Spreadsheets and OLAP

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*OLAP, the acronym for **On L**ine **A**nalytical **P**rocessing, is becoming the fundamental foundation for Intelligent Solutions including Business Performance Management, Planning, Budgeting, Forecasting, Financial Reporting, Analysis, Simulation Models, Knowledge Discovery, and Data Warehouse Reporting. OLAP performs multidimensional analysis of enterprise data and provides the capabilities for complex calculations, trend analysis and very sophisticated data modeling. OLAP enables end-users to perform ad hoc analysis of data in multiple dimensions, thereby providing the insight and understanding they need for better decision making. And it can be done through the spreadsheets as **Excel** spreadsheet and Web browser. For example, **PowerOLAP** and **BIXL** (**B**usiness **I**ntelligence for **E**x**c**el) can provide immediately useable OLAP and Business Intelligence Solutions.*

Spreadsheets and OLAP (short history)

By the late 1980s, the spreadsheet was already becoming dominant in end-user analysis, so the first multidimensional spreadsheet appeared in the form of **Compete**. This was originally marketed as a very expensive specialist tool, but the vendor could not generate the volumes to stay in business, and Computer Associates (CA) acquired it, along with a number of other spreadsheet products including **SuperCalc** and 20/20. The main effect of CA's acquisition of Compete was that the price was slashed, the copy protection removed and the product was heavily promoted. However, it was still not a success, a trend that was to be repeated with CA's other OLAP acquisitions. For a few years, the old Compete was still occasionally found, bundled into a heavily discounted bargain pack. Later, Compete formed the basis for CA's version 5 of SuperCalc, but the multidimensionality aspect of it was not promoted.

Lotus was the next to attempt to enter the multidimensional spreadsheet market with **Improv**. Bravely, this was launched on the NeXT machine. This at least guaranteed that it could not take sales away from 1-2-3, but when it was eventually ported to Windows, **Excel** was already too big a threat to 1-2-3 for Improv's sales to make any difference. Lotus, like CA with Compete, moved Improv

down market, but this was still not enough for market success, and new development was soon discontinued. It seems that personal computer users liked their spreadsheets to be supersets of the original 1-2-3, and were not interested in new multidimensional replacements if these were not also fully compatible with their old, macro driven worksheets. Also, the concept of a small multidimensional spreadsheet, sold as a personal productivity application, clearly does not fit in with the real business world. **Microsoft** went this way, by adding **PivotTables** to **Excel**. Although only a small minority of Excel users take advantage of the feature, this is probably the single most widely used multidimensional analysis capability in the world, simply because there are so many users of Excel. **Excel 2000** included a more sophisticated version of PivotTables, capable of acting as both a desktop OLAP, and as a client to Microsoft Analysis Services. However, the OLAP features even in **Excel 2003** are inferior to those in OLAP add-ins, so there is still a good opportunity for third-party options as well.

Excel-Friendly OLAP

Each brand of OLAP program has a different set of features and benefits. Each interacts with Excel in different ways. However, only a few of these programs are *Excel-friendly*.

Excel-friendly OLAP programs have three general characteristics:

1. They use spreadsheet functions to populate Excel.

Unfortunately, most OLAP programs write numbers and text to Excel. But Excel-friendly OLAPs use spreadsheet functions to return data from the OLAP database. The difference between these two methods is the difference between *push* and *pull*.

Most OLAPs force users to navigate through various dialogs to push data into Excel. But Excel-friendly OLAPs allow users to write formulas in their spreadsheets, formulas that specify the data they need. Then, to pull the data into Excel, users recalculate their spreadsheets.The pull approach is much more powerful than the push approach, and much easier to learn.

2. They provide many spreadsheet functions.

Some OLAP programs offer only one or two Excel functions. But Excel-friendly OLAPs offer a dozen or more functions. By offering a wide variety of useful spreadsheet functions, Excel-friendly OLAPs give Excel users significant analytical power.

