XOOMWORKS TECHNOLOGY

Managing risk with a real-time Big Data solution
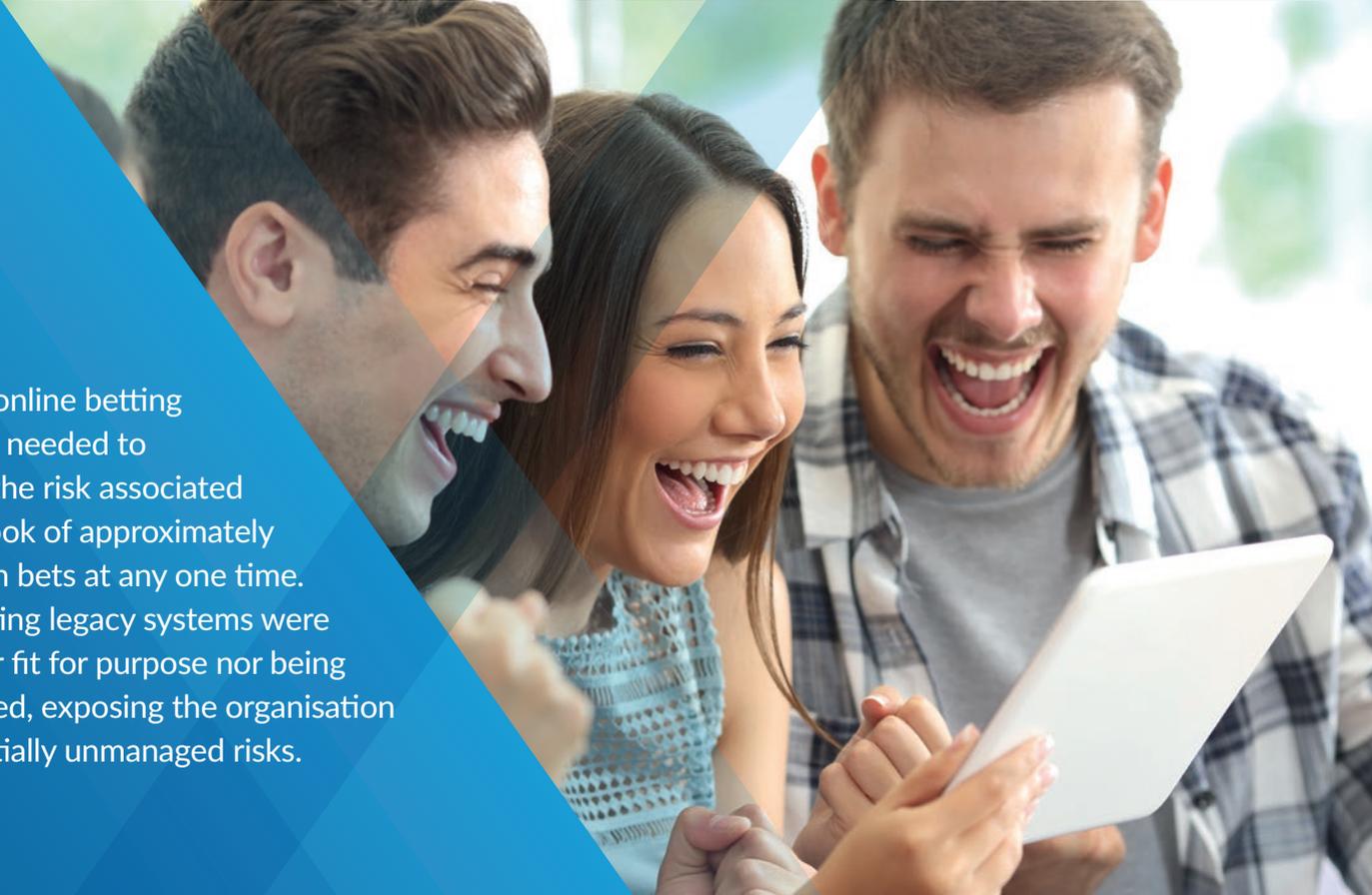
A global online betting company needed to manage the risk associated with a book of approximately 60 million bets at any one time. The existing legacy systems were no longer fit for purpose nor being maintained, exposing the organisation to potentially unmanaged risks.

