

Paper 027-2011

# Why did Lloyds Banking Group Le Mans Risk Platform win the 2010 SAS® Innovation Award? Hear the story so far.

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## ABSTRACT

Lloyds Banking Group, the largest high street bank in the UK, has recently developed and implemented a new Risk Platform (Le Mans) to support the Credit Risk community. The Le Mans infrastructure utilises the suite of SAS 9.2 banking solutions and its stated aim is to enable 21st Century Analytics.

The presentation will cover the business case presented, rationale for our selection of SAS, solution and approach as well as the challenges faced in delivering a step change within the business through adoption of new technologies and overcoming challenges to the vision.

## INTRODUCTION

Lloyds Banking Group was formed in January 2009, following the merger of 2 of the UK's largest high street banks - LloydsTSB and HBOS. With over 30 million customers, Lloyds Banking Group is by far the largest retail bank in the UK, one in 3 people and one in 5 small and medium sized businesses bank with us. The Le Mans Risk Analytical Platform is being developed to support the Credit Risk business unit for the combined Retail arm of the Group.

The merger of the 2 banks presented a number of unique challenges:

- Data migrations and data movements – keeping track of changes to the business.
- Funding – transforming the business vs integrating the business
- Supporting integration – being good corporate citizens vs our appetite for change

Our Executive team presented a challenge to us to enable 21st Century Analytics capability:

Neither HBOS nor LTSB existing solutions for Risk Analysis and Modelling were fit for purpose:

- LTSB had disparate data sources and used a series of small scale servers or PC processing
- HBOS existing platform could not be scaled to accommodate the growth in data and users

We were also challenged to:

- build models quicker, more accurately with less resources
- Improve access to wider range of data sources
- Run a more flexible & scalable platform that may be used by Marketing & Finance in future

## Business Case

Delivering the biggest ever UK banking integration started with a simple assumption – choose a 'defender' bank and assume all systems, processes and procedures will move in one direction. This approach was only successfully challenged on very few occasions, one of which was Le Mans – a complete new

system. The business case for Le Mans rested on a couple of key principles, the existing heritage LTSB processes were not fit for purposes (a variety of small servers or PC based processing with disparate and intermittent access to data sources) and the heritage HBOS experience and proven benefits of introducing a similar approach (a SAS 9.1.3 platform called Risk Data Infrastructure). As a result, we could point to significant financial and operational benefits – speed to market is reduced, increased developments, better, more representative models through increased sample sizes and data granularity, as well as greater team motivation – allowing Credit Analysts to be analysts not data manipulators.

We came up with a solution called “Leading Edge Modelling & Analytical System” using the SAS 9.2 Banking Analytics Platform. At a high level some of the benefits included:

- According to our Exec sponsor, Richard Norgate (interviewed at the 2010 Global Forum Kickoff) this would deliver benefits of c. £50m per year
- HBOS experience of building a similar solution (using SAS 9.1.3) had proved significant operational and financial benefits

In detail, the benefits included:

- Reduced model development time from 13 to 6 weeks
- Build better models through access to better data sources and increased use of transactional data
- Improved collections & recoveries capability
- Built twice # of models with the same staff
- Allowing analysts to be analysts not data manipulators improved morale
- Joined up model development across both banks and introduction of standard platform & procedures to stop “reinventing the wheel”
- Modellers build better, more accurate models
- Information sharing with other areas of the business.

## Why use SAS 9.2?

Despite the fact that the standard LBG approach to BI was a combination of Microsoft BI and Teradata data storage, the Le Mans team opted for the SAS 9.2 Banking Analytics platform for several reasons:

- **Integrated solution**  
The integrated nature of the SAS toolset simplified set up and management. In addition, the wide range of tools covered all needs for all user roles & skill levels. Our group Standard approach from Microsoft was not suitable.
- **User Experience**  
Although the user community of 600 users had varying levels of skill and tool usage – they had 1 thing in common – all Base SAS (PC SAS or Mainframe SAS) users.
- **Security & Compliance**  
The ability to meet compliance requirements and manage access to sensitive data using the SAS Management Console was a major consideration. In addition, the SAS authentication enterprise identity management systems and authorisation via the SAS Metadata Server using 9.2 roles & capabilities allowed us to control access to the data level. Likewise, the ability to prevent the practice of storing data locally and force all processing to take place on the server, minimised the risk of data leakage.

## Solution / Approach

Le Mans Phase 1 went live in June 2010 with limited functionality (no scheduling ability and a single SAS Compute server) and users. Its implementation supported a limited number of critical business processes required to be rebuilt to support the wider bank integration and to develop a series of small 'proof of concept' processes ahead of the full infrastructure delivery in Q1 2011 (Phase 2). Phase 2 is a 200TB data store (including backup and failover) based on SAS SPDS, and has full functionality with 5 compute server nodes utilising SAS Grid Manager for flexibility and scalability.

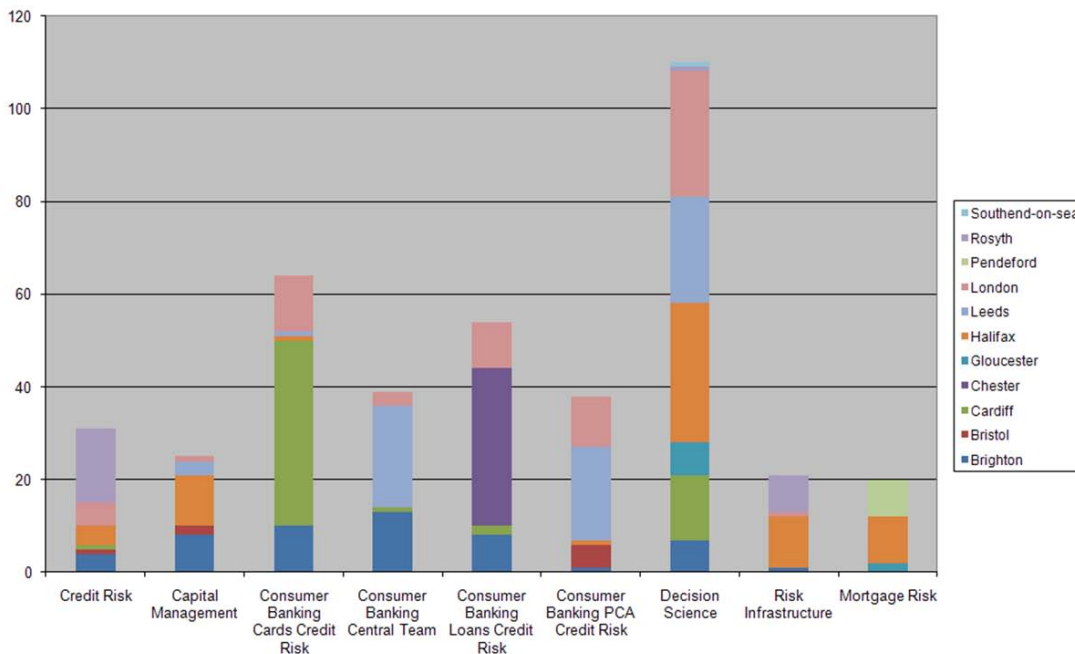


Fig 1. LBG Retail Risk community split by team and location.

Our User community was split over 9 teams and 12 locations, as shown above, so close management and minimising the impact of change was key.

The deployment approach and solution is shaped by a few key decisions that have evolved through the design period of the project:

1. No 'Big Bang' User rollout.

Roll out to the user community is managed via a series of Strategic Releases – predominantly organised around a product and credit lifecycle stage, which drive the data, data structuring requirements, business processes to be redeveloped and associated users.

2. Publishing Approach

The LBG standard for internal publishing is to use Sharepoint, however the Le Mans team wanted the functionality offered by SAS Information Delivery Portal and SAS Web Report Studio. A compromise was reached – information produced externally but related to Le Mans is held on Sharepoint (User Access Requests, Work Requests and associated workflow, user experience surveys) and information generated within Le Mans (Dashboard reporting for server performance, Data load alerts, Management Information and product level reporting) is held on the SAS Portal with shared branding and links between the 2 to mask the divide to the end user.

