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FINAL THESIS REPORT

**SAP QUERY REPORTING TOOLS**

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## I. Abstract

Knowledge is power. However, in order to enable the companies to maximize the benefits from it, the data has to be presented in a comprehensive way. Humongous flows of data is generated every day, and then stored in various databases and folders. The challenge is to retrieve the essential data, transform it into a useful knowledge. As the company has the required knowledge, it is able to make useful strategic decisions to remarkably improve its activities.

Vaahto Roll Service Inc, a Finnish company operating in the paper industry, has faced the same challenge. It implemented the MySAP Business Suite application, allowing the company to make proactive, knowledge-driven decisions to speed up and optimize its processes. All the data is stored in this integrated system. So the data exist, but how can we retrieve it from the system and eventually present it in a comprehensive way, in order to get most out of it?

This paper makes an expedition to the electric data repository of the company, the data warehouse, possessing an objective to extract the desired, hidden data from the system and finally represent it on a single report. A specific focus will be on the SAP Query-tool; blessing for those you do not have the talent to utilise the complicated ABAP-coding. SAP Query tools enable the end-user to select desired data from the system, make simple calculations and then present this data on a report. But is the Query tool powerful enough to correspond to the demanded requirements?

Illustrated by a case study and screenshots, the paper explains how, when and by whom the query-function is used, what possibilities it offers, what other options it has and finally evaluates the pros and cons of the tool. The acquired information will later be applied to other processes, possessing an objective to speed up the evaluation of the duration of the processes, calculations of their costs, and to further provide the customers more accurate information.

**Keywords** ERP InfoSet Query tools Reporting SAP




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## II. Tiivistelmä

Tieto on valtaa, mutta jotta yritykset voivat maksimoida sen tarjoaman hyödyn, on data esitettävä ymmärrettävällä tavalla. Valtava määrä tietoa tuotetaan joka päivä, ja varastoidaan sitten yritysten lukuisiin kansioihin ja tietokantoihin. Haaste on etsiä oleellinen tieto järjestelmästä, ja muuttaa sitten nämä dataryöpyt hyödylliseksi tiedoksi. Kun yrityksillä on tarvittavat tiedot, voi johtoporras tehdä sen perusteella strategisia päätöksiä parantaakseen huomattavasti toimintojaan.

Vaaho Roll Service Oy, suomalainen paperialan yritys, on kohdannut saman haasteen. Yritys käyttöönotti MySAP Business Suite sovelluksen, mahdollistaakseen ennakoivan, tietopöytäisten päätösten teon, jonka tarkoituksena on prosessien nopeuttaminen ja optimointi. Kaikki data on varastoitu tähän integroituun järjestelmään. Data on siis olemassa, mutta kuinka kaivaa se järjestelmästä ja lopulta esittää se ymmärrettävällä tavalla?

Tämä työ tekee tutkimusmatkan yrityksen sähköiseen tietovarastoon, päämääränään kaivaa haluttu, piilossa oleva data järjestelmästä ja esittää se yhdellä raportilla. Erityinen huomio keskittyy SAP Kysely-työkaluun, joka mahdollistaa halutunlaisten raporttien luonnin ilman monimutkaista ABAP-koodausta. Kysely-työkalu on monipuolinen työkalu, mutta onko se tarpeeksi tehokas vastatakseen yrityksen tarpeisiin?

Tapaustutkimuksen ja ruutukaappausten siivittämänä paperi selittää kuinka ja keiden toimesta Kysely-toimintoa käytetään, mitä mahdollisuuksia se tarjoaa, mitä muita vaihtoehtoja sille on ja lopulta arvioi työkalun hyviä ja huonoja puolia. Saatu tieto sovelletaan myöhemmin muihin prosesseihin, tarkoituksena nopeuttaa prosessien keston arviointia, niiden kustannuslaskentaa, sekä tarjota asiakkaille tarkempaa tietoa tulevaisuudessa.

**Avainsanat**                      ERP      Infojoukko      Kysely-työkalut      Raportointi      SAP

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# 1. Introduction

## 1.1. The extent of the work

This work is done within the framework of a Bachelor Thesis, as a partial requirement for the award of the degree; Bachelor of Business Administration in International Business by Tampere University of Applied Sciences, Tampere, Finland. The thesis is done on the commission of Vaahto Roll Service Inc, the subsidiary company of Vaahto Group Plc.

Vaahto Roll Service Inc. implemented MySAP Business Suite application to unify the operations of the various departments and systems in the company. The system possesses as a default the SAP Query reporting tools that enable retrieving and combining data from different modules of the system, and finally creating a report, containing the specified data.

The management of the company needs information on the durations and possible delays of its work processes, in order to identify the possible bottlenecks and to find out which phases require improvement in order to increase efficiency. This data is available in the system. However, by far all the essential dates have been manually retrieved from different documents of the SAP-system, and then, if necessary, further processed in excel. This is exceedingly time-consuming process, which is why the company wants to familiarize itself with the qualities provided by the SAP Query-tool.

The paper researches the functionalities and capabilities of this tool, possessing an objective to eventually provide with an example report on the requested durations and delays of a tambour roll maintenance process, which functions as an example case in the work.

## 1.2. Document outline

A brief presentation of the company initiates the work. This is followed by a presentation of the MySAP Business Suite system, including general information about the SAP-systems. SAP-Query tools as well as terms involved with them are presented after that. The next chapter introduces the actual project, after which methods of data retrieving are presented.

This is continued with the creation of InfoSets, which function as a data source for the queries, and finally the creation of queries, using all the three Query-tools provided with the system. An illustration of how the actually example report was eventually created is presented after this, and is followed by evaluations of the reporting tools provided by the SAP-system, as well as evaluations concerning the whole project.

This information enables the company to identify the possible problems of the different work phases, and provides with more accurate lean-time estimations for the offer calculation. As a result, resources will be saved and improvements in terms of efficiency can be directed to right processes. The work will be done in cooperation with Vaahto's SAP specialist, Kalle Kylkilahti, and the Director of Production, Jukka Pullinen.



## 2. The company and MySAP Business Suite initialization

### 2.1. Vaahto Roll Service

Vaahto Roll Service Inc started its operations in 1927 in Tampere. It is the subsidiary company of Vaahto Group Plc, since 1996. In 2008, the company merged with another subsidiary, Vaahto Inc, and Vaahto Roll Service turned into a commercial name.

Vaahto Roll Service has three basic processes; the manufacture, maintenance and coating of rolls for pulp and paper machines. Additionally, the company offers after-sale and spare part services. Vaahto Roll Service employs about 80 people.

The services of Vaahto Roll Service in paper, board and pulp industry cover over 80 % of the whole production. However, the company operates also in mechanical wood-processing, plastics, printing, steel and engineering industries. Company's market-areas are mainly in Northern Europe, but products are also delivered with co-operation of Pulp & Paper Machinery group to Central-Europe, North America and China.

### 2.2. The four categories of production processes:

➤ **Maintenance of rolls**

CS (capacity selling), is used as a production form in the maintenance process. The customer demands a request for an offer and if the proposed offer is accepted, he or she places an order and sends the roll to the company. CS process is a challenging production form because the work that needs to be done is not on record until the customer has sent the roll to the company and the workload can be evaluated. This exacerbates the pricing as well. The delivery time has to be reconciled according to the customer's needs, thus the capacity has to be flexible.

➤ **The manufacture of rolls**

ETO (engineering to order) process takes place in the production of rolls. In this process the customer places an order, after which the roll is produced.

➤ **Production of choppers**

The production of choppers uses MTS (made to stock) process. The production is based on the sales predictions and the production program created according to the predictions. As the term implies, the products are sold from the stock to the end-user.

➤ **Covering of rolls**

This is a work process used in both, the production, as well as the maintenance of the rolls. The pricing for these processes is done based on previous experiences and calculations respectively.

### **2.3. Vaahto Group concern**

Vaahto Group Plc is a globally operating high technology concern, founded in 1874. It possesses a turnover of 88, 2 million Euros and personnel average of 414. The group is operating in two fields; pulp and paper machinery and process machinery. Vaahto Roll Service, together with Vaahto Oy and AP-tela, work in the field of pulp and paper machinery, whereas Japrotek Oy Ab and Stelzer Rührtechnik International GMBH account for the field of process machinery. In addition to the paper and board machines, rolls and roll covering, and pulp drying machinery, the corporation also offers services of installation, training and start-up services.

### **2.4. Implementation of the MySAP Business Suite**

Vaahto Group initialized the implementation project of MySAP Business Suite-system, possessing an objective to replace the old separate systems. In accordance with the initial plans, it included the financial management, production planning and ordering systems, project management, logistics and quality control.

According to the CEO of Vaahto Group, Antti Vaahto, the objective is to support the corporation's internationalization and manage separate functions in an integrated way. This enables the unification and optimization of the separate processes, precipitating the lead-times, improving the reliability of the deliveries and getting real-time reports. All the data is stored in an integrated system, enabling the availability for separate departments, speeding up and optimizing its various processes, as well as avoiding duplicated work.

The implementation is done in stages of which the first one includes the functions already covered by the current systems. According to the chief technical officer, Virpi Björkman, during the next 3-5 years, the usage will be broadened into new functions, such as Human Resources and project management.

### **2.5. Before the SAP-system**

Before the implementation of the SAP-system, the data of the various departments was stored in separate systems and manually transmitted to other systems. This now happens automatically; once the data is stored in one application area, it is automatically available in other areas as well. The system helps to provide the management with essential information for decision making. In addition, it offers a basis for electric business operations.

The company has not had a special reporting system before; accordingly, no particular model is followed in the process of creating the reports. The output of the report is determined according to the possibilities offered by the Query-tools. No system has provided the durations of the separate work phases either. The dates for them are now stored in the SAP-system, however, they need to be retrieved from the database and combined to a single report for further evaluations.

### **3. SAP AG and the SAP ERP software applications**

The next section introduces briefly the company, SAP AG that developed the system. This is followed by a presentation of MySAP Business Suite system used in Vaahto Roll Service, and eventually a general presentation of the SAP-systems.

#### **3.1. SAP AG and brief history of the SAP-systems**

SAP AG is the name of the German company that developed the SAP software. The company is a remarkable employer in its headquarters in Walldorf, Germany. SAP GmbH was founded by five former workers of IBM in 1972. Their vision was to create standard applications for real-time trading.

In 1973 they published R/1 an application focusing on financial administration. This was followed by more flexible R/2 in the late 1970's. The product appeared to be successful, and enabled the fast growth of the company. R/3 was introduced in 1992. The connected graphical screens, logical usage of relation databases and independence of the computer vendors made R/3 a strong system. Hitherto, the software had reached companies in 35 countries.

MySAP.com was introduced in the end of 1990's. This connected the e-business together with the functionality of the ERP-system. By far the software was used in 120 countries. SAP has operated in Finland since 1996.

SAP has targeted its product supply separately for small and middle-sized enterprises, big enterprises and the various niches of industry. For small and middle-sized companies SAP offers SAP Business All-In-One, SAP Business One and SAP Business ByDesign software. For bigger companies, such as Vaahto Roll Service, Sap offers SAP Business Suite, which was initially developed in 2002/2003.

#### **3.2. MySAP Business Suite**

MySAP Business Suite is an SAP-application, supplementing the R/3 software with additional products and components. It can be used in combination with R/3 or as an independent software product.

The software consists of separate software packages, including SAP Customer Relationship Management, SAP ERP, SAP Product Lifecycle Management, SAP Supply Chain Management and SAP Supplier Relationship Management. Additionally, it has complementing parts, such as Duet, which makes SAP business applications accessible through Microsoft's Office programs. In terms of the Query tools, this attribute enables the further processing of reports in, for example, Word or Excel programs. The best known software is SAP ERP, which is the successor of SAP R/3.

### 3.3. SAP R/3

SAP R/3 is standard business solution software, supporting companies in their different business processes. It stands for the German words Systeme, Anwendungen und Produkte in der Datenverarbeitung (Systems, Applications and Products in Data Processing). The “R” stands for Real-time and means that the data is updated immediately, being available for further processing. The “3” indicates that it is the third generation of the product (Sharpe1997).

The system can be modified and customized to better meet the company’s own requirements. However, sometimes it is better to build an exterior system and integrate it with SAP. For instance, the offer calculation of Vaahto Roll Service is done with an external system; Spexcel.

The applications are modular, which means that they are divided into small parts called modules. The modules have transactions covering a great part of the business processes. Transactions are commands that execute the various functions. For example, transaction SQ01 takes us to the screen where we can create queries.

### 3.4. What made SAP superior to the other ERP-solutions?

SAP-system is not the only integrated ERP-solution for the companies. Companies such as Oracle, Microsoft or Sage Group offer their own solutions. However, despite the competition and several mergers in the field, SAP AG has managed to retain its position as a market leader. It has 46100 users in 120 countries, and 95% of the foreign trade in Finland is handled with the SAP-applications. What is the secret of SAP’s success?

Being initially used by numerous major, international corporations, SAP has succeeded in bringing itself to light and spread like wildfire worldwide. The usage among middle-sized companies is also strongly expected to increase. The globalisation of companies has functioned as a major benefit for SAP.

In the European market area the company was used producing applications for multinational enterprises and handling with different currencies, custom and tax regulations and languages (Jormanainen 2008). For the American competitors the adaptation with the new situation caused remarkable problems.

For several IT-professionals in the 1990’s the term ERP equalled SAP R/3 (Jormanainen 2008). The widespread support of SAP-applications by various organisations around the world was one the fundamental reasons for Vaahto Group Plc, and most probably also for other organisations, to implement the system. Vaahto Group has an international extension in sight, and SAP-solution responds greatly to the needs of its cross-border trade and manifold product line.

## 4. The project

The purpose of the work is to examine the Query functionality of the SAP system. Query tools enable the creation of reports with no demanding ABAB-coding skills. ABAB is a special coding language that reminds SQL (structured query language), but is particularly used in SAP-systems. The following section defines the objects of the work, the expected benefits of it and the methods of how to reach the defined targets.

### 4.1. The objective

The objective is to develop a report that automatically displays the information on the ultimate lean-time of the work processes all the way from the date when customer places the purchase order, to the date of delivery and invoicing. It should equally provide the dates and durations of various phases, such as purchase order date, roll's arrival date, as well as the difference between these two. Possible delays of the work and the differences between the planned and the actual dates of the various phases are equally demanded to be displayed on the report.

After the creation of the above mentioned report, a research of the durations of the separate phases of the actual work is implemented. The aim is to create a report, providing with information on how long time each separate work process takes. It is equally important to have data on how long and where the roll lies before the subsequent work phase takes place. The challenge is to enable an automatic mass output of the requested data from the repository, to the report. The right dates need to be extracted from the database and combined in an optimal way to eventually provide the requested information.

### 4.2. The benefits

Instead of retrieving manually all the required data each time; finding the location of the data in the repository, creating InfoSets and finally the reports, the demanded data is already collected on the report. The durations of various phases can be evaluated in less time; as a result, the company will gain remarkable time savings and have the opportunity to focus on other tasks. The evaluations of the costs and durations of future projects can also be faster and more accurately evaluated, which improves the customer service.

The information of the durations of different work phases is of high value for the upper reaches of management when evaluating the efficiency of work. The objective is to find out the bottlenecks of the various processes; how long do the rolls lie in the different work stations? As real facts and data are provided, it is easier to discover which phases require closer look in terms of efficiency. When the management knows where the delay occurs, it is easier solve what caused the delay and if there is something that could be done to avoid this in the future.

As the functionality and the usage of the query tools is researched, it is simpler to utilize them in later processes the future and it can be applied to various other processes. There will be data on where the query-tools can be used, what positive/ negative attributes they possess, and

if they can be used for the creation of the case report. All in all, the creation of reports will be faster when the possible problems can be avoided and the user knows what to do.

### **4.3. The methods and tools to be used**

Familiarization with the theory of the Query-functionality will function as a basis for the actual practical part. The aim is to utilize as versatile sources of information as possible, including the supply of WWW-pages, books, interviews and above all, the information provided by the company and the system itself. There exist also particular SAP and IT-communities that can provide with valuable information in case problems occur on the way.

As a robust basis of knowledge is obtained, the testing part takes place. Due to the security reasons, the VAT-testing environment is used. A realistic case, transmitted from the production are to the test environment is used. The tests will be done according to the knowledge gathered from the various sources, illustrating the steps with screenshots, and explanations. Provided that the tests pull off, the reports will be created in the real environment. As for the creation, maintenance of a tambour roll will function as a case study.

### **4.4. The case study method**

In order to simplify the process, a case study approach will be used. A realistic, completed project is transmitted from the production environment to the test environment and used as an example. The various phases of the supply chain of the defined project are examined; what are the phases and what happens in the SAP-system during the phases. The maintenance of a tambour roll was determined to function as an example for the case. Before introducing the case, let's familiarize ourselves with the SAP Query-tools and terms involved.

### **4.5. The procedure**

A clear definition of what information is desired to be displayed on the report initializes the project. This is followed by a research on how to retrieve the required data from the system and use it in the reports. The objective is to find out in which tables and fields the desired data is located.

The desired fields and tables are retrieved from the database and joined together by the creation of InfoSets, a storage where the collected data is retrieved for the report. Eventually, the query will be created and assigned to the specific user groups. If required, a new user group is also created. The end part provides with more close examinations on what different possibilities the Query tools enable to accomplish. The very last part includes the final evaluations, comparisons and analyses in terms of the query tools and the project.

## 5. SAP Query tools

Formerly, the reports in SAP were mainly created with the ABAP Workbench, writing code in ABAP language. This requires substantial programming skills, and deep knowledge of each application area of SAP for which programming occurs. Accordingly, the Query family of tools was created for the end user enabling the creation of customized reports, without a need of handling all the technical details.

SAP Query tools enable the creation of reports not already existing as a default in the system. The Query tools are user-friendly and require no ABAP-coding skills. However, as will be shown, there are significant limitations in terms of the creation of reports and calculations within the reports. The problems most probably occur in the phase of the creation of InfoSets, which generally initializes the creation of queries.

### 5.1. SAP Query family

The Query family comprises the SAP Query tool, the InfoSet (Ad Hoc) Query tool, and the Quick Viewer. The tools are available for free within all standard SAP installations. The InfoSet (Ad Hoc) Query and Quick Viewer are simplified tools for a casual generation of basic lists, possessing limited flexibility.

SAP Query tool has widest range of features, enabling the creation of more complex reports. Briefly, due to the simple usage, combined with greatest variety of features and possibilities it is the best option of all the three tools. Quick Views and queries created by InfoSet Query can also be processed with other SAP Query tools. Simultaneous use of the tools, on the other hand, may yield incoherent data.

### 5.2. The SAP Query Tool

Sap Query –reporting is a tool, used to do database searches and create reports not already contained in the default, from scratch without programming. It is used for defining reports in different forms such as basic lists, statistics, or ranked lists. These outputs can include lists on screens in table format, ALV grids, downloadable spreadsheets, and downloadable flat files (2006-2007 SAPTechnical.com).

In the query- reporting, the user defines both search, and result fields. Due to the cooperation with Microsoft, the results can be transferred to external programs, such as Excel or Word, for the purposes of further processing. Not only is the SAP Query tool simple to use, but it equally provides with a comprehensive range of beneficial features, such as multiple-line lists, graphics, colors and subtotaling. Additionally, it is connected to ABAB Workbench.

The queries within SAP query can be defined either without graphics, or without the help of graphics. Since the creation with graphics is slightly easier, it is generally set as default in the system. However, the definition without graphics enables a bit more detailed definition of the query.

### 5.3. The Quick View

The QuickView possess the same attributes as queries, but only basic lists can be defined with it. No group assignment is required because each user has his/her own personal list of QuickViews. Accordingly, QuickViews cannot be exchanged between users. InfoSets are not required either, because QuickViews can also use database views, logical databases and tables as a data source.

The creation with a query painter is slightly faster and easier than with the SAP-query. However, certain calculation functions cannot be performed with the Query-painter. The preparatory definitions, such us title of the query, field selections and selection criteria is the same as when creating a query with the help of a query painter.

### 5.4. The InfoSet Query

InfoSet query is the simples and fastest in terms of the query creation. It enables the creation of queries for one user group only, and only basic lists can be created with it. The data source to be used is an InfoSet view. It is a good tool if you create a report for yourself only, and if no calculation functions are required.

### 5.5. How to convert Quick View into a Query?

As already mentioned, the Quick View reports can easily be converted into SAP Queries. To do this, choose first the query group that you are assigned to and that you will want to assign your query to. If the QuickView you want to convert is based on an InfoSet, that InfoSet must be assigned to your query group.

Navigate to the main screen of the Query tool with SQ01 transaction and select “Query” → “Convert QuickView”. On the dialogue-box, select the QuickView you want to change, as in figure 1. Click the green check mark and add the name of the Query and define an InfoSet on the following dialogue-box (*figure 2*), to proceed with the query. Then select “enter”. The Quick View is now converted into a query, and can be shared with other users.

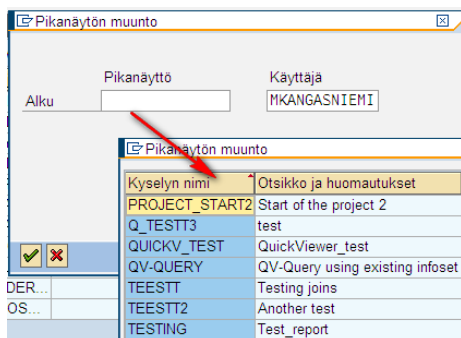


Figure 1: Choosing the desired QV

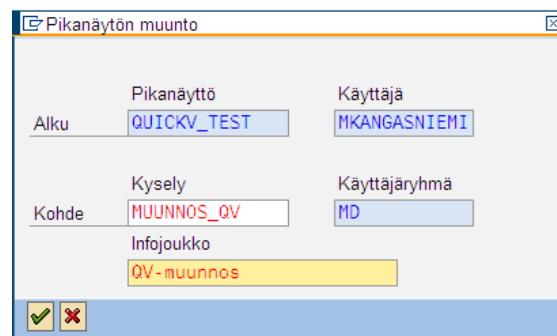


Figure 1.2: Select name for the Query and InfoSet



## 6. Creation of queries with the SAP Query

In the simplest case, only the query need to be created by choosing the fields included in the report from an InfoSet view, and finally assigning the query for the chosen user group/s. However, if the desired data is not included in the InfoSet view, the InfoSet needs to be created first. In other words, we need to retrieve data from various tables or logical database, and combine the desired fields in a repository, called InfoSet. InfoSet is where we get the data for the reports. This will be explained in more detail in later sections.

The user group has to be chosen as well, that is, define the group allowed to access certain sources of data. Certain user groups are already specified in the system; however, sometimes a new user group may need to be created. The next section briefly explains the pattern to be used in the creation of Queries and provides some useful definitions.

### 6.1. The procedure of creating Queries

We will take a look at the whole process all the way from giving authorizations for the creation of queries, InfoSets and user groups, to the ultimate creation of InfoSets and the query. The assumption is that no appropriate InfoSets or user groups exist, which requires a complete process in terms of the creation. In this case, the steps involved include the following:

#### 1. Giving proper authorizations for the query users

The given authorizations determine whether the user is permitted to create and modify queries. The transactions involved with the Query include SQ01 (Maintain Queries), SQ02 (Maintain InfoSets), SQ03 (Maintain User Groups) and SQ07 (Language comparison).

#### 2. Creation of query Groups and assigning users to query groups: Transaction SQ03

User groups are groups of SAP users that are allowed to run the query. A user group is always associated with InfoSets. In this phase we put the users allowed to use a particular InfoSet in a group and give the group a descriptive name.

#### 3. Creation of InfoSets: Transaction SQ02

InfoSets are the second component of SAP reporting. They are special views of data, retrieved from the data source. InfoSets are the source where user gets the data to use in the report. The user can also use InfoSets that already exist in the system if they include all the data needed for the creation of the report. However, this requires belonging to the user group for which the particular InfoSet is assigned. InfoSets are created because retrieving data for the report is much simpler from an InfoSets that contains all the necessary data, than navigating all the tables and selecting fields from them.

InfoSets are created in the maintain InfoSets screen, which can be accessed using transaction code SQ02. This phase consists of retrieving the defined data from one of the data sources, such as logical database or table join and selecting the data we want to include in the report. For this purpose the user needs to know in which tables and fields, or logical databases the particular piece of information he or she wants to include in the report is located.

#### **4. Assigning InfoSet to a query group**

This simple, quick phase determines which user groups are allowed to use the InfoSet we have created.

#### **5. Creation of the Queries based on the InfoSets; Transaction SQ01**

The next step is to create the query, which is the report. This phase includes for instance the decisions on the layout and content of the report. The content is based on the fields we have chosen from the selected InfoSet. The Queries are created in the Maintain Queries screen, which can be accessed with SQ01 transaction.

#### **6. Assigning the Query to the Query groups**

In this part we choose which groups of users are allowed to use the query. Query Groups is a collection of SAP users who are grouped together and are allowed to run the query. Being assigned to use the query, gives also the authorization to use the InfoSets data the query is based on. One user can belong to several user groups. Any user of the user group can execute queries that are assigned to that group, but only users with appropriate authority can modify queries or define new ones.

## 7. Components, Query areas and transports

There are certain important terms that should be taken into consideration before starting the creation of queries. The picture below explains first the structure in a simplified way. After this, the components associated with the Query are presented. This is followed by the definition of the meaning of Query areas and transports.

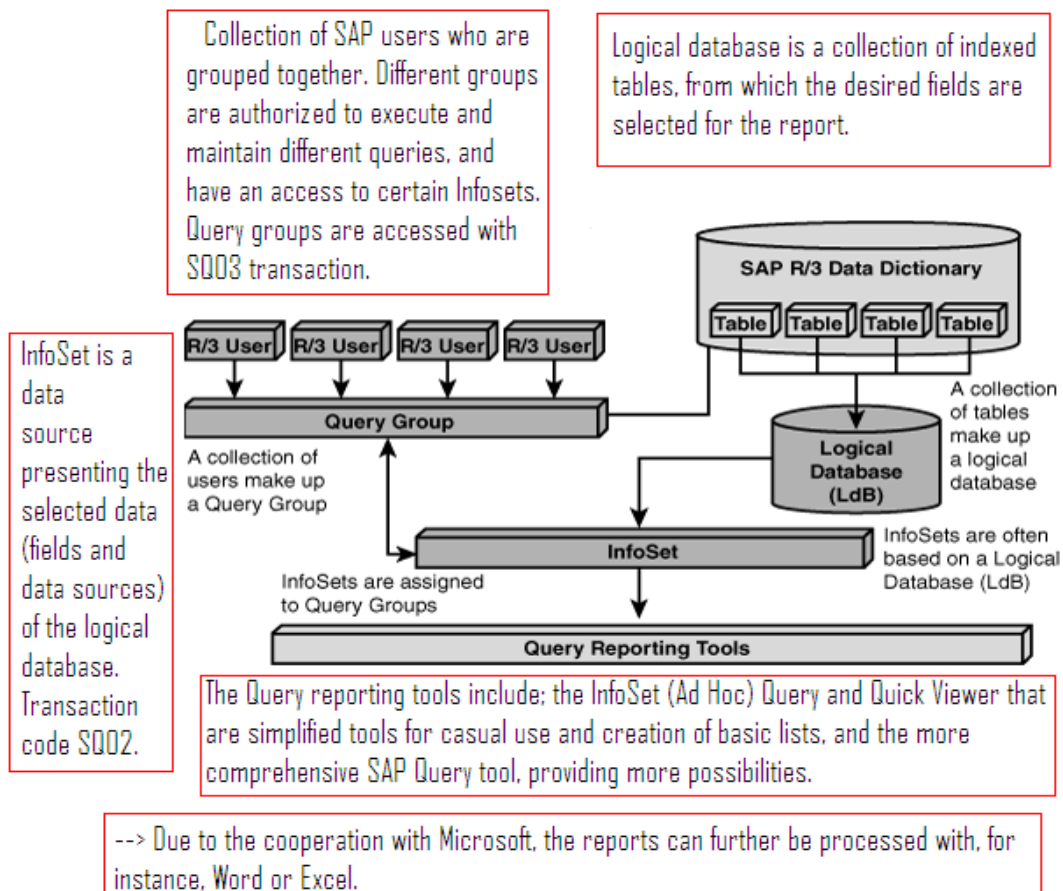


Figure 2: Sections involved in the creation of reports with the SAP Query tool (Anderson George, Larocca Danielle)

## 7.1. Components of SAP Query

SAP Query consists of four components. The first one is the query maintenance where the user can create, change and execute queries. The second component is the InfoSet maintenance, where the InfoSets are created, changed or displayed. The third component is for the maintenance of user groups, and last one for the translation of the fields to another language.

- **Query Maintenance:**

Tools → ABAP Workbench → Utilities → SAP Query → Queries (**SQ01**)

Lists, ranked lists and statistics are created, maintained and modified in this component. The end-user can also generate lists by executing queries, as well as define and change queries.

- **InfoSets Maintenance:**

Tools → ABAP Workbench → Utilities → SAP Query → InfoSets (**SQ02**)

InfoSets are special views of data sources. An InfoSet describes which fields of a data source can be reported on in queries. This is the source of all the data that will be displayed and evaluated in the report. InfoSets are assigned to the user groups, which means determining the range of reports the departments or end-users can generate using SAP Query. InfoSet can be assigned to several user groups.

- **User Group Maintenance:**

Tools → ABAP Workbench → Utilities → SAP Query → User Groups (**SQ03**)

Here, users working with same application are assigned to the same user group and anyone among the same group can execute the query, no matter who created it. Users from other user groups are not authorized to modify queries but they may in some cases copy and execute them. Users can be assigned to several user groups, and thus have the authorization for several InfoSets.

- **Language Comparison (Translation):**

Tools → ABAP Workbench → Utilities → Translation → SAP Query (**SQ07**)

For all text elements, when defining queries, InfoSets and user groups, there is an equivalent text in one or more other languages, allowing the comparison of texts. The texts are usually displayed in the logon language.

Any of the components can also be accessed via the Environment option, found on the menu bar. You can equally at any point later make changes to the InfoSets, Queries or the User Groups if needed.

## 7.2. Query Areas

Query areas contain the ABAP Query elements, queries, InfoSets, and Query Groups. There are two different query areas:

- **Standard Area** is client specific, which means that they are available only in the client in which they were created. I create my test Queries in the VAT-test client, so the queries exist only in my VAT-test client and not in the rest of the system. This is not connected to the Workbench Organizer.
- **Global Area**: as the name implies, queries developed here are cross-client, which means they are used throughout the system and can be transported into other systems. These queries are registered in the Workbench Organizer. All query objects delivered by SAP are located in the global area.

Both query areas provide you with a full range SAP Query functions.

## 7.3. Transports

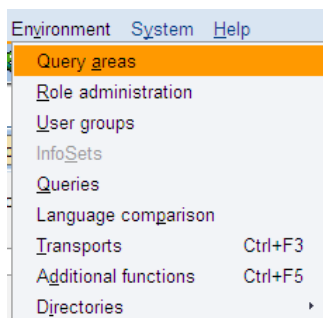
- **Global Area** (all the Clients)

Global area objects are created and transported via the Workbench Organizer, using the normal correction and transport procedure. This is created to VAD100.

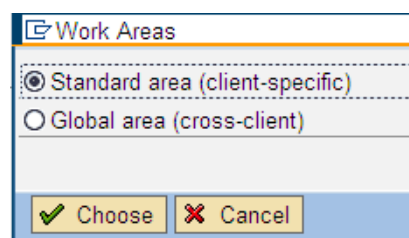
- **Standard Area** (InfoSets liable on the recording system)

The components Maintain InfoSets and Maintain User Groups contain utilities for transporting standard area objects (user groups, InfoSets and Queries). This enables, for example, the transfer of tested queries to the production system.

*Figure 3: The default is changed here  
(initial screen of Query or InfoSet  
maintenance)*



*Figure 3.1: select “standard area”*



After defining the working area the creation of the InfoSets can start.

## 8. Background work required before creating queries

Few questions need to be answered before the creation of the InfoSets and queries:

1. **What?** Before starting the creation of the report, the user needs to define what data will be displayed on the report.
2. **Where?** The knowledge on the location of the data is not enough; in order to use it in the reports, it is essential to know in which tables and fields the data is located.
3. **How to retrieve the data?** Knowledge on how to retrieve the desired data from the repository to find out the correct tables and fields is required.
4. **How can the data be joined/ can it be joined?** Often the data needed for one report is located in different tables. This data is generally joined with the help of table joins or logical databases. All the tables cannot be used in the creation of queries, and some tables cannot be joined together. Therefore, a table mapping illustrating the relations of various tables may appear to be a useful guide.

After all this knowledge, the actual creation of the reports can start. The next section presents the case, and data required for the case report, giving an answer for the first question. This is followed by the methods used to find the correct tables and fields. Finally, the creation of the actual data source for the reports, the InfoSets, explains how to combine the desired data together.

## 9. Case maintenance of a tambour roll

Since Vaahto Roll Service has several varying operations for the rolls, a case study method was taken as an example. The purpose is to examine the final lead-time of the order-delivery process of a tambour roll, as well as the duration/delay of various phases involved in the case.

After completing the order-delivery process case, the plan is to examine the durations and delays of different work phases involved in the project. This gives us a deeper look in the actual work part of the maintenance of a tambour roll. Accordingly, two reports will be created and the projects are handled separately. The work starts with the order-delivery process.

A realistic case is transmitted from the production client to the test environment and later introduced in the production part. The information gained from this research will be applied to other work processes of the company.

## What is a tambour roll?

Tambour roll is a part in the winding-up section, in the end of the paper machine, where the nearly finished paper web is wound up the roll. One of the services provided by Vaahto Roll Service Inc is the maintenance of tambour rolls. The following picture describes the order-delivery process of tambour roll maintenance.

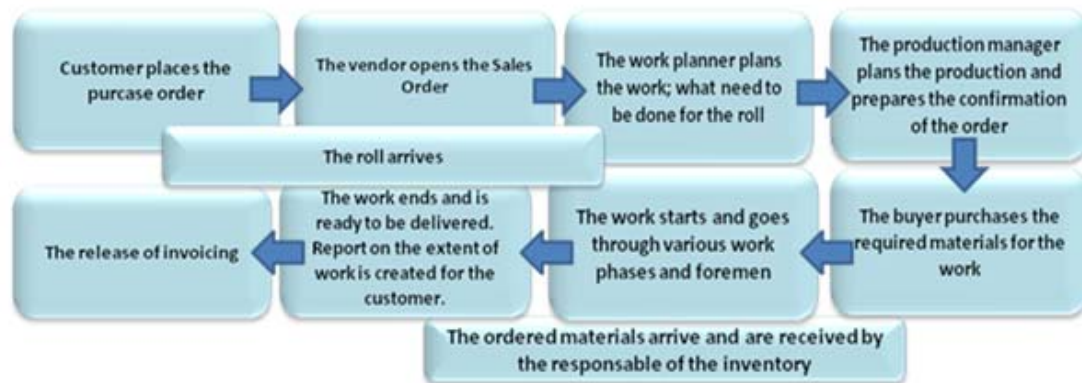


Figure 4: The order-delivery process of a tambour roll

## 10. Report of the order-delivery process

The purpose of the first case is to examine the lead-time of the whole process, as well as the steps involved in the maintenance of the tambour roll. This consists of all the steps from the date when the customer has placed the purchase order until the final delivery and invoicing dates.

### The phases of the project and the requested data of each phase

1. **Customer creates the purchase order**; this is a commercial document issued by the buyer to order products or services. The purchase order date and the name of the customer are required from this document.
2. **Creation of the sales order**; this is a binding order received from a customer. The production or purchases is based on this document. The planning process will not start until the sales order has been created. The sales order creation date and sales order number will be included in the report.
3. **Arrival of the tambour roll**; this is the date when the roll physically arrives to the factory. This date is registered to the SAP-system. The arrival date of the roll varies. Sometimes the arrival is simultaneous with the SO-date, sometimes after it or even before. The arrival date of the roll is needed.
4. The extent of the work can now be evaluated, the work is planned and the required materials (such as revolving steel, cargo, dry ice, and minor utensils) are ordered.

Certain work phases cannot start before the orders of required materials are made. The orders are registered to the SAP-system.

5. **Creation of the repair service document** can start after the evaluations. The document includes information on the estimated extent and duration of the work. The creation day of this document is requested.
6. **Releasing the repair service**; after the release the actual work can start. The day when the repair service was released is requested.
7. **The start of the work**: The **planned start date**, and the **actual start date** of the project, and the **difference between these dates** (=the delay of the start) is needed.
8. **The end of the work**: The **actual end date** is requested.
9. **The delivery date**: Both the **planned delivery date** and the **actual delivery date** on when the roll has physically left the stock
10. **Invoicing** is the last phase of the project. From this phase, the billing block (determines when the bill is ready to be sent) and the actual billing date (when the invoice has been sent).

## Information that needs to be created

In addition to the above mentioned dates, some delays and durations are requested. These require some calculations either in SAP or in an external program, such as Excel, after export. The requested durations and delays include:

1. **Duration of the order viewing process**: Sales Order date – Purchase Order date
2. **Difference between the roll's arrival date and the purchase order date**: Roll's arrival date – Purchase Order date
3. **Duration of the work planning**: Release date of the repair service order – Rolls Arrival date IF the purchase order is placed before the roll arrives OR Release date of the repair service – Sales Order creation date IF the purchase order is placed after, or the same day as the roll arrives
4. **Delay of start**: Actual start – Scheduled start
5. **Given Delivery Time in weeks**: Agreed delivery date – Roll's arrival date/ 7 IF the purchase order is placed before the creation of the roll's arrival OR Agreed delivery date – Purchase order date/ 7 IF The purchase order was placed the same day, or after the roll arrived.
6. **Given production time in weeks**: Agreed delivery time – scheduled start/ 7
7. **Relation between the production time and the delivery time (%)**: Production time/ Delivery time
8. **Delivery delay**: Actual delivery date – Agreed delivery date
9. **Delay in invoicing**: Billing date – Billing block date

This is all the data required for the first report, thus all the data we need in the creation of the InfoSets. It may sometimes be useful to add extra fields as well; fields that may be needed in later reports or fields that could be useful as selection criteria. The next section presents different methods that can be used when searching for data in the SAP-system.



# 11. Hunting the dates –how to search data in SAP?

The location of the dates for the report in the database, and their location in the fields and tables are searched one by one. The simplest way is to find the data directly by displaying the technical information, which sometimes refers to the table and field where it is located. However, most of the times, other methods are required.

## 11.1. The simplest way; display the technical information

Customer purchase order date appears on the customer's purchase order and it was found in quite an easy way:

The transaction VA03 displays the location of the actual date, the sales order. By entering the sales order number the case, 30000614, in the order field, the system searched the document of the particular project.

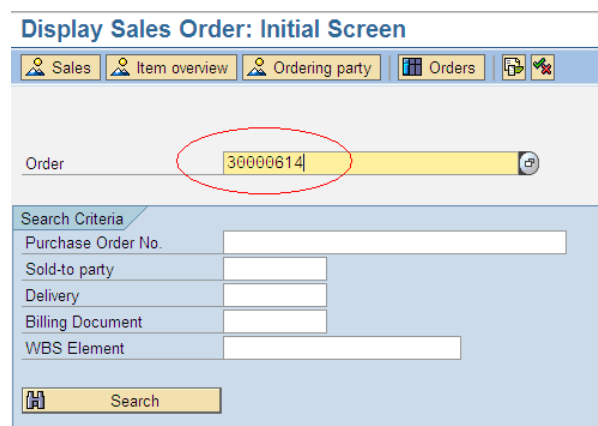
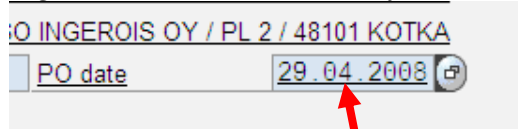



Figure 5.0: Display Sales Order

The following page displays the purchase order date needed for the report. The date is now known, but the table and field in which it is located are required.

Figure 5.1: Activate PO-date field



By activating the PO date field, then clicking F1 and  icon, we can see the technical information it includes. This view displays the table and field name where the specified data exists. The purchase order date is thus located in VBKD table and BSTDK field.

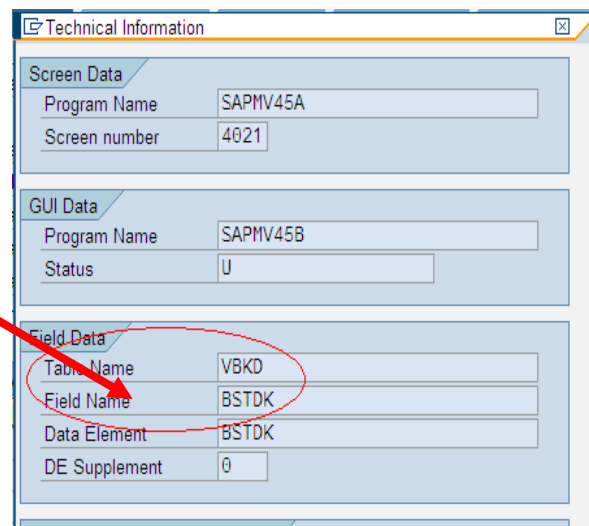



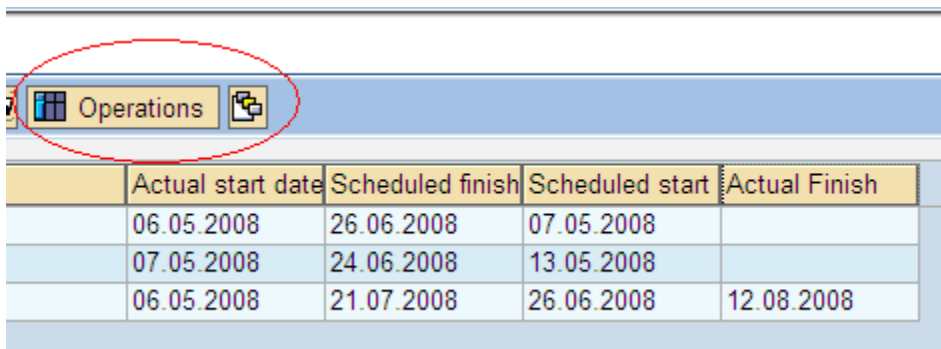
Figure 5.2: Technical information display

The date of the sales order follows the same pattern. These two dates' locations were easy to find. However, in most cases finding the right field and table is not this easy. Thus, for the other dates another method needed to be used to find the correct field and table.

## 11.2. Table search with the help of “Where-Used-List”

As already mentioned, the pop-up window of the technical information does not always display the field and the table in which the particular data exists. This was the case when searching the location for the planned and actual start and end dates.

IW38 transaction displays the selected purchase order. With the  icon one can determine what type of information will be displayed on the screen and in which order. Accordingly, we can have the actual start and finish dates, as well as the scheduled start and finish dates. F1 shows the tables and fields again.



	Actual start date	Scheduled finish	Scheduled start	Actual Finish
	06.05.2008	26.06.2008	07.05.2008	
	07.05.2008	24.06.2008	13.05.2008	
	06.05.2008	21.07.2008	26.06.2008	12.08.2008

Figure 5.3: Display the Purchase Order Document

The information displayed in the technical information did not include transparent tables that could be used in the creation of lists. Instead, it displayed structure. **Structures** are Data Dictionary objects that have fields but do not carry data. They are like empty tables. Accordingly, they cannot be used in table joins and in the creation of InfoSets.

Sometimes, despite being displayed as a structure, the required data is located in a transparent table as well, and can thus be used in the queries. There are two ways to find the correct tables and fields with the help of structures; the where-used-list or via the ABAP dictionary.

### Usage of the Where-Used-List:

Where-Used-List is a way to search for transparent tables including specified fields. **Transparent tables** store data, and views are linked groups of transparent tables. The start is the same as in the beginning.

1. Place again the cursor on the scheduled start date field:
2. Click F1 and “technical information”. On the technical information dialogue box, double-clicked on the field labeled “Field data/Data element”;

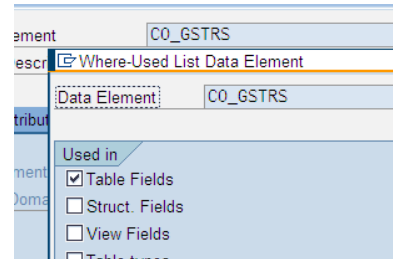
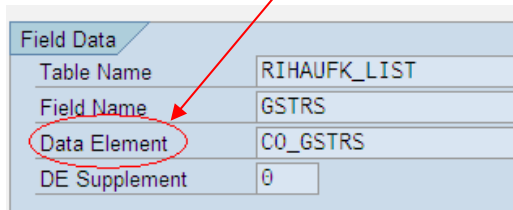
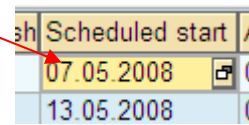


Figure 5.4: Select “data element”

Figure 5.5: Select table fields

Follow the path: “Utilities” → “Where-used list” → “Table fields” → Enter

Where-used Data Element CO\_GSTRS in Table Fields (14 Hits)

Table Fields	Short description
AFKO	Order header data PP orders
<input checked="" type="checkbox"/> GSTRS	Scheduled start
KBK0	Header Record for Capacity Requirements
<input type="checkbox"/> GSTRS	Scheduled start
MCAFK0V	Versions: Order Header Data - PP Orders
<input type="checkbox"/> GSTRS	Scheduled start
MCSFIS	R/2 SFIS Data: 01d
<input type="checkbox"/> GSTRS	Scheduled start
S021	SFIS: Order Item Data for Material
<input type="checkbox"/> GSTRS	Scheduled start
S022	SFIS: Order Operation Data for Work Center
<input type="checkbox"/> GSTRS	Scheduled start

Figure 5.6: A list of table views and structures that use this element is displayed. The table AFKO has an appropriate description, so GSTRS field, located in this table is selected and displayed (F7).

Dictionary: Display Table

Transp. Table: AFKO Active  
Short Description: Order header data PP orders

Field	Key	Init...	Data element	Data Ty...	Length	Decim...	Short Description
MANDT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MANDT	CLNT	3	0	Client
AUFNR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AUFNR	CHAR	12	0	Order Number
_INCLUDE	<input type="checkbox"/>	<input type="checkbox"/>	AFKO_INC	STRU	0	0	Order header data PP orders
GLTRP	<input type="checkbox"/>	<input type="checkbox"/>	CO_GLTRP	DATS	8	0	Basic finish date
GSTRP	<input type="checkbox"/>	<input type="checkbox"/>	CO_GSTRP	DATS	8	0	Basic start date
ETRMS	<input type="checkbox"/>	<input type="checkbox"/>	CO_ETRMS	DATS	8	0	Scheduled release date
GLTRS	<input type="checkbox"/>	<input type="checkbox"/>	CO_GLTRS	DATS	8	0	Scheduled finish
GSTRS	<input type="checkbox"/>	<input type="checkbox"/>	CO_GSTRS	DATS	8	0	Scheduled start
GSTR1	<input type="checkbox"/>	<input type="checkbox"/>	CO_GSTR1	DATS	8	0	Actual start date
GETR1	<input type="checkbox"/>	<input type="checkbox"/>	CO_GETR1	DATS	8	0	Confirmed Order Finish Date
GLTRI	<input type="checkbox"/>	<input type="checkbox"/>	CO_GLTRI	DATS	8	0	Actual finish date
ETRM1	<input type="checkbox"/>	<input type="checkbox"/>	CO_ETRM1	DATS	8	0	Actual release date
ETRMP	<input type="checkbox"/>	<input type="checkbox"/>	CO_ETRMP	DATS	8	0	Planned release date

Figure 5.7: The following page displays the content of the chosen table, in this case, AFKO. The screen displays the fields as well as a short description of each field. Valuable fields are located in the transparent table, AFKO.

### 11.3. Retrieving data with the Repository Info System

The data search through the repository info system is simpler and more convenient in terms of the usage, because it enables you to define not only tables according to the field names, but also, for example, fields according to structure names.

1. Enter the repository info system with the **SE84** transaction
2. Choose ABAP Dictionary
3. Under the “Fields” title, choose “table fields” and enter the name of the field in the appropriate field, as shown in the screenshot.
4. Click the clock icon, “execute”.

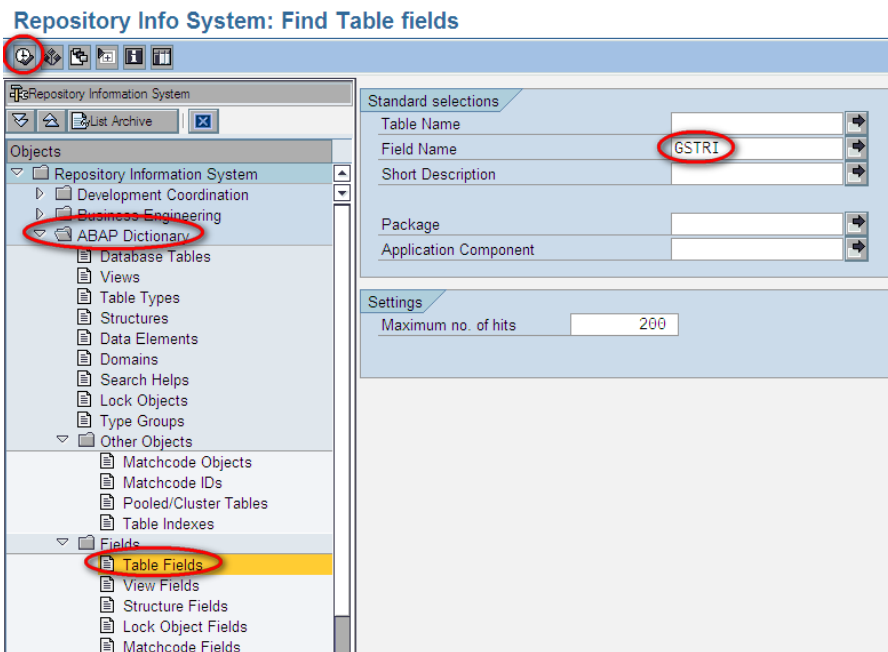


Figure 5.8: The ABAP dictionary enables the search of, for instance, tables, fields and structures

→

Table Name	Short Description
Table field	Short Description
AFK0	Order header data PP orders
<input checked="" type="checkbox"/> GSTRI	Actual start date
VSAFK0_CN	Version: Order header data for PP orders
<input type="checkbox"/> GSTRI	Actual start date
S280	Order header and item, BW
<input type="checkbox"/> GSTRI	Actual start date
S280BIW1	S280BIW1 * Order header and item, BW
<input type="checkbox"/> GSTRI	Actual start date

Figure 5.9: List of tables, fields and their short descriptions is displayed

## 12. The fields and tables to be used in the report

### 12.1. The data for the report

With the help of these methods, the desired data and its location for the report were found. The following table displays the description of the required data, the table in which it is located, and the field representing the piece of data.

<b>The date/duration</b>	<b>Table name</b>	<b>Field name</b>
<b>PO-number:</b> number that identifies a purchasing document	VBKD	BSTKD
<b>Purchase order date:</b> date on which the customer created the purchase order.	VBKD	BSTDK
<b>Customer name</b>	KNA1	NAME1
<b>SO-number:</b> the number that identifies the sales document	VBAK	VBELN
<b>Roll's arrival date</b>	VBAK	AUDAT
<b>Created on:</b> Date on which the record was created.	VBAK	ERDAT
<b>Actual release:</b> date on which the order was released	AFKO	FTRMI
<b>The scheduled start</b>	AFKO	GSTRS
<b>The actual start date</b>	AFKO	GSTRI
<b>The actual finish date:</b> Date on which the last operation was confirmed	AFKO	GLTRI
<b>Agreed delivery date</b>	VBEP	LFDAT
<b>Date of release of the invoice</b>	VBAK	FAKSK
<b>Invoicing date</b>	VBKD	FKDAT
<b>Goods issue date</b>	VBEP	WADAT

*Figure 6.0: list of the tables and fields where the requested data exists*

According to the table mapping, certain tables cannot be joined. For example, the data on the sales documents cannot be joined with the data on the order header data. This data was equally not found from other tables that could have been combined, which means that for example, the fields AFKO and VBKD cannot be joined. Accordingly, another solution has to be invented.

## 12.2. The data not automatically available in the system

As already mentioned, all the information is not automatically available in the system, so it has to be created. The information required, but not already existing in the system includes;

- The given delivery time in weeks
- Duration of the work survey
- Duration of the work planning process
- Delay of the start of the work
- The given production time in week
- The relation of the production time and delivery time
- The delay of the delivery
- Delay of the invoicing

This information has to be calculated according to the dates that are output on the report. SAP Query possesses a function for the creation of simple equations. The equations are made during the creation of the query, in the field definition screen. The created new fields are called local fields and they will be described in more detail in the query creation part. Before this phase we need to create the InfoSets. The InfoSets are created based on the data we have now specified.

## 13. InfoSets

### 13.1. The purpose of the InfoSets

The data needed to be included in the report is located in various tables. This data needs to be combined by creating an InfoSet, unless there already exists one to be used. No InfoSet corresponding to our needs exists. Accordingly, a new InfoSet needs to be created. InfoSet is like a deposit where all the data to be included on the report, is collected. Components can be added to an existing InfoSet at any time. For example, more fields can be added later. Fields can also be deleted, but only if they are not used in the queries.

There are several ways to retrieve the data for the InfoSet. The most common ways include using logical database or table joins. The other methods are briefly mentioned, however, the main focus will be in the logical database and the creation of table joins. “Table join using table” is illustrated first. We will see how the InfoSets are created in practice using these methods, and discuss the benefits of the methods in different situations. The maintenance of a tambour roll and the defined data functions as an example.

## 13.2. Choosing the name and query area

1. Choose SAP Menu → Utilities → SAP Query → InfoSets or the transaction code SQ02. You are now in the InfoSet: Initial Screen.
2. Choose Environment → Query areas to change the query area from global area into standard area in order to create the query in your own client
3. Specify a name in the InfoSet field (up to 24 characters) or use the name of an existing InfoSet, by selecting the name of the existing InfoSet and changing the name in the InfoSet field. This is the name the end users see when displaying or executing a query, so it should be as descriptive as possible.
4. Choose create (you are now in the InfoSet: Title and Database dialog box).

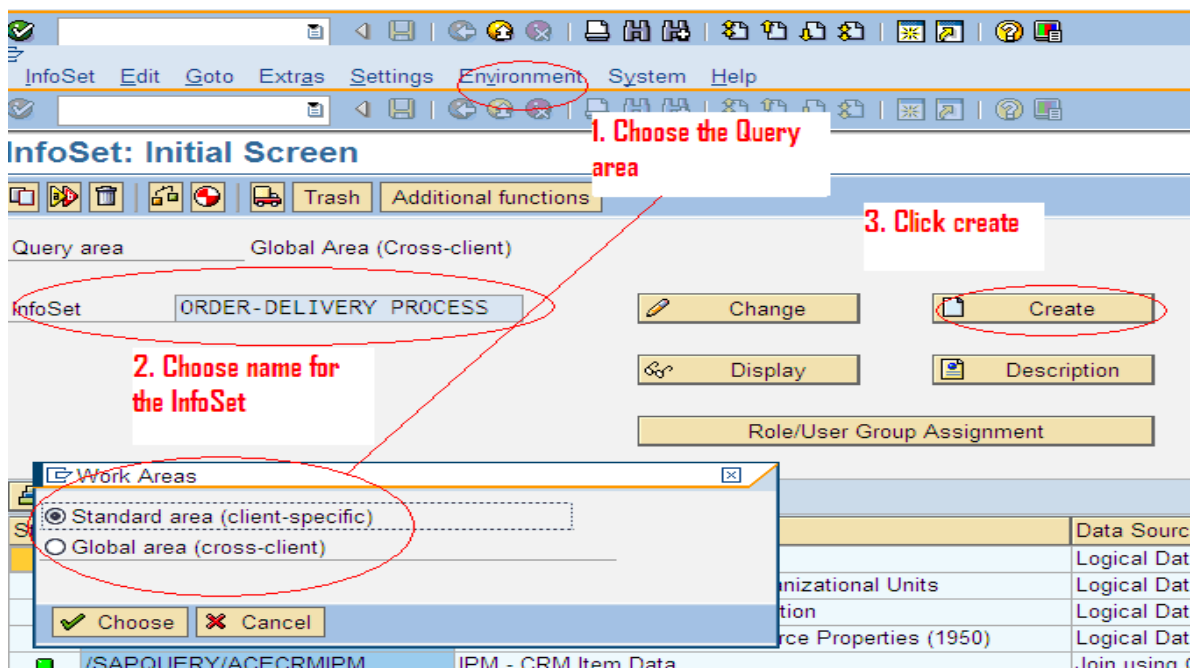


Figure 7.0: Steps involved in the first phase of the InfoSet creation

### 13.3. Assigning Data Sources

The data source is determined next. They are assigned by taking the following steps:

1. **Specify the name of an authorization group** in the Authorization Group field (max. 8 characters) if needed.

This determines the authorizations for executing queries and reports by this InfoSet and should not be confused with the user group. An authorization group can be assigned for one or more reports.

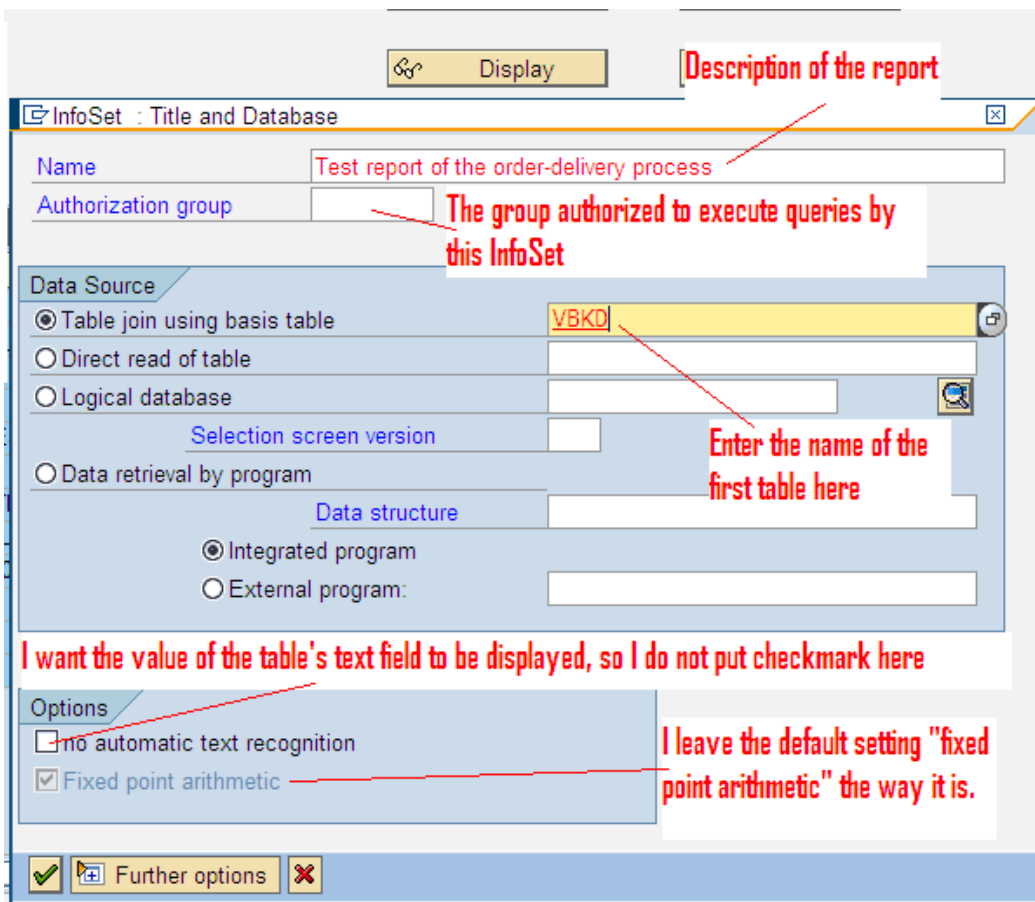


Figure 7.1: The screen to assign the data sources

2. **Choose the data source**

The data source is the source from which the data is to be retrieved to the report. There are several options to choose from, but the most common ones are either the logical database or the table joins.



## The data source options

### 1. Table join using table

This is a set of tables, linked together with the SELECT statement and contains all the fields of all the tables used in the join. All the links between the tables used in the join are separately specified. This is used when Query is prepared for retrieving data from more than one database tables having relationships. Table joins must be defined before maintaining InfoSets and Quick Views. In the first example, the InfoSet is created with table joins, so “Table Join Using Table” is selected.

### 2. Reading tables directly

This means reading data directly from an SAP table and is used when Query is prepared for retrieving data from one table only and for the users to be able to report directly on the contents of the table. The table must be included in the data dictionary and on the database.

### 3. Logical databases

Some tables are too large work with table joins, so in that case logical databases should be used. It can be identified with SE12 transaction. Logical database is a series of tables arranged in a hierarchical structure. One needs to specify the name of the logical database. Input help can be used to get a list of all the logical databases. This is used when Query is prepared for retrieving data based on a Logical database (LDB).

### 4. Using programs to retrieve data

Here a program can be written with own logic. An ABAB report can be used to evaluate any datasets, for which the automatic data retrieval process in the query is inadequate.

### 5. Sequential datasets

To generate reports on a sequential dataset, without having to create a program that reads data for the query reports.

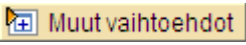
### 3. Choose from the options field:

#### 1. No automatic text recognition

You can choose whether to display the value or the relevant text of the table's text field in the report. If the function is not used, a checkmark has to be put in the checkbox.

#### 2. Fixed point arithmetic

To determine if the queries that are defined using this InfoSet operate with the fixed point arithmetic function switched on or off. The contents of this field become an attribute of the generated reports. As a default it is switched on and it is recommended to not change the setting. However, the status of it can be changed in an existing InfoSet. Before doing this, all the code relating to the InfoSet must be checked.

→ You can choose  Further Options, that is:

- Class for identifying text
- InfoSet generator

### 4. Possibility to define joins with or without graphics

Table joins can be defined with or without the help of graphics; the graphical join definition is the default in case corresponding software requirements have been met. In the InfoSet maintenance, you can decide if you want to use graphics to help you define table joins.

The setting can be changed by following the menu path “Settings” → “Settings” from the InfoSet maintenance initial screen and selecting or deselecting “Graphical Join Definition”. The paper takes a look to both of these options to compare the differences between them.

## 14. Defining table joins with the help of Graphics

The following screen enables to choose the tables that contain the fields and data, the user intended to add to the report. However, before starting the table joins process, there are certain facts that are useful to know:

- The tables to be used in the join should have at least one field in common, for example; the same name, domain or data element.
- The location of the table on the screen matters; sometimes only by moving a bit the location of the table on the screen, you may successfully generate the InfoSet.
- All the tables in SAP cannot be joined together; for example, tables from different modules seldom cooperate successfully together.
- Based on personal experience; the system might claim the InfoSet join definitions are correct and let the user continue all the way to the creation of queries. However, when executing the query, based on the InfoSet in question, the system may give a statement “no data was selected”. This means the InfoSet was not created successfully after all and you are not able to run the query.

The screenshot shows the SAP 'Join Definition' screen. The title bar includes 'Join Edit Goto Extras System Help'. Below the title bar are buttons for 'Add table' and 'Delete table'. The main area is titled 'InfoSet: Initial Screen' and contains a toolbar with 'InfoSet', 'Alias', and 'Join conditions' buttons. Two tables are displayed side-by-side:

VBKD : Sales Document: Business Data	
Technical Name	Long Text
VBELN	Sales and Distribution Document Num
POSNR	Item number of the SD document
KONDA	Price group (customer)
KDGRP	Customer group
BZIRK	Sales district
PLTYP	Price list type
INCO1	Incoterms (Part 1)
INCO2	Incoterms (Part 2)
KZAZU	Order Combination Indicator

VBAK : Sales Document: Header Data	
Technical Name	Long Text
VBELN	Sales Document
ERDAT	Date on Which Record Was Created
ERZET	Entry time
ERNAM	Name of Person who Created the Obj
ANGDT	Quotation/Inquiry is valid from
BNDOT	Date until which bid/quotation is bind
AUDAT	Document Date (Date Received/Sent
VBTYP	SD document category
TRVOG	Transaction group

Annotations on the screen include:

- To check the validity of join conditions and look for tables that are not joined** (pointing to the 'Join conditions' button)
- To create another name, alias name, for the table.** (pointing to the 'Alias' button)
- Proposing standard default table joins** (pointing to the 'Join conditions' button)
- Join conditions are displayed as lines** (pointing to the join lines between the two tables)
- Tables are displayed with long texts and technical names and key fields are marked with a symbol.** (pointing to the table headers and key fields)




At the bottom right, a partial table is visible:

AFVV : DB structure of the quantities/dates/values in the open	
Technical Name	Long Text
NTANZ	Constraint for activity start time (Basic)

Figure 7.2: The Join Definition screen

## 14.1. Table Join Definitions

In the screen illustrated on the previous page we can:

1. Add tables for the join by clicking  icon, specifying the name of the table and finally choosing  (ENTER) to continue.
2. Delete tables
3. Propose join conditions  **Join conditions**. The system proposes the standard default table joins, according to the foreign key dependencies stored in the dictionary, or from the key fields in the tables that are used in the join. Joined tables are used in a select statement to combine data from two or more tables that share one or more columns.

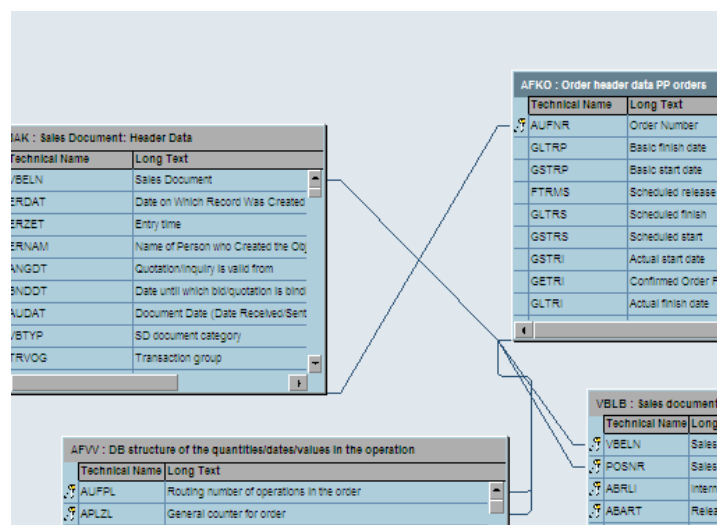





Figure 7.3: As the join condition is valid, it is displayed as a line

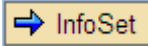
4. Check link conditions; after all the tables are added, the link conditions are checked by clicking  icon. If the link condition is not perfect, so the system may give, for example, the following notice:

 Table AFVV must be the right-hand table in a join

Despite a notice like this, it is still possible to continue to the following screen. The InfoSet cannot be generated. The notice states the link conditions are valid, but the table AFVV must be removed to the right side. The actual position of the tables matter; three different tables can be joined if they are successfully positioned. The same three tables may not cooperate successfully, if the positions are not correct. The right positions can be evaluated with the help of the table mapping, in order to achieve the following notice;

 Defined join conditions are correct

## 14.2. Maintain InfoSets

1. As all the tables are added and the joins are valid, go to the "Maintain InfoSets" screen with the  button or F6.

2. On the small popup screen we can choose whether we want to include all the values or key values of the tables in the new InfoSets or if we want to choose the fields ourselves. In this case only part of the tables' information is needed in our report, so the last option is chosen.

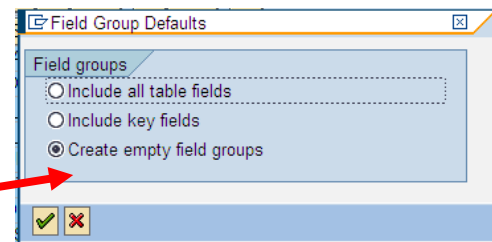


Figure 7.4: field group options

3. Accordingly, the fields on the right side are empty, and we now need to drag and drop all the defined fields, that is all the data we may need to use in the report, from the Data Field to the Field Group/Data Fields:

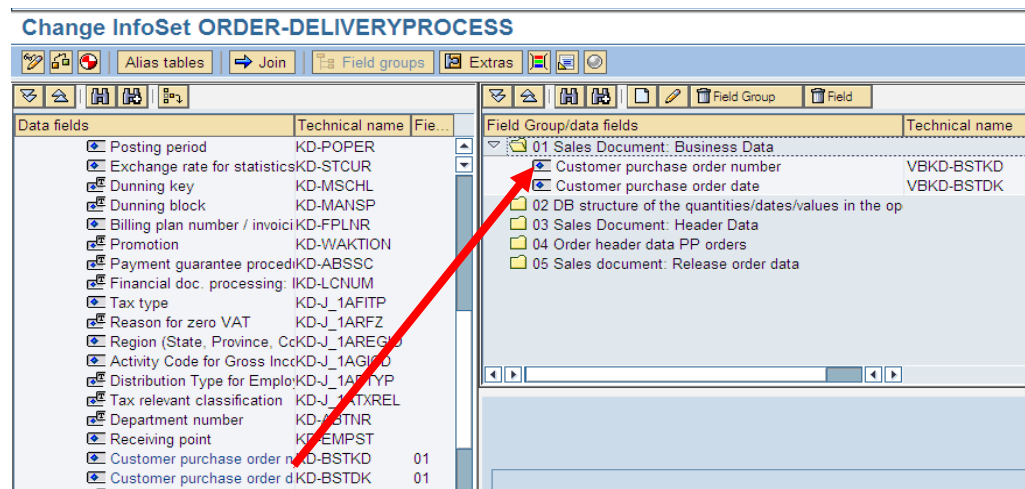



Figure 7.5: Drag and drop requested fields to the field groups on the right

4. Creation of a new field group; in order to classify all the fields into separate field groups according to the table in which they are located: Choose  (create field group)

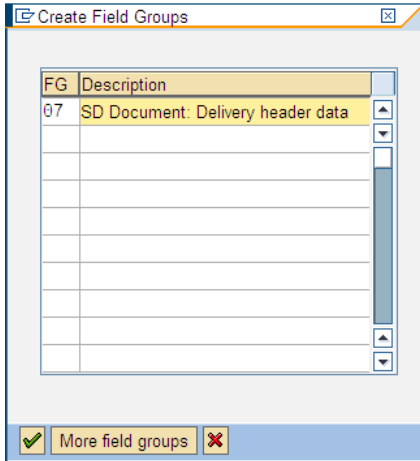


Figure 7.6: Enter description for the field

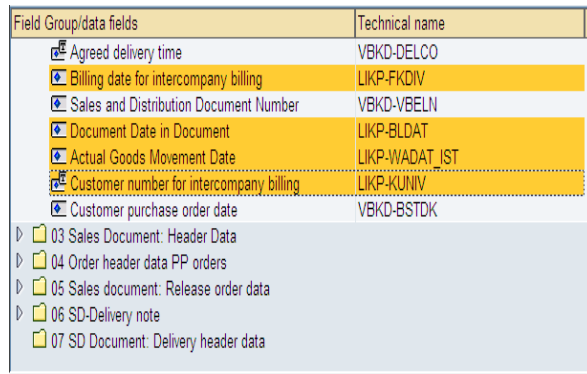

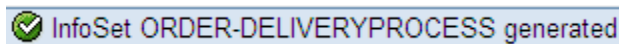


Figure 7.7: Drag and drop the desired fields to the new field group

- After all the values have been chosen, we click the Generate button “Generoi”  or shift +F6. If the InfoSet is successfully generated, we should get the following message:



- Next we need to assign the InfoSets to one or more roles/ user groups. We need to go back to the previous page and choose the InfoSet row that need to be assigned. After this we click “Role/User Group Assignment” button.

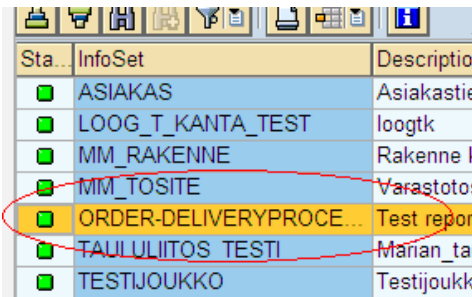


Figure 7.8: Choose the InfoSet

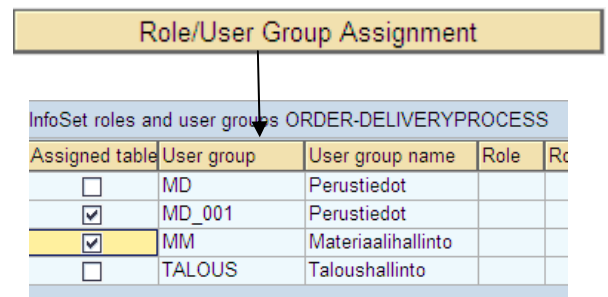



Figure 7.9: Choose the user group

Here we choose the user groups, in other words, determine which end-users or individual application departments can use this particular InfoSet when they create queries. After this we save the InfoSets → 

If many InfoSets with multiple fields are assigned to one user group, you can use the search function to find the right InfoSet. Within the specified InfoSets it is possible to perform any number of searches. The result is a displayed list of all InfoSets and fields, which satisfy the search criterion.

## 15. Creation of InfoSets without Graphics

As already mentioned, the InfoSets can also be created without the help of graphics. The creation of InfoSet without the help of Graphics appears to be a bit more complicated process, which is why it will be only briefly presented to have an idea what it means. By choosing “Settings” → “Settings” we can take a look on what the InfoSets look without graphics:

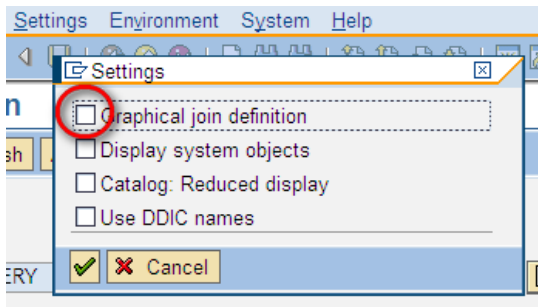


Figure 8.0: Choose settings – settings and deselect the graphical join definition

### 15.1. The initial screen; choosing the tables for the join

1. On the first screen in the creation of InfoSets without graphics the tables are added on the blank fields. After this two tables at the time are chosen by putting checkmark on the checkmark box on the left side.
2. The chosen join conditions are then displayed on the right side of the screen. The user can determine the join type between the two tables. The options include inner join, which is the default setting, or left outer join.

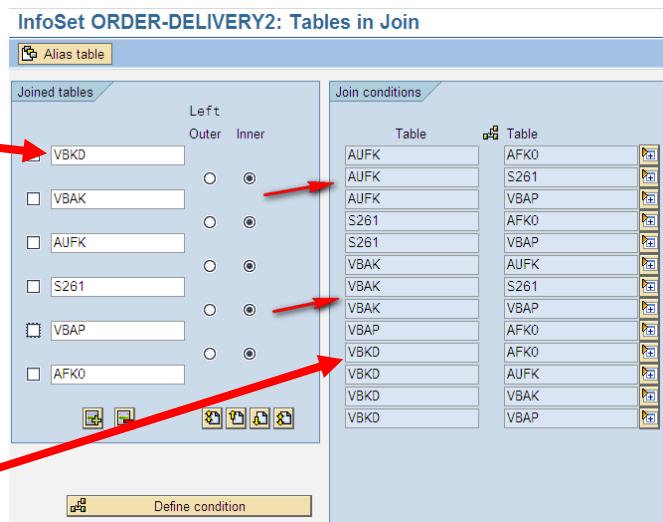


Figure 8.1: InfoSet definition without Graphics

**Left outer join:** each data record in the first (left) table is included in the result set, even if no record exists in the second (right) table according to the link conditions. In this case, the fields in the right table are set to their initial values.

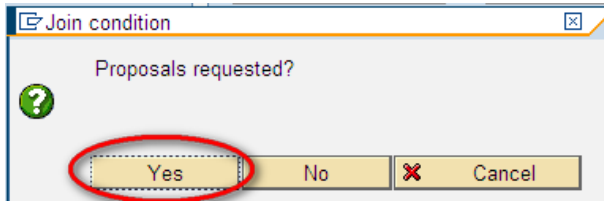
**Left inner join:** data record in the first (left) table is included in the result set only if a record exists in the second (right) table according to the link conditions.

Figure 8.2: specification of join conditions

Table
AFK0
S261

- The conditions can be specified by choosing the pushbutton illustrated on figure 30.. This shows how the tables are joined.

Figure 8.3: Join conditions



- The system proposes the standard default settings for the condition. These settings are based on the foreign key relationships that are stored in the data dictionary or on the key fields of the tables in the join.

## 15.2. The second screen; relations between the tables

The next screen enables the specification of the condition between two tables. This consists of defining equal relationship between two fields. This means, that records in the left and right tables are only included in the result set if they contain the same values.

There can only be an equal relationship between two fields if both have the same type in the database, i.e. they are from the same domain in the Dictionary or their Dictionary types – and lengths –are identical.

- The equality condition can be defined by assigning identical indexes to the fields concerned. For these indexes any characters can be used, but it is recommended to keep to numeric indexes between 00 and 99.

Field documentation			
	AUFK		VBAP
Order Number	AUFNR	00	00 AUFNR
Order Type	AUART	1	1 VBELN
Order category	AUTYP		POSNR
Reference order number	REFNR		MATNR
Entered by	ERNAM		MATWA

Figure 8.4: Field condition display

The system suggests a condition by defining the field AUFNR, the order number, with an index “00”. This means that the type in the database of the field AUFNR in table AUFK equals the corresponding field in the VBAP table. The fields AUART and VBELN in turn, are not the same type in the database. This is stated by the following notice;

Fields with the index 1 cannot be linked

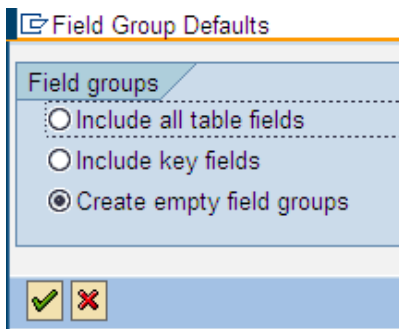


There may be several links between two tables:



Field	Table	Key	Operator	Table	Field
Period to analyze - curre...	SPTAG	00	=	00	GLTRP
Delivery	VBELN	01	=	01	RMANR
Delivery Item	POSNR	02	=	02	POSNR
Statistic(s) origin	SSOUR				AUFNR

Figure 8.5:  
The system can propose several links




2. The “back” button  takes us to the same screen as with the table definition with the help of graphics. After this phase the procedure continues the same way as in the table join with the help of graphics.

Figure 8.6: Field group options

### 15.3. Possibility to display the InfoSet with graphics

In spite of the fact the InfoSet was created without the help of graphics, the graphical display is equally possible by choosing again “settings” → “settings” and selecting “Graphical Join Definition”. In this case, when choosing the “Join” function, the selected tables are displayed one by one on the screen:

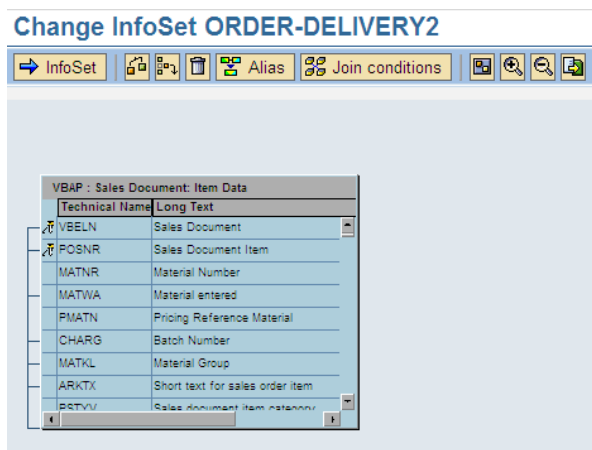


Figure 8.7: The InfoSet can be displayed with or without graphics, regardless the method used when creating it

We have now created InfoSets by using the table joins with and without the help of graphics. Next we will see how to create an InfoSet by using the logical database. Logical database is a repository that contains several tables.

## 16. Creating an InfoSet with a logical database

Logical databases are special ABAP programs that retrieve data and make it available to application programs. The most common use of logical databases is to read data from database tables by linking them to executable ABAP programs.

Logical databases contain Open SQL statements that read data from the database. You do not therefore need to use SQL in your own programs. The logical database reads the program, stores them in the program if necessary, and then passes them line by line to the application program or the function module LDB\_PROCESS using an interface work area.

A logical database provides a particular view of database tables in the R/3 System. It is always worth using logical databases if the structure of the data that you want to read corresponds to a view available through a logical database.

The data structure in a logical database is hierarchical. Many tables in the R/3 System are linked to each other using foreign key relationships. Some of these dependencies form tree-like hierarchical structures. Logical databases read data from database tables that are part of these structures.

### 16.1. Finding the correct Logical Database name

Before starting the creation of an InfoSet with the logical database, the user needs to know which logical database contains the tables needed for the report. To find out in which logical database the required tables are located, the transaction **SE36** is used. It takes us to the screen where we can search logical databases with table names.

Figure 9.0: Click Extras → Table usage

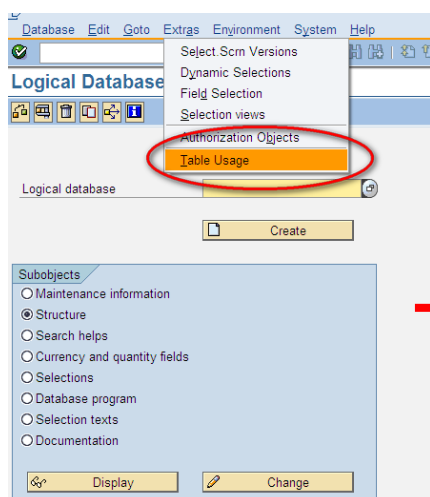
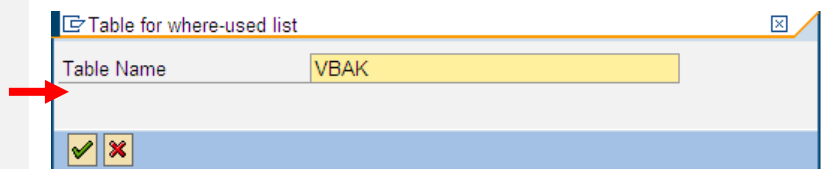


Figure 9.1: Then supply the Table name and hit enter



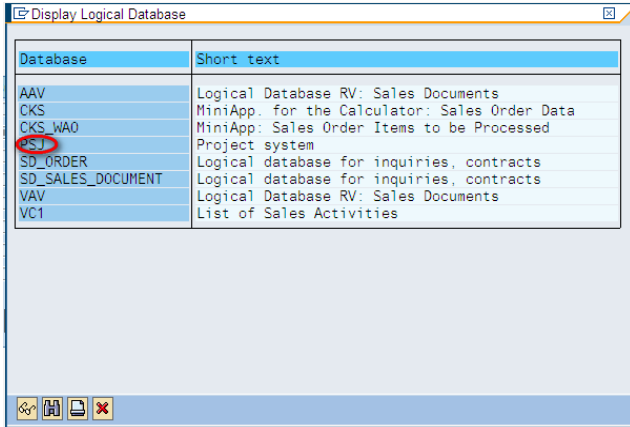


Figure 9.2: A pop-up window shows Display Logical Database

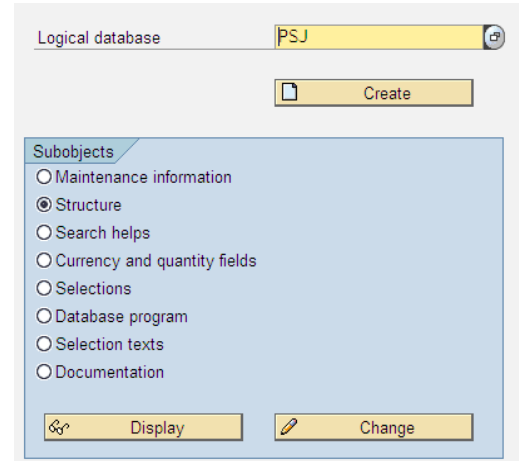


Figure 9.3: The content of PSJ is displayed

Figure 9.4: The logical database includes tables VBAK, VBKD, VBAP, LIKP, LIPS, AFKO and AUFK; all the tables we want to include in the join

PSDYPD	PSDYPD	Table	LDB PSJ: Dummy structure
VBAK	VBAK	Table	Sales Document: Header D
VBKD	VBKD	Table	Sales Document: Business
VBAP	VBAP	Table	Sales Document: Item Data
VBUP	VBUP	Table	Sales Document: Item Stat
VBKDPO	VBKDPO	Table	Sales document: Business
FPLA	FPLA	Table	Billing plan
FPLT	FPLT	Table	Billing Plan: Dates
PSDYVB	PSDYVB	Table	LDB PSJ: Dummy structure
PSDYVK	PSDYVK	Table	LDB PSJ: Dummy structure
PRPS_R	PRPS_R	Table	Project Hierarchy Reporting
PRTE	PRTE	Table	Scheduling Data for Project
PSMLST	PSMLST	Table	Milestone I/O Table
PSTX	PSTX	Table	PS Texts (Header)
PLAF	PLAF	Table	Planned order
KBED04	KBED04	Table	Capacity Requirement Recs
RESB04	RESB04	Table	Reservation/dependent reqs
PSMERK_PRPS	PSMERK	DDICType	Characteristics for Summar
PSDYPR	PSDYPR	Table	LDB PSJ: Dummy structure
AUFK	AUFK	Table	Order master data
AFKO	AFKO	Table	Header Data in PP Orders

## 16.2. Creation of an InfoSet using the Logical Database

1. The initial screen is exactly the same as when creating InfoSets with the help of table joins. Give the InfoSet a descriptive name and chose “create”.

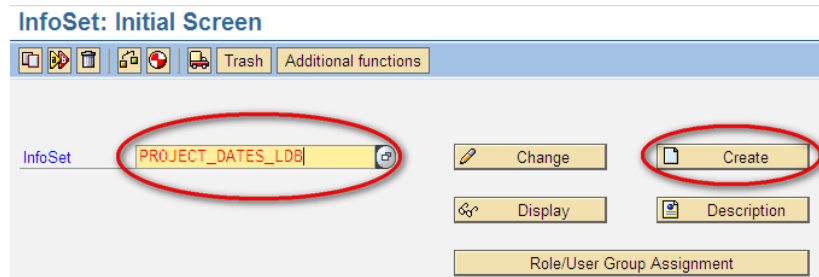


Figure 9.5: InfoSet initial screen

Figure 9.6: The next phase is similar, except that instead of typing a name of a basis table, we now add the name of the logical database in the “Logical Database” field. In our case it is PSJ.

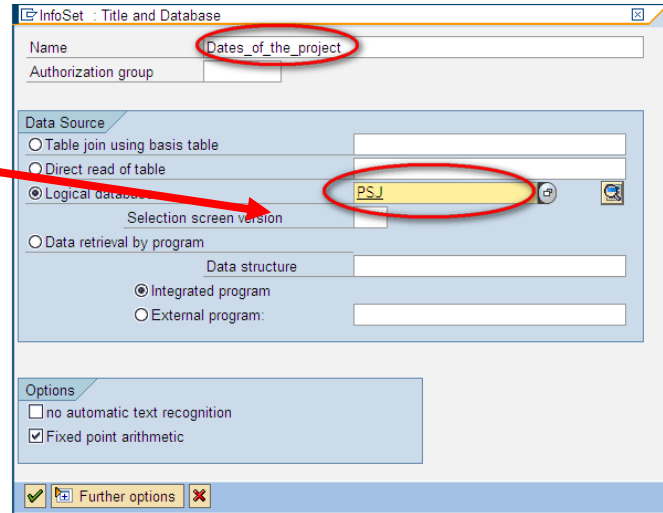


Figure 9.7: The next phase is to choose the desired tables for the InfoSet from the pop-up window. In this case this includes choosing the tables mentioned above.

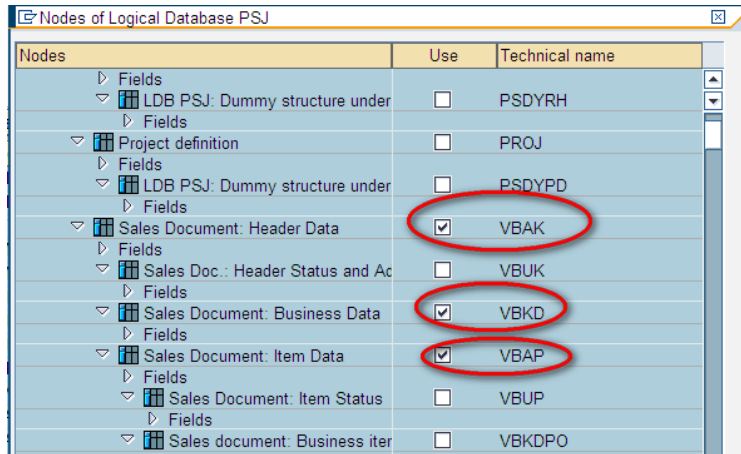
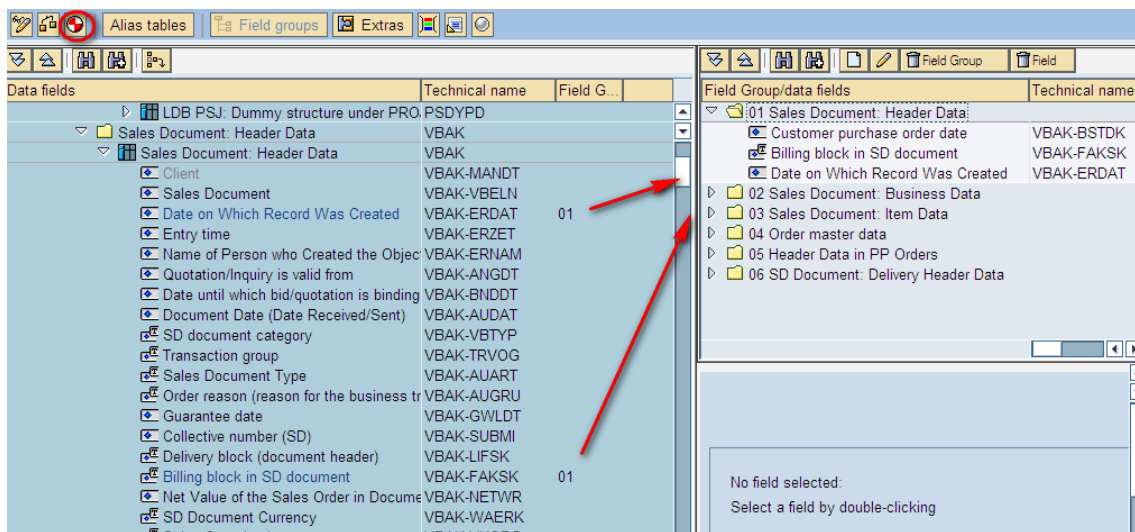
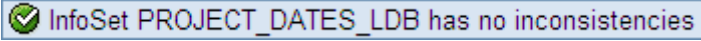




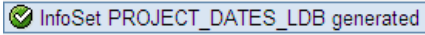
Figure 9.8: Despite limiting the table display for the InfoSet, the field selection screen displayed all of them. As in the creation of InfoSets with table join, we move the required fields from the left to the right and position them in the field groups.



2. After all the selections have been made we check the join conditions (F8).

→  →

3. The query is ready to be saved and generated →  →  →

 →

7. After the generation, we return back to the InfoSet main screen using the green arrows and assign the InfoSet for specific user groups the same way as when creating the InfoSets using the table joins. Once again, the changes must be saved. The InfoSet has now been created and assigned to specific user groups. Now we are ready for the creation of the Query, based on the created InfoSets. Before this, we will use the language comparison.

## 17. Language comparison

### 17.1. Purpose of the language comparison

The Query tools possess a function that enables to compare the terms with different languages. The dates for the example report were defined in Finnish but the report will be done in English. In order to know which term in English is the equivalent for the Finnish term, the language comparison is used.

### 17.2. Accessing the language comparison tool

Language comparison is accessed with SQ07 transaction. The screens and terms are usually in the language used in the logon. However, this function displays the terms of InfoSets and Queries in various languages. The function shows how the field names are translated from Finnish into English. In the example, the names are displayed in Finnish, because the used logon language was chosen to be Finnish.

Kielivertailu SAP-kyselyn objekteille

Kielivertailu Alku FI Suomi  
Loppu EN Englanti

Kysely

Käyttäjryhmä

Infojoukko

Käyttäjryhmät

1. Go to the Language Comparison screen with SQ07 transaction and enter the name of the desired InfoSet or Query.

Infojoukon ORDER-DELIVERYPROCESS tekstien näyttö

Vain erot

Osaobjekti	Merkitys
Infojoukko	
Kenttäryhmä	
01	
03	
04	
05	
06	
07	
08	
09	
Tietokantataulu	
AFKO	PP-tilauksen otsikkotiedot
APVV	Vaiheen määrin/päivämäärien/arvojen tietokan
LKP	Hyntitositte toimituksen otsikkotiedot
QHLL	Laatuilmoitus
SZ01	SD - toimitus
VBAK	Hyntitositte: otsikkotiedot
VSKD	Hyntitositte: kaupalliset tiedot
VBLB	Hyntitositte: toimitusmäärätiedot
Tietokantakenttä	
AFKO-BREAKS	Tunnus: saeut huomioon otettava ajoitus
AFKO-FTRMI	Toteutunut vapautuspäivämäärä
AFKO-FTRMP	Suunniteltu vapautuspäivämäärä
AFKO-GLTRI	Toteutunut loppupäivämäärä
AFKO-GSTRI	Tot. alkupää

2. The following screen displays the Field groups, tables, fields, additional fields and currency/ unit fields.

Näytä osaobjekti

Tietokantakenttä	AFKO-FTRMI
Merkitys	
FI	Toteutunut vapautuspäivämäärä
EN	Actual release date
Otsikko	
FI	Toteutunut vapautuspäivämäärä
EN	Actual release date

3. By double clicking one of the field names, a screen displaying the description in both, Finnish and English appears

Now we have created the InfoSets, assigned it to specific user groups, and checked the translations. Accordingly, we can start to create the actual query.

## 18. Creating the queries

There are two ways to define queries in SAP with the actual query-tool:

- 18.1. Query painter, which is used to create basic lists.
- 18.2. Defining structure of basic lists and statistics through several screens by making entries to required fields.

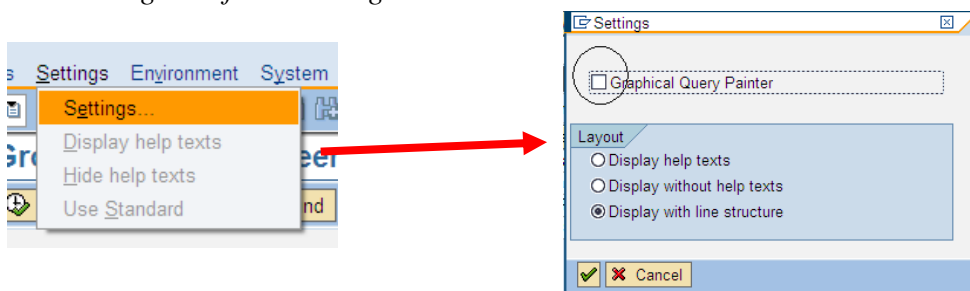
Beginning with R/3 release 4.6A, SAP offers a graphical version of the SAP Query tool, called the Graphical Query Painter. If you have not used queries before, this option, is set as default in the initial screen of the query creation.

The user might find it easier to define queries as the graphics are displayed. However, we will start the creation without graphics. This option enables the creation of statistics and ranked lists as well. As already mentioned in the beginning, in addition to these, the queries can be defined with the help of the Quick View, and the InfoSet query. These will be illustrated in later sections.

### 18.1. Creating queries without the graphical definitions

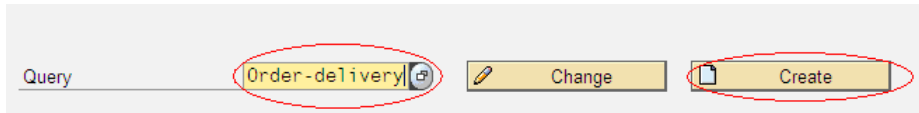
The initial screen of the Query Creation is accessed with the SQ01 transaction. The same transaction is used when creating the queries with the other members of the query family. It is possible to display or change queries with or without the graphics, regardless the method used when creating them. The title bar lists the query group you are currently in. If you are assigned to multiple query groups, press F7 to see a list of all of them.

*Figure 10.0: The Query Painter is usually set as a default because it is simpler to use, it has to be changed before starting the creation:*



### 18.1.1 Inserting the name

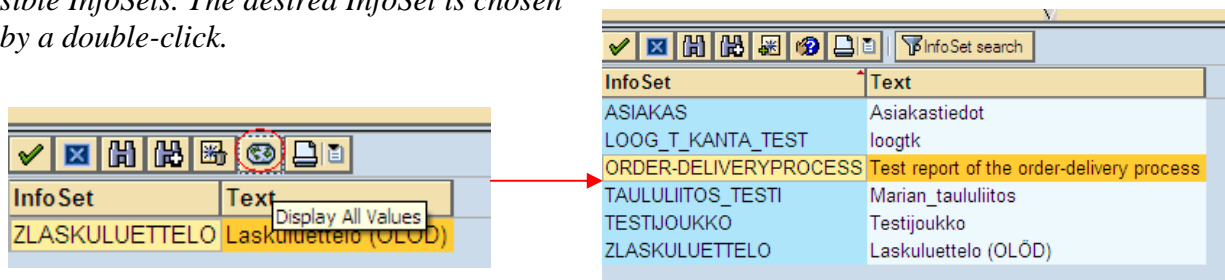
Figure 10.1: The name of the Query is inserted to the Query field, and followed by clicking the “Create” button



### 18.1.2 Choosing the InfoSet

Next step is to choose the data for the report. This is where the InfoSet comes along. A popup window displaying a list of the InfoSets assigned to the user group in which the user belongs appears on the screen.

Figure 10.2: All the values may not be shown. “Show all values” button displays all the possible InfoSets. The desired InfoSet is chosen by a double-click.



The system takes us through four different main screens; field selection, basic list, statistics and ranked list. After the field selections and the basic definitions for the basic list, one can execute the query at any point.

### 18.1.3 Faster and simpler query or time taking, specifically defined query?

There are two ways to create queries. There is a simple way, which means all the definitions are being displayed as default. In this case only the title of the query, field selections and line, and row output sequence need to be defined. This is the faster way.

There is also a bit more time taking way. The user can make pretty customized specifications for the queries. These specifications include, for example, row or field colors, number of blank lines after each row or slashes before or after lines. A basic list is created next, illustrating all the possible features the query function offers. In other words, a basic list is created using the more time-taking way.




### 18.1.4 Defining the title and format

We will start by choosing the title and output format:

Figure 10.3: Basic List creation initial screen

1. The title is used later as the title of the screen, or when printing, as the first line of the heading for the lists generated by the query.
2. The notes are used to document the query. When requesting the query directory, notes are displayed with the title.
3. The default for the output of the screen is a dynamic page size and 83 columns. It can be, but is not recommended to be changed because the system adapts the dimensions of the list to the size of the window.
4. The number of columns defines the width of lists. It determines when a line break occurs in a basic list.
5. One standard variant can be created per query and any query with a standard variant is always executed with a variant. Query variants can only be maintained in the initial screen, so standard variant can only be defined when one has defined a query to the extent that one can generate a report.
6. The attribute “Execute only with a variant” applies to the generated report and can thus be used also when starting the report directly.
7. If we want to protect the report in a way that only the one who created it can make changes, we can click the “change lock” field.
8. Printing lists with or without a standard title option allows deciding whether to output a standard title, which does not appear in the screen display for each page when printing a list. The standard title contains the date, the query title and the page numbering.
9. The left margin allows designating the size of the left margin when printing the list and does not affect the screen output of the list.
10. The output format radio buttons are a pre-set for further list processing.

After the definitions we go to the next screen → 

### 18.1.5 The Output Options

**SAP List Viewer:** The first sub- list (must be a single line basic list, a statistic, or a ranked list) is transferred to the ABAP List Viewer directly when the query is processed.

**ABAP list:** The list is displayed on the screen when executing the query. The list or the data generated for its creation can also be passed on a list without displaying the list on the screen beforehand.

**Graphic:** The first sub-list (must be a one-line basic list, a statistic or a ranked list) is passed directly to the graphic. The first numeric field in the first line of the list is used as a reference point for the graphic display. A parameter will be predefined on the selection screen.

**ABC Analysis:** The query is passed on directly for ABC analysis when executing the query. The list must be a one-line basic list, a statistic or a ranked list. A parameter must be set on the selection screen.

**Executive Information system (EIS):** The first sub-list is passed directly to the Executive Information System (EIS) when executing the query. If it is to be passed on, the sub-list must be a one-line basic list, a statistic or a ranked list. A parameter will be predefined on the selection screen.

**File Store:** The first sub-list (must be a one-line basic list, a statistic or a ranked list) is passed directly to the download interface and stored as a file when executing the query. A parameter will be predefined on the selection screen.

**Display as table:** In this case, the format of the first sub-list (must be a one-line basic list, a statistic or a ranked list) depends on a table view control. A parameter will be predefined on the selection screen.

**Word processing:** The list (must be one-line basic list, a statistic or a ranked list) is passed on directly for word processing. A parameter need to be set on the selection screen.

**Spread Sheet:** The first sub-list (must be a one-line basic list, a statistic or a ranked list) is passed directly to EXCEL (via the XXL interface) when executing the query. A parameter will be predefined on the selection screen.

### 18.1.6 Field group selection

Next phase is to select the field groups for the report. Field groups are the groups we created in the InfoSet part. The InfoSets are divided into field groups to facilitate pre-selection. Since one InfoSet can be used for several different reports, we may not always need every single field group.

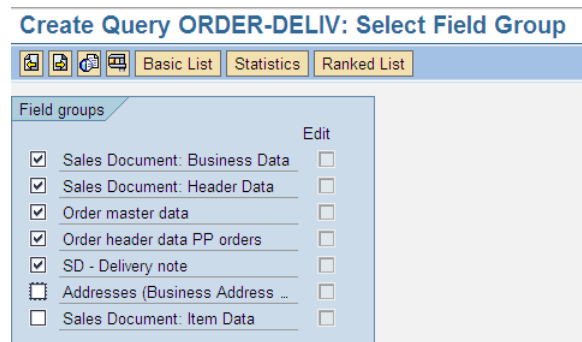


Figure 10.4: field group selections

After selections, we move to the next page →

### 18.1.7 Field selection

On this screen we select the fields we want to include in the report. The selection of field groups and fields can be changed at any time.

We can navigate through the various pages of field

options with the  icons.

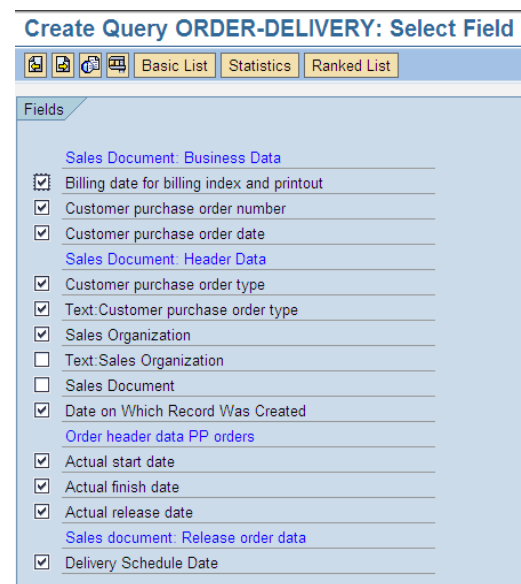


Figure 10.5: Field selections

### 18.1.8 Changing column header

The column headers for selected fields can be changed on this screen by placing the cursor on one of the fields and selecting Edit → Column headers → Maintain. On the dialog box you can change the column header or set the standard value:

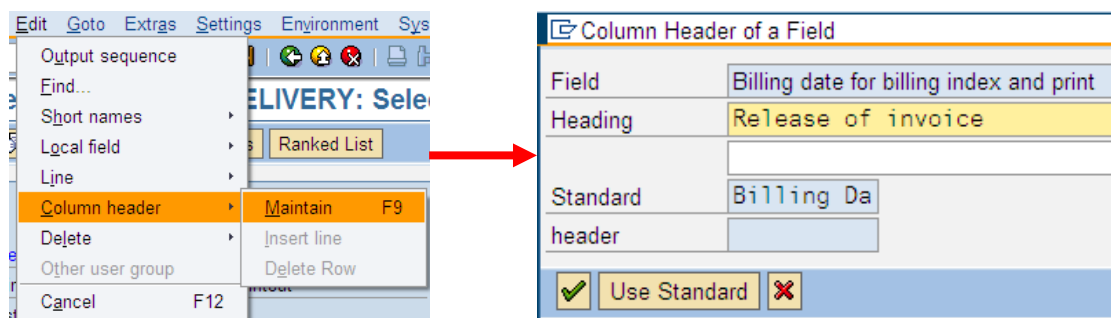


Figure 10.6: Column headers

### 18.1.9 Searching the field names of the InfoSet

By selecting Edit → Find one can search for field names of the InfoSet.

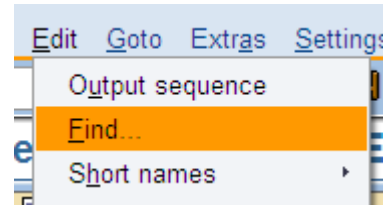


Figure 10.7: Find field names

### 18.1.10 Information on the fields

By placing the cursor on a selected field and choosing Extras → Field documentation one can see more information about the selected field:

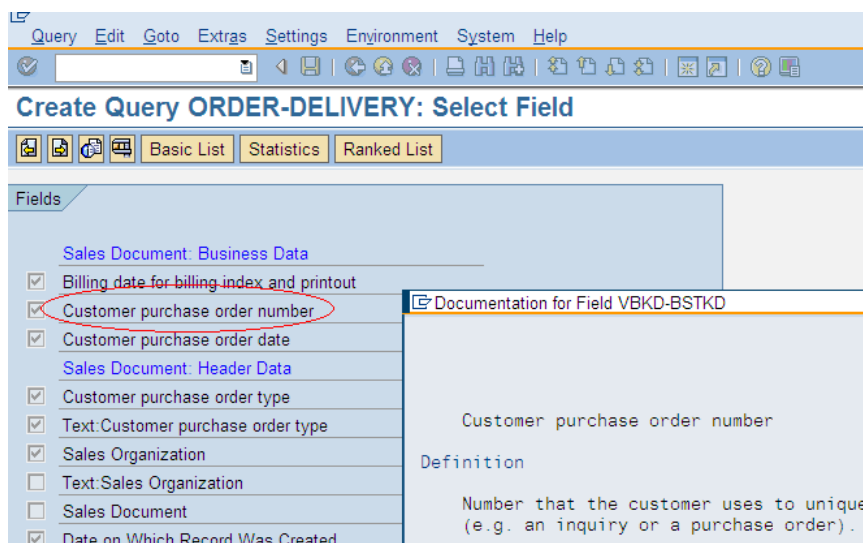
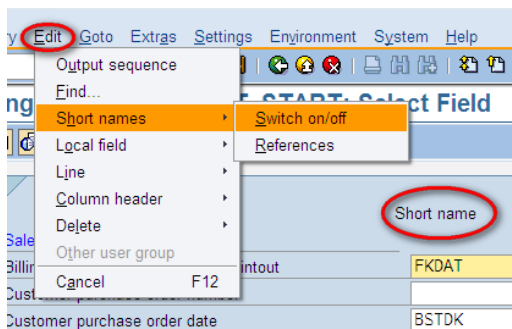


Figure 10.8: A double-click on the customer purchase order number displays the description of this field

### 18.1.11 Assigning short names



If you want to place the value of a field in a header or calculate a local field, you need to assign a short name for the fields. These names will be used when creating the formulas for the calculations.

Figure 10.9: Write a short name for the fields that require one

### 18.1.12 Defining Local Fields

By defining local fields one can generate new information from the existing fields in an InfoSet without adding new fields. For instance, I could calculate the duration from the date of the purchase order all the way to the date of the invoicing. This is where we need to have a field name as well as the short name for the field. We can also create new data by using our own values.

Figure 11: To define a local field: Edit → Local field → Create



Next, we need to define the formula and other specifications for the local field:

**Short name:** The name defined within the query

**Field description:** Describes the content of the field

**Heading:** Defines how the field is described in the report

**Field Group:** You can decide in which field group you want to include the field

**Properties:** Determine whether the local field is a text field, calculation field, date field, etc. Basically the properties define how the result is output. In this case the value is numerical. We

will calculate the duration between two dates; the date of the customer's purchase order and the billing date. Therefore, we choose the calculation field. You must remember to define the number of digits and decimal places as well.

**Calculation formula:** This is the formula to be used for our simple calculation. We can use parentheses in a normal way. In order to output the result in weeks, the number is divided by seven. The result will be output with an accuracy of one decimal place.

Figure 11.1: Local Field definitions

## Complex calculations

Figure 11.2: The calculation of local fields enables more complex calculations as well. We can define conditions by choosing “Complex Calculation” option.

```

+, -, *, /, DIV, MOD, ( ), [...] %NAME, %DATE, %TIME
=, <, >, <>, <=, >=, AND, OR, NOT SYM_..., ICON_...

```

Figure 11.3: These symbols can be used in the formulas. %NAME designates the name of the user processing the query, %DATE the current date and %TIME the current time.

Icon	Name	Descript.
	ICON_CONVERT	Convert
	ICON_COMPARE	Compare
	ICON_MOVE	Move

Figure 11.4: The “Icon” option enables the user to choose an icon to be output in the local field.

Symbol	Name
	SYM_SPACE
	SYM_PLUS_BOX
	SYM_MINUS_BOX
	SYM_PLUS_CIRCLE
	SYM_MINUS_CIRCLE
	SYM_FILLED_SQUARE
	SYM_HALF_FILLED_SQUARE
	SYM_SQUARE

Figure 11.5: Or, we can choose to display symbols as an output of the field.

With the complex calculation we could, for example, create a calculation which displays the value of the duration of the final lean time as a black circle in case it has been delayed. Otherwise as a white circle. Simple calculations like this are enabled with the query function. However, for example the IF function is not supported. Additionally, the fields chosen for the queries must work properly; the date of the billing block, for example, was not displayed at all in the final report, so it could not have been used in the local field creation either.

### 18.1.13 Defining the selection criteria

This screen allows the user to define the criteria according to which he or she will execute the report. For example; by selecting the customer purchase order date as for a selection criteria, means that the reports are executed according to the dates of the customer's purchase order. It is possible to extend or change the selection criteria later, but it has to be done in this screen.

This means that no default values are assigned to any of the selection criteria for the query

Selection of fields for which you want to define an additional selection criterion

The order of selection on the selection screen; the number must be between 1 and 90

The text wanted to appear on the selection screen

This means that only one entry field is prepared on the selection field. The pushbutton "Multiple Selection" is available to make multiple selections. You can deactivate the multiple selection function by putting a checkmark in the next checkbox

This enables you to specify a single value or an interval on the selection screen. The pushbutton for selecting the extra screen "Multiple Selection" is not available. If you want to restrict the selection so that you are permitted to only select single values, also put a checkmark in the first checkbox

Now we have made the basic selections; determined the title, format, field groups and fields to be used, and the selection criteria. On the next screen we create a basic list for the query. This includes making decisions about the structure, output and finally adding header and footer for the report.

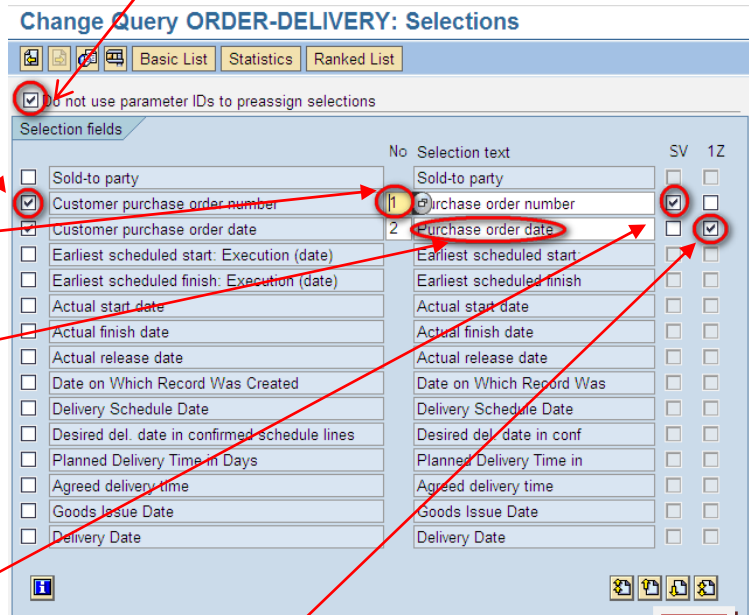


Figure 12.0: Selection Criteria Screen

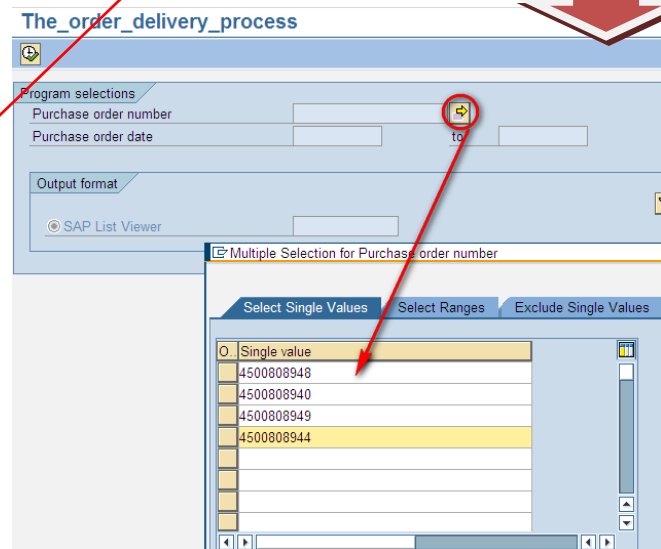


Figure 12.1: The view on the last screen

### 18.1.14 Basic List Line Structure

SAP Query offers different kinds of processing options. We will create a basic list, simultaneously explaining what the various options provide.

**Basic list with box:** The basic list is displayed in a box.

**Columns separated by I:** can only be used with the basic list with box option and affects the layout of the basic list like this:

- After each field on a line except the last field, there is a vertical bar
- Before and after each control level text and each total there is an underscore
- The individual columns in the standard header are separated by vertical bars in single line basic lists. In basic lists with multiple lines no vertical lines are embedded

**Permit row count in SAP list viewer:** The number of rows is counted in the list when it is displayed with the SAP List Viewer (ALV).

**Frame width:** determines the width of the frame around the basic list. It is recommended to let the system automatically to determine the frame width to adjust to match any changes made.

Field	Line	Sequence	Sort	Total	Counter
Earliest scheduled start: Execution (date)	1	1			
Sales and Distribution Document Number	2	1			
Name of orderer	3	1			
Order Number	4	1			
Sales Organization	5	1			
No. of deliveries	6	1		<input checked="" type="checkbox"/>	
Number of delivery items	7	1		<input checked="" type="checkbox"/>	
Earliest scheduled finish: Execution (date)	8	1			
Earliest scheduled start: Processing (date)	9	1			

Figure 13.0: Basic List Line Structure

**Compressed display:** The basic list is displayed in compressed format, provided compressed display is possible.

**Line:** determines on which line the selected field is displayed.

**Sequence number:** determines, for each line, the sequence in which you want the individual fields to be output on the line. So in addition to the line number, you should also assign a sequence number to all the fields you want to appear in the basic list.

**Sort sequence number:** specifies the sort sequence in the basic list; you can assign sequence numbers between 1 and 10.

**Total:** The numeric fields for which you want to output the total at the end of the basic list and, if sort criteria exist, sub-totals at the end of each control level.

**Counter:** For each of the fields you want to count, select how often they should be read while the query is getting data. The total is displayed at the end of the list.



### 18.1.15 Displaying layout

1. We can check the layout at any time to see what the report is like and how the changes affect on it by choosing Query → Layout display

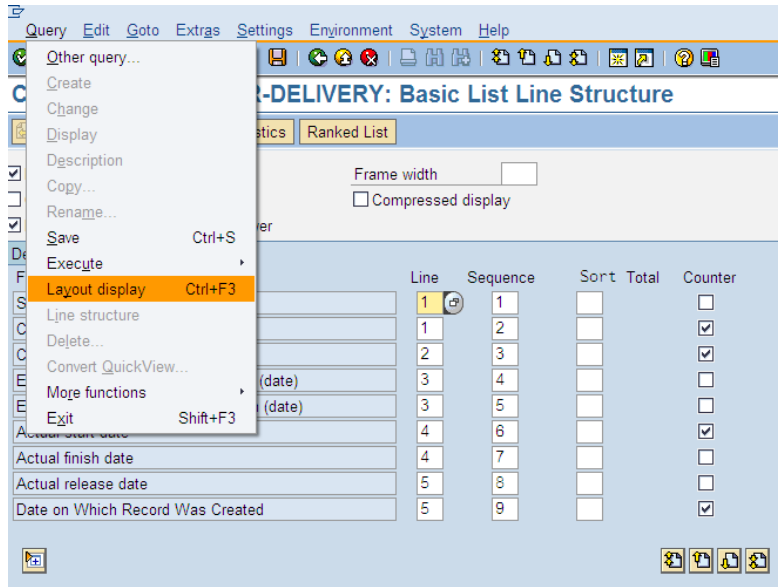


Figure 13.1: Layout Display

### 18.1.16 Displaying help texts

If we are not exactly sure what all the field names mean, we can choose Settings → Display help texts. This provides us with an explanation:

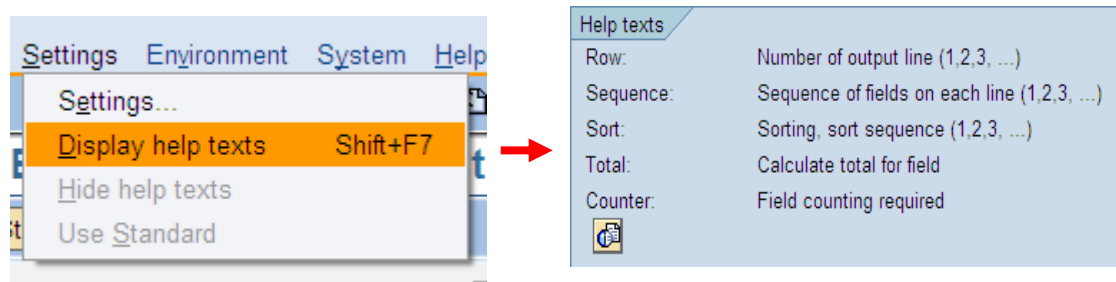


Figure 13.2: Help Text Display

The query is now ready to be executed or we can continue to the following screen, which permits us to define output options for the lines of the basic list.

### 18.1.17 List Line Output Options

Line	Color	Header line	Ref.	Slash	Blank line	Columns	Page	New
				Bef / To	Bef / Aft	with	header	Page
1	NegThreshold	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	NegThreshold	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	List line	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	OverallTotal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	List line	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	List line	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	OverallTotal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	List line	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	List line	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	OverallTotal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11	OverallTotal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 14.1: List Line Output Options

1. **Color:** a color for a particular line can be chosen in the list displayed on the right.
2. **Header Line:** Column headers are automatically generated for the fields in this line. Since no more than four lines can have column headers in a basic list, only four lines are made available. The column headers for fields can also be double-spaced, so two lines with column headers can be supplied for a line of the basic list. The automatically generated column headers are displayed on the screen *Headers*. You can change them, if required.
3. **Ref. (Line number):** Number of a line in a basic list. Specifies dependencies between different lines of the basic list. If you enter the number of another line here, the line is only output if the line you enter here is also displayed.
4. **Slash Bef / To:** Slash is displayed before/ after the rest of your line is displayed. The option 'Slash' can only be used if you have chosen the option 'Basic list with frame' as well. I chose the slash function since it makes the report's appearance more clear.
5. **Blank line Before/ After:** Determines how many blank lines should be output before/ after the output of the line. If you do not enter anything, no blank line is output.
6. **Columns with:** the individual fields of the line are separated by a vertical line (|). The field is only ready for input if the option 'Separate columns with |' has been chosen from the previous screen.



Figure 14.2: Line color options

**Effect of slash**

The order-delivery process	
Sold-to pt Purchase order number Leantime o	
Sold-to_pa	Customer_purchase_order_number _____
Customer_p Date_on_Wh	
Actual_re1	
Earliest_s Actual_sta	
Earliest_s Actual_fin	
Delivery_S Agr	
Desired_de Pla Delivery_D	
Goods_Issu Actual_Goo	
Billing_da	
Leantime_o	
Overall total Pla *	
Total number Delivery_S *	
Leantime_o *	
Vaahto Roll Service	

Figure 14.3: With the slash before and after

The order-delivery process	
Sold-to pt Purchase order number Leantime o	
Sold-to_pa	Customer_purchase_order_number _____
Customer_p Date_on_Wh	
Actual_re1	
Earliest_s Actual_sta	
Earliest_s Actual_fin	
Delivery_S Agr	
Desired_de Pla Delivery_D	
Goods_Issu Actual_Goo	
Billing_da	
Leantime_o	
Overall total Pla *	
Total number Delivery_S *	
Leantime_o *	
Vaahto Roll Service	

Figure 14.4: Without the slash

**Effect of blank line**

The order-delivery process	
Sold-to pt Purchase order number Leantime o	
Delivery_S Agr	
Desired_de Pla Delivery_D	
Goods_Issu Actual_Goo	
Billing_da	
Leantime_o	
Overall total Pla *	
Total number Delivery_S *	
Leantime_o *	
Vaahto Roll Service	

Figure 14.5: 0 lines before and 1 blank line after

**Effect of columns with**

The order-delivery process	
Sold-to pt Purchase order number Leantime o	
Sold-to_pa	Customer_purchase_order_number _____
Customer_p	Date_on_Wh
Actual_re1	
Earliest_s	Actual_sta
Earliest_s	Actual_fin
Delivery_S	Agr
Desired_de	Pla Delivery_D

Figure 14.6: Usage of columns with function

- 7. **Page header:** This means that the relevant line is output in the page header when starting a new page and one of the following lines results in a new page.
- 8. **New page:** A new page is started before the line is output.

### 18.1.18 Specifications for single fields

For single fields, you can make different specifications on the subsequent screen.

Figure 15.0: Field specification's screen

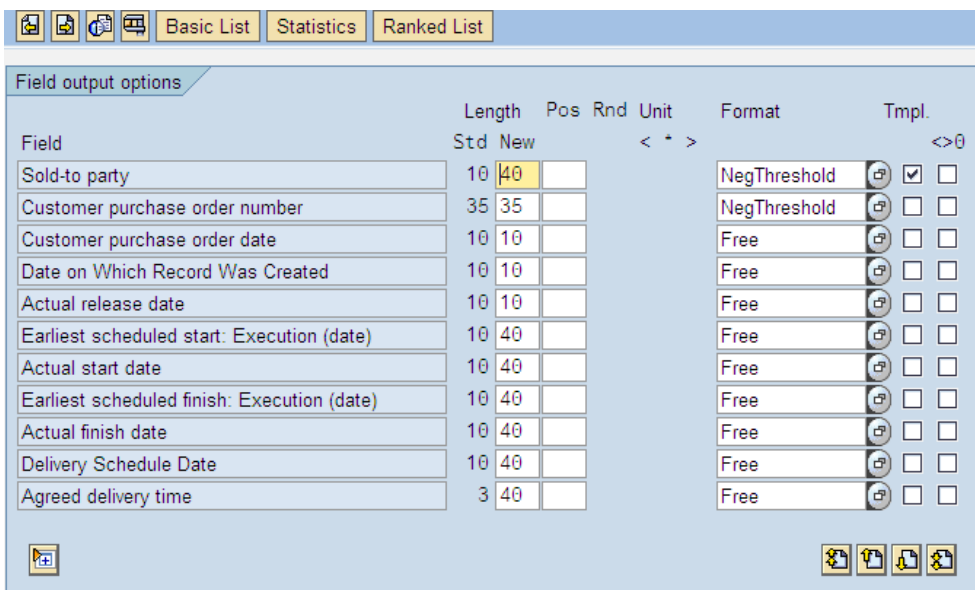


Figure 15.1: With the selections made on the upper screenshot, we have a following layout:

The order-delivery process		
Sold-to pt	Purchase order number	
Leantime of the order-delivery process		
Sold-to_party	Customer_purchase_order_number	
Customer_p	Date_on_wh	
Actual_rel		
Earliest_scheduled_start:_Execution_(dat	Actual_start_date	
Earliest_scheduled_finish:_Execution_(da	Actual_finish_date	
Delivery_Schedule_Date	Agreed_delivery_time	
Desired_del_date_in_confirmed_schedule_	Planned_Delivery_Time_in_Days	Delivery_Date

## Definitions of the specifications

**Length:** determines the field output length. The query proposes the standard output length as the output length of the field but other specifications can be done to improve the layout. If you are summing items and the calculated total no longer fits into the output field, you should increase the output length of the field. If the output length you choose is smaller than the standard output length, the field values in the list will be incomplete.

**Position:** Specifies the position of the field in the output line. Without specifying a position, the field is always output following the preceding field or from position 1, if it is the first field of the line.

**The format** on this screen is used to define a color for fields. Normally the color of the field is the same as the color of the line. I chose to display pink fields on white rows.

**Template** function enables you to define a special output template. The output template is defined on a subsequent screen and they can only be created for non-numeric fields.

**<>0:** option means that by choosing this, a value of the field is only output if it is not equal to zero.

### Field templates:

If you put a checkmark on the template box, a screen allowing the user to define the output template for the field specified on the left. You see a default value for this, but you can change it by entering any special characters to format the field contents within the angle brackets. The brackets are not displayed.

Field templates	
Fields	
Sold-to party	< _____ >
Customer purchase order number	< _____ >
Customer purchase order date	< _____ >
Date on Which Record Was Created	< _____ >
Actual release date	< _____ >
Earliest scheduled start: Execution (date)	< _____ >
Earliest scheduled finish: Execution (date)	< _____ >
Actual start date	< _____ >
Actual finish date	< _____ >
Delivery Schedule Date	< _____ >
Agreed delivery time	< _____ >
Desired del. date in confirmed schedule lin...	< _____ >


*Figure 16.0:  
Specifications for the output template of the fields*

### 18.1.19 Entering the page header and footer

On the last page in the basic list definition the user determines the page header and footer for the query.

Page header (headers and column headers)		
The order-delivery process		
Sold-to pt	Purchase order number	
Line structure		
Sold-to-party_____	Customer_purchase_order_number_____	
Customer_purchase_order_date_____	Date_on_which_Record_Was_Created_____	
Actual_release_date_____		
Earliest_scheduled_start:_Execution_(date)____	Actual_start_date_____	
Earliest_scheduled_finish:_Execution_(date)____	Actual_finish_date_____	
Delivery_Schedule_Date_____	Agreed_delivery_time_____	
Desired_del_date_in_confirmed_schedule_lines_	Planned_Delivery_Time_in_Days_____	Delivery_Date_____
Goods_Issue_Date_____	Actual_Goods_Movement_Date_____	
Billing_date_for_billing_index_and_printout____		
Leantime_of_the_whole_process_____		
Page Footer		
Vaahto Roll Service		

Figure 16.1: Header and Footer selections

The query has been properly defined and contains all the required information. Therefore, it should be ready for the execution. The query is tested by clicking  and the following popup window appears:

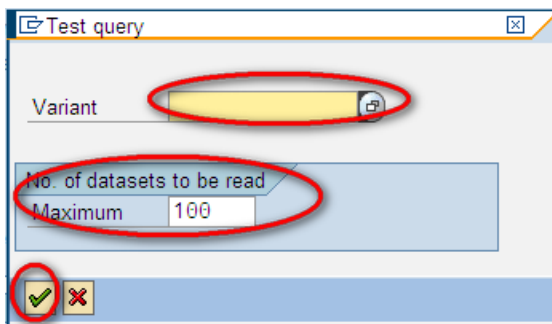



Figure 16.2: Number of datasets to be read

On this popup the user can decide to use a variant if he or she has created one and determine the maximum number of datasets to be read. After desired selections has been made, click the green mark.

The last screen is the selection screen. After the selections, the clock icon  executes the query.

### 18.1.20 Execution of the query

The last screen is the selection screen, which enables the user to define a selection criterion. In the example, the definitions for the report are made according to the purchase order date. The interval option is used, and corresponding fields appear on the screen. According to this example, the report should display data from the period between 1.5.2008 and 31.5.2008.

Next we choose the desired output format. We choose the “spreadsheet” option, in order to export the query directly to Excel program, and then click the clock icon.

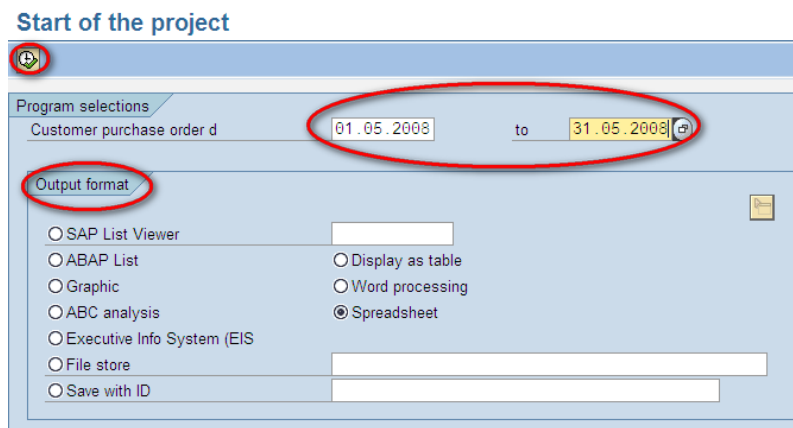


Figure 17.0: Execution of the Query

### 18.1.21 Export to Excel

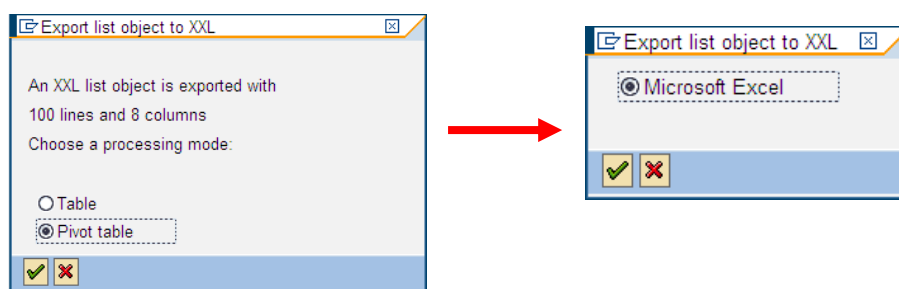


Figure 17.1: When choosing the pivot table we can make further selections in Excel

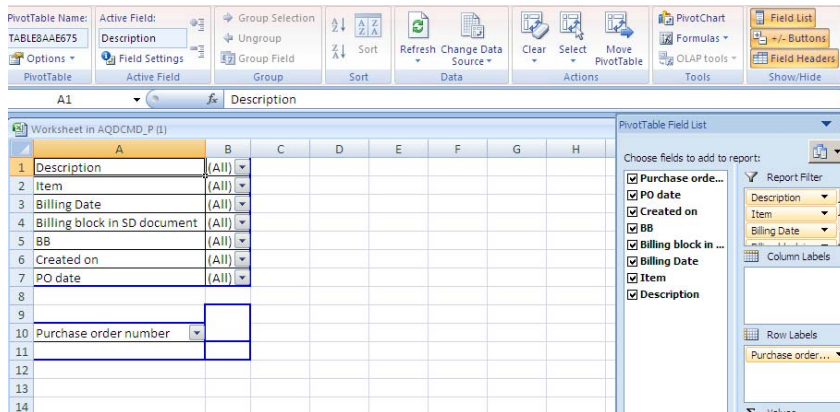


Figure 17.2: Excel view when choosing the pivot table

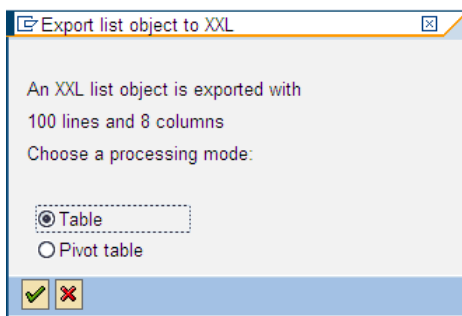


Figure 17.3: If we choose “table” the maximum number (in our case 100 first) are displayed as follows. For some unknown reason the billing block date is not displayed at all.

	Purchase order number	PO date	Created on	BB	Billing block in SD document	Billing Date	Item	Description
1	13207	05.05.2008	05.05.2008			26.05.2008	010000	Kromitela n:o 42, ø270*1600
2	13207	05.05.2008	05.05.2008			26.05.2008	010100	Johtot. Papjal VRS-CHROME
3	13207	05.05.2008	05.05.2008			26.05.2008	010200	Johtot. Papjal VRS-CHROME
4	13207	05.05.2008	05.05.2008			26.05.2008	010300	Johtot. Papjal VRS-CHROME
5	13210	05.05.2008	05.05.2008			26.05.2008	010000	Kromitela n:o84, ø270*1600

### 18.1.22 Export to Word

The report can be exported to other programs, such as Word, as well. By enabling the display of colors, the Word document appears quite dark, as we will see.

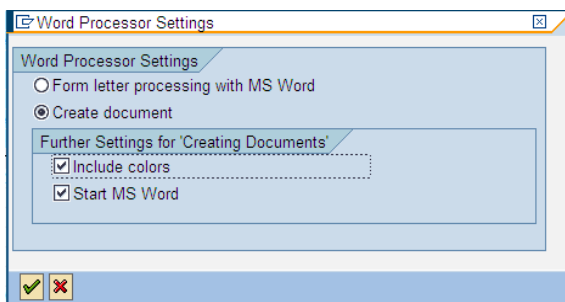


Figure 17.4: 1. Choose “create document”, include colors and start MS word



Figure 17.5: 2. Save the document

Start and end
Purchase order number
PO date
Created on
BB
Billing block in SD
Billing Da
Item
Description
13207
05.05.2008
05.05.2008
26.05.2008
010000
Kromitela n:o 42, ø270*1600
13207
05.05.2008
05.05.2008
26.05.2008
010100
Johdot, Papjal VRS-CHROME
13207
05.05.2008
05.05.2008
26.05.2008

Figure 17.6: 3. The result is displayed on the following screen; it appears to be a narrow, unclear report possessing a length of 15 pages.

## 18.2 Creating a query with the help of a Query-painter

The start is the same as when creating the queries without the help of the graphical query painter; selection of the title, field groups and fields and selection criteria.

Data fields	list field	action	Field	Technical Name
Table join	5	1		
Order master data	1	0	AUFK	AUFK
Created on	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AUFK-ERDAT	AUFK-ERDAT
Order header data P	4	1	AFKO	AFKO
Scheduled start	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AFKO-GSTRS	AFKO-GSTRS
Actual release date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AFKO-FTRMI	AFKO-FTRMI
Actual finish date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AFKO-GLTRI	AFKO-GLTRI
Actual start date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AFKO-GSTRI	AFKO-GSTRI

Created on	Actual rel	Scheduled	Actual sta	Actual fin
25.06.2007	28.01.2008	29.02.2008	21.02.2008	21.02.2008

Figure 18.0: Initial screen of the Query Painter report creation

As starting the creation of a basic list, the screen is displayed with the help of graphics. The selections of the desired fields and selection criteria can be done here as well, by putting a checkmark on the required fields on the left side of the screen. The fields appear to the right side of the screen according to the order of selections.

### 18.2.1 Sorting fields

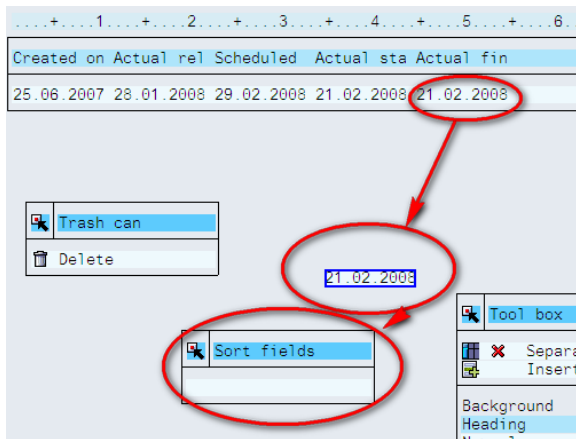


Figure 18.1: You can sort fields by clicking on them and then dragging the particular field on the sort field's tool bar, which is graphically shown on the screen.

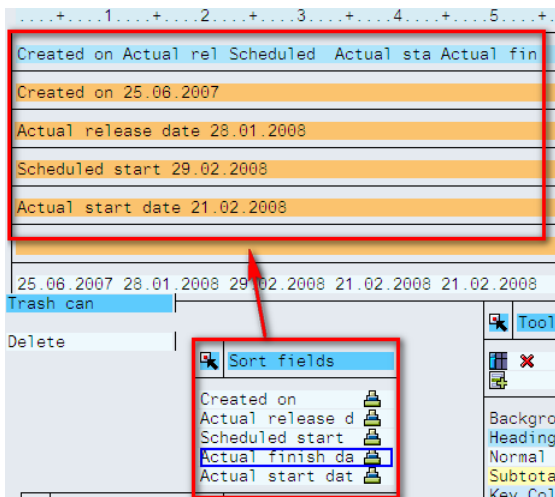


Figure 18.2: The fields dragged on the sort field's bar are displayed on the upper part of the screen

### 18.2.2 Defining the query

Actual finish date

Sort direction

in ascending order

in descending order

Start control level

Control level text

New line

New page .

Frame around control level

End control level

Display totalling

Display counting

Apply Reset

Figure 18.3: When clicking the fields on the right, a following screen appears to the lower left corner. This screen enables the user to make same definitions as when creating a query without the graphical query painter.

### 18.2.3 Totaling fields

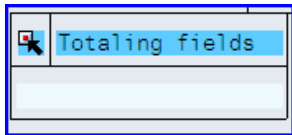
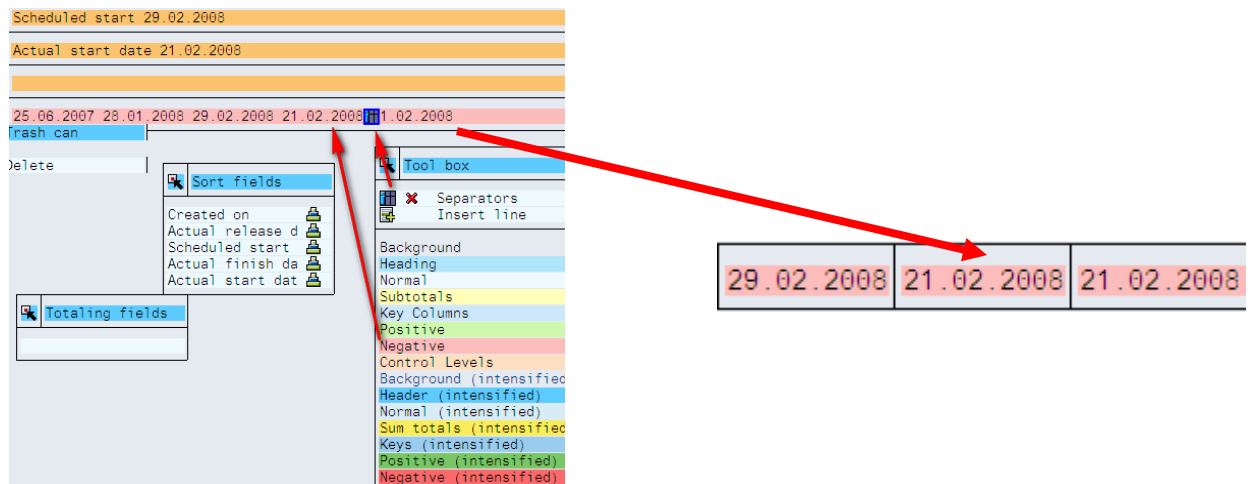


Figure 18.4: In case there are numerical fields in the query, they can be summed by dragging them in the totaling fields bar. Total can be deleted by dragging the trash can icon to the field.

### 18.2.4 Colors and separator functions

The separator icon or the insert line icon can be used by dragging the icon to the line you want.

Figure 18.5: The color of a list line or a list field can be changed by dragging the color to the line/field in question. The function can be stopped or deselected by dragging the icon to the line or function.



### 18.2.5 Header and footer

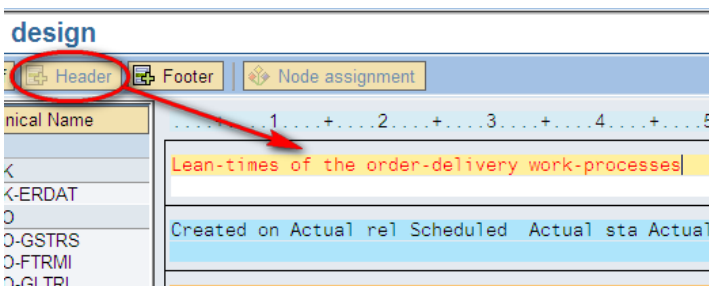
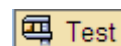


Figure 18.6: The header and footer are added from the icons up the page and written on the header/footer page

After all the criteria have been defined, select the test icon:



## 18.2.6 Execution of the query

Add the selection criteria in the normal way and execute the query

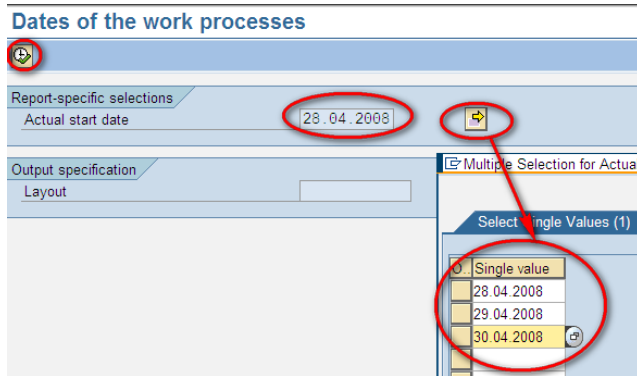


Figure 18.7: In this example, single values are used as for the selection criteria

## 18.2.7 The results in SAP List Viewer, Excel and Word

Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
02.02.2008	02.02.2008	30.04.2008	28.04.2008	00.00.0000
04.02.2008	14.02.2008	26.03.2008	29.04.2008	30.04.2008
08.02.2008	20.02.2008	25.03.2008	30.04.2008	09.05.2008
21.02.2008	21.02.2008	28.04.2008	28.04.2008	00.00.0000
		23.05.2008		
27.02.2008	17.03.2008	28.04.2008		03.06.2008
13.03.2008	08.04.2008			00.00.0000
31.03.2008	31.03.2008	06.05.2008		
03.04.2008	03.04.2008	28.04.2008		
07.04.2008	07.04.2008	19.06.2008	30.04.2008	
10.04.2008	10.04.2008	30.05.2008		
14.04.2008	14.04.2008	06.06.2008	28.04.2008	
16.04.2008	16.04.2008	30.04.2008	30.04.2008	
17.04.2008	17.04.2008	29.05.2008	29.04.2008	
21.04.2008	21.04.2008	09.05.2008	28.04.2008	
		11.06.2008	30.04.2008	
22.04.2008	22.04.2008	29.04.2008	29.04.2008	
23.04.2008	23.04.2008	09.05.2008		
		21.05.2008	28.04.2008	
		22.05.2008		
	30.04.2008	30.06.2008	30.04.2008	17.06.2008
24.04.2008	24.04.2008	02.05.2008		00.00.0000
		04.05.2008		
		07.05.2008		
		08.05.2008	28.04.2008	

Figure 18.8: The view in SAP list viewer

	Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
1	2.2.2008	2.2.2008	30.4.2008	28.4.2008	
2	2.2.2008	2.2.2008	30.4.2008	NaN	NaN
3	2.2.2008	2.2.2008	30.4.2008		NaN
4	2.2.2008	2.2.2008	30.4.2008		
5	2.2.2008	2.2.2008	NaN		
6	2.2.2008	NaN			
7	NaN				
8	4.2.2008	14.2.2008	26.3.2008	29.4.2008	30.4.2008
9	4.2.2008	14.2.2008	26.3.2008	NaN	30.4.2008
10	4.2.2008	14.2.2008	26.3.2008		NaN
11	4.2.2008	14.2.2008	NaN		
12	4.2.2008	NaN			
13	NaN				
14	8.2.2008	20.2.2008	25.3.2008	30.4.2008	9.5.2008
15	8.2.2008	20.2.2008	25.3.2008	NaN	9.5.2008
16	8.2.2008	20.2.2008	25.3.2008		NaN
17	8.2.2008	20.2.2008	NaN		
18	8.2.2008	NaN			
19	NaN				
20	21.2.2008	21.2.2008	28.4.2008	28.4.2008	
21	21.2.2008	21.2.2008	28.4.2008	NaN	
22	21.2.2008	21.2.2008	28.4.2008		NaN
23	21.2.2008	21.2.2008	NaN		
24	21.2.2008	21.2.2008	23.5.2008	28.4.2008	
25	21.2.2008	21.2.2008	23.5.2008	NaN	

Figure 18.9: The view in Excel

18.12.2008	Dynamic List Display	1		
18.12.2008	Dates of the work processes	1		
Dates of the work processes				
Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
02.02.2008	02.02.2008	30.04.2008	28.04.2008	00.00.0000
18.12.2008	Dynamic List Display	2		
18.12.2008	Dates of the work processes	2		
Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
04.02.2008	14.02.2008	26.03.2008	29.04.2008	30.04.2008
18.12.2008	Dynamic List Display	3		
18.12.2008	Dates of the work processes	3		
Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
08.02.2008	20.02.2008	25.03.2008	30.04.2008	09.05.2008
18.12.2008	Dynamic List Display	4		

Figure 19.0: View on Word

## 18.3 Creating Query with the Quick View

QuickViews possess the same functional attributes as queries. However, it can only define basic lists. In addition to InfoSets, the user can use logical databases, tables or database views as a data source. Thus, creation of InfoSets is not necessary. QuickViews require no user group assignment either. Each user has his/her own personal list of QuickViews and they cannot be exchanged between users. QuickViews may, however, be converted to queries and then be made available to other users in a specific user group.

### 18.3.1 Calling the Quick View

QuickView is called with a transaction SQVI, or entered through Query basic screen, SQ01, or SAP menu path. To begin, enter the name of the QuickView report and choose “Create”

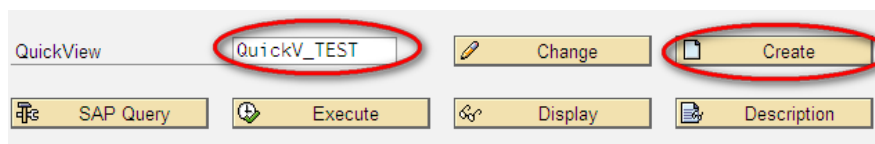


Figure 20.0: Quick View initial screen; name of the Quick View

### 18.3.2 Choose the title

The following popup appears on the screen, allowing the user to determine the title, add notes if necessary. The data source is the source when the user wants to retrieve the data for the report. This can be a table, a logical database, a join, or an InfoSet from SAP Query. The last part enables to determine the desired mode. Basis mode is chosen when the user wants to export the report fields directly. Layout mode is chosen if the Quick View is wanted to be output graphically.

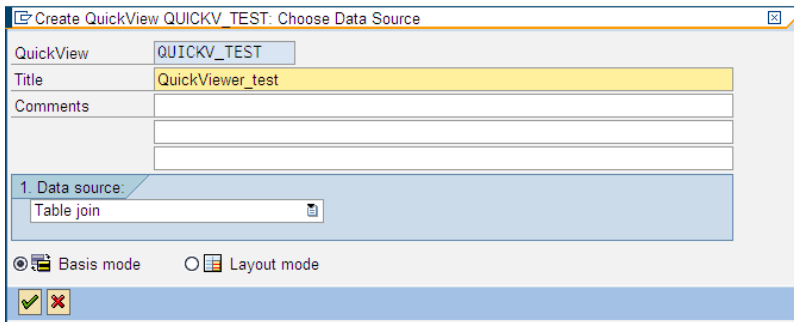
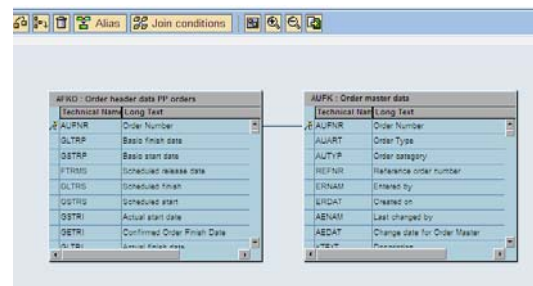


Figure 20.1: The first screen of the QuickView creation

Figure 20.2: Table joins within the Quick View

### 18.3.3 Creation with the table join

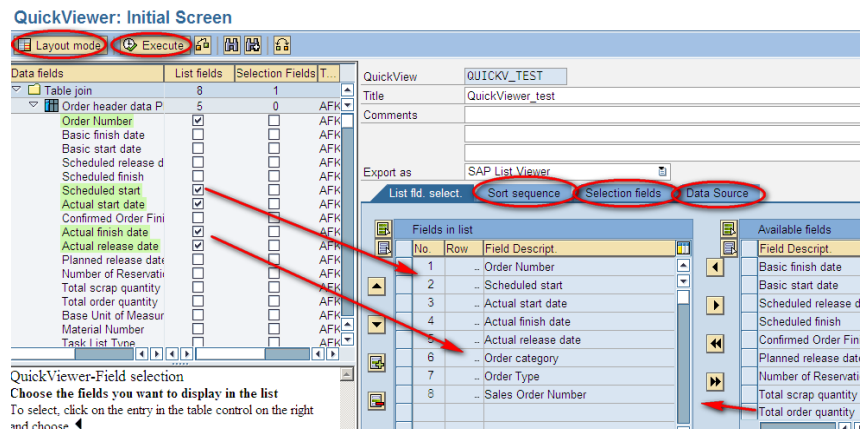
The table jointures are done the same way as when creating the InfoSets.



### 18.3.4 The field selections

After definitions, choose “back”, and the following screen appears. Here you make the selection on which fields to be output on the report, and which fields to be used as selection criteria.

Figure 20.3: Instructions on how to create a Quick View are constantly shown on the left corner



### 18.3.5 Using existing InfoSet:

When using an existing InfoSet, the user simply enters the name of the InfoSet, and the fields it contains are displayed on the following screen.

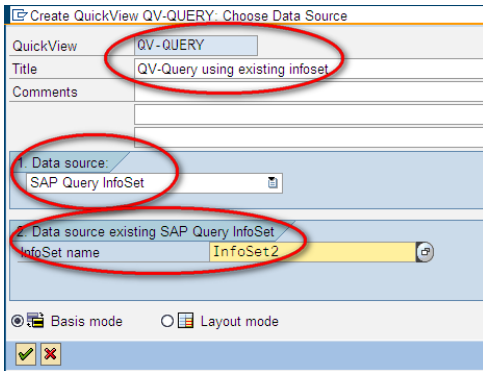


Figure 20.4: Choose SAP Query InfoSet

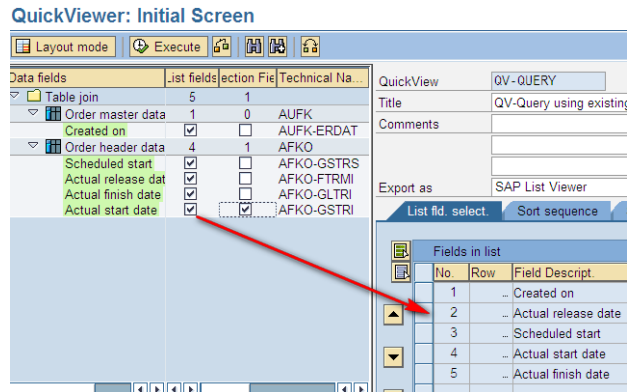


Figure 20.5: Drag chosen fields from the selected InfoSet

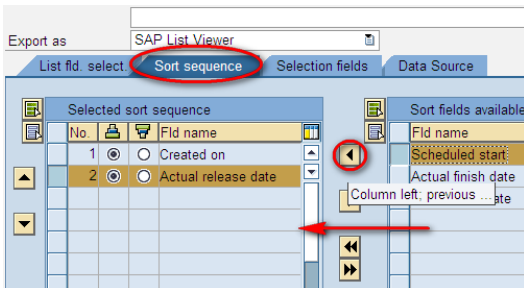


Figure 20.6: Sequence can be sorted the same way as in the normal Query creation at "Sort Sequence" tab

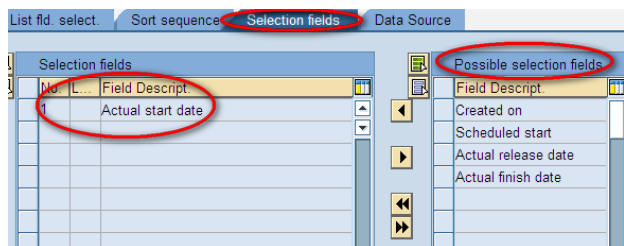
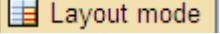
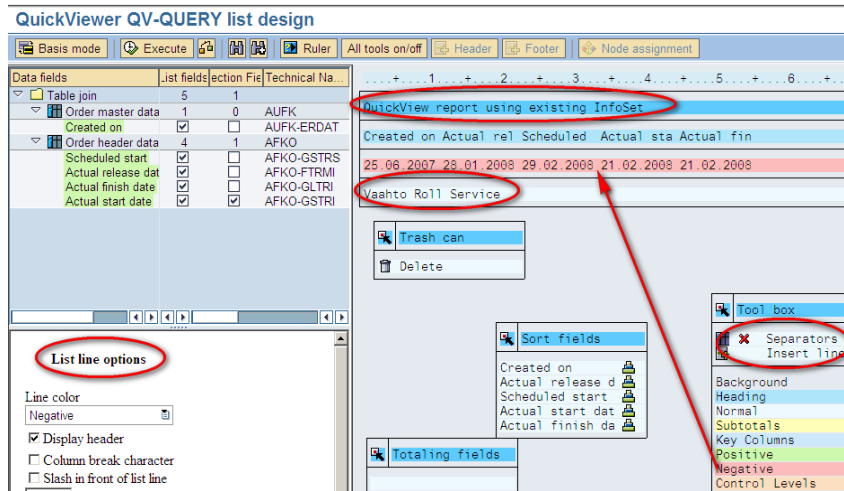


Figure 20.7: "Selection fields" enables to make the criterion for the final screen

The report can be executed in basis mode with standard layout or edited using drag and drop tools.

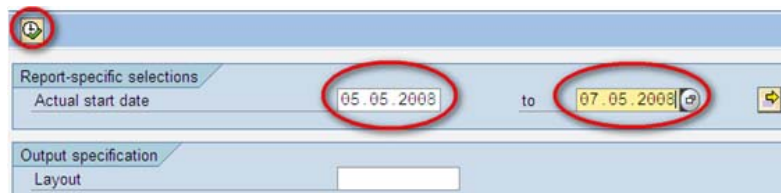
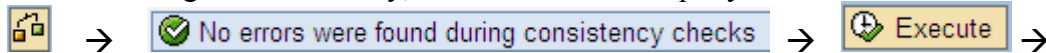
### 18.3.6 Checking the layout

The layout of the Quick View can be checked by choosing the radio button  Layout mode

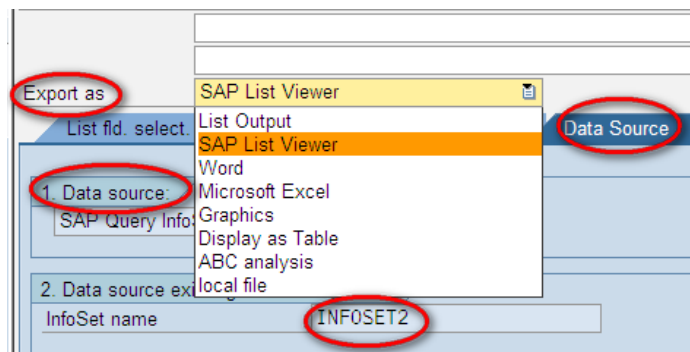


21.0: The layout mode screen reminds the screen displayed in the creation of queries with Query Painter

After checking the consistency, we can execute the query:



21.1: On the final screen we choose the criteria based on the chosen selection option



21.2: The layout format can equally be chosen from the drop-down menu "Export as". The export possibilities are the same as in other queries.



### 18.3.7 Word processing

We will see how the query is displayed in Word program. The path to export the Quick View to Word is the same as in the creation of the query. In this case as well, the colors are included.

*Figure 21.3: After changing the color of the report into blue, it is displayed like this on SAP-list Viewer:*

Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
07.02.2008	07.02.2008	26.03.2008	07.05.2008	07.05.2008
08.02.2008	20.02.2008	19.03.2008	05.05.2008	05.05.2008
20.02.2008	16.04.2008	07.05.2008	07.05.2008	16.05.2008
25.02.2008	25.02.2008	12.05.2008	06.05.2008	00.00.0000
31.03.2008	31.03.2008	23.05.2008	07.05.2008	
08.04.2008	23.04.2008	09.05.2008	06.05.2008	28.05.2008
18.04.2008	18.04.2008	07.05.2008	07.05.2008	00.00.0000
		09.05.2008	05.05.2008	
21.04.2008	21.04.2008	07.05.2008		
		26.05.2008		
22.04.2008	22.04.2008	07.05.2008		
23.04.2008	23.04.2008	02.01.2007	05.05.2008	
		01.01.2008	07.05.2008	
		06.05.2008	06.05.2008	
		21.05.2008	05.05.2008	
		22.05.2008	06.05.2008	
	28.04.2008	01.05.2008	05.05.2008	
			06.05.2008	

*Figure 21.4 The same report with same colors in Word:*

Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
07.02.2008	07.02.2008	26.03.2008	07.05.2008	07.05.2008
08.02.2008	20.02.2008	19.03.2008	05.05.2008	05.05.2008
20.02.2008	16.04.2008	07.05.2008	07.05.2008	16.05.2008
25.02.2008	25.02.2008	12.05.2008	06.05.2008	00.00.0000
31.03.2008	31.03.2008	23.05.2008	07.05.2008	00.00.0000
08.04.2008	23.04.2008	09.05.2008	06.05.2008	28.05.2008
18.04.2008	18.04.2008	07.05.2008	07.05.2008	00.00.0000
		09.05.2008	05.05.2008	
21.04.2008	21.04.2008	07.05.2008		
		26.05.2008		
22.04.2008	22.04.2008	07.05.2008		
23.04.2008	23.04.2008	02.01.2007	05.05.2008	
		01.01.2008	07.05.2008	
		06.05.2008	06.05.2008	
		21.05.2008	05.05.2008	
	28.04.2008	01.05.2008	05.05.2008	
			06.05.2008	
			06.05.2008	

View in excel is the same as in the previous report, since it is displayed without colors. The colors appear to be darker on the reports after transportation to Word; there is a huge difference in terms of the colors. Execution without colors is thus recommended; on the screen it may look good, but after printing the result is not a great pleasure for the eyes.

## 18.4 Creating a Query with InfoSet-query

### 18.4.1 The start of the creation

The InfoSet is a simple and fast way to create queries for one user group only. The InfoSet query is called with the transaction SQ01. The query is given a name, and “InfoSet Query” is being chosen. A popup window enables the user to choose the InfoSet to be used, as well as determine the user group for which the query is assigned.

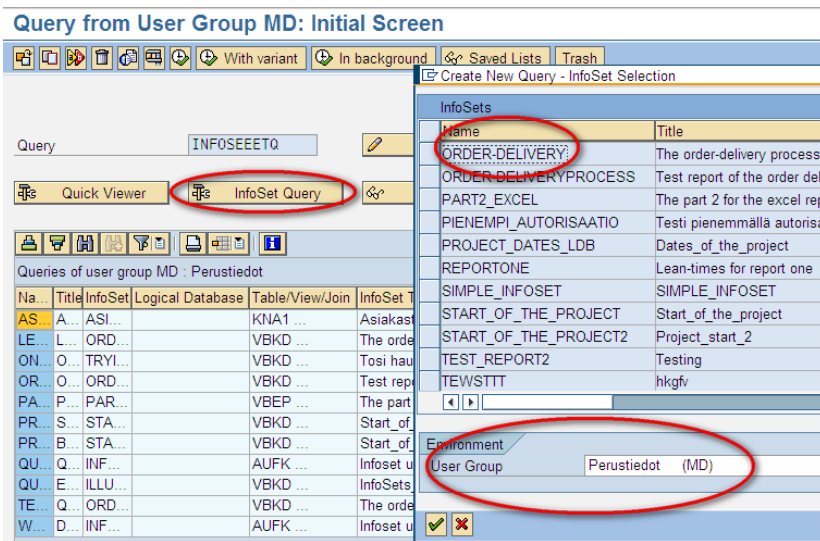


Figure 22.0: InfoSet Query main screen

### 18.4.2 The field selections

On the following screen we can select the desired fields for the report by putting checkmark on the “output” checkmark box. The selected fields appear automatically on the lower part of the screen. “Selection” checkmark boxes are for the selection of the selection criteria. This, in turn, appears on the right side of the screen and can be further specified by clicking the “option” icon.

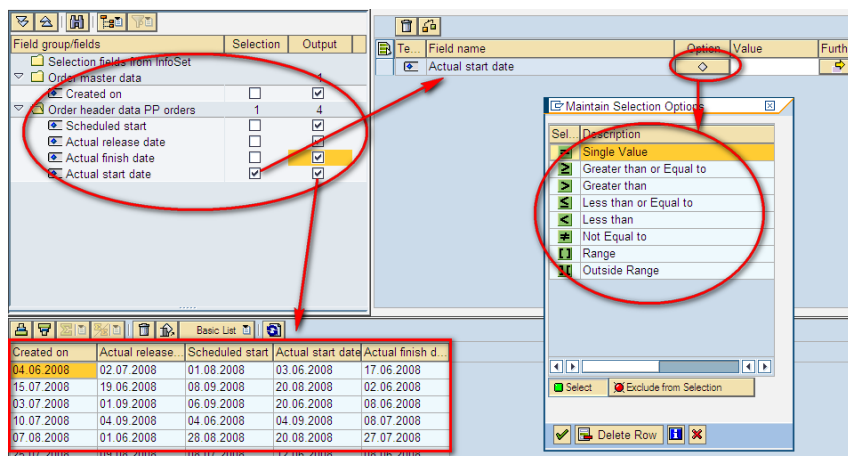


Figure 22.1: InfoSet Query field selections

### 18.4.3 Determining the selection criteria

The multiple choice button is available as well, to extend the selection criteria:

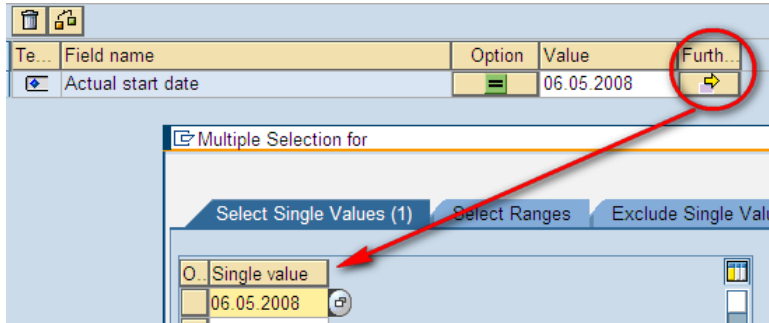
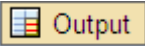


Figure 22.2: InfoSet Query selection criteria

### 18.4.4 Output of the Query

After the desired selections have been made, choose “start output” (F8)  → a screen displaying the selected values and the name of the user who created the query appears.

SAP Query 18.12.2008/15:27:07 MKANGASNIEMI

Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
08.04.2008	23.04.2008	09.05.2008	06.05.2008	28.05.2008
02.05.2008	02.05.2008	06.05.2008	06.05.2008	00.00.0000
02.05.2008	02.05.2008	02.05.2008	06.05.2008	07.05.2008
02.05.2008	02.05.2008	13.05.2008	06.05.2008	04.06.2008
03.05.2008	05.05.2008	13.05.2008	06.05.2008	16.06.2008
03.05.2008	05.05.2008	25.06.2008	06.05.2008	09.07.2008
30.04.2008	30.04.2008	07.05.2008	06.05.2008	06.05.2008
30.04.2008	30.04.2008	05.05.2008	06.05.2008	07.05.2008
30.04.2008	30.04.2008	06.05.2008	06.05.2008	09.05.2008
30.04.2008	30.04.2008	06.05.2008	06.05.2008	08.05.2008
03.05.2008	03.05.2008	28.05.2008	06.05.2008	00.00.0000
03.05.2008	05.05.2008	17.06.2008	06.05.2008	25.09.2008
03.05.2008	03.05.2008	06.05.2008	06.05.2008	30.05.2008
03.05.2008	05.05.2008	13.05.2008	06.05.2008	30.05.2008

Figure 22.3: the output of the InfoSet Query

### 18.4.5 Export to external programs

The created list can be further processed on, for instance, Excel or Word. This is done exactly the same way as when creating the other queries.

Infoset report test

	A	B	C	D	E
1	Created on	Actual release date	Scheduled start	Actual start date	Actual finish date
2	8.4.2008	23.4.2008	9.5.2008	6.5.2008	28.5.2008
3	2.5.2008	2.5.2008	6.5.2008	6.5.2008	
4	2.5.2008	2.5.2008	2.5.2008	6.5.2008	7.5.2008
5	2.5.2008	2.5.2008	13.5.2008	6.5.2008	4.6.2008
6	3.5.2008	5.5.2008	13.5.2008	6.5.2008	16.6.2008
7	3.5.2008	5.5.2008	25.6.2008	6.5.2008	9.7.2008
8	30.4.2008	30.4.2008	7.5.2008	6.5.2008	6.5.2008
9	30.4.2008	30.4.2008	5.5.2008	6.5.2008	7.5.2008
10	30.4.2008	30.4.2008	6.5.2008	6.5.2008	9.5.2008
11	30.4.2008	30.4.2008	6.5.2008	6.5.2008	8.5.2008
12	3.5.2008	3.5.2008	28.5.2008	6.5.2008	
13	3.5.2008	5.5.2008	17.6.2008	6.5.2008	25.9.2008
14	3.5.2008	3.5.2008	6.5.2008	6.5.2008	30.5.2008
15	3.5.2008	5.5.2008	13.5.2008	6.5.2008	30.5.2008
16	3.5.2008	3.5.2008	22.5.2008	6.5.2008	26.5.2008
17	3.5.2008	3.5.2008	7.5.2008	6.5.2008	
18	3.5.2008	5.5.2008	25.6.2008	6.5.2008	26.6.2008
19	4.5.2008	4.5.2008	12.5.2008	6.5.2008	
20	3.5.2008	3.5.2008	5.5.2008	6.5.2008	
21	4.5.2008	4.5.2008	30.6.2008	6.5.2008	23.7.2008

Figure 22.4: Transport of InfoSet Query to Excel

## 18.5 Evaluations of the different Query tools

The creation of queries with and without the query painter is similar in the beginning. The definitions for the basic list differ, and for some reason the field selections and selection criteria can be done again in the following screen. The creation of statistics or ranked lists is not supported within the Query Painter. However, other specifications are pretty similar.

The Quick View enables the usage of other sources than InfoSets. You can basically do the definitions of the content while creating the query. The InfoSet query is the fastest and simplest option, but you can only create queries for one user group with it. Additionally, no fancy features are supported within the InfoSet query. The final reports look all quite alike, and all the queries can be exported to external programs.

## 19. Ranked List and Statistics

Same process mentioned above can be used for generating Ranked list and statistics. The only difference is that you should choose Ranked list or statistic instead of Basic List.

Ranked lists are special outputs where numeric values are summed for key terms and displayed in the table, and the sorting is always by a numeric value called Ranked List Criterion. Only a certain number of additional items are displayed on the output.

One query can have many ranked lists – hence every ranked list should be assigned a title. The default entries in the ranked list can be 10 but user can also change the number.

One of the fields should be defined as the ranked list criterion. The default sort sequence for this field is descending but ascending order can also be specified. An output length and a rounding factor can also be defined.

In case of statistics a reference currency or reference units to convert all the amounts for the currency fields and quantity fields. You can also maintain the header and specify graphic parameters for statistics.

The example report did not contain many numeric values, so these two functions are not illustrated.

## 20. Creation of the final report

Next section explains how the report was finally created and what needed to be done in order to get the results. Unfortunately, the query tools did not correspond to the requirements needed for the report in question.

As the table connections required in order to create the desired report appeared to be impossible, another route was taken. There is a customized report, `Z_CS_raportti`, created with ABAP programming. This report includes most of the data required. The data from this report was sorted and filtered in SAP, and then exported to an excel sheet where the required calculations were done.

After this, a query containing the missing dates was created. Some of the calculations could be done within the SAP, but some of them needed to be done in Excel after the export. This query required two table joins. The data from the two Excel files was joined, after which all the required durations were calculated.

### 20.1. The process of the creation of the requested report

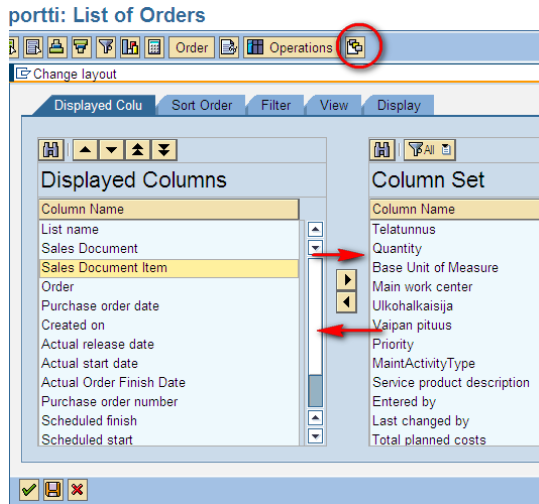
Two reports needed to be created. The first one was the report of the maintenance, exported to Excel, and the second one a query, exported to an Excel sheet as well. These two files were combined, after which the required calculations were done.

#### 20.1.1. First part of the report

Huoltoraportti: Selection of Orders			
WBS Element	<input type="text"/>	to	<input type="text"/>
Subnetwork of	<input type="text"/>	to	<input type="text"/>
Superior activity	<input type="text"/>	to	<input type="text"/>
Sales Order	30000614	to	<input type="text"/>
Sales Order Item	<input type="text"/>	to	<input type="text"/>
Sales Organization	<input type="text"/>	to	<input type="text"/>

Figure 23.0: The call of the `Z_CS_report` with `Z_CS_raportti` transaction

1. Call the maintenance report by `Z_CS_raportti` transaction and determine the selection criteria; in this case, the sales order number of the tambour roll maintenance.




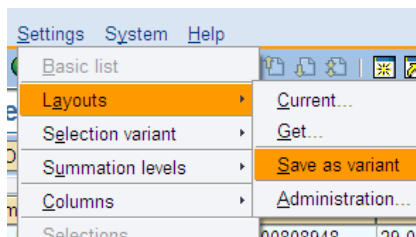
- Remove the irrelevant information and add the relevant with Ctrl+F8 or  icon.

Figure 23.1: selection of the required fields

Sales Doc.	List name	PO number	Order
30000614	STORA ENSO INGEROIS OY	4500808948	4001471
30000614	STORA ENSO INGEROIS OY	4500808948	4001472
30000614	STORA ENSO INGEROIS OY	4500808948	4001473

- The sequence of the data can be changed by dragging it to the desired position.

Figure 23.2: Changing the sequence



- Save the chosen layout as a variant to have it automatically available for the next time. On the next screen the variant is given a name and description. It can be determined to be user-specific and set as a default setting.

Figure 23.3: Saving the selected data as a variant

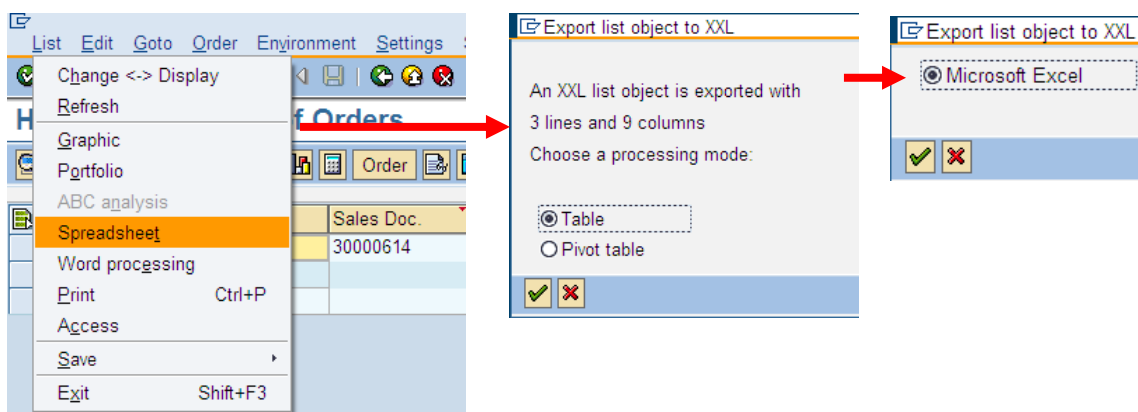


Figure 23.4: export of the data to Excel program

- After defining the list and arranging the data in desired order, it can be further processed with Excel or other external programs such as Word.

### 20.1.2. Creation of the other part of the Excel sheet

The next part involves the creation of the query. The rest of the data is exported from the query to an Excel sheet.

1. The project is initialized by the creation of InfoSets. Before starting the creation, we change the query area to client-specific from the environment menu.

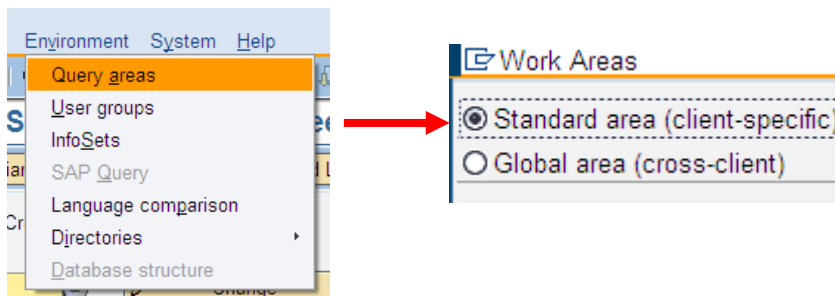


Figure 24.0: Changing the Query area

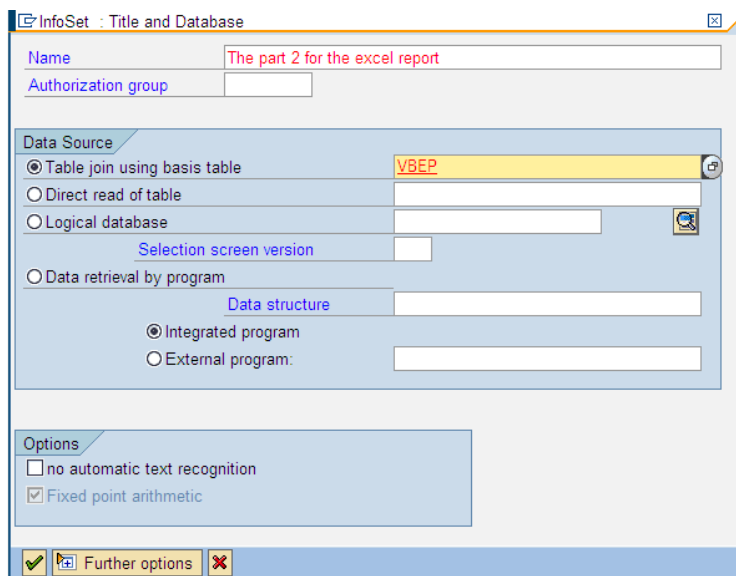


Figure 24.1: The selection of the data source for the actual query of the tambour roll maintenance

2. After defining a descriptive name for the query from the initial screen and choosing “create”, we define the data source to be used. In this case, table join using a basis table “VBEP” is used.

3. The join includes four tables; VBEP, VBAK, VBKD and VBAP. After dragging the required fields to their field groups, the link condition is tested. If the link condition has no inconsistencies, the InfoSet is saved and generated.

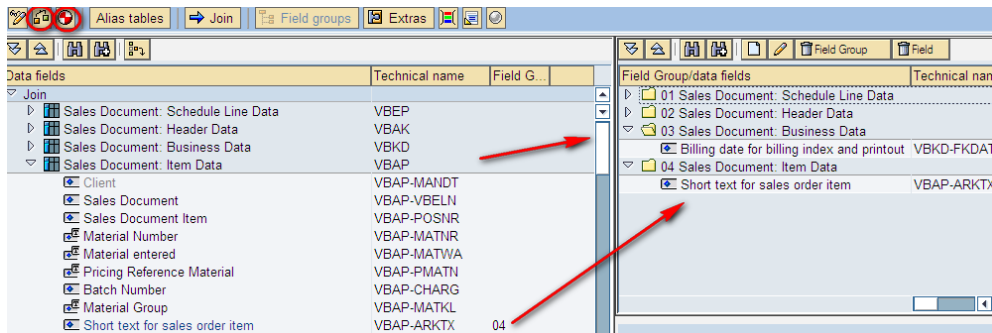


Figure 24.2: The field selection for the InfoSet

4. F3 or the green arrow button  takes us back to the initial screen.

5. Through the “Role/User Group Assignment” pushbutton we assign the InfoSet to the desired user groups. After putting checkmarks on the desired user group fields, the assignment must be saved again.

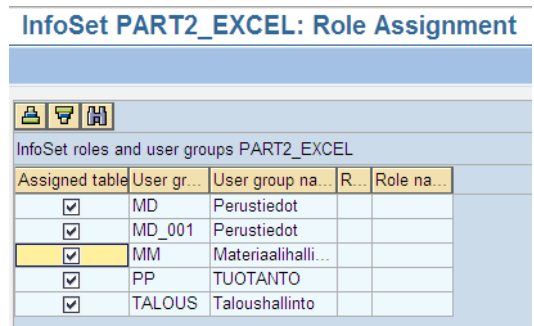
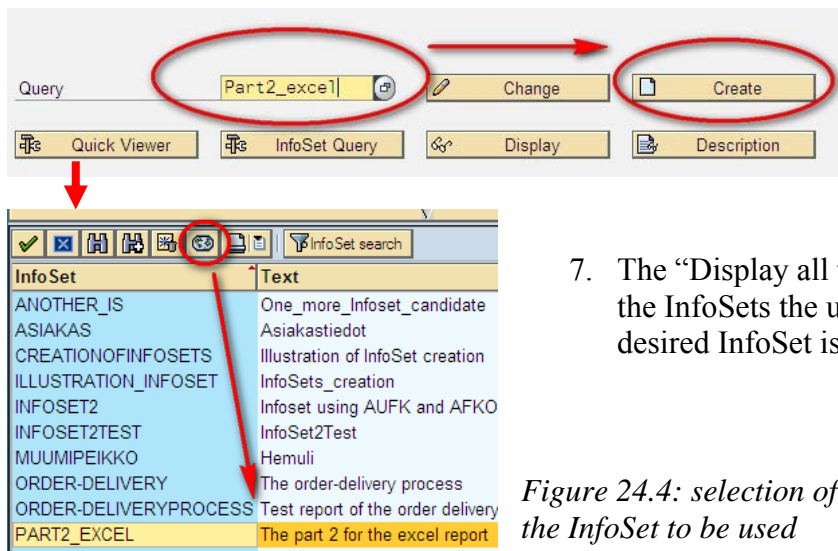


Figure 24.3: User Group assignment for the InfoSet

6. The actual creation of the query can start now. The transaction SQ01 accesses the initial screen of the Query-tool.



7. The “Display all the values” icon shows all the InfoSets the user is authorized to use. The desired InfoSet is selected by a double click.

Figure 24.4: selection of the name for the query, and the InfoSet to be used



**Create Query PART2\_EXCEL: Title, Format**

Basic List | Statistics | Ranked List | Output sequence

Title: Part 2 for the case report

Notes: To be combined with the an excel sheet Z\_Huolto

List format: Lines, Columns: 83

Table format: Columns: 200

Special attributes: Standard variant, Execute only with variant, Change lock

Print list: With standard title, No. of characters left margin

Output format:
 

- SAP List Viewer
- ABAP List
- Graphic
- ABC analysis
- Display as table
- Word processing
- Spreadsheet

8. On the first screen only the title needs to be added. Everything else can be ignored, since now we are creating the simplest form of a basic list which will be executed with default settings. The default for an output format is the SAP List Viewer and it is recommended to keep it that way, to enable the possibility to make changes in terms of the field sequence, after execution.

Figure 24.5: The first screen of the creation of the case report

After adding the title, and notes if desired we can move to the next screen with the yellow arrow on the upper left corner.

9. The field group and field selections are made on the next two screens. Checkmark it put to all the fields and fields groups the user wants to include in the report.

Field groups

✓ Sales Document: Schedule Line Data

✓ Sales Document: Header Data

✓ Sales Document: Business Data

✓ Sales Document: Item Data

Edit

Figure 24.6: Field Group selections

Fields

Sales Document: Schedule Line Data

✓ Loading Date

✓ Material Staging/Availability Date

✓ Schedule line date

✓ Goods Issue Date

Figure 24.7: Field selections

If any calculations are required, they are done on the field selection screen by creating first a short name for the fields used in the calculations. By choosing “local fields” and “create” from the “edit” menu, we can add the required calculation formulas.

## 10. Local field calculations

Two calculations could be done within the query; duration of the order survey process and the difference between the roll's arrival date and the purchase order date. The short name, field description and heading were determined. The both fields are calculation fields. The number of digits was determined to be three and number of decimal places one.

The calculation formula for the order survey duration is simple; difference between the sales order creation date and the purchase order date. The short names for these fields are ERDAT and BSTDK, so the calculation is ERDAT-BSTDK. This results as a number of days taken for the process of order survey.

The screenshot shows the 'Field definition' dialog box with the following details:

- Short Name:** Order\_surv
- Field Description:** Duration of the order survey process
- Heading:** Duration of the order survey process
- Field group:** Sales Document: Business Data
- Properties:**
  - Same attributes as field
  - Text field (No. of Characters: )
  - Calculation field (Number of Digits: 3, Decimal Places: 1)
  - Date field
  - Time field
  - Symbol
  - Icon
- Calculation Formula:** ERDAT - BSTDK
- Condition:** (empty)
- Input on Selection Screen
- Mandatory

Figure 25.0: Field definitions for the local field calculations

→

The screenshot shows a list of fields with the following details:

- Billing date for billing index and printout
- Duration of the order survey process (ORDER\_SURV)

Figure 25.1: A new field, duration of the order survey process appears to the selected field group providing with new data for the report. This field is called a local field.

## 11. Choosing the selection criterion/ criteria

The next screen is the screen where we select the criteria according to which the data on the report is retrieved from the system.

Selection fields		No	Selection text	SV	12
<input type="checkbox"/>	Loading Date		Loading Date	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Material Staging/Availability Date		Material Staging/Availabi	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Schedule line date		Schedule line date	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Goods Issue Date		Goods Issue Date	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Requested delivery date		Requested delivery date	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Date until which bid/quotation is binding (valid-t...		Date until which bid/quot	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Document Date (Date Received/Sent)		Document Date (Date Recei	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Sales Document	1	Sales Document	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Date on Which Record Was Created		Date on Which Record Was	<input type="checkbox"/>	<input type="checkbox"/>

Figure 26.0:  
Choosing the  
selection criteria

The data for the example case is retrieved according to the sales document number, so check mark is put on the sales document field. The “No” designates the order in which the criterion fields are output on the final screen, in case there are several criteria. Since we are looking for data with a single value, we put checkmark on the “SV” field.

After this we choose the “Basic List” option **Basic List** and the following screen appears:

Define basic list		Line	Sequence
Field			
Loading Date	1	1	
Material Staging/Availability Date	2	1	
Schedule line date	3	1	
Goods Issue Date	4	1	
Requested delivery date	5	1	

Figure 26.1: Selection of the order of lines  
and the field sequence

12. On this screen, the obligatory fields include the determination of the line and sequence. Everything else is left as default. Line selection indicates the order in which the fields are displayed. Sequence indicates the order in which the fields are displayed if several fields are output on the same line.

Page header (headers and column headers)	
The second part of the Excel report	
Loadg Date	
Mat .Av .Dt .	
Deliv . dat	
GI Date	
Req .dlv .dt	
Valid to	
Doc . Date	
Sales Doc .	
Created on	

The two next screens are left as they are, we can skip them and navigate with the yellow arrows to the third page in which we add header and footer for the report.

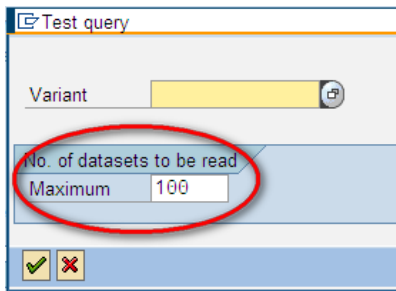
→

On the last page the report conditions are tested by Ctrl+F8 or



icon.

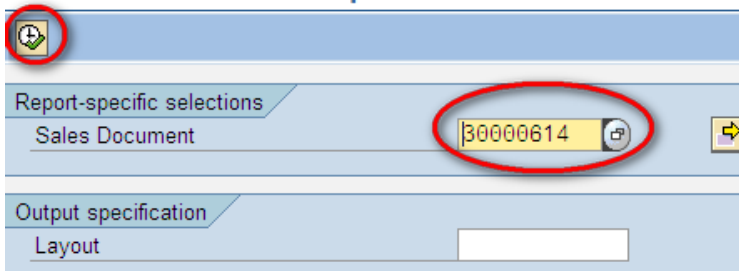
Figure 26.2: Page headers and footers



A pop-up window allows determining the maximum datasets to be read. The default value for this is always 100, but it can be changed. By choosing, for instance, 10, ten first hits are displayed on the result screen.

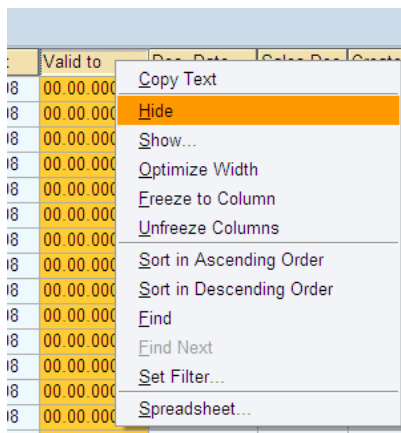
Figure 26.3: Selection of the number of datasets to be read

### Part 2 for the case report



13. The selection criterion, in this case the sales document number of the case project is typed on the selection field and the report is executed. The yellow arrow enables the addition of more values.

Figure 26.4: The selection criteria screen



14. The data is displayed on SAP-list viewer from which it will be exported to an excel sheet. After execution we can still modify the report by, for example, hiding insignificant or empty fields or sorting fields in ascending/ descending order. The order of the different fields can also be changed.

Figure 26.5: Hiding the unnecessary data

15. Since the last page displays a bit too much of data, it needs further specifications. The filter option is created for this purpose.

Part 2 for the case report				
Description	Item	Sales Doc.	PO date	Created on
KK4 Tampuuritela T994	010...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	010...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	010...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	010...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	020...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	020...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	020...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	020...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	030...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	030...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	030...	30000614	29.04.2008	29.04.2008
KK4 Tampuuritela T994	030...	30000614	29.04.2008	29.04.2008
Tampuuritela Täyshuo...	010...	30000614	29.04.2008	29.04.2008
Tampuuritela Täyshuo...	010...	30000614	29.04.2008	29.04.2008
Tampuuritela Täyshuo...	010...	30000614	29.04.2008	29.04.2008
Tampuuritela Täyshuo...	020...	30000614	29.04.2008	29.04.2008
Tampuuritela Täyshuo...	020...	30000614	29.04.2008	29.04.2008
Tampuuritela Täyshuo...	020...	30000614	29.04.2008	29.04.2008

Figure 26.6: the display on the SAP List Viewer

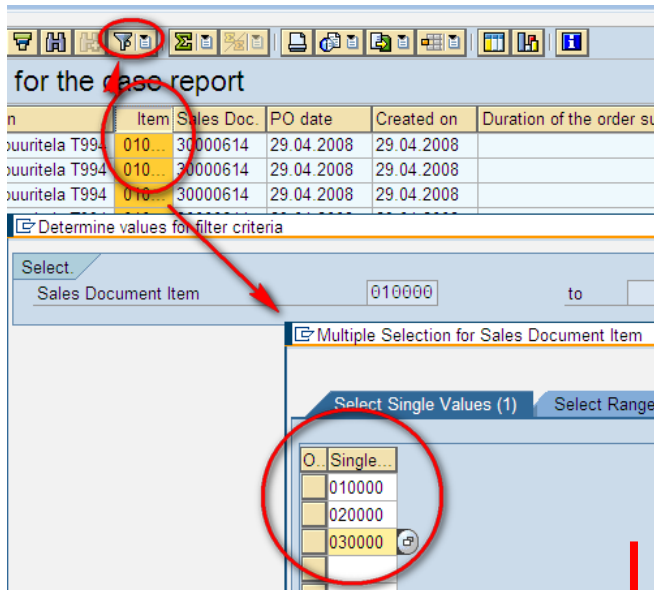


Figure 26.7: the filter function

16. First activate the field according to which you want to do the filtering. Then click the “filter” icon and determine either single values or range of values in an interval.

→ In the example case, the filter was being used in the item number and description. These specifications summarized the report to display the required values and erase the unnecessary data.

Part 2 for the case report

Description	Item	Sales Doc.	PO date	Created on	Duration of the order survey process	Deliv. date	Req.dlv.dt	Roll's arrival and PO difference
KK4 Tampuunitela T994	010000	30000614	29.04.2008	29.04.2008	0,0	27.06.2008	15.08.2008	59,0
KK4 Tampuunitela T994	020000	30000614	29.04.2008	29.04.2008	0,0	27.06.2008	15.08.2008	59,0
KK4 Tampuunitela T994	030000	30000614	29.04.2008	29.04.2008	0,0	27.06.2008	15.08.2008	59,0

Figure 26.8: the filter function erases the unnecessary data from the query

17. The report is now ready to be exported to the Excel sheet.

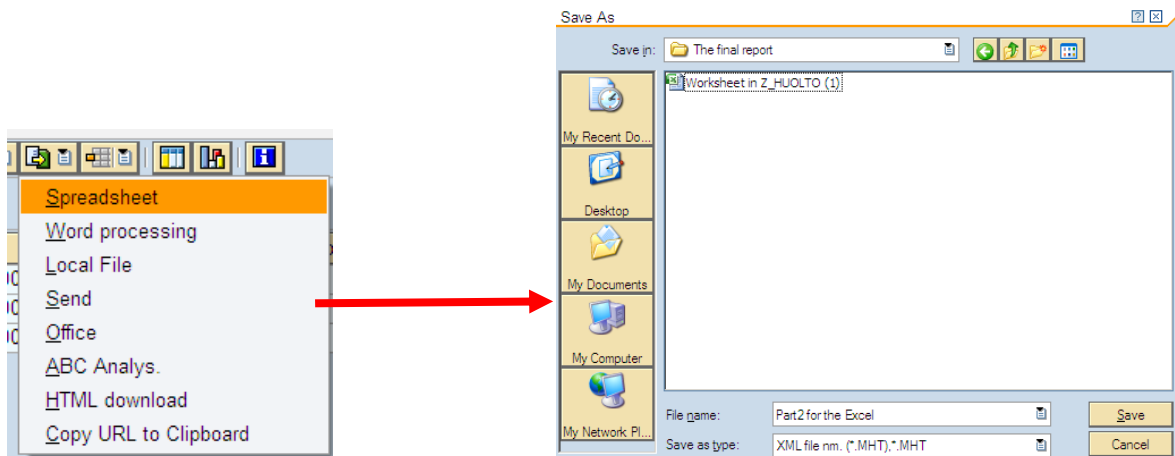


Figure 26.9: export of the report to Excel sheet

Figure 27.0: View on the Excel sheet:

	A	B	C	D	E	F	G	
1	Description	Item	Sales Doc.	PO date	Created on	Duration of the order survey process	Deliv. date	Re
2	KK4 Tampuunitela T994	10000	30000614	29.4.2008	29.4.2008		0,0	27.6.2008 15.
3	KK4 Tampuunitela T994	20000	30000614	29.4.2008	29.4.2008		0,0	27.6.2008 15.
4	KK4 Tampuunitela T994	30000	30000614	29.4.2008	29.4.2008		0,0	27.6.2008 15.
5								
6								
7								
8								
9								

18. The data from the first report is copied and pasted to the other Excel sheet →

G	H	I	J	K	L
Sched. start	Actual start	Actual Finish	Description	Item	Sales Doc.
07.05.2008	06.05.2008		KK4 Tamp	10000	30000614
13.05.2008	07.05.2008		KK4 Tamp	20000	30000614
26.06.2008	06.05.2008	12.08.2008	KK4 Tamp	30000	30000614

Figure 27.1: Combining the data of the two reports with copy-paste

19. When all the required data is on the Excel sheets, the rest of the calculations can be done.

### 20.1.3. The calculations in SAP and Excel

All the calculations that require IF-statement, for example, need to be done in Excel. This is because the query functionalities do not support IF-statements. Additionally, the calculations that required data from fields that could not be joined in SAP need to be done in Excel.

The normal Query, enabling the calculation of local fields and other specifications was being used in this example. However, if no calculations are needed it is recommended to use the Quick View function for the creation because it is faster, simpler and enable same joins as the Query. It can equally be transported to Excel and further processed.

The graphical query painter can equally be used, since the layout is kept as it is set on default in SAP. It skips automatically the unnecessary screens and the user can make specifications with the help of graphics.

## 21. Conclusions on the case report

All the data that was originally demanded for the report could not have been provided. This is because the data simply did not exist in the tables; instead of showing dates, the report displayed empty fields. For instance, the date of the billing block, or the actual delivery date displayed empty fields. Accordingly, certain calculations could not have been done.

Because of the inconsistencies in the creation of InfoSets, the report had to be created in a bit more complicated way. The Query-tools are simple to use, if you create simple reports. The example case appeared to be too complicated for these tools. Fortunately, it is always possible to further process the queries in Excel, or other external programs.

Another report was meant to be created as well. This report was supposed to include the durations of the different phases during the tambour roll maintenance. However, despite hard attempts to find the dates from transparent tables, in order to use them in the queries, this did not succeed. The data was stored in the form of structures; accordingly, it could not be used in the queries.

As a conclusion, the Query-tool did not really correspond to the required needs. The tool is not powerful enough to create as complex table joins as the case report required. As a result, two separate queries needed to be created and then combined in Excel, in which the required calculations were done. The dates for the first report were taken from a report that was created as a default to the system. This data was then exported to an Excel sheet.

The second report was created using the Query function, and all the calculations that could be done within the SAP, that is, calculations that were simple enough and for which the required information were available, were created by using the “local field” function. A filter function was needed in order to erase the unnecessary information from the query. This query was equally exported to a separate Excel sheet and then combined with the first one. After this, all the possible calculations were done.

Both reports were saved as a variant, in order to have the information available for the next usage. These reports need to be executed separately when using them. The user can each time decide which information he or she wants to display on the report, providing that the information is included in the InfoSets. The selection criteria can be changed if only one query is executed. If both reports are executed, the only option is to use the sales order document number as a selection criteria, since it is the only common factor in the two reports.

The user can later display data of either several cases, or single cases, depending on the requirements. Additionally, the usage of the already created query is much faster; the user only needs to deselect unnecessary data if needed, choose the selection criteria and execute it. After this it can be exported to Excel by following the simple pattern. So, even if the Query tool was not powerful enough for the creation of a report as planned before hand, it can now be used to provide with information much faster than before.

## 22. Final conclusions

SAP-Query enables the creation of various types of reports; you can decide the content, create new fields with calculation based on the content, and specify pretty much in detail the layout, such as width of margins, colors and the order of values of the report. In addition to basic lists, you can create ranked lists and statistics to display data in compressed form.

Compared with the complex ABAP coding, which in this case would not even have been an option, the tool is pretty simple to use. It also provides with more attributes than the simpler options, such as Quick View or InfoSet-Query. What is more, Quick View and InfoSet queries can be converted to SAP-Query as for the creation of more complex qualities.

SAP's cooperation with Microsoft enables further processing in external programs such as Word or Excel. Additionally, one can pretty well determine about the authorizations; who are allowed to display, execute and copy the reports. Accordingly, the security issues are quite well taken into consideration.

Once in a while, the tools appeared to be slightly rigid to use. In the creation of InfoSets, the system claimed that the table joins were correct and the InfoSet was successfully generated. However, when reaching the point of execution of queries based on this particular InfoSet, the system was not willing to cooperate anymore. So, the problem with the InfoSets was not revealed until the last phase of the creation of the queries, which makes the user lose time and nerves.

Deleting the tables that were not accepted to the joins and generating and saving the InfoSets again was of no use; the field of the deleted table was haunting on the query despite the desperate attempts to delete it from the query. In other words, if you add two tables and the query works well and then add third table and the query does not work anymore, you have to start the creation of InfoSets and Queries all the way from scratch. Additionally, if you change the content of a particular InfoSet at some point, the new data is not shown in the Queries already created. So adding data from new tables to the queries is not possible.

When executing the query by using, for instance, too long interval of the purchase order dates as a selection criterion; all the works were not displayed. Accordingly, the amount of data enabled to be displayed is limited. Additionally, some fields, such as the billing block, were not displayed at all. The content on the Word document display was not complete; however, the output on an Excel file was good.

There were lots of different specifications for different dates; scheduled start, planned start, forecasted start etc. Accordingly, it was at times a bit difficult to determine which date was the one to use.

Due to the strict limitations in terms of the table joins, there is a need for the creation of different reports. You can, for example, join together tables, which include data on the start, end and release dates of the projects. However, you cannot join tables that would state the name of the customer or the name of the particular project. Thus, as for the selection criteria, you can



only use start and end dates. Accordingly, the output of the report is fairly challenging to interpret and analyze.

Some of the dates were impossible to have on the reports. The billing block date, for example, did not appear at all on the report. The arrival date of the roll eventually appeared several times on the report. Accordingly, further selection criteria needed to be added on the selections screen.

One should have created a field of its own for this particular date. However, this would have required ABAP-coding, and due to the restrictions for authorizations, this could not have been done. The same problem was being faced when starting to work with the work phase durations.

There were major problems with table joins; the creation of joins is extremely limited, probably due to the security reasons or because of the general structure of the system. This limited the possibility to use certain values as a selection criterion and prohibited the calculation of certain local fields.

To solve this problem, I tried to find if these particular tables would have been joined in the logical database. This did not work, so I tried another way; to create myself a logical database. However, because of the lack of authorizations, this could not be done eventually. Lack of authorizations has several times restricted the usage of certain ideas in terms of problem solving.

## **22.1. Recommendations**

As for the creation of more complex reports, that require simple calculations, the SAP Query is definitely the right tool to use. This enables the presentation of data with the help of statistics and ranked lists as well, which gives the possibility for the management to quickly make decisions according to data that is displayed in compressed form.

However, if the report is too complex, or if data needs to be retrieved from many different modules, several queries need to be created and then exported to Excel. This may end up being a time-taking process. Especially if the content varies often, the selection criteria need to be done one by one for each query, and several modifications may need to be done manually. In addition, if no fancy features are needed, it may be difficult to pass the unnecessary screens.

The Quick View is simple and fast tool for the creation of simple reports. You cannot do any calculations, but if those are needed, you can export the query to Excel and do the calculations there. After all, Excel enables greater variety of calculations than the SAP Query.

What is also pleasant with the Quick View is the fact that you can retrieve the information for the report directly from the tables of the logical database. If the query does not end up working with certain table joins, you will find out that faster. As when creating the queries with the actual Query tool, you first have to create the InfoSets, then the Query, and in the final phase

the Query either works, or it does not work. Even if more complex reports are needed, it is good to at least test the table joins in Quick View; what works in Quick View, works in the SAP Query as well. Besides, you can pretty easily convert the Quick Views into actual Queries.

In case the query tools do not correspond to the requirements in terms of reporting, there are of course other options. One of them is the SAP Business Warehouse Reporting, today better known as SAP NetWeaver. This is an additional tool that has to be purchased separately, but it enables more functions than the SAP Query tools. Whether to implement the new reporting system or not depends on the future requirements in the company as for the reporting. At this point, while the system is still new for everybody, I recommend a familiarization for the Query tools first, and then, if necessary, considering the additional tool.

## References:

### Litterature:

Anderson George, Larocca Danielle (2006) *Teach yourself SAP in 24 hours* (second edition), SAMS publishing

Schicht Gabriele, Schmieden Andrea (2001) *Flying Start with SAP R/3*, SAP Press/ Pearson Education Limited

Sharpe Simon (1997) *SAP R/3 PRO-kurssi*, QUE Corporation Copyright, (Finnish language edition; Suomen Atk-kustannus Oy, 1998)

### Internet:

Hörchens Stefan (2008) *Användning av BI – system; Vilka möjligheter finns att förbättra informationskvalitén med BI verktyg och hur används dessa verktyg inom ett praktiskt problemområde?* (Final Thesis) Växjö University,  
[www.divaportal.org/vxu/reports/abstract.xsql?dbid=2285](http://www.divaportal.org/vxu/reports/abstract.xsql?dbid=2285)  
 [Viewed 10/12/2008]

Jormanainen Arto (2008) *SAP ERP Toiminnanohjausjärjestelmän laajentamismahdollisuuksien tarkastelua*, [ftp://cs.joensuu.fi/pub/Theses/2008\\_MSc\\_Jormanainen\\_Arto.pdf](ftp://cs.joensuu.fi/pub/Theses/2008_MSc_Jormanainen_Arto.pdf), Pro gradu -tutkielma  
 [Viewed 25/10/2008]

SAP AG  
[http://en.wikipedia.org/wiki/SAP\\_AG](http://en.wikipedia.org/wiki/SAP_AG)  
 [Viewed 25/10/2008]

Sap NetWeaver Library:  
[http://help.sap.com/saphelp\\_nw70/helpdata/EN/43/e39fd25ff502d2e10000000a1553f7/frameset.htm](http://help.sap.com/saphelp_nw70/helpdata/EN/43/e39fd25ff502d2e10000000a1553f7/frameset.htm) [Viewed 04/09/2008]

SAP Query (BC-SRV-QUE) Release 4.6C, 2001 SAP AG:  
<http://help.sap.com/printdocu/core/Print46c/EN/data/pdf/BCSRVQUE/BCSRVQUE.pdf>,  
 [Viewed/20/10/2008]

Vahto Group Plc Oyj, Kvaliitti Oy:  
[http://www.vaahtogroup.fi/index\\_fi.asp](http://www.vaahtogroup.fi/index_fi.asp)  
 [Viewed 20/10/2008]

The Spot 4 SAP (Michael Management Corporation):  
[http://www.thespot4sap.com/Articles/SAP\\_ABAP\\_Queries\\_Introduction.asp](http://www.thespot4sap.com/Articles/SAP_ABAP_Queries_Introduction.asp)  
 [Viewed 04/09/2008]

Vaaho tähtää SAP ERP -ratkaisun avulla mailman huipulle  
<http://www.sap.com/finland/company/pressroom/press.epx?pressid=9299>  
 [Viewed 01/09/2008]

When execution matters  
[http://www.eumice.com/content/default2.asp?active\\_page\\_id=126](http://www.eumice.com/content/default2.asp?active_page_id=126)  
 [Viewed 25/10/2008]

Wikipedia, the free encyclopedia/ Executive Information System  
[http://en.wikipedia.org/wiki/Executive\\_information\\_system](http://en.wikipedia.org/wiki/Executive_information_system)  
 [Viewed 20/01/2009]

Wikipedia, the free encyclopedia/ Oracle Corporation  
[http://en.wikipedia.org/wiki/Oracle\\_Corporation](http://en.wikipedia.org/wiki/Oracle_Corporation)  
 [Viewed 20/01/2009]

## **Forums:**

IT Knowledge Exchange (<http://ITKnowledgeExchange.techtarget.com>)  
 [Accessed 22/10/2008]

SAP Developer Network (<https://forums.sdn.sap.com>)  
 [Accessed 21/22/2008]

## **Other:**

### **Employee interviews;**

Mr. Kalle Kylkilahti, Mr. Jukka Pullinen *Interview on the company and the SAP-system*

Perttula Ismo, Raunio Jari *Interview on the maintenance process of rolls*

### **Material provided by the SAP Business Suite system;**

- Company booklets (Vaaho –ERPFI, Koulutus ETO1, 22.1.2008)
- SAP help portal
- Technical information provided by SAP Business Suite
- SAP Table mapping

## Abbreviations and definitions

**ABAB:** (Advanced Business Application Programming, originally Allgemeiner Berichtsaufbereitungs-Prