ExtraView™
Your Process. Your Workflow.

Using ExtraView to Consolidate Multiple Tracking Systems

Within a single database, corporations may configure multiple issue-tracking systems, working independently or integrated with each other. At the same time, ExtraView's flexibility gives wide latitude on which parts of a system may be accessible by different constituencies.

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Introduction

Business Areas within ExtraView allow companies to segment their business processing needs into different functional areas. Each area may have attributes that are shared with other areas, or it may use its own discrete attributes. For example, different Business Areas can be defined to track engineering defects, customer calls, project requirements, safety issues, Human Resource issues and issues being reported to the company's IT help desk. Some fields may be common across all Business Areas, such as the title and description of issues, but other fields such as product or version may be available only in a single Business Area. Also, some fields such as the Status field may have some values in common across all Business Areas, and some values that are unique to an individual Business Area. ExtraView is an example of one of the very few tools that can be used to consolidate the multiple tracking systems within an enterprise, while adding disparate functionality into each of these areas.

This principle is called multi-tenancy, where multiple applications may share the same underlying infrastructure. This leads to a highly efficient system where data may be kept private or may be shared. At the same time, system administration is kept to an absolute minimum with no need to maintain multiple server installations and with the administrator being able to manage the multiple tenants with a hierarchical structure.

Significantly, different Business Areas may have different rules, processes and workflows applied, offering a tremendous amount of flexibility to construct an enterprise-wide solution that provides individual solutions at the departmental level. This factor most often is the key decision point when implementing ExtraView, as to whether to utilize Business Areas, or to use other features. If your application requires similar business rules and workflow methods across the board, it is typically better to use features such as user roles and embedded layouts.

This is all achieved in a single database, making it easy to accumulate data across different Business Areas. For example, a senior manager may quickly find all the critical issues in his domain, irrespective of whether the issue is a product defect, a customer with urgent needs or an internal systems problem. At the same time, users further down the organization's hierarchy will only have access to data within their domain.

Business Areas are incredibly powerful when coupled with other features of ExtraView, such as security, reporting and alternative screen layouts. For the first time, companies can use a single database to track many different types of issues. You will have the ability to define different Business Areas with different workflow and process steps, different fields and different reports. One user may easily be constrained to work only within a single Business Area – not even being aware that other Business Areas exist, or users can be allowed to access multiple Business Areas, consolidating information across different functions of the company.

Embedded Layouts within ExtraView allow companies to split a single Business Area into different screens for creating and maintaining issues, dependent upon the value of a field within the *Add* or *Edit* screen. Choosing a value for the field on the master *Add* or *Edit* screen, will cause ExtraView to update the screen with the fields on an embedded layout that are associated with that value. For example, choosing a *category* of *hardware* may cause the screen or part of the screen to be populated with a different set of fields than choosing a *category* of *software*. Typically the same set of business rules will apply to all the layouts and embedded layouts within the Business Area.
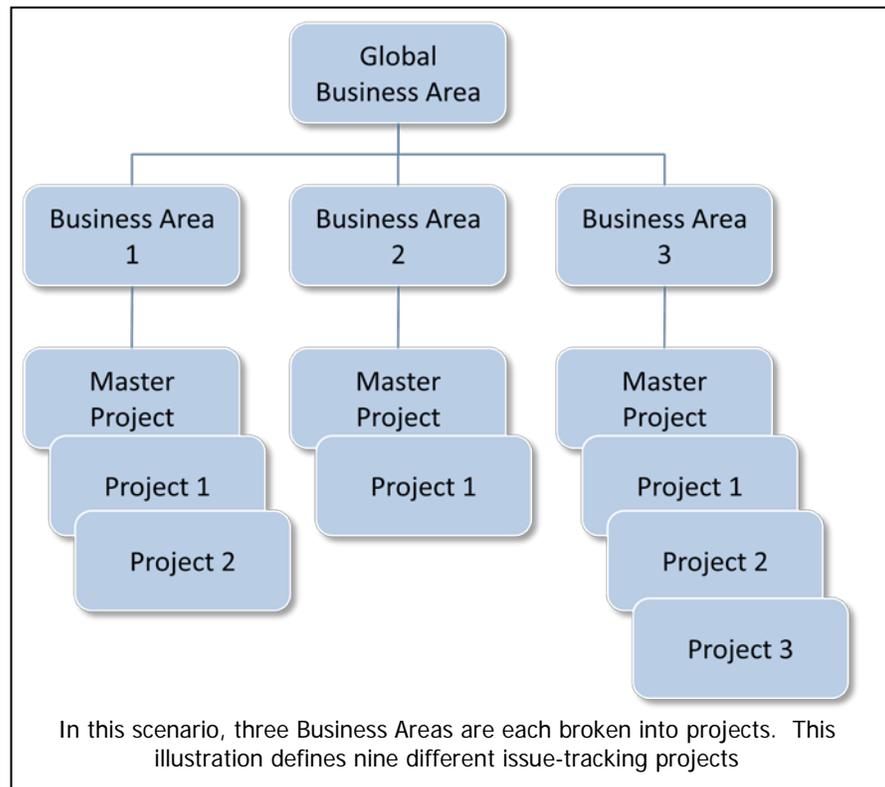
What is a Business Area?

