OLATION®

A NEW AGE OF VISIONARY INTELLIGENCE

PARIS Technologies

Table of Contents

I. Visionary Intellligence 3

II. Benefits 4

III. It's All Relational:The Online Transaction Processing (OLTP) Database 5 - 6

IV. OLAP in the Organization 7

V. Promises Not Kept from Business Intelligence 8

VI. The Power of Olation: Relational Store and Multidimensional Modeling 9

VII. Olation as a Metrics Engine for Data Visualizations and Reports 10

IIX. Key Technical Competencies 11

IX. Olation: Welcome to the New Age 12

X. Key Business Benefits 13

VISIONARY INTELLIGENCE

Olation® goes "beyond Business Intelligence" to deliver Visionary Intelligence, fostering collaboration between end users and management, and providing dynamic connectivity between database systems, applications and end-user tools.

Olation, as a fusion of analytical – OLAP and relational databases [thus the term, Olation] represents a milestone in the evolution of database technology; as a consequence, and given the business value in its speed-to-solution/benefit, **Olation will have a significant impact on the implementation of planning, analysis and reporting information systems.**

Like any important evolutionary event, Olation combines the best features of what came before it with important new capabilities. As we will see, Olation provides a seamless, optimized in-memory multidimensional – OLAP functionality layer over the "bedrock" relational database environment that every company utilizes to capture and store transactional information. A true real-time capability now exists between the relational and multidimensional "spheres," which had previously been two discrete functional entities —indeed, most often, two entirely different database types (OLTP and OLAP) altogether.

As a technology that for the first time fuses OLTP and optimized OLAP capabilities, **Olation invites a "Welcome to a New Age of Visionary Intelligence."**

BENEFITS

Olation's fusion of analytical - OLAP and relational technologies provides these benefits:

- Business Leaders obtain critical Business Intelligence (BI) dynamically, enabling decision-making based on historic actuals, as well as on real-time company performance and expected plan results.

- IT is able to manage and control data, with all requisite security in place, from one "sanctioned" single source, i.e., within the relational database environment. There is no integration/ duplication of data required, much less are there different or even proprietary database systems to oversee.

- End-users can leverage their skills with any preferred tool (report writers, spreadsheets, dashboard products, even other BI products, etc.) with the knowledge that all data is "true" back to and available from the transactional source; furthermore, there is no lag time in end-user computational models, including for "write back." The OLAP capability inherent in Olation provides results dynamically to any front end, including for budget and forecast planning applications.

- There is unprecedented connectivity between technologies, since Olation functions as a "connector/nexus" for different applications, front ends and databases (Olation can connect to any system and installs in SQL Server, SAP HANA, Oracle, etc.).

- Staff collaboration becomes a reality, enabling firms to power towards corporate objectives: performance is measurable in real-time, and "what if" plans can be altered—whether related to budget, forecast or long-term strategic—likewise in real time, to target future profitability.

It's All Relational: The Online Transaction Processing (OLTP) Database

At this point, we can step back to briefly review the development of OLTP and OLAP technologies. This will provide particular insight about Olation's technology and business-benefit differentiators.

Every business has a system, if not several systems, for collecting and storing its core operational data. The entry point for data may be at someone's desk (keyed in), or through an automated system that will record each transaction. Examples of transactions are entries in an accounting system, online reservations for an airline seat or a hotel room, and credit card purchases of clothes in a department store. **Once a transaction is completed, the necessary data is sent back for storage to a database.** At minimum, the data sent to a database from a sales register would include date, store location, item identification number, credit card number, and purchase price, among other particulars.

In the seemingly distant past, companies developed their own individualized systems for the collection and storage of data. Eventually the "relational model"—endorsed by E.F. Codd in an influential paper published in 1972—was acknowledged as **the best database management system for capturing, validating, and storing large volumes of individual transactions, aka, on-line transaction processing (OLTP).** Since that time companies have made huge investments in **relational database management systems (RDBMS)** and the software applications that leverage RDBMS capabilities. One such application is an ERP (Enterprise Resource Planning) system, business process management software that handles core data requirements related to, for example, purchasing, inventory control, distribution, accounting, marketing and finance.

Database management systems also allow for the retrieval and processing of stored data. It should be noted, though, that the internal design of the database affects how quickly and flexibly data can be retrieved and processed.

Imagine the case of a company that needs to verify a single transaction, or wants simply to total the purchases of an item at one location during a fixed period of time. RDBMSs are amenable to straightforward queries, including those concerned with simple math. However, the **static physical design of relational databases**—data is stored in two-dimensional tables, with each entry being a row in the table—impedes more complicated data analysis. As well, the **sheer volume of data in the database makes analytical activities very time-consuming, if not unrealistically complex.**

By now there are products that can deliver, in addition to standard or "canned" reports, a robust set of ad hoc reports based on complex underlying queries from an RDBMS, executed via a user-friendly front end. Furthermore, newer "in-memory technology" products are particularly well-suited to conveying data visualizations (aka dashboards) across a wide selection of choices ("multidimensional" selections, in OLAP terms), although they too rely on queries and utilize their own proprietary data stores. These BI products—Tableau, Qlik and Power BI, for example—also provide some additional "on the fly" calculated values to be displayed.

And yet…for all the reporting tools and impressive graphical visualization products on the market today, **management still has difficulty reaching and working up data to run the business.** This is particularly true of the "plan" data needed to guide the business forward, in applications (budget, forecast, etc.) where staff collaboration is especially important.

End-users, by the tens of millions continue to live in spreadsheets, justifiably characterized as the single most popular Business Intelligence technology. And for good reason: **spreadsheets can go beyond reporting, giving users the chance to get hands on in working up complex calculated analytical results.** Also, spreadsheets "allow write-back," and thus can be used for "what if"/ planning models, however cumbersome spreadsheet-based planning models become. Often, and ironically, these same spreadsheet models "become the database," i.e., the data source for reporting and visualization products.

OLAP in the Organization

The term OLAP, for On-Line Analytical Processing, was coined by the same E. F. Codd who had endorsed relational databases as the best transactional data store. Codd later affirmed the fact that relational databases do not have the functionality to perform sophisticated analyses on transactional data, the core operational data of a business.

In order to work up data in a meaningful way, analysts need to prepare models that can quickly and accurately compare and contrast all manner of "multidimensional" (as compared to relational) **data**: for example, actual sales of a particular group of products, over time, within specific regions, as compared with the budget plan. Analysts must also be able to **create "what if" scenarios within their models**: by how much will the total cost of a product decline if a less expensive production material is substituted in the manufacturing process? And if the price of the product is lowered, and sales rise by ten percent as a result, by how much will revenue and profit be affected? These types of analyses, often **based on complex calculations**—whose results indicate how a business will perform according to varying circumstances—must be done as quickly as possible and made shareable among many users.

The multidimensional OLAP cube structure allows for particularly fast, flexible data-modeling and calculations. For one, locating cells is vastly simplified—an application can identify a cell location by name (at the intersection of dimension members) rather than by searching an index or the entire model as in a relational database. **Multidimensional models are able to incorporate advanced array-processing techniques and algorithms for managing data and calculations.** As a result, they can store data very efficiently and process aggregations and formula-driven calculations in a fraction of the time required of relational-based products.

The strengths of multidimensional OLAP technologies are not shared by RDBMS-centric products, whether "Relational OLAP" or even the newest in-memory products. ROLAP products have the drawbacks of additional ETL cost and slow query performance. In-memory products are best suited for relatively smaller data stores, constrained by how much RAM is available. As well—key point—there is typically extremely limited capability to create computational models quickly: outstanding BI dashboard graphics (at best) are the main selling feature of in-memory products, but they "can't do the math" required for key business indicators based on complex calculations. Furthermore, there is no capability to do "write back," no matter how dazzling the presentation layer.

Promises Not Kept from Business Intelligence/OLAP

We have considered how core operational data is collected and stored: overwhelmingly, in relational databases. As well, the weaknesses of front-end tools like report writers and in-memory dashboard products: they are either unable to accommodate sophisticated queries and/or accommodate the modeling (formula/plan) that analysts need to do, to pattern complex real-world data relationships. We also know that OLAP technology enables end-users to model multi-dimensionally in an optimized environment, as well as perform complex calculations and "what if" modeling.

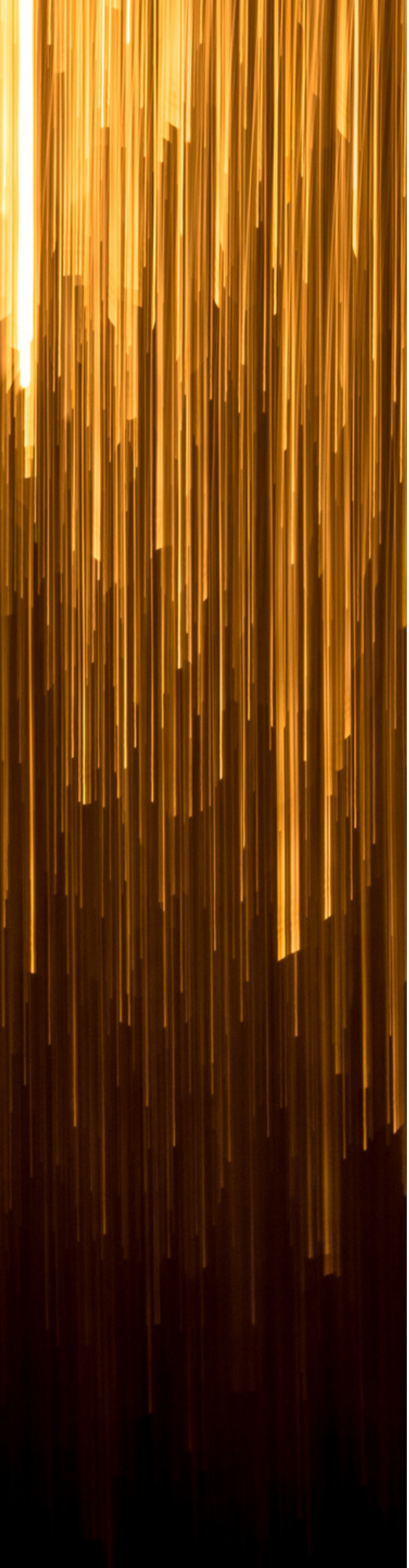
However, until the advent of Olation, even the most advanced analytical - OLAP products required significant—often very significant—effort to bring transactional data into multidimensional cubes. First it was necessary to prepare the transactional data into specialized form, aggregating and adjusting it for integration; then there was the ETL process of bringing the "analysis data" into a multidimensional database. Updating could only occur at intervals, often a lengthy overnight process. Finally, once data was brought from "there to here" (relational to multidimensional), OLAP products each required their own proprietary database, an anathema to the IT mindset.

The end result of an OLAP implementation was typically an independent multidimensional database entirely separated from a company's transactional system, which continued to receive and store key operational data.

From a business standpoint, the cost of maintaining a transactional system and an analytical system has often been so great that organizations, departments and user groups:

- resorted to Excel again, even with all its attendant problems, as the basic system for management information;
- made successive purchases of different Business Intelligence products, whether for different purposes or to fulfill the promise they expected to be kept from their first purchase; and/or
- spent a great deal of time and money overall, also on ERP or other transactional systems, because those systems are sold with similar promises to deliver Business Intelligence

How does Olation fit into this picture?



The Power of Olation: Relational Store and Multidimensional Modeling

Olation overcomes technological shortcomings by leveraging the relational core of systems already in place: it is a totally IT-manageable and brilliantly fast layer for end users that maintains the RDBMS as the data store, while utilizing an optimized multidimensional OLAP modeling engine for real-time aggregation and calculation results. Because these results can be stored in the relational database, virtually any front end—Excel, report writers, BI products (including dashboard visualization tools)—can be utilized for instantaneous reports and analytics.

Olation also supports “write back” from any user interface for planning (budgeting, forecasting) models; the data is captured in one place, in RDBMS tables. With data in a relational database (SQL Server, SAP HANA, Oracle, etc.), all data is live throughout the system and, once again, available to all front ends.

Olation as a Metrics Engine for Data Visualizations and Reports

Olation can also serve as a “metrics engine” for Qlikview, Tableau, Power BI, and other BI, dashboard and reporting tools. As such, Olation provides a foundation to maintain centralized access to all business metrics that matter to an organization—calculated values derived from actual transactional data (e.g., KPIs), plans and forecasts.

By implementing Olation along with other these other products, companies can manage their businesses not just from the historical standpoint that traditional BI delivers, but also from a combination of historical and plan data, which serves as a guide to the future they envision for their organization.

Using Olation as a metrics engine helps streamline data preparation along with adding significant value to an organization’s preferred BI and reporting tools by providing:

- **Dynamic, Real-time data**
  Working dynamically with RDBMS tables, Olation obtains transactional data dynamically and shows results in the analytical models in real time.

- **Automatic Calculations**
  Instead of manually transforming and computing data in end-user tools like Excel, aggregations and custom calculations are automatically performed in Olation. This minimizes error-prone manual operations and vastly improves the efficiency and accuracy of data.

- **Data Governance**
  Maintaining a single centralized data engine for all dashboard and reporting needs ensures consistency of data and metrics across all platforms, regardless of the presentation layer that is used; as well, security access rules to specific data sets can be defined in Olation and they will be carried over to 3rd party tools.

- **Excel Live-Link**
  The Excel Live-Link feature eliminates the need to manually update spreadsheets by creating a dynamic connection between spreadsheets and the Olation metrics engine. This is particularly useful for planning and forecasting wherein changes and updates are typically entered by team members and managers working in collaboration, each in their own template. The Excel Live-Link enables on-the-spot “write back” to the metrics engine and instantly displays changes not only in the spreadsheets, but also in connected dashboards and reports.

Key Technical Competencies

- **Olation Calculation Engine** that integrates seamlessly with Microsoft SQL Server™, MySQL, SAP HANA, Oracle and other relational databases.
- **True real-time Multidimensional OLAP** (MOLAP) that is not based on Relational OLAP (ROLAP) and therefore does not have the performance limitations of such tools.
- **Easy mapping of existing relational database structures** into corresponding multidimensional structures— and this process needs to be done only once.
- **Defined relationships between environments**, enabling intelligent drill-down into cubes, with corresponding drill-through into relational transactions.
- **Ability to construct multidimensional data types**, such as dimensions and cubes, with automatic creation of the corresponding relational structures.
- **Access to external data sources** by reference using a SQL query to the data or by staging and transforming the data in tables in the Olation database.
- **Full API supporting third-party access** to all Olation functions.
- **Total algebraic expressions** across all dimensions.

Olation:
Welcome to the New Age of Visionary Intelligence

From a management perspective Olation is the optimal solution for businesses that have taken an honest accounting and determined that they have data problems (data proliferation, data management, data under-utilization) that need to be solved and/or have decided they need a comprehensive Business Intelligence - Planning (budgeting/forecasting) solution. Olation is also suitable for businesses that have tried one or many solutions promising success but that have ultimately failed to meet expectations.

