads to long development times even for the simplest of changes.



Also, whilst a tactical solution may be quick and easy it often delays the ultimately inevitable move to a modern platform. This is unlikely to get easier as more legacy systems are absorbed through mergers, and the required skills sets and knowledge for maintenance become harder to find, or are even lost entirely. A strategic solution is needed, usually requiring management buy-in and has to overcome significant resistance to change to start with. In the long run there are clear benefits in moving to a pure SOA architecture with loose coupling, particularly if you are looking to migrate or retire legacy systems, or even replace your entire core banking platform.

A service layer provides the ideal means with which to isolate upstream components from re-plumbing, redirection and interface changes. Whilst the technical and future-proof benefits of re-engineering are clear, the cost benefits are not always so immediate and long term support for ailing legacy systems must be factored in to the cost benefit analysis. Additionally proper separation of business logic and presentation logic allows for re-use of services across multiple applications, thereby increasing the return on investment of the original service development.

IPL is a software & IT services company specialising in the delivery of intelligent business solutions. We help our clients to exploit corporate information assets to yield tangible business benefits.

IPL's consulting is renowned for its quality and value. We consistently exceed our clients' expectations through a combination of imaginative thinking, managerial and technical expertise and many years of systems engineering experience.

IPL's track record in end-to-end software solutions development is exceptional. Our proven development methodology allows us to cut through technical complexity, manage risk and completely focus on delivery. We always deliver reliable, efficient and accurate systems to a precise schedule.

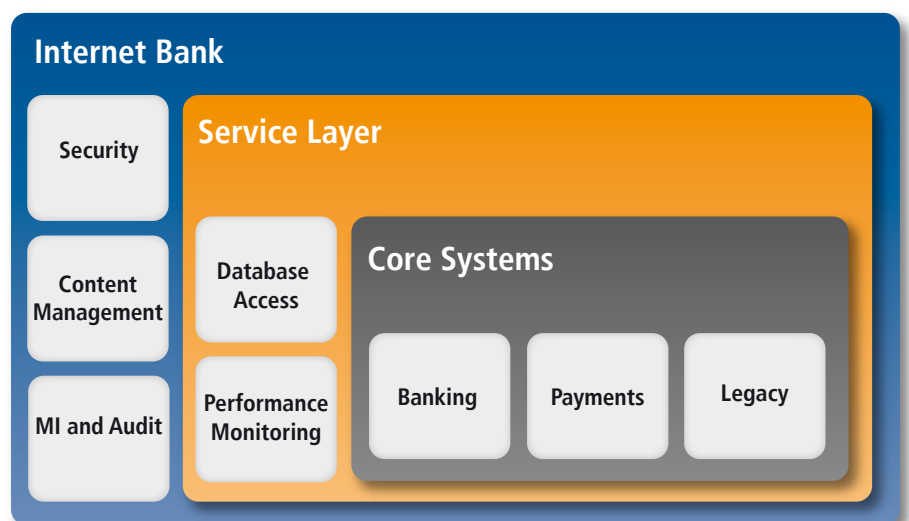
IPL is certificated against three international standards:

- ISO 27001:2005 (Information Security)
- ISO 9001:2008/TickIT (Quality)
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The company has a permanent workforce of 260, revenues of ca. £29M p.a. and 40,000 sq ft of secure office space in central Bath.

The model

A properly layered architectural model is clean and efficient with clear interfaces. A good service layer will hide the complexity of mainframe calls and the "nastiness" of legacy systems, while allowing the upstream consumers to be ignorant of changes and downstream system migrations. If the data contracts for the services are correctly defined then the IB Application layer becomes a simple authentication and presentation layer. Also note that "Internet Bank" in the diagram can be replaced with any secure web based application.



The Content Management System (CMS) must also be considered to provide the ability for rapid change of the basic content, structure and styling. Here the boundaries between the layers can get slightly blurred depending upon the level of API/Service call support within the CMS product. That aside, it is safe to assume (conceptually) that the CMS lives within the presentation layer.

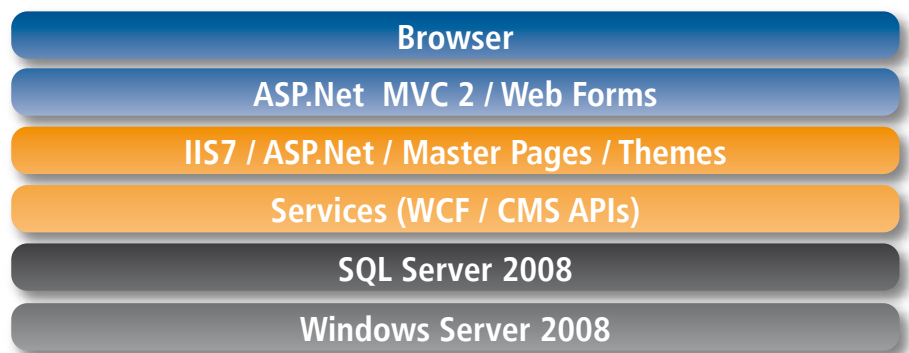
A Model View Controller (MVC) approach lends itself to full unit testing of the application components as the UI layer is so thin and all the properties can be accessed and set on the component to drive particular test scenarios. Additionally these tests can be automated, resulting in robust, well tested code and a rapid turnaround on changes.

As already mentioned an SOA model has clear benefits in encapsulated business logic, interoperability of systems and reuse of these services. All of these are salient points that any established IB provider must consider when undertaking a major programme of change. The decision for any new entrants to the IB service market is much easier as they don't have the baggage associated with years of slow evolution.