3. Data Security

As security of data and the risk of data leakage is a big concern, the decision was taken to prevent access to Le Mans via anything other than SAS Enterprise Guide 4.2 (or in some instances, SAS DI Studio and SAS Enterprise Miner). The key decision criterion was 'Is this tool authenticated via the Metadata Server and managed via Management Console?'

The high level solution architecture comprised of the following key components:

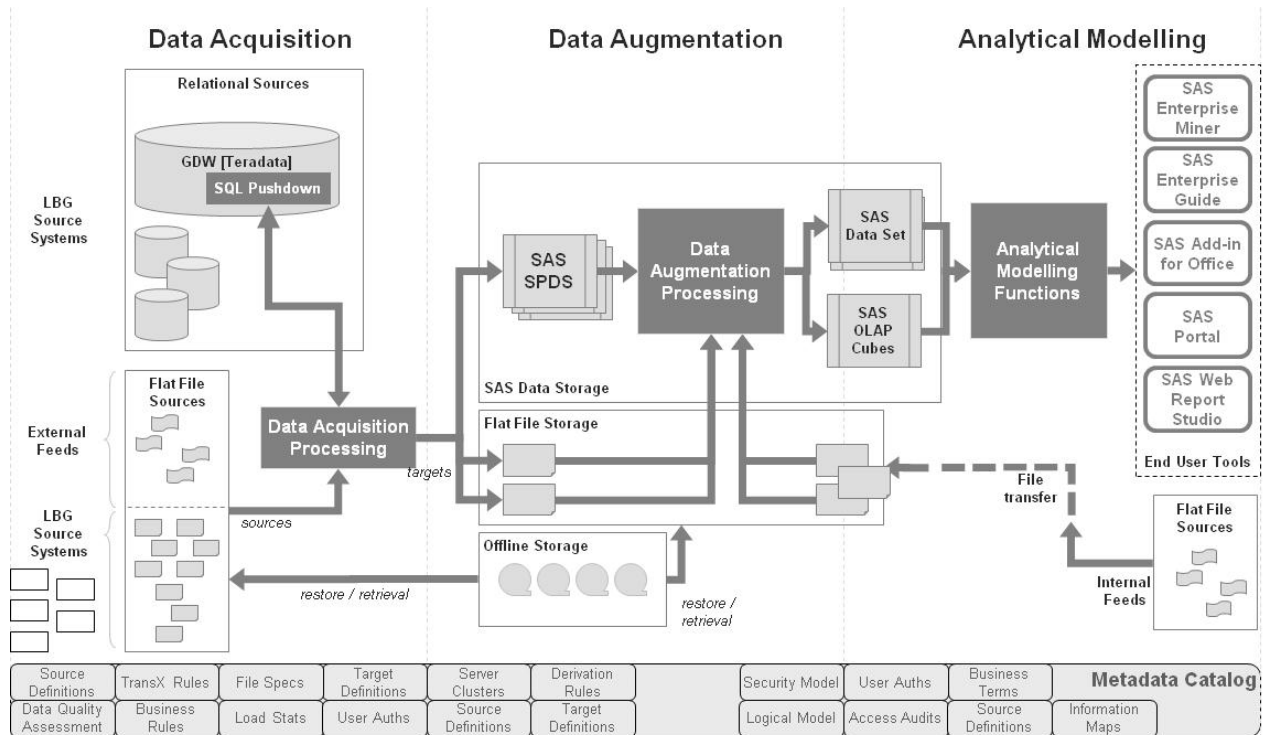


Fig 2. Solution architecture

Some key facts about the physical architecture:

- We have 30 CPUs in dedicated frame
- The environment contains a Production space and split between Discovery and Operational areas
- We have 5 Compute Servers managed by SAS Grid
- Access and management is controlled via 1 Metadata Server
- Processing is managed via 1 Grid Manager Server
- Business controlled Development and Test environments – Business/IT route to live
- Pre Production environment – Cut down version of Live
- We have ½ Petabyte of storage which is the largest in bank by a factor of 10
- 100% Disaster recovery infrastructure

The diagram below shows the physical architecture:

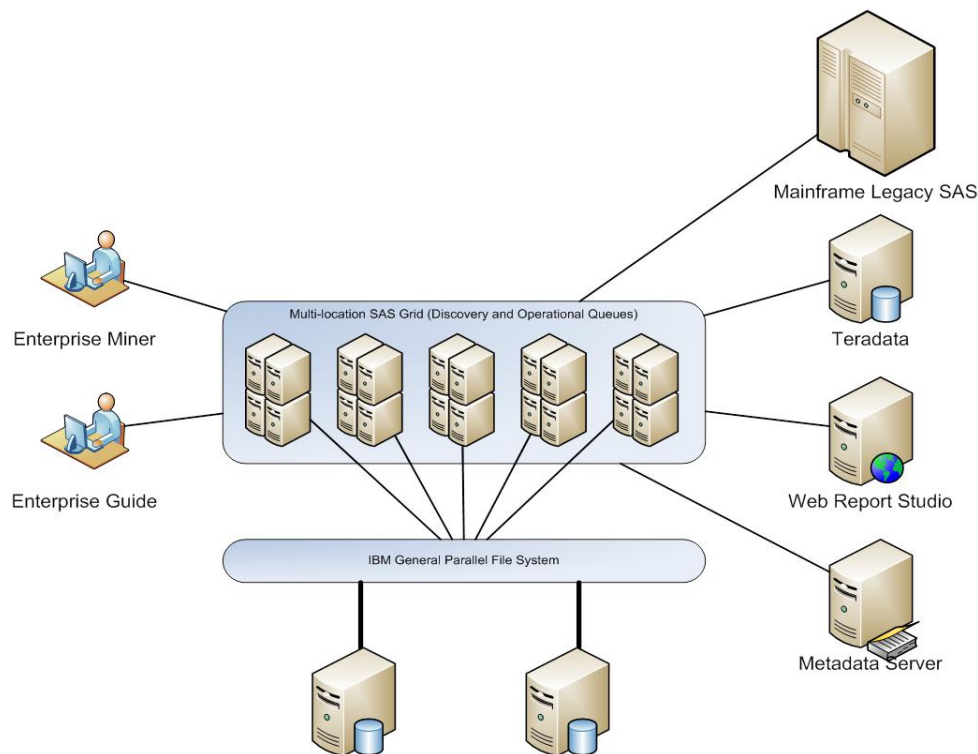


Fig 3. Physical architecture

Some other key facts about our solution and technical delivery:

- Hardware costs were £6M
- We have spent to date £3M internal IT resource costs
- Circa £500k Professional Services Costs (SAS/IBM)
- Around 120 internal IT resources across multiple and varied skillsets (4000 man days)

A major factor was our partnership approach Lloyds Banking Group, SAS & IBM utilising:

- SAS Premium Support
- Significant involvement in platform & process designs by SAS
- On Site Dedicated SAS consultants
- SAS design, installation and configuration of 9.2 suite
- IBM Consultants on site to support industrialisation of IBM technologies
- SAS and IBM tailored training for business and IT resources

## Challenges and how they were overcome

### 1. Deskilling Perceptions – Moving from PC SAS to Enterprise Guide 4.2

The majority of our users were / are 'dyed in the wool' programmers – including the Risk Director! – Who liked nothing more than turning out pages of beautifully written code. Convincing them to move to Enterprise Guide 4.2 was a major challenge, particularly as the previous heritage HBOS incarnation (RDI) had tried and failed. The Le Mans team took a two stage approach – the Security Model and the need to prevent data storage on local desktops was the 'stick' – the 'carrot' was a series of training courses designed in conjunction with and run by SAS Adoption Services, aimed at suggesting alternatives to hand coding, development of best practice guidelines to utilise the SAS Grid Manager functionality and offering a 'code optimisation' service as part of the support team

### 2. Crafting the message

Both heritages had very different experiences of analysis and consequently a single business change adoption approach proved impossible to craft. After a number of false starts and in danger of losing our audience the Le Mans team adopted different messages to different groups. With the heritage HBOS community, we stressed the need to adopt standards, focusing on the benefits of structured views and the need for increased security in the new world. For the heritage LTSB community, it was about first and foremost fixing some of their fundamental problems – access to data and space to work.