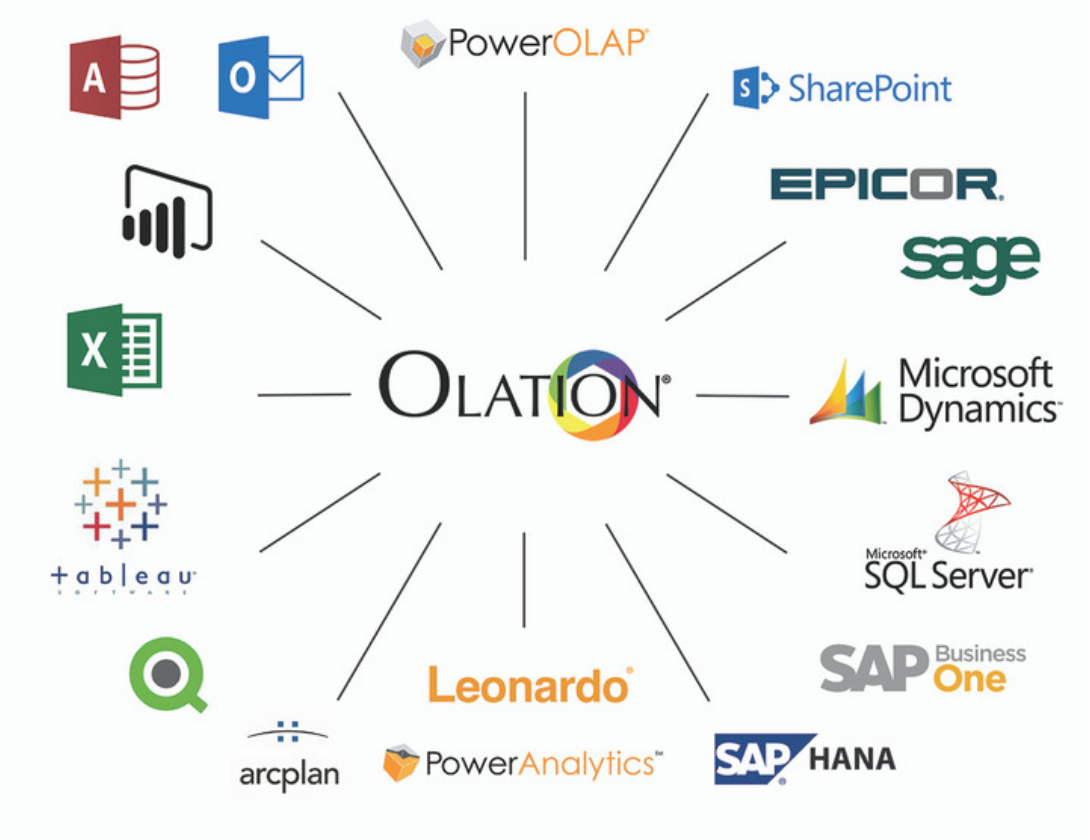
Olation therefore is a superb fit for businesses with existing solutions that provide only part of what they need, but still need more from these solutions and want to leverage their existing platforms. Significantly, this includes businesses that rely on proliferating spreadsheet systems for management decision-making.

By fostering user collaboration and data connectivity, Olation heralds a new age of Visionary Intelligence.

Key Business Benefits

Olation® creates dramatic business impact in a number of ways:

- Offers enterprise planning, analytical, and reporting information capabilities.
- Delivers true dynamism throughout the environment, allowing data to be changed bidirectionally.
- Serves as one single version of the truth, not a copy of transactional data that has been staged for Business Intelligence or other analytics.
- Reduces application development time and costs.
- Reduces application implementation costs and maintenance.
- Markedly increases end-user productivity.
- Leverages existing skill set of the end user by allowing Olation to be managed through existing tools, such as Excel.
- Acts as a connector/nexus technology between all manner of RDBMS, analytical – OLAP, spreadsheet and other systems.



About PARIS Technologies

PARIS Technologies Inc. is a data management, business intelligence, analysis, and reporting software company dedicated to providing innovative applications that improve the productivity and profitability of organizations through data-driven decision making.

PARIS is an acronym for Planning, Analysis, Reporting Information Systems.

PARIS Technologies, Inc.
200 Hyde Park, Doylestown, PA 18902
info@paristech.com
+1 (215)-340-2890