The technology

Once the decision to re-engineer has been made and the necessary management buy-in obtained the next question is what technology to use. Where the IT development has not been outsourced, a major factor in the choice of technology is the in-house technology already present, or the skills available at a particular establishment.

There are two clear technology leaders for anyone looking to build a new IB platform: Microsoft .Net and Java. Whilst Java can be deployed on a number of platforms and Operating Systems, there is often a significant lack of understanding of what Java is capable of. Choosing a complete suite of technologies built by one company that are designed to work together in unison has clear advantages. The required skill sets for design, development and maintenance are much smaller and therefore easier to find and manage. The technology stack and solution that IPL has proven is based on a pure SOA architecture with the necessary Security, Content Management and MI requirements for a modern IB solution. All this is possible using the latest Microsoft Technologies to build the system from the ground up.



A modern IB platform can be built using the latest .Net 4.0 Framework combined with the .Net MVC 2.0, Windows Workflow Foundation (WWF), Windows Communication Foundation (WCF), Windows Entity Framework (WEF), SQL Server 2008 and Windows Server 2008 operating system. At the time IPL built a prototype on these technologies, the majority were still in beta, but all have since progressed to a full release by Microsoft.

The prototype

Over a period of 3 months, a team of developers evaluated the technologies described above. We explored different designs and methodologies to prove the technology was flexible. Consideration was also given to full automated testing, this was achieved using a Mocking framework that allowed the business objects and services to be tested independently of the user interface. A formal CMS selection process was run with meetings and presentations by a number of CMS suppliers to allow a provisional CMS product to be selected.

This prototype was demonstrated to a potential client and was instrumental in shaping the direction of their future IB roadmap and their technical approach to design build and test.

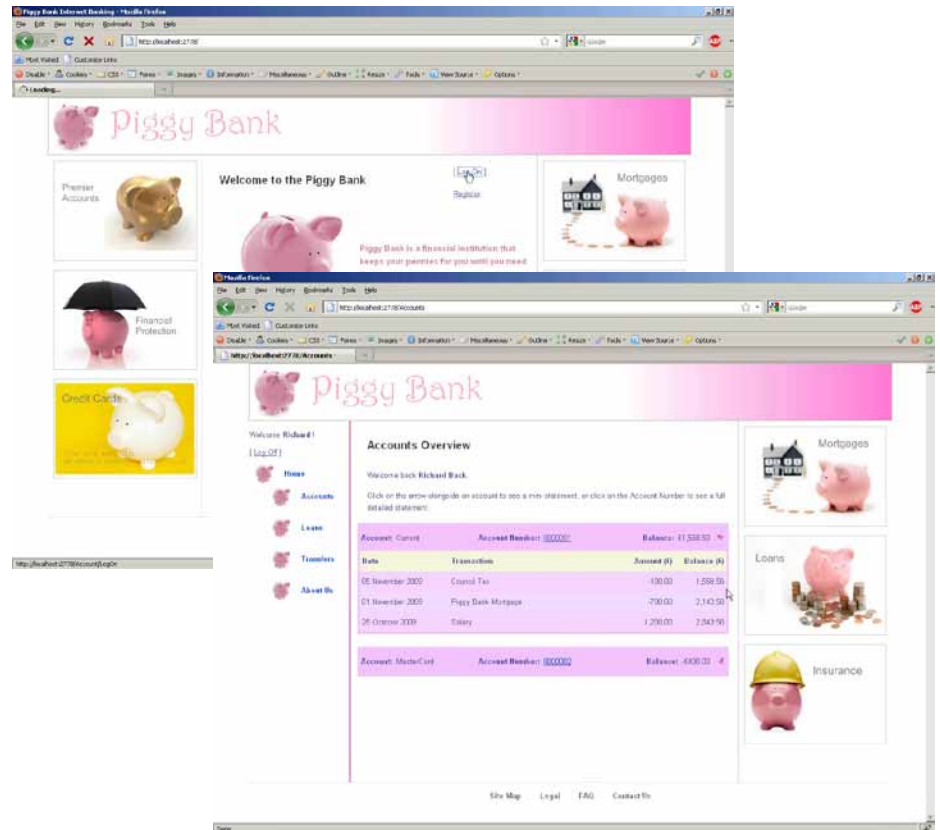
Conclusion

The technologies discussed here were demonstrated to work together in a prototype IB application. They form a powerful array of tools which, in combination, can be used to address a wide range of web development scenarios. This could ultimately save time, reduce the overall amount of code written and increase code quality and testability. The code is more reusable, configurable and maintainable than with the technologies that preceded them.

IPL has extensive experience in online application development; the architecture has been successfully adopted by our client and provided foundations for discussion of further systems enhancements. These include Mobile applications and Account Origination systems.

If you need a flexible modern platform for an Internet Bank then the work IPL has done in proving these technologies is instrumental in transforming the software landscape for any Internet Banking provider.

If you are facing similar challenges please call us – we can help!



About the author: Jon Durant

Jon joined IPL in 2000, after completing a MEng (Hons) degree in Electronic and Communication Engineering at the University of Bath. Jon has worked on a wide variety of projects from mission critical embedded systems to the latest .Net systems serving modern Internet Banking websites. Jon has a keen eye for detail and often comes up with innovative solutions to the problems faced by our customers.

Jon now works as a Sector Consultant for the Banking and Finance Sector, providing detailed technical input to proposals, bids, and other consultancy work, whilst still completing day-to-day work for one of our key customers.



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