

**StatSoft®**  
**Business White Paper**

**The *STATISTICA* Enterprise-wide  
SPC System (SEWSS):  
The Analysis Platform for Data Collection  
and Storage Systems  
(Part 2 of 3: Interactive Filtering)**

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## Table of Contents

Executive Summary.....	3
Purpose of SEWSS .....	3
Conceptual Introduction.....	4
Example: Interactive Filtering .....	5
Conclusions.....	10

## Executive Summary

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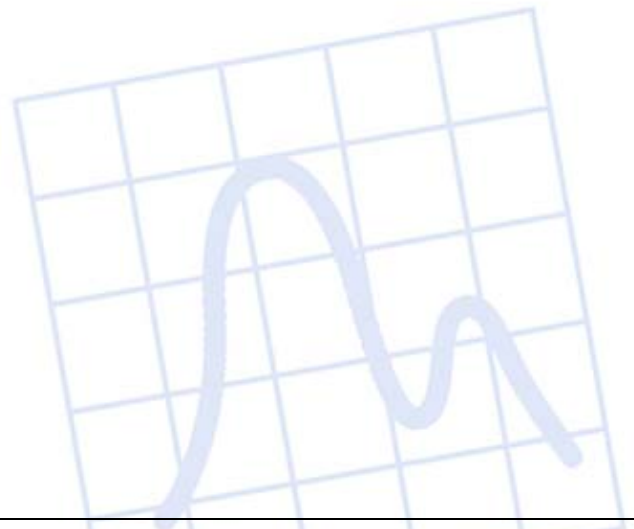
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StatSoft, provider of the **STATISTICA** product suite, is committed to partnering with our customers in meeting our mutual goal of the design and production of products of the highest quality and reliability. The **STATISTICA Enterprise-wide SPC System (SEWSS)** is the ultimate analytics platform for research and development (R&D) and quality control. In collaboration with our customers, we learned that the major barriers to the use of analytics are:

- **Ease of use:** Regardless of the power of an analytics platform, if it is not intuitive, the vast majority of users within an organization will not adopt it.
- **Integration with Data Repositories:** Access to data often involves a time-consuming collaboration between the individuals who know the definition of the data they need and those individuals who understand the data repository and the approach to extracting the required data set.
- **Collaboration:** Research and Quality Control activities within an organization are rarely a single individual operating in isolation. Instead, these activities are programs that require collaboration among many individuals.

With this in mind, StatSoft has developed and refined **SEWSS**, first released in 1997, over many years and iterations.

**SEWSS** provides a comprehensive suite of data mining, analysis and visualization tools all within a single software platform. This platform provides role-based user interfaces, analysis templates for the automation of standard analyses and reports, and collaboration through data and results-sharing within a secure environment. Every worker, technician, analyst needs access to data and analytical tools. **SEWSS** provides the platform to service those needs.

This paper is the first in a series of three papers that provide an introduction to the major features of **SEWSS**, specifically focusing on its capabilities for integrating with your existing data repositories. The benefits of these features are that your organization is now provided with the necessary tools to make full and continual use of the valuable data you are collecting.

## Purpose of SEWSS

StatSoft understands that for many organizations the status quo is not good enough in terms of taking best advantage of the wealth of data being collected and stored. There is an acknowledgement that greater integration of analytical techniques is needed, but there is a fear that it would be expensive to develop and implement such

a system and its intended users may lack the necessary training to be able to make the most use of it.

Many organizations have a wealth of existing data. Personnel within these organizations would benefit by utilizing these data, but the barriers and time commitment to do so prevent it. What is needed is an integrated system of data querying, data mining, data analysis and data visualization techniques all within a secure, multi-user, collaborative environment.

Imagine a software system where an individual simply a) has the requisite permissions and b) clicks on an analysis listed in a folder structure to be presented with the results based on the latest data. She doesn't need to know where the data are stored. She doesn't need to know that the data are being aggregated from two repositories. She doesn't need to know that the product specifications were queried separately once she selected the product and test of interest. All that she needed to know was the name of the analysis that she wanted to conduct.

*That is exactly how SEWSS works!*

## Conceptual Introduction

**SEWSS** is a multi-user software application that provides a rich palette of features for use within your organization. At the highest level, the following are the major functional pieces of the **SEWSS** system:

- **Connections to Data Repositories:** **SEWSS** is configured within your organization to recognize the relevant data repositories that store the data of interest for mining, analysis and visualization.
- **Analysis Templates:** **SEWSS** stores definitions of analysis templates that can be manually or automatically initiated. These templates are either “hardcoded” with all of the analysis parameters specified in the template, or can be “parameterized” to allow the user of the template to select which data and specific analyses are of interest.
- **Interactive Filtering:** **SEWSS** provides a robust set of filtering capabilities, to hide the user from the complexities of the data structures and Structured Query Language (SQL). Instead, the user is presented with an easy-to-use menu of values (e.g., product name, Date/time range) from which she may select to determine the data of immediate interest.
- **Reports:** **SEWSS** provides customizable report templates to define the page layout and format for reports to be produced on a regular basis. **SEWSS**

includes a scheduling application to manage the automation of the production of these reports at specified time intervals.

- **Security and Permissions:** In a multi-user software application, treating everyone the same is not appropriate. Roles and responsibilities within an organization differ from individual to individual. **SEWSS** stores account information about what the user should be able to view, modify and perform while utilizing the system. One major contributor to the system's ease-of-use is that users do not see features and reports that are irrelevant to them.

The **SEWSS** system provides the analysis companion to your data repositories, utilizing the above categories of capabilities. As an off-the-shelf software system, **SEWSS** provides general objects that are configured through its administration user interfaces. The major **SEWSS** objects are introduced immediately below. An understanding of the terminology used in **SEWSS** is an important foundation for the example that follows in the next section.

- **Connections:** Connections store the definition of a particular data repository and the method by which data are accessed.
- **Profiles:** Profiles are collections of one or more queries that define the data to be analyzed. Profiles also contain metadata for storing the necessary properties of the data to allow **SEWSS** to treat them appropriately for analytic purposes (e.g., that a particular column contains data, another contains the Product Name to be used for filtering, etc.)
- **Monitors:** Monitors are analysis templates that define the parameters of the analyses to be performed, including which analytical techniques to run and their respective settings.
- **STATISTICA Visual Basic:** **SEWSS** is implemented as an object-oriented application with an Application Programming Interface (API) provided in Visual Basic for Applications (VBA). **SEWSS** customizations are available through the 11,000+ functions in the **STATISTICA** object model.

## Example: Interactive Filtering

This section provides an example of the use of **SEWSS** as an analysis platform connecting with your organization's data repositories. This example builds upon the one presented in the first paper in this series entitled "Part 1: Database Integration." You should consult that example for additional details not discussed in this focus on interactive filtering.

**SEWSS** provides flexible capabilities to allow system users to interactively define the data of interest for a particular analysis. When setting up Profiles, the system

administrator defines which fields are filterable. In addition, there are several options regarding the properties of filterable fields.

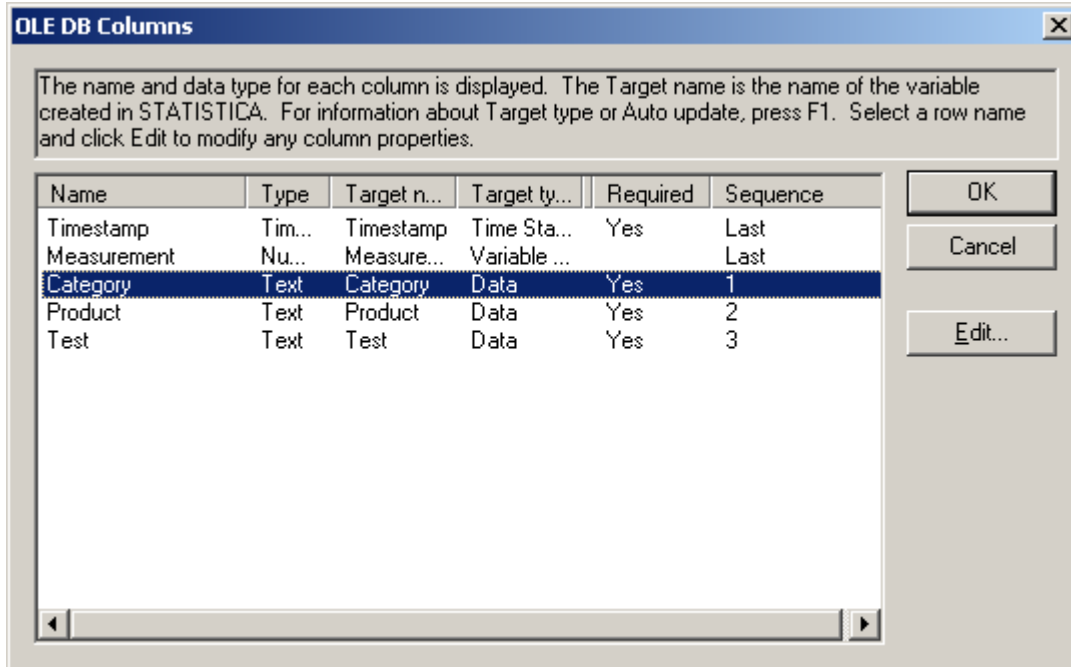
The system administrator defines whether filtering on the field is mandatory or optional. A good example of when a mandatory option is useful is when the base query within a profile does not restrict the date/time range for the data to be retrieved. In that case, making the date/time fields mandatory for filtering prohibits the possibility of a system user mistakenly requesting the entirety of data in the database.

