Pearls, Swine and Sow’s Ears:
Interface Research Inside a Multinational Bank

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Abstract. Inside the Union Bank of Switzerland (UBS), as with many other corporations, timely access to the right information determines the success or failure of work goals. Ubilab is the UBS information technology research lab, and it develops new information tools and advises on technology trends for the bank. New technology, however, bears a risk of unbalancing established practices. Bank employees such as traders and analysts see the potential of new technologies but their reactions to the pressure to be up to date with the latest technology may not be what a researcher expects. They cannot afford to take excessive risks, are used to relatively basic technology, and are fully occupied handling their everyday work. They may consider researchers’ ‘pearls of wisdom’ to be unsuitable, irrelevant or unhelpful. Their work practices are advancing, as of course is database system and interaction research, but these directions are not the same and this divergence weakens both sides. By pointing out some of the contrasts and similarities between everyday information use and mainstream database interaction, I hope to spark off discussion about this separation and what can be done to reduce it.

1 Introduction

At first glance, one might consider that modern corporations’ reliance on vast amounts of data would validate database research in its many forms. The well-known difficulties of ‘information overload’ and usability might suggest that all corners of such a corporation would actively encourage and quickly employ advances in database systems and their interfaces.

Such a Utopian view is far from the truth. In fact, the relationship of a research laboratory within a large corporation is a difficult balance between pragmatism and risk: short-term development needs and financial pressures within the corporation have to be balanced with the fundament of such laboratories’ existence: longer–term goals of research and discovery. Arising from this is a problem which the author feels may ultimately diminish support for database research. This is that the everyday use of information is at odds with the way that most database systems work, and that if anything the gap between practice and research in database interaction is widening.

By looking at mainstream database interaction and at some front desk work in my own corporation, I hope to offer examples of this gap. Also, by using examples from some of Ubilab’s research in information visualisation, I will offer some suggestions as to how it might be reduced.
2 Information Access

The stereotypical image of foreign exchange and bond traders has become familiar to
many, with the frantic activity of the 'pit' having been often shown in films and novels.
Huge amounts of data stream through such workplaces. Along with news feeds of
textual information, the traders concentrate on real-time data showing the rises and
falls of prices and other economic values. These rising and falling values are recorded
over time, building up databases of time series which are in turn the basic material for
prediction and analysis. Electronic trading systems are starting to spread around the
world's exchanges, distributing over networks and accumulating databases of the
ongoing trades. Much work is now being done from trading rooms out in the
individual banks (and similar institutions). Electronic exchange systems have
accelerated the rate at which decisions must be made; the pace of work is intense.

Although a few more modern workstations are appearing, the majority of traders' and
analysts' (the 'quants') desks have PCs with very basic tools for data management.
Each person usually handles a small area of financial instruments and does not roam
expansively over the large set of data available. If they do query some larger database
it will be in a relatively cursory way, as query languages are too complex: boolean
expressions tend to be either very short or used with little confidence in the result.

Usually, spreadsheets are used for analysis and display of a small number of time
series, allowing relatively simple graphing and analysis e.g. calculating correlation
matrices and looking for periodicity. Larger numbers of series make for cluttered
table plots and unwieldy matrices, making analysis and exploration difficult. They
also may mean delay and confusion: the former may mean that market opportunities
are missed, while the latter may mean financial over-exposure or loss. Since speed and
low risk are two of the most essential features of traders' work, they need to be able to
construct their own analyses quickly and understandably, wait seconds (and not
minutes or hours) for answers, and thus obtain clear timely results that they trust. It can
also be noticed that databases for newsfeeds and similar textual data, and their
correlation to time series data, are not usually used.

All in all, the number of items that can be handled effectively is constrained. In both
spreadsheets and database front-ends, users can only compare data in simple ways.
Simple graphs and matrices, linear lists of database query matches: such structures are
weak in conveying the richness of the stored data. The context of an item matching
some query, the inter-relationships of the retrieved set, the relationship of that set to
previous work, the patterns that would be apparent from an overview of the full data
set — all these things are discarded in traditional database interfaces. Queries are too
often a fumbling grasp into the black box of the database. Instead of an ongoing
interactive process, each query essentially conforms to a batch mode of operation: the
query is composed, sent off for processing, and executed in sterile isolation from the
user.

Some of these issues are at the core of the author's project at Ubilab. This relatively
new project is centred on the visualisation of complexly structured data such as
collections of time series and corpora of textual data. We are exploring techniques for
efficiently laying out high-dimensional data in the form of maps or landscapes, which
can be browsed and explored graphically [Chalmers93, Chalmers95]. We are trying to
design easily perceivable representations of this data so that people can better maintain