

ExPlan® - The Web Deployment Planning Application

ExPlan® is a Strategic Enterprise Management software platform that supports simulation-based business planning and helps managers plan collaboratively. The platform/application can be deployed on a server such that users can access the application over the web. The input and output pages of the user interface will be customized for the parallel trade model.

Some of the key features of ExPlan® include:

- Rich, interactive user interface
- Navigation scheme which captures the entire process of planning
- Connectivity to a variety of corporate data sources
- Enterprise web deployable
 - Centralized database
 - Centralized simulation
- Zero-cost deployment and updates - updates made in one place.
- Support of multiple database engines

The Strategic Planning and Enterprise Management Environment

ExPlan® provides the following capabilities for a user:

1. **Business Case** presents the user with the information about the operations and industry in which the organization is operating. It also shows a conceptual model of the operations and environment to help the trace causal linkages and impact points. It shows which variables relate to which and the direction of causality. It provides the user with the information required to take decisions.
2. **Management Objective Builder** lets users specify the objectives for planning such as growth targets and specific objectives for various initiatives.
3. **Scenario Builder** allows a user to specify values for all the scenario variables; provide a name for the scenario and save it. Users will be presented with a default scenario when they access the scenario builder for the first time. Under each scenario, all scenario variables will be given a default value which the users can modify. Users can build multiple scenario sets by cloning an existing scenario or modifying the default scenario. Scenarios can be shared with other users within ExPlan®.
4. **Strategy Builder** like the scenario builder, the strategy builder allows a user to create anew, clone, access or modify existing strategy or strategies. The user can also specify input values to the variables of the chosen strategy and step the simulation in time. While stepping the simulation through in time, the user can at the same time view the simulation results and modify the strategy accordingly. The reports can display both historical and the simulated data.
5. **Analyzer** provides the capability to compare results from multiple simulation runs. Results from multiple strategies can be compared to see how they work for a chosen scenario – in trying to identify the best strategy that meets the objectives. Similarly, results from multiple scenarios can be compared to see how a particular strategy holds up in a range of scenarios.
6. **Optimization, Risk Assessment and Risk Management** is an optional functionality that can be added, on client request, to provide the user the ability to *optimize* his/her

decisions; that is, to minimize or maximize the value of an objective, while satisfying some imposed constraints. The user can also *assess risk* to show the effect of any uncertain factors on the results of a simulation, through which he/she can disclose risks as well as opportunities. Finally, the user can *manage risk* by optimizing a model to achieve his/her objectives while keeping risks within some given thresholds.

The ExPlan® navigation scheme captures the following steps of the planning process.

1. **Management Objective:** Captured by variables market share targets, revenue growth rate, ROI, ROA, etc.
2. **Scenario:** Captured by variables which represent internal and external risk factors to the achievement of our desired objectives. Variables that managers typically have no control or influence over, but can anticipate. For example, major changes in demand, competitor actions, loss of a major resource, process failures, etc.
3. **Strategy variables:** Variables that are typically controlled by managers to make decisions. For example, price of products in each market, inventory/stock-up policy for each market, marketing and sales strategies, human resource strategies, etc.
4. **Performance Report Variables:** Variables that represent performance measures and the metrics we want to track in the model such as customer satisfaction, sales volume, revenue, brand image, stock price, employee morale, attrition rate, etc.

Other relevant features of the ExPlan® include:

- Along with standard reports that are pre-configured, users can create their own custom reports
- Users can share their scenarios and strategies with other users in the system
- Users can be categorized and assigned different user rights within ExPlan®
- ‘Super users’ (users with special rights) can modify certain assumption that are made in the model.(this change will apply to all simulations in the system as opposed to scenarios affecting only that simulation)
- additional key features include ability to perform variance analysis, trend analysis and a business scorecard

No-touch Deployment

One of the biggest advantages of browser-based Internet applications is in deployment. Only one copy of the software resides on a server and there is no other software required on the user’s computer except for a web browser like Internet Explorer. Updates to the application are applied in one spot and are immediately available to all users. The biggest drawback however is the richness of the user interface. Due to the proliferation of a number of popular browsers that usually do not all follow the same standards, an application developer must develop the web pages to use the least common denominator. This fact prevents the developer from creating rich user interfaces that are any where near the functionality provided by a Windows-based forms application. It is possible to create bits of functionality that can be downloaded and installed on the user’s computer, but this is typically a potential security nightmare.

With Microsoft’s .NET Framework, the best of both worlds is possible:

- the low cost of deploying an application, and

- a rich, Windows Forms user interface.

This is made possible in the .NET Framework by allowing .NET code to be automatically downloaded to the user's computer as versions change, but causing this code to run within a secure environment that can prevent the code from accessing local resources and possibly causing damage to the user's file system.

ExPlan® is a Windows Forms application that can be run on a client machine while a server maintains a copy of the most up-to-date version of the application. Each time the client runs ExPlan®, the software checks for any updates and downloads them automatically. All that is required for the user to install ExPlan® is to run a small setup program designed specifically for each deployment scenario that points the user's computer to the location of the server. The entire application is downloaded once the first time it is run and is then kept up to date over time.

Advantages of Using Microsoft .NET

The .NET Framework is the latest development technology and application infrastructure from Microsoft. It provides an expansive array of programming tools and application services that can be utilized to develop enterprise distributed applications. ExPlan® fully exploits these tools and services in order to provide a feature-rich application that can be run over the Internet while offering a robust user experience.

The Deployment Technology

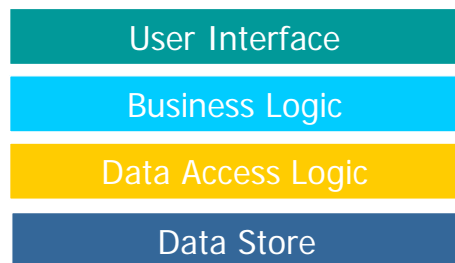
Object Oriented Design

ExPlan® was designed and developed using Object-Oriented (OO) approach, an industry-recognized methodology that allows the application architect to design a system that best emulates the real world, methodologies to improve extensibility, minimize re-design and development as the product evolves and to better accommodate change.

N-tier Application

ExPlan® is a tiered application, one that is segmented into layers that encapsulate a functional area of an application. The main layers or tiers are user interface, business logic, data access, and data store. ExPlan® was designed and developed with a clear logical and physical separation of the various tiers. This also provides for a number of different deployment scenarios which are described below.

The **data store** maintains the data used by the system. This might be a relational database such as SQL Server or Oracle. The **data access logic** layer communicates with the data store to retrieve data and manipulate it in the data store. The **business logic** layer is where all of the processes, rules and concepts about the solution are developed using the Powersim Studio™ modeling tool. This is really the heart of the solution. The **user interface** layer provides the interaction mechanism for the end-users, whether that interface is a browser, PDA or Windows Forms program. This layer allows the user to interact with the business layer to perform the work of the application.



Logically tiered application

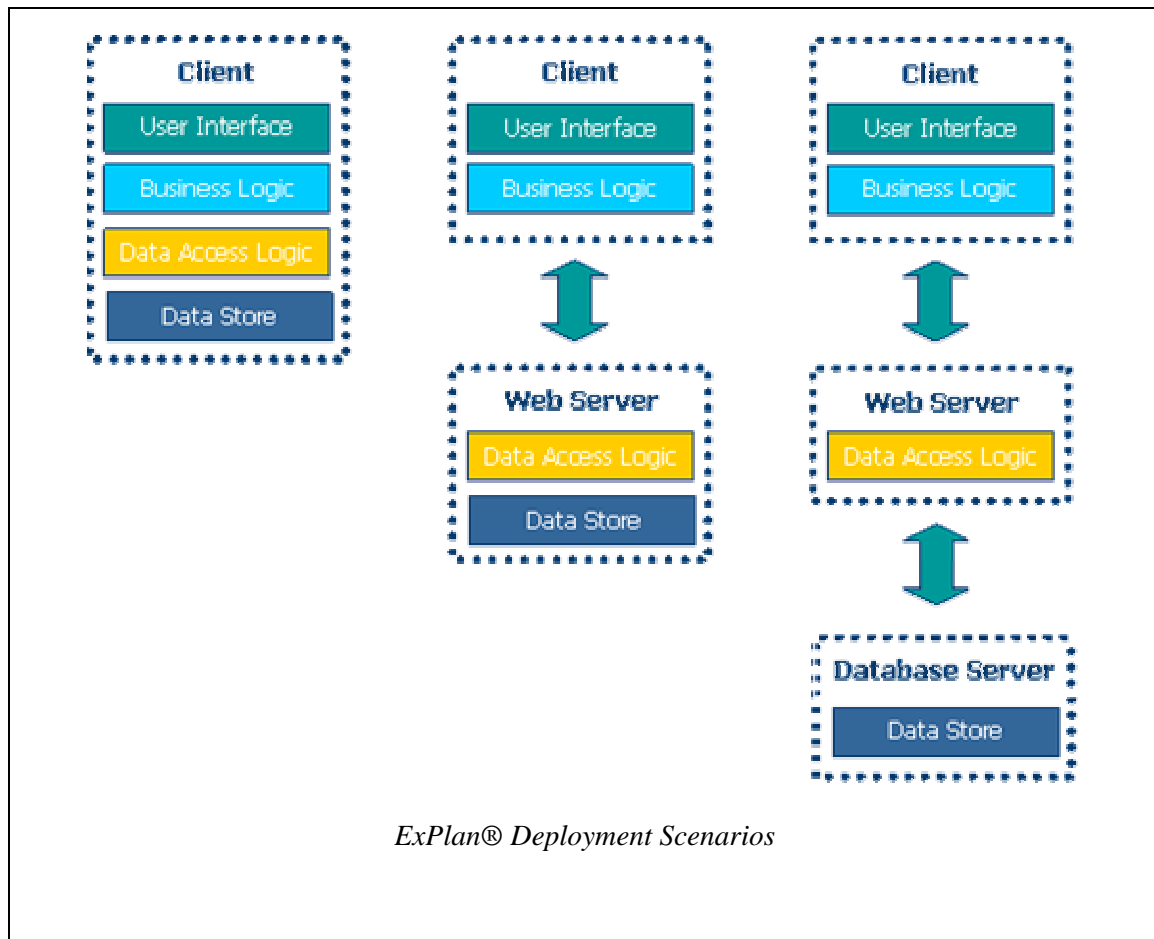
By architecting and developing ExPlan® in this manner, we can replace or improve individual layers with little or no impact on other layers. This is important, for example, in the case where a decision is made after the solution is built to provide a different user interface, perhaps a browser

instead of a Windows Forms application. If the user interface was not designed as a separate tier, it would impact the entire system and thus dramatically increase the cost of such a change.

Deployment Scenarios

The tiered design of ExPlan® allows us to deploy it in a number of different scenarios depending on the requirements of the application and the physical architecture of the framework to which the application is deployed. On one end of the spectrum, the entire application can be deployed and run on a single computer, assuming the external resources required by the application such as databases are available on the computer. Only minor changes to configuration files are necessary to make this work. No changes to the application itself are necessary.

However, ExPlan® as a Strategic Enterprise Management (SEM) tool can be deployed within a corporate environment and framework that may involve a number of separate computers such as a web server, application server, database server and the client's own computer. ExPlan® can be deployed in all of the following scenarios depicted in the diagram below.



System Requirements

Software Requirements

ExPlan® was developed using the latest Microsoft .NET Framework. Therefore, any computer on which any layer of the application will run must have the .NET Framework installed. The framework is publicly available free from Microsoft and the download is only about 20MB in size.

(NOTE: The Microsoft .NET Framework will ship as standard with all future versions of Microsoft Windows and is already shipping with Windows Server 2003. The .NET Framework is available for Windows 2000 and Windows XP versions).

To run the complete ExPlan® system, the following software is required. (The actual location of each software requirement will depend on the chosen deployment scenario). In a typical deployment scenario where the database is located on a separate server, the requirements are:

Client Machine

- Windows 2000/XP
- Microsoft .NET Framework 1.1

Server

- Windows Server 2000 or 2003
- Microsoft .NET Framework 1.1
- Internet Information Server 6.0 or higher is preferred although our data portal can be reprogrammed to accommodate other non Microsoft web servers
- SQL Server 7/2000, DB2 or Oracle 8/9i
- Powersim Studio SDK 2005 (necessary to execute the simulation model)

Hardware Requirements

The actual hardware requirements will depend on the complexity of the simulation model and size of the data store. However, the minimum requirements would be:

Client Machine

- IBM-compatible PC
- 1GHz+ processor
- 512MB RAM
- 20 MB free disk space

Server

- Dual 1GHz+ processors
- 1 GB RAM
- 10 GB free disk space