An additional option is whether the filtering is “flat” or “hierarchical.” “Flat” filtering is when all of the filterable fields are presented in an integrated user interface for the user of the analysis template to select the values of interest. In this case, the user has the ability to select “Machine = A” and “Technician = George”, for example. Flat filtering is useful when the filterable fields do not follow a natural hierarchy. In this example, for instance, George may collect data on all machines and so any ad hoc filtering selections would be relevant.

In the cases where the filterable fields are not independent, the **SEWSS** system administrator may define “hierarchical filtering.” Hierarchical filtering is when the filterable fields are displayed in a defined sequence when the analysis template is run. Subsequent values on filterable fields are restricted by previous selections. An example best illustrates the value of the hierarchical approach. It is common that an organization that manufactures products has defined product categories, products within each category, and specific tests run only on certain products. Hierarchical filtering in this case would allow the user first to select a product category and then would show only the products and tests that are relevant.

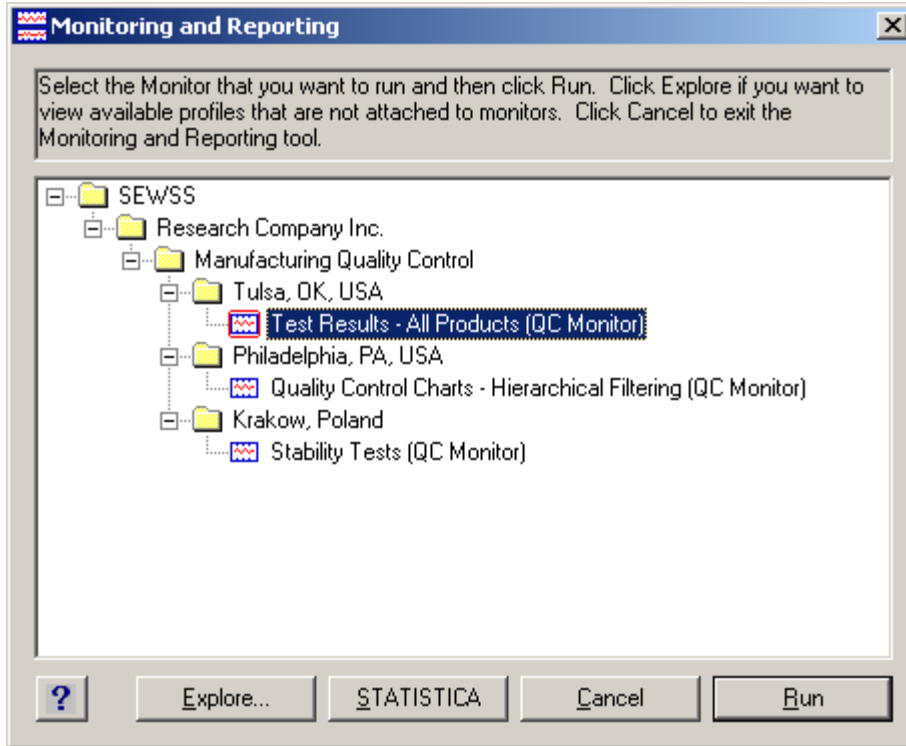
The following example demonstrates the logic and **SEWSS** facilities for the above mentioned case. Within the Profile Wizard in **SEWSS**, once a Query is defined, the system administrator has the option to define the metadata stored in the system to describe the properties of that Query. In **SEWSS**, those column properties are referred to as “Target Properties.”





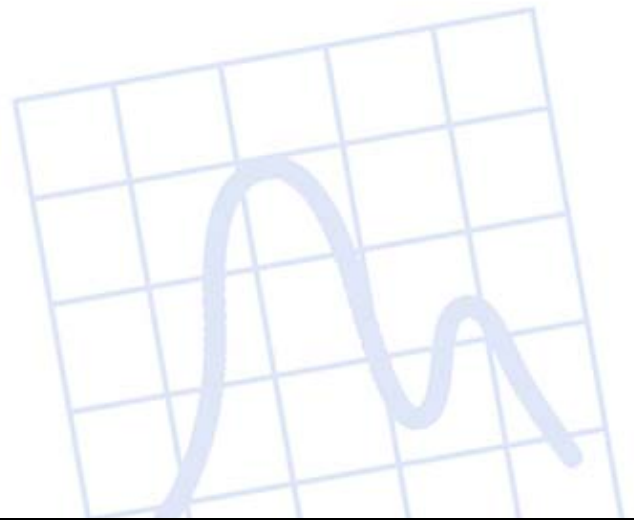
In the above user interface, the most relevant properties are called “Required” and “Sequence.” Required indicates that the user of an analysis template built based on this Profile must select one or more values on this filterable field. Sequence is specific to hierarchical filtering, defining the order in which the filtering prompts are displayed. You can see above that Category, Product, Test and Timestamp are all required fields and will be presented in that respective sequence.

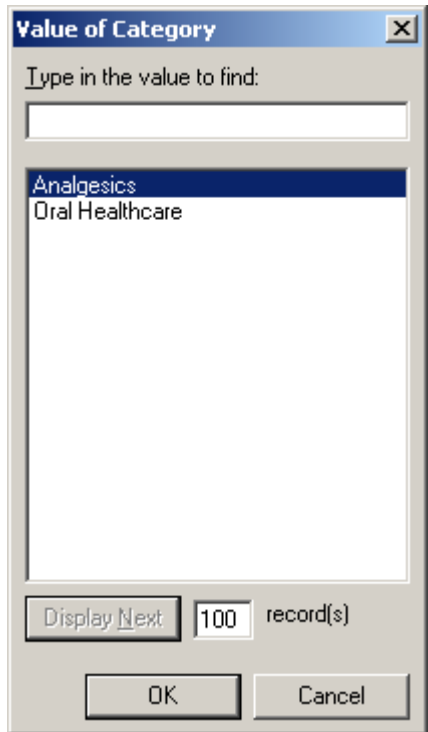
When the analysis template is run, the end user sees the listing of filtering prompts before the analysis is executed.



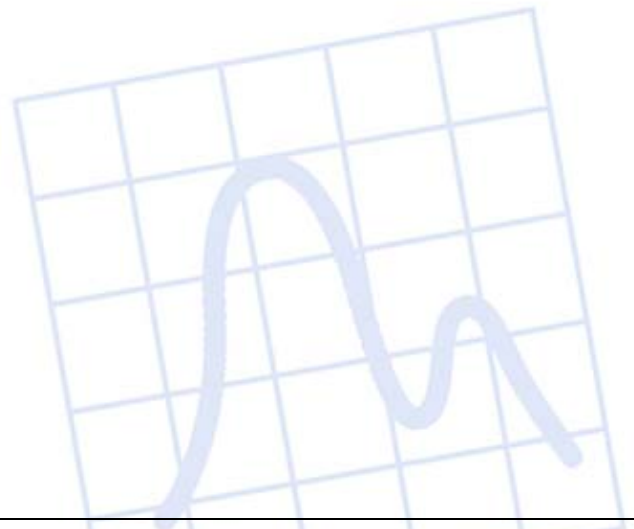
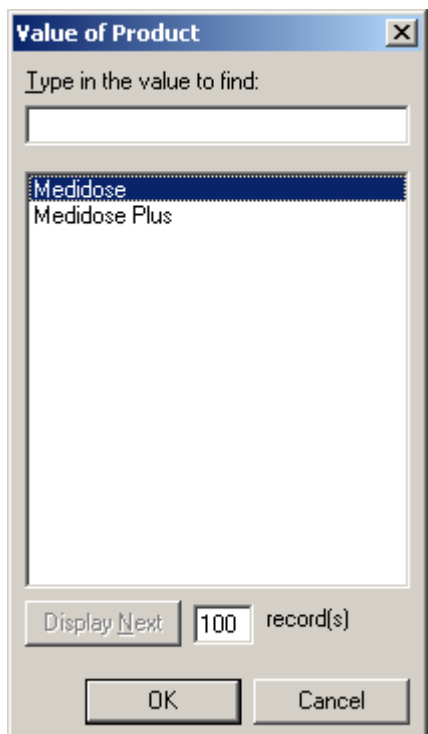
First, the user selects the desired analysis. In this case, a single “foundation” Profile allows for the retrieval of all test data for all products. It is up to the individual user’s needs as to which test data for which products and timeframe are of interest. This capability makes the system extremely flexible in that a single analysis template can service many analysis requirements.