- Rapid Development of Big Data Solution
- Single, Trusted Source of Information
- Global, Real-time Risk Management

The Challenge

The client is a growing global organisation, operating a very complex business with the need to closely manage the significant and complex financial risks that are inherent in the betting market.

The business model is complex. It offers both online and offline betting opportunities for customers via multiple channels, both in-house and through 3rd parties. Data volumes are huge, with over 60 million current bets on the books on any day. Calculating the liabilities associated with this portfolio and making them easily visible is essential to mitigating risk.

Legacy systems that were no longer maintained and not fit for purpose were preventing the company from managing this aspect of their business effectively. Integrating data from a recent merger had created an extra layer of complexity. Traders had to struggle with multiple sources of information to stay on top of the problem.

What the company needed was a platform that would make global betting business and consequent liabilities visible in real-time. This would enable them to execute mitigation strategies, such as pricing adjustments or hedging, as risks develop.

The Solution

Owing to successful delivery on other projects for this client, they asked the eight-strong Xoomworks team, already embedded in the client organisation, to build a solution. Later these resources were re-assigned under the direction of a delivery manager and product owner from the client's own technology group.

The nature of the problem and the immense amount of data involved drove the decisions around technology; the development of a new application had to be started from scratch.

Within 6-8 months, the Xoomworks team delivered a minimum viable product (MVP), proof of concept, and technical design for single-bet scenarios. Multi-bet complexity was later added to the live product, and within two years, a fully-functional global application was live.

The team employed various technologies with changes along the way, implemented with rigorous migration and testing programmes to ensure continuity of service.

The solution consists of a fully integrated suite of applications, running state-of-the-art software to handle the huge data volumes and complex calculations required. The Akka toolset was selected to build the highly-concurrent, distributed, and resilient message-driven applications.

The solution is continually being improved by the embedded Xoomworks team, including alert functionality that highlights suspicious or anomalous activity.

To give an idea of the scale of the challenge, the system handles the following data volumes:

- Close to 100,000 Events, such as football matches or horse races
- 3 million markets, e.g. win or 1st goal
- Tens of millions of selections, i.e. outcomes that bets can be placed on
- Over 50 million current bets in the system

This business generates the following volumes of data within the system:

- At least 170 million database entries, primarily the Events and Bets catalogues
- Around 300 million rows in MySQL
- Over 4 billion rows in the Apache Cassandra database.

Every 24-hours, approximately 300k updates are processed, and more than 2 million bets handled. That requires analysing over 3 million liabilities - all in real-time.

Historical data is retained for 30 days, and continually purged when it expires. A significant processing challenge!

The hardware to support all of this includes 546 vCPUs, 1.5 TB of RAM and 6 TB SSD storage, including multiple test environments, one of them being aligned 1:1 with production.

Xoomworks also implemented a Continuous Integration (CI)/Continuous Delivery (CD) pipeline enabling frequent delivery of new features to production. Updates were being deployed multiple times per week, and sometimes several per day during the development peaks.

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The Results

Delivery of the new platform and applications has transformed the organisation's ability to manage risk in real-time. For the first time, the global book of bets and associated liabilities is easily and readily visible to key trading staff, who are now equipped to mitigate the risks.

Productivity has increased significantly as each trader is now able to handle many times their previous workload. This has allowed the business to expand its offering to its customers.

Having a single, trusted view of the business gives the client the confidence it is protecting itself from financial risk – a critical advantage in the betting market!

Since the application is easily scalable, mergers that have taken place since it was deployed have been seamless, with new data being fed into the system and integrated into its risk management operation from day one. This will make it much easier for future mergers.

- ✓ Global, real-time view of all business and associated risk
- ✓ Single, trusted source of data
- ✓ Increased productivity
- ✓ Reduced financial risk for the organisation