3. They reference many cubes in one worksheet.

In Excel, formulas in one spreadsheet can link to any number of cells in any number of workbooks. Similarly, in Excel-friendly OLAP databases, formulas in one Excel spreadsheet can link to any number of multi-dimensional cells in any number of OLAP cubes.

The bottom line is that Excel-friendly OLAP programs, like PowerOLAp or BIXL, give Excel users significant power and flexibility.

PowerOLAP

PowerOLAP provides extraordinary empowerment, using the tool that we use most often for planning, analysis and reporting needs: the familiar Excel spreadsheet.

PowerOLAP is an enterprise-wide information system designed to connect people in your organization to the data they need to make better decisions. Because PowerOLAP delivers your company's latest data directly into Excel, productivity is dramatically increased and staff can spend more time on advanced analysis and much less time on retrieving data and maintaining spreadsheets.

Key benefits of **PowerOLAP** and its native **Excel** interface**:**

• Spreadsheets retain all their formula, formatting and graphical capabilities: Excel continues to be the principal reporting tool. But these reports will *update automatically* as the underlying data or structure changes.

• Put an end to re-keying data from multiple reports: Power**OLAP** pulls the data you want directly from the sources of your written reports. No more clerking spreadsheets by analysts, managers and executives.
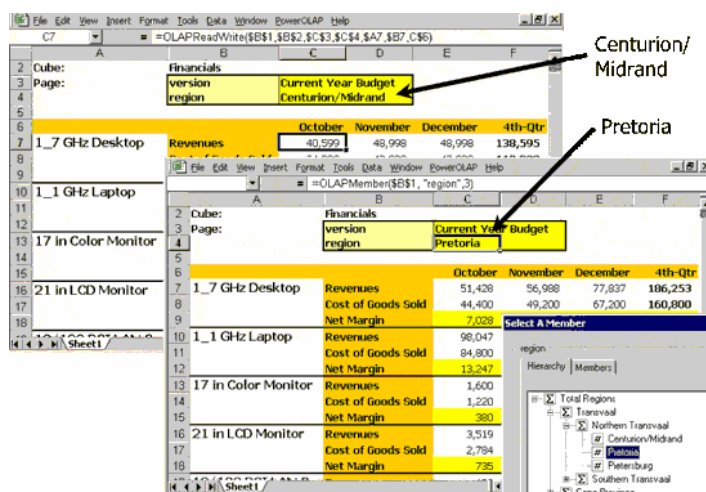
• Connect directly to all important data sources: Microsoft SQL, Progress, Oracle, Sybase, or legacy systems that are the databases for Accounting, Customer Service, Sales Force Automation, Point of Sale, Customer Relationship Management, HR/Payroll or other systems-all dynamically connected to your spreadsheet.

• Combine hundreds, even thousands of spreadsheets into one: Power**OLAP**'s multi-dimensional structure and direct data connections makes linked, multi-sheet spreadsheets and pivot tables.

• These spreadsheets can be saved and are sharable throughout the enterprise: Spreadsheets created with Power**OLAP** maintain their dynamic connection to source data and can be shared over your network or via the Internet. This maintains one version for all.

• Dynamic write-back capabilities allow you to enter data in a spreadsheet and save them to various models: So you can enter updated figures or test "what if" scenarios, create budgets and forecasts all within Excel and without changing the underlying database.

Reach Data Anywhere.

Data can be drawn from any source, relational databases like Microsoft SQL Server or Analysis Services OLAP cubes, as well as other OLAP sources. This compatibility enables you to leverage PowerOLAP's high-performing engine even while you work with existing database systems.

Powerful Business Benefits:

• Accessible company information through Excel or the web, connecting live to all organization data, including data in Microsoft's OLAP cubes.

• Faster Budgeting cycles, dynamic report building, and advanced analytics through "multidimensional" views of your company's business structure and performance.

• Timely and accurate data available across your organization, synchronized and real-time delivered to the right people at the right time.

• Rapid ROI with little training required and significant reduction in current task time and effort, and great increases in staff productivity.

• Open and flexible software architecture which adapts to all your business needs in every department, from Finance and Sales, from Inventory to HR.