Once the analysis is run, the user is presented with the option to select a Product Category, as shown below:





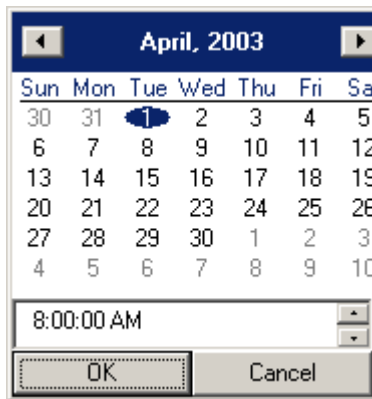
Once selected, the user is then presented with a listing of products in that category.



Recall that the Profile indicated that all filterable fields were mandatory. If the user attempts to run the analysis without selecting values on all filterable fields, then a reminder is displayed.



For date/time selection, an easy-to-use calendar interface is displayed.



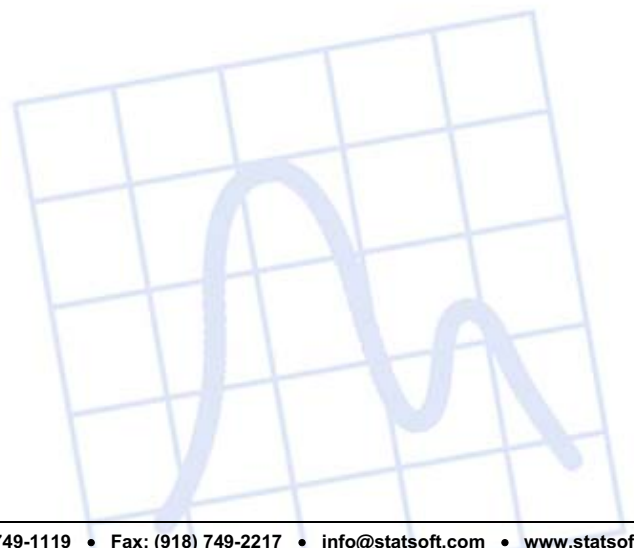
Once the date/time range is selected, the analysis is run and the results are displayed. The hierarchical filtering prevents the selection of inappropriate combinations. Mandatory filtering prevents running analyses mistakenly on the entirety of the database (e.g., without specifying a date/time range) or across heterogeneous data sets (e.g., across all products within a category).

## Conclusions

**SEWSS** provides a powerful, flexible and easy-to-use software platform for the data mining, analytics and visualization needs of your organization. This paper provided an introduction to the features and benefit of **SEWSS** along with an example of its interactive filtering capabilities. Interactive filtering allows for an analysis template to service many analytic needs by allowing the user to define the data of interest when it is run. **SEWSS** provides many useful interactive filtering capabilities including simple to use filtering user interfaces that require no knowledge of Structured Query Language (SQL).

For more details about **SEWSS** capabilities and for a customized demonstration of the system for your needs, please contact StatSoft at 918-749-1119.

This paper, “Part 2: Interactive Filtering”, is the second in a series that address the database integration capabilities of **SEWSS**. Please refer to the other two companion papers, entitled “Part 1: Database Integration” and “Part 3: Applying Specifications”.



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