



## INTRODUCTION

Based on Live Objects platform, we have built live objects using in office automation settings. Office automation managers rely on an underlying message broker, transactional queue manager, or publish/subscribe middleware layer to wrap participating applications, to detect business process related events, and to guarantee reliable delivery of events and messages to applications.

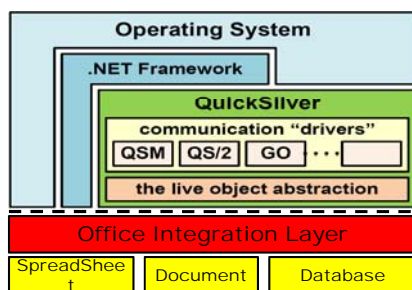


FIG.1 Office Integration Layer

## CONTRIBUTIONS

1. Office data type using XML schema
2. A set of endpoints, collections of business operations, protocols or services
3. Clean integration with existing office documents and database systems
4. Process transactional support with database systems
5. Easy integration of heterogeneous applications in distributed environments
6. Loosely-coupled to complex underlying communication substrates
7. Strong type checking, exception handling
8. Noble interface, a drag and drop interface in an event notification manner
9. No architectural assumptions

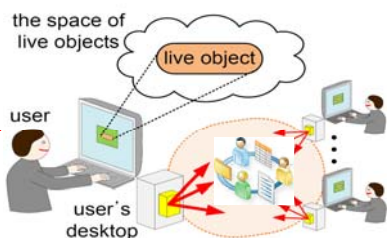


FIG.2 Live objects coordination

## Ex.1 : Global Sales

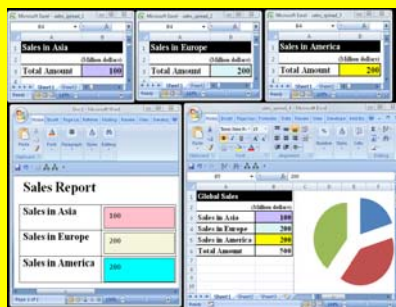


FIG.3 This example shows how data in spreadsheets and Document could be associated with live channels.

## Ex.2 : Stock Market

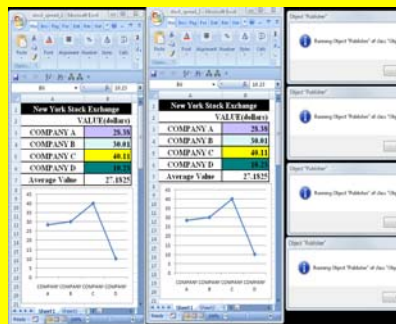


FIG.4 This example presents New York Stock Exchange.

## Ex.3 : Net Status

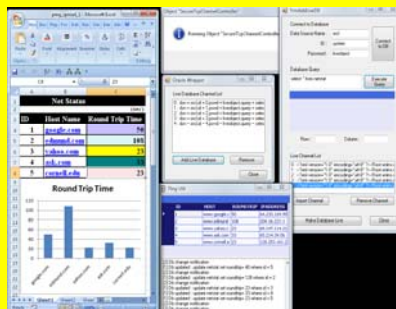


FIG.5 This example presents how Oracle database could have a materialized view through live channels.

## OFFICE DOCUMENTS INTEGRATION LAYER

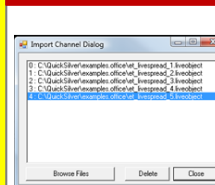


FIG.6 Import live channels

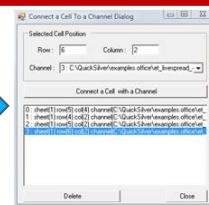


FIG.7 Connect data to a live channels

## DATABASE INTEGRATION LAYER

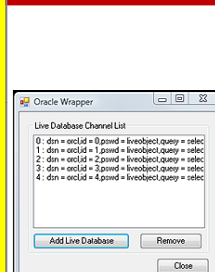


FIG.8 Live channel list associated with database queries

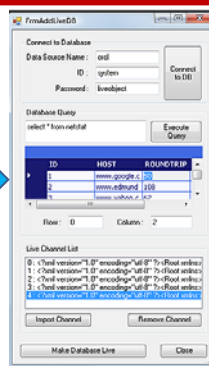


FIG.9 Connect data (based on a query) to Live Channels

## CONCLUSION

1. The Integration layer scales up well.
2. Reliable Event/Message Delivery
3. Support simple Transactional Support for Concurrency
4. Automate intra- and inter- enterprise business processes with clean integration among heterogeneous systems

## FUTURE WORK

1. Security/ Privacy Issues within group memberships
2. System compatibility issue such as live objects on linux/unix systems
3. Open issues for advanced transactional support

## REFERENCE

- Programming with Live Distributed Objects. Krzysztof Ostrowski, Ken Birman, Danny Dolev, Jong Hoon Ahnn. In submission (December, 2007)
- Live Distributed Objects: Enabling the Active Web. Krzysztof Ostrowski, Ken Birman, Danny Dolev. IEEE Internet Computing, November-December 2007.