OLAP Web Services- Internet HTTP and XML enabled

PowerOLAP Web Services provides Internet connectivity through a customizable Web browser that enables staff or customers to create unlimited reports and analytical views, including graphs, of data made available to them. Web Services also allows clients to enter figures into PowerOLAP cubes from wherever they can make an Internet connection. PowerOLAP Web Services is truly a means to extend a company's *real-time reach* to virtually anywhere. Connectivity via Web Services extends PowerOLAP's Internet integration strategy enabling end users to analyze and report, budget and forecast using up-to-the-instant data. By opening up advanced modeling to users who need only a Web browser connection, companies empower users-staff or customers-to "slice and dice" and create advanced reports on data made available to them. Plus, Web Services includes a Chart View feature, an eminently

flexible graphical report writer. Further, with Web Services, privileged uses can also enter updated figures, leveraging PowerOLAP across the Internet for remote reporting, budgeting, even for "what if" modeling. Note that all of PowerOLAP's strict security privileges remain in effect, ensuring that users can see or model only that data to which they are given privileges.

PowerOLAP is HTTP and XML enabled making reporting possible that executives on line.
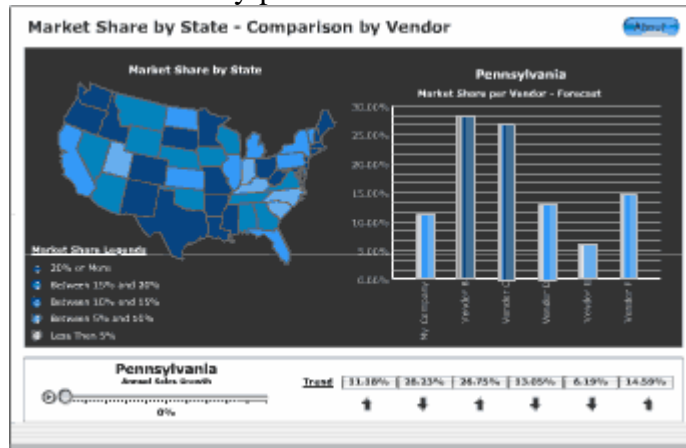
Business Intelligence for Excel (BIXL)

With **BIXL**, the Excel spreadsheet is transformed into an ideal business intelligence tool. You lose none of Excel's outstanding and familiar uses, but you gain business intelligence capabilities, and the business advantages, to read and write, chart and graph, slice and dice all the data kept in MS Analysis Services and other Industry-standard OLAP cubes[1].

The argument made here is that *Business Intelligence for Excel* has superceded other Business Intelligence products by closing a technology gap that exists between where data is stored and where it is needed. *BIXL* closes the gap by employing two outstanding technologies, the relational database, which has been enhanced with cube/analysis capabilities, and the everyday spreadsheet. It assumes that smart business users, whose job is to counsel themselves or management, very much want to continue working in their spreadsheet, for its computational, formatting, and graphical features.

The term *Business Intelligence* is much in use today. *Business Intelligence* has taken its place among other technology concepts: *OLAP, Decision Support, ERP* (*Enterprise Resource Planning*) etc., that relate to the fast delivery of key data to organizations. The data in question is of the sort that companies have (historically) a difficult time reaching, i.e., records in underlying, mostly relational databases.

End users need business intelligence for, in effect, any job they need to do. These user tasks, which millions of spreadsheet users must accomplish each day, could broadly be described as planning, analysis and reporting. The products that call themselves ***Business Intelligence*** (**BI**) solutions need to address some part of those requirements, optimally, one product would address *all* of those requirements.

Business Intelligence for Excel differs from other BI tools: the product delivers to an end-user's Excel spreadsheet data that can be used for analytical and reporting purposes, from Microsoft's *Analysis Services* (and other OLE DB for OLAP cube providers), and adds all-important writeback capabilities for planning (and budgeting and forecasting) tasks. Most importantly, since the interface is Excel, users enjoy the full familiarity and capability of their spreadsheet, just as they are used to.

Analysis Services (and other OLE DB for OLAP) data and returns that information for end-users towork with in their spreadsheets. *BIXL* delivers Business Intelligence into Excel dynamically.

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[1] Business Intelligence Technologies, Inc., 200 Hyde Park, Doylestown, Pennsylvania 18901

The core concept of *Business Intelligence for Excel* (*BIXL*) is to allow users to build that business intelligence into Excel and deliver it exactly the way they want it.

BIXL works as a Microsoft Excel add-in to seamlessly retrieve *Analysis Services* OLAP data and returns that information for use in the everyday spreadsheet, not a PivotTable. *BIXL* brings all Business Reporting, Analysis, Planning and Budgeting into Excel in a matter of minutes. With a keen eye on your ROI, and offering access to and enhancement of Microsoft's OLAP functionality at a very competitive price, *BIXL* is the intelligent and powerful way to reach business intelligence through Excel.

The following summarizes *BIXL*'s features and benefits:

➢ Work In Excel. Users never leave their comfortable and familiar Excel environment. A few minutes of training, and end-users have access to data the way they want it. Users can start advanced analytics and reporting with the Excel formatting and functionality they already know.

➢ Write Back Capability. Users see business figures dynamically in Excel, but *BIXL* also allows them to send data back to the source cubes—for example to report the latest figures and test "what if" scenarios. This 'Write Back' capability makes BIXL ideal for all planning, forecasting and budgeting requirements.

➢ Data from Anywhere. *BIXL* integrates with any OLE DB for OLAP-compliant system, including Microsoft's SQL Server 2000 *Analysis Services*, to retrieve data from cubes into Excel.

➢ WWW-Able. Use *BIXL* across the Web for worldwide access, data manipulations and data entry to models contained in Analysis Services cubes and other OLE DB cube providers.

➢ Cost-Effective. *BIXL* is very competitively priced. Whether an organization has one user or thousands, *BIXL* provides solutions for the right price, leveraging and combining already-deployed technologies, *SQL Server* and Excel.

➢ Fast. Users see data in spreadsheets that can be customized in a few seconds. Quick and dynamic views of real-time data support requirements for immediate enterprise-wide analysis-and-response time.

➢ Easy. The simple *BIXL* wizards guide users through customizations to create the spreadsheet users want to create. Familiar and simple—exactly as Excel is currently used—means money saved on roll-out efforts and training.

➢ Flexible. BIXL allows users to change the layout of a spreadsheet with a mouse click. *BIXL*'s flexibility dynamically allows views of your data *on the fly*, with multidimensional, ad-hoc analysis capability instantly, from within Excel.

➢ Return on Investment. Important data is sitting in company databases, but presently it is cumbersome, costly and time-consuming to get that data into Excel, where analysts use it. Today they can continue to lose productivity and pay a very high cost, or use they can use the right tool.

References

1. CFO Research and Cap Gemini Ernst & Young study, cited in Reason, T., "Partial Clearing", CFO Magazine, Dec. 2002.

2. Hackett Group Study, cited in "How'm I Doing?", CFO IT, Mar. 2003

3. Freeman, D. (1996). "How to Make Spreadsheets Error-Proof." Journal of Accountancy, 181(5), 75-77.

4. KPMG Management Consulting, "Supporting the Decision Maker - A Guide to the Value of Business Modeling," press release, July 30, 1998.

5. E.F. Codd & Associates, 'Providing OLAP (On-line Analytical Processing) to User-Analysts: An IT Mandate', 1993.

6. Business Intelligence Technologies, Inc., 200 Hyde Park, Doylestown, Pennsylvania 18901

7. http://www.biolap.com/

8. http://www.bixl.com/

9. http://www.olapreport.com/origins.htm

10. http://www.exceluser.com/olap/xlolaps.htm

11. http://www.olap.com/index.html

12. http://www.ExcelUser.com

13. http://www.exceluser.com/olap/intro.htm

14. http://www.businessintelligence.com/ex/asp/code.139/xe/article.htm