

Information Dissemination in Modern Banking Applications

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Abstract. Requirements for information systems, especially in the banking and finance industry, have drastically changed in the past few years to cope with phenomena like globalization and the growing impact of financial markets. Nowadays flexibility and profitability in this segment of the economy depends on the availability of ready, actual and accurate information at the working place of every single employee. These theses are exemplified by outlining two modern real-life banking applications, each different. Their business value is founded on the rapid dissemination of accurate information in a global, distributed working environment. To succeed technically, they employ a combination of modern database, networking and software engineering concepts. One case study centers on the swift dissemination of structured financial data to hundreds of investment bankers; the other deals with the rapid dissemination of semi-structured and/or unstructured information in a knowledge retrieval context.

1 Introduction

The past decade has been characterized by the economic phenomena of globalization, a shift from production oriented industries to service oriented industries, and the ever growing importance of information technology. In particular, this has brought about a dramatic change in the attitude towards and the requirements for the information systems in the banking and financial services industries. Originally, information systems in these industries were vehicles to automate high-volume business processes (accounts, credit cards, ...). Yet their complexity was low or medium. Systems of that kind were built on top of a database system, and a transaction processing monitor skilfully exploited the available computing resources to maximize throughput in terms of standardized, simple transactions. Though it is arguable, whether these types of systems still dominate the banking IT environment, certainly they still play an important role. Nowadays and even more in the future, flexibility and profitability of this segment of the economy crucially depends on the immediate availability of accurate information at the working place of every single employee. Information has undoubtedly become one of the most valuable resources in the banking industry.

Due to business requirements and the rapidness of decision-making, the information technology landscape is best characterized by a high degree of heterogeneity, the physical and logical distribution of the application systems and the availability of high-end technology. From an operational perspective, demands on information system reliability, speed and accuracy are challenging. Likewise, this applies to development cycles resulting in the need for rapid development and speedy introduction of new technology and operational systems into the business environment.

We exemplify these theses by outlining two modern real-life banking applications, each representing one of a kind. Their business value is founded on the rapid dissemination of accurate information in a global, distributed working environment. Though we also point out the potential economical benefits, naturally the article focuses on technologies employed, the technical problems overcome and some lessons learnt in the process of implementing applications of that type. One case study centers on the swift dissemination of structured financial data to hundreds of investment bankers. The brokers' decisions are based on real-time data and a very specific financial calculus. From the technical and science perspective, the system makes use of a very intriguing combination of database, network and software engineering techniques. The other case study focuses on the rapid dissemination of semi-structured and/or unstructured information in a large banking environment. Its architecture as well as an integrated framework based on text mining technologies for efficient knowledge retrieval are presented. One of the key modules consists of a browsable, automatically generated semantic network, extracted from various document sources (in-house as well as external) without any need for expensive human modeling or supervision.

2 A Large Scale Real-Time System for FX Trading

2.1 Motivation

Global networks had been effecting large scale transactions between financial institutions for a long time before E-commerce or the WWW came to everyone's attention. Knowledge about the intricacies of securities and derivatives is shared among just a few professionals within each bank. The profitability of the traded products remains high as long as only few players understand their real mechanisms and implications. Striking successful deals depends on the availability of consistent and current market prices. A combination of well conceived trading strategies, the availability of current market data and sophisticated tools for their interpretation and evaluation constitute a sound basis for high profitability in the business.

The case study outlines the design and implementation of a large scale online/real-time system for the foreign exchange (FX) division of a world-wide investment bank with hundreds of brokers employed in several trading rooms in various countries. In the design phase, major issues, such as parallelism, representation and location of data, techniques for their replication and the distribution of work between client and server