The communication strategy developed a toolkit to respond:

- A dedicated intranet site for information
- A governance strategy to manage senior stakeholders
- An 'Open Call' approach for end users
- Targeted workshops (tools demonstrations)
- Quarterly roadshows with user driven agenda

### 3. New to Bank Technologies

Le Mans has 3 key technical components that were new to bank and underwent considerable challenge from within the IT community – the use of IBM XIV disk and GPFS for data storage and SAS Grid Manager for processing utilities.

Specifically, these technologies were:

- SAS 9.2 Suite
- SAS Grid Manager
- Snapshot Backups
- Clustered File System
- Cutting Edge Storage Technology
- Fat and Citrix client rollout

They are now industrialised and available for use by other projects/developments within LBG as a result of the Le Mans programme.

### 4. Reducing the reliance on IT

Previous experience had taught us that Risk Analysts will always ask for all data now as developing a business case for new data sources or additional fields is incredibly difficult – particularly as the business struggle to articulate the benefits of that new data without analysing it in the first place. A key challenge was trying to design an operating model that was flexible enough so our reliance on IT to deliver data was

reduced as much as possible. The support function for Le Mans became christened the BICC (Business Intelligence Competency Centre) and a central feature of it was that it was business owned and business sourced with IT skills embedded in it, allowing the team to 'pull' data as required using SAS DI Studio, rather than relying on IT to 'push' bespoke feeds to Le Mans.

The BICC provided a range of services to the end user community and IT. It's role to bridge the gap, maximise the investment in Le Mans and enable the delivery of the transformation of Risk Analytics within Retail LBG.

The core team was split into 3:

- Support and Administration – managing the user experience and physical environment
- Projects – new enhancements in a constantly changing world
- Development – rapid response to user requirements – it's role to build data structures, provide SAS expertise and facilitate the 'route to live' for managed business processes.

Underpinning the BICC are a data governance approach, a target operating model and security policy, as well as an approach to development that allow us to drive the operating model:

The diagram below lists the services that the BICC provide:

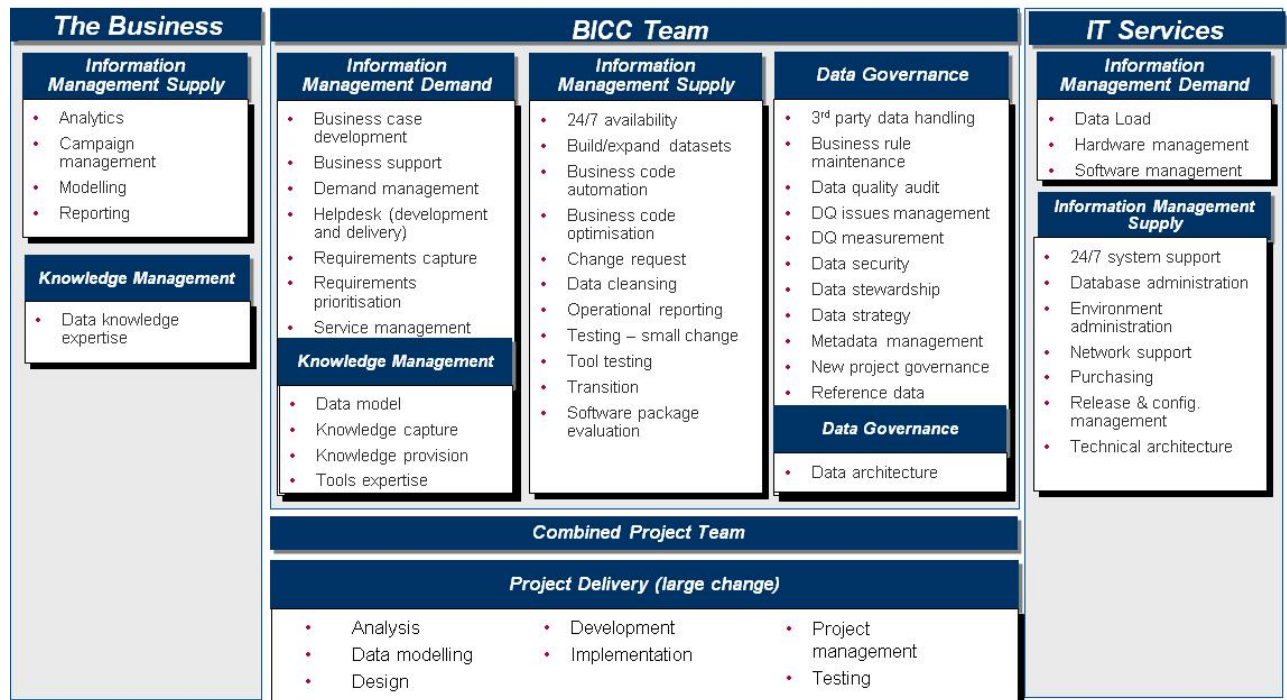


Fig 4 BICC Services model



## CONCLUSION - The Future – the next challenges for Le Mans

The Le Mans story isn't over – we are still very much a work in progress and some of the key challenges we expect to face in the next 12 months include:

- Standardising toolsets

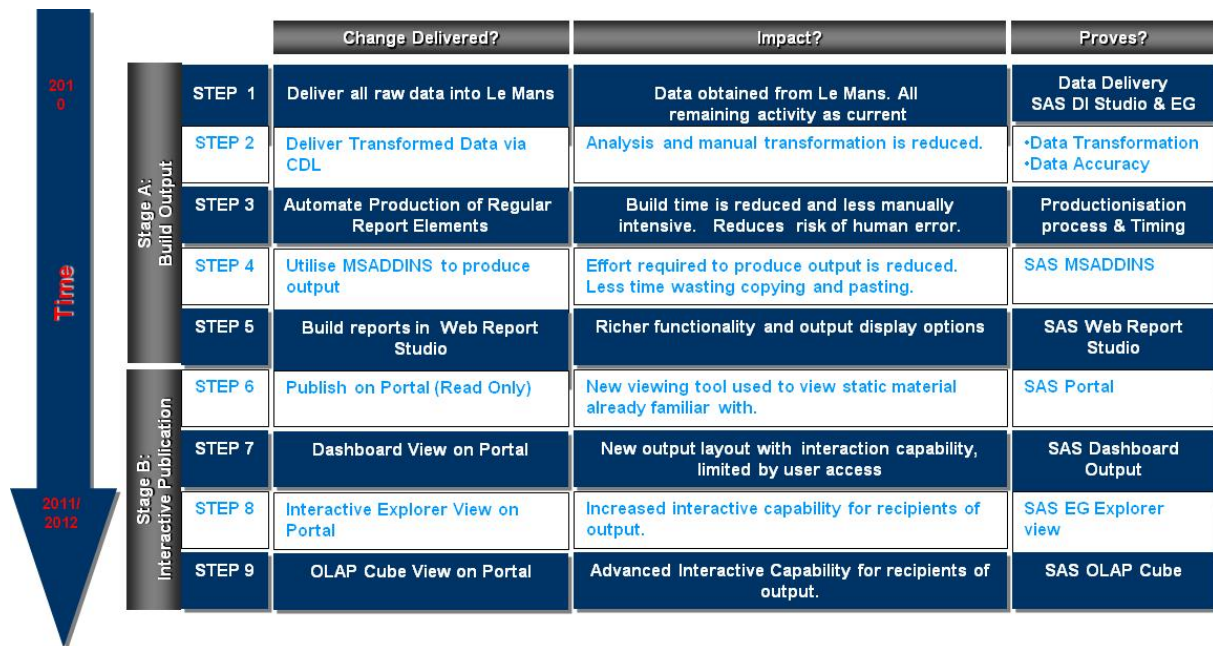


Fig 5. Le Mans Proposed tool evolution.

The diagram above shows the natural evolution of tools and capabilities. We've taken the 1<sup>st</sup> step, but we need to build on that and ensure we use the right tool for the right job. For example Web Self Serving – publishing to the portal and beyond.

- Channelling and focusing Analysis – we've opened the floodgates, how do we ensure we focus that?
- Driving the business operating model – managing appetite for change with demand for service
- Le Mans beyond Risk – can we leverage Le Mans to add benefit to the wider Retail community?



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