A Business Area has the following attributes:

- The Global Business Area refers to the fundamental Business Area from which all other Business Areas inherit their default characteristics and behavior. By convention, issue data is not stored within the Global Business Area. It is simply used as the place from which other Business Areas will inherit their characteristics

- Each Business Area uses a set of screen layouts, for the *add* and *edit* issues processes. If you do not define a screen layout at a Business Area level, then it will inherit the properties of the same screen layout from the Global Business Area. The fields within each of these processes may be different from the Global Business Area

Within this scenario, three Business Areas are defined, each with independence from the Master Business Area
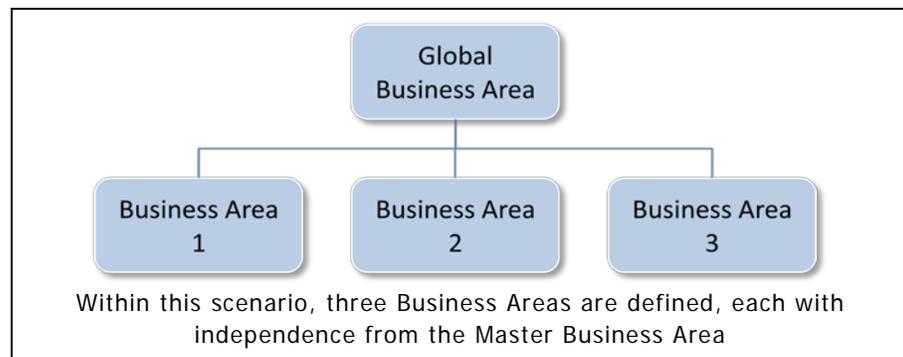
- Each new Business Area that is defined will inherit the characteristics and attributes of the Global Business Area, until the administrator makes alterations at the new Business Area level. When they do this, the altered characteristics and attributes will belong only to the new Business Area

- Business Areas are the highest level object within ExtraView. Examples may be Bug Tracking, Customers, Customer Support Issues, Assets, License Tracking

- Groups of users may be granted access to one or more specific Business Areas, and they may be prohibited from accessing any other Business Area

- Any Business Area can be broken into sub-Business Areas, known as Projects within ExtraView. Each of these Projects works exactly like an individual Business Area. Examples of Projects within a Business Area may to break the Bug Tracking Business Area into separate projects with separate fields and processes to handle Hardware Issues, Software Issues and Documentation Issues

- There is a Master Project defined within each Business Area. By convention, this is not used to store any issue data, but is a placeholder where you can define all the common characteristics, layouts, fields, rules, etc. that you want to be inherited by each of the other Projects within the Business Area. The Master Project itself inherits its characteristics from the Global Business Area.

In this scenario, three Business Areas are each broken into projects. This illustration defines nine different issue-tracking projects

Inheritance

Inheritance simplifies greatly the setup and maintenance of Business Areas and Projects. You may define and set the permissions for an object such as a field or a layout, at the global level. Any individual Business Area will inherit the attributes and characteristics of this object and use it in the way it was defined. In the same manner, Projects will inherit these characteristics from their Business Area. A change to the object at the global level is immediately applied to all the Business Areas and Projects that use the object unchanged.

The administrator may change the object in one or more Business Areas and/or Projects, thus breaking the inheritance chain and allowing the object to have a different set of attributes at that level. If the object is changed at the Business Area level, then the Projects contained within that Business Area will inherit the attributes of the Business Area.

Thus, you only need to setup and maintain the object at the global level, or at a level where you want to change its attributes. If you want a Business Area to use an object without change, then no action or setup is needed.

Some Practical Examples

TechComp is a growing technology firm. To aid in their product improvement process, they have a number of key business issues that they need to track:

- The engineering and QA teams need to track defects discovered during the testing phases of product development

- The marketing team want to enter and track new requirements for future revisions of the product

- The support team want to enter customer issues as they are reported, and want to be able to resolve issues within their own resources, or pass the issue to the engineering team, if it is determined that the issue is a product defect.

TechComp can use ExtraView for all these needs. A separate Business Area is created for each of the three tracking areas. Within each Business Area, fields can be created that are specific to that departments needs. For example, the support team may have customer contact details, and the marketing department may want to plan future versions around fields that determine the relative importance of the features and the engineering team may need to create a structure to record each of the versions of product affected by the defects found. However, fields such as owner, title, description and status may be common to all Business Areas.

BigCo is a multinational enterprise with seven operating divisions. Within each of these divisions, independent development of BigCo's

products takes place. Each division has very different products, and different needs to track different attributes of the products, with differing business rules.

ExtraView can be configured, using a different Business Area for each of the different operating divisions. Within each Business Area, a project is defined for different products that require different rules. ExtraView supports this complex hierarchy with ease. For example, where divisions are similar, they can share the Master Business Area's definitions. Where projects within a Business Area are similar, they can share the Master Business Area or Business Area's definitions. Only where the attributes of a project or a Business Area are different from its parent are the differences implemented. This is where ExtraView uses inheritance to simplify the definition of a new Business Area or project.

How are Embedded Layouts Used?

Many ExtraView users can obtain all the flexibility they need, using embedded layouts alone as opposed to setting up multiple Business Areas and Projects. For example, embedded layouts can be used to offer different fields within an input screen form, dependent on the value in one of the fields in the form. For example, you may define the *add* screen to have a *Category* field. When the category named *Software* is chosen, all or some of the remaining fields on the screen may contain fields relevant to tracking software defects. When the category named *Hardware* is chosen, the fields that referred to *Software* can be replaced with fields relevant to tracking hardware defects. This example leverages the "Visible If" layout attribute, so you can make an entire embedded layout's visibility based upon the value selected by a user.

Embedded layouts can be a labor-saving device. For example, you may want to set up a batch of related fields on a single layout, and then embed this same layout within many *Add* and *Edit* layouts across one or more Business Areas. For example, you might set up an incident reporting system for a pharmaceutical company, and want to use the same embedded layout to collect patient information, whether you are on an *Add* or *Edit* screen.

Embedded layouts are simpler and quicker to implement than Business Areas. They are ideal to use in circumstances when all the users have visibility and access to all the data. Business Areas are used when you need to provide structure to the data and structure to accessing the data or with differing workflow requirements for each Business Area.

An important point to note is that the same field with write permission can be placed on layouts embedded within different layouts on different Business Areas, but you cannot place the same field on different embedded layouts within a single Business Area.

You may use a combination of Business Areas and embedded layouts within an ExtraView installation.
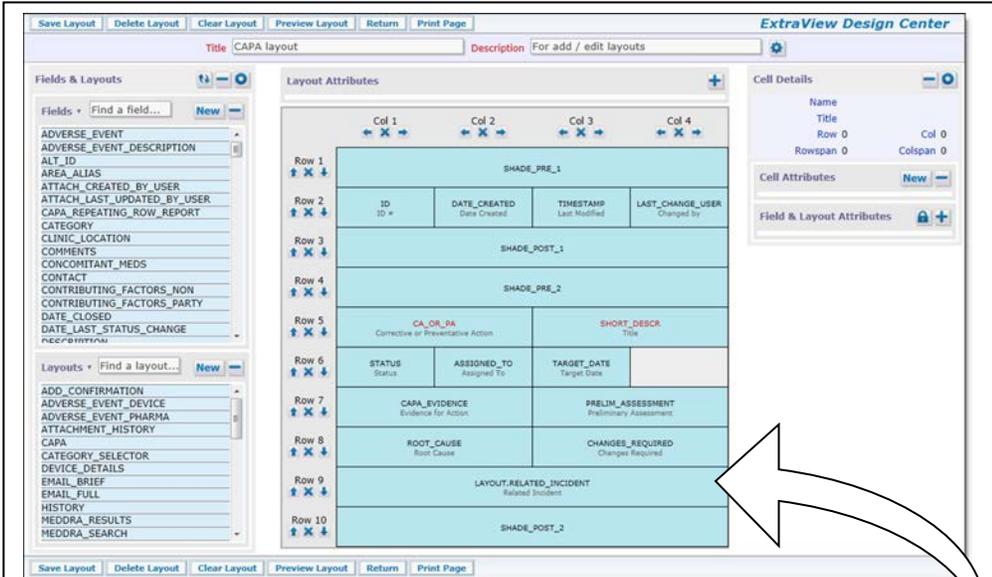
Visualization of how the administrator embeds a layout within in a form.
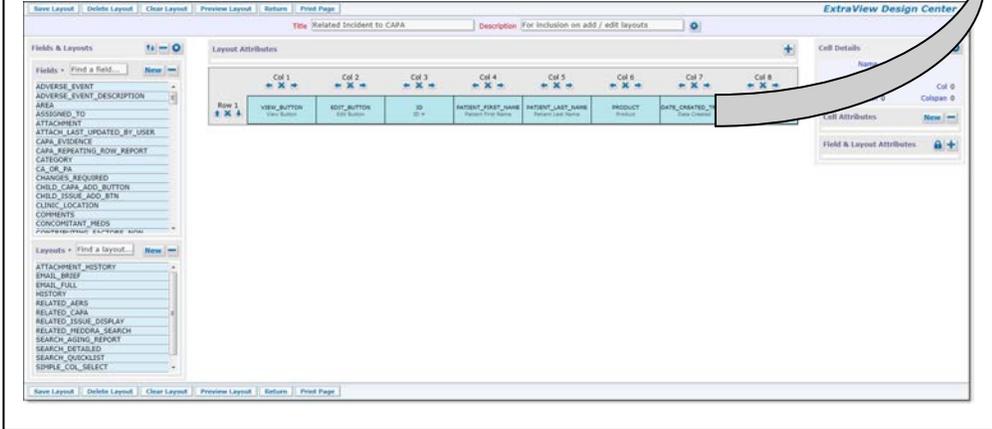
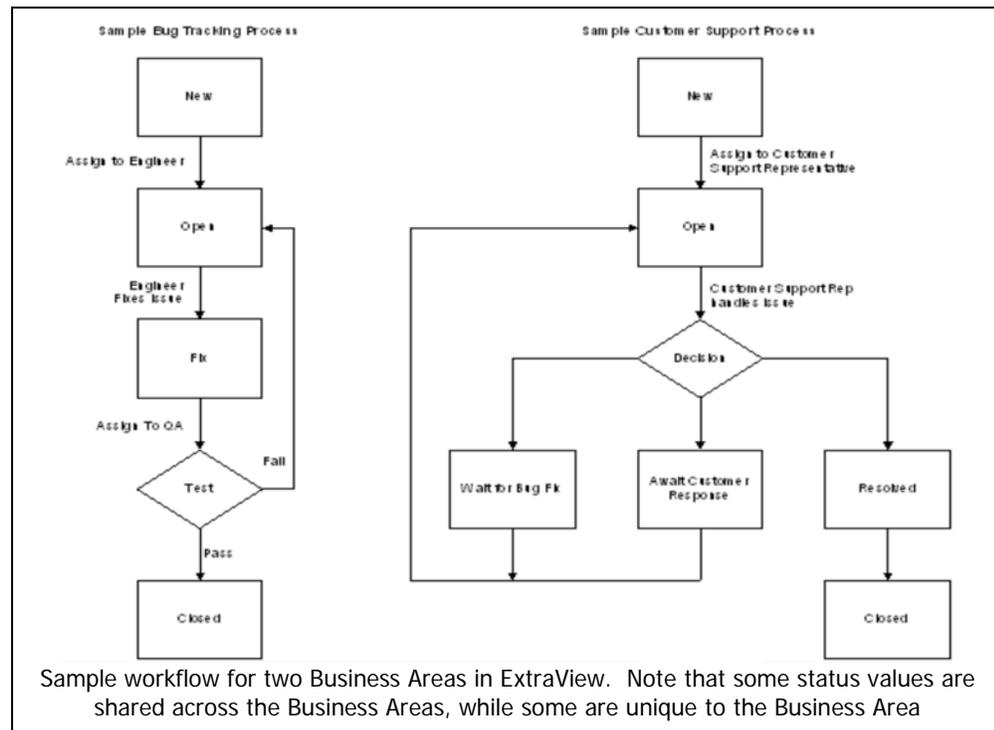## How do Business Areas Compare to User Roles?

Different *Add* and *Edit* layouts can be defined for each user role in ExtraView. The most typical use of this feature is to design attractive and well thought out layouts for each user role. For example, your *Customer* user role may only have a handful of fields, while the *Engineer* role may have a large number of fields in a very different layout.

Also, note that layouts configured at the user role level may exist within individual Business Areas.

How does Workflow Interact across Multiple Business Areas?

Any workflow can be created for any individual Business Area. However, it's likely that different business areas will utilize different values for the Status field. The Status field is important within ExtraView, as it has special properties, such as handling workflow.

For example, you may need these two separate workflows within your organization, within the Bug Tracking Business Area and within the Customer Support Business Area:

Sample workflow for two Business Areas in ExtraView. Note that some status values are shared across the Business Areas, while some are unique to the Business Area

To achieve workflow similar to this within ExtraView, the administrator takes the following steps:

- Creates a master list of all status values that are required, across all Business Areas
- Creates an Allowed Value relationship between the AREA field and the STATUS field. This allows different statuses to be chosen for each Business Area
- Create the Allowed Value list and allocate the different valid Status values to each Business Area
- Define the workflow for each Business Area using the Status Change Rules feature within the Workflow section of Administration

Note that at the decision point in the workflow, the Customer Support Representative is able to clone the issue and change the new issue's Business Area to the Bug area where it will flow through the bug process. The Customer Support Issue can then be placed in a Status of 'Waiting for Bug Fix'. Further, this process can be complemented by creating a relationship between the Bug and the Customer Support Issue, allowing the viewer of the Customer Support Issue to instantly see the current status of the Bug as it is being fixed by the engineering group.

How does Security Impact these Features?

Security overrides all the ability to define different Business Areas, projects and user roles. Every field within every Business Area and Project can have a different security setting (no-access, read-only access, read-write access). The security settings may be set at the highest level, i.e. at the Master Business Area level, individual Business Areas, individual Projects, or at the level of a user role within a Business Area or Project. The administration of security keys utilizes an inheritance-based model, making it simple and speedy to use the default setting or to override the setting in any specific Business Area or Project.

Permission may be give, by user role, to each Business Area and each Project. This allows a broad restriction in that different users may be restricted to only seeing and updating issues stored within Business Areas and Projects to which they have permission.

You should also consider a feature named **Company Name Security**. When this is turned on, users whose account belongs to a specific company name can only see and update issues belonging to the same company name. The exception is that the internal users of the company that has licensed ExtraView may see all issues, regardless of the company name. This allows the setup whereby all the internal users within your company can see and update all issues, yet your customers can only see and update their own issues.

Privacy

Privacy is another concept that governs which users see which issues. This visibility is regardless of the Business Area and Project within which an issue is stored. Individual users are assigned to one or more privacy groups. Any issue, regardless of its Business Area and Project may be assigned to a privacy group.

Before a user can see and update an issue, he must belong to the same privacy group. This is orthogonal to the use of permissions within Business Areas and Projects. Both features may be used together for advanced purposes in locking down the visibility of issues to different constituent groups of users.

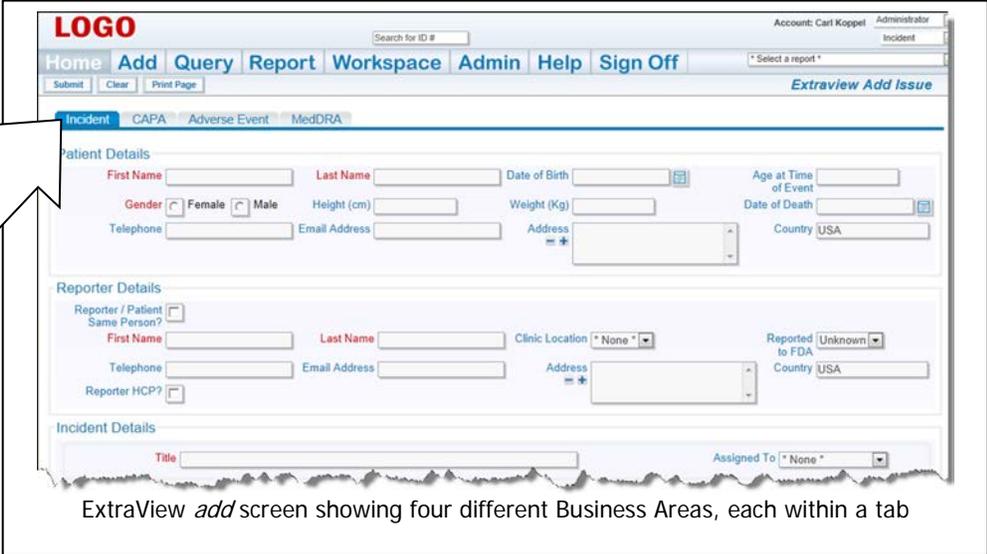## Can an Installation Use a Combination of Layout Features?

Yes! Without compromise, an ExtraView system can be built that uses a combination of Business Areas, projects, user roles and embedded layouts.

Are there any limitations?

ExtraView supports an unlimited number of Business Areas, projects, user roles, layouts and embedded layouts. Each of these objects can have an unlimited number of fields.

What do Business Areas look like within an implementation?

There are many ways that the administrator can configure Business Areas. Firstly, an individual user role can be constrained to operate only within a single Business Area. In this case, the users within this role will not even be aware that different Business Areas and/or Projects exist. The administrator will confine them to a single area of working, such as with defects, or customer calls.


ExtraView *add* screen showing four different Business Areas, each within a tab

The ExtraView *add* and *edit* screens can be configured to show each Business Area as a separate tab on the display. In this case, different fields will be shown, according to the tab currently selected. Any combination of Business Areas (or tabs as they will appear in the above screen shot) may be accessible to any group of users.

Note that on each of the sample screens shown, there are fields that are in common and fields that are different. With one click of a mouse, an issue can be switched from one Business Area to another, e.g. from a *Customer Issue* to a *Defect*.

The same ExtraView installation, showing the *edit* screen for the CAPA Business Area
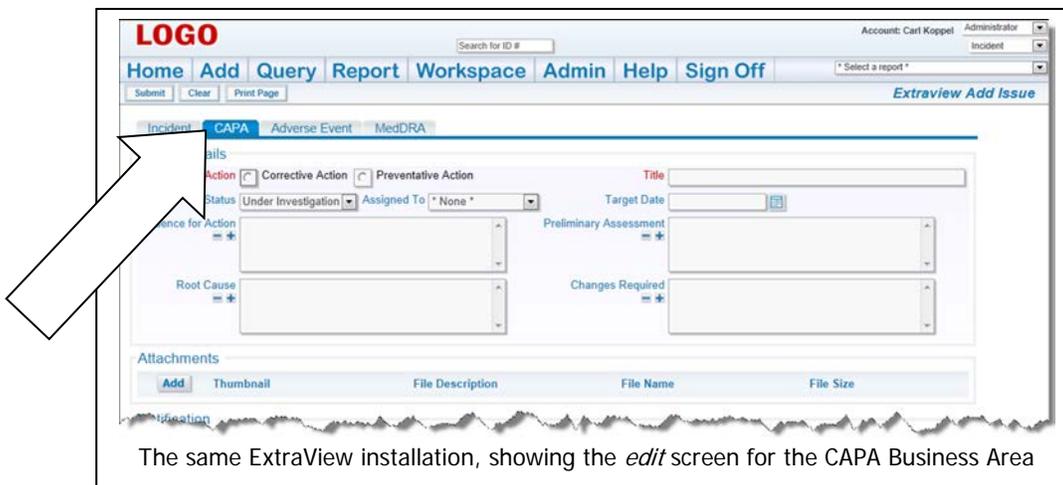
The ExtraView Database Architecture

The features described in this paper are made possible with ExtraView's unique architecture. It's critical to note that when additional business areas, projects, fields or other objects are added to ExtraView, the underlying database schema never, ever changes – all customers share the identical schema. This is a key strength of the product, offering the following advantages:

- Support of customer installations is simplified, as there is a known database environment
- The limitations of the underlying database are often overcome. For example, there are no restrictions in how many fields may be added, or how wide the columns within a business area may be
- Upgrading installations is simplified, as there is always a known start point and end point, with no customer changes to interfere
- Performance is superb, as all critical information over an entire set of business areas (i.e. tracking systems) is in a single table, and supplementary information is one database "join" away from this table
- ExtraView is more independent of the implementation of databases from different vendors, as we are less reliant on the features of each implementation

Extending ExtraView

A significant feature of ExtraView is its ability to be extended, without altering the base source code of the product. ExtraView offers a very rich range of features, but if your organization has the need for a specific feature not supported by the product, there is no need to wait until the feature has been implemented by the author. Without altering the base source code of ExtraView, you can extend functionality with the "UserCustom" feature, either within your organization, or by utilizing ExtraView's Professional Services team. There is a full set of API's including SOA and WOA that make it simple to integrate ExtraView into your existing suite of enterprise applications.

Summary

ExtraView offers tremendous flexibility in handling the needs of simple or complex enterprises. Other technologies do not have the depth of ExtraView, many are not truly architected for the web, or just do not scale to the same size. ExtraView customers can be certain that as their needs grow and change, the product will always be able to adapt, and provide a truly adaptable, enterprise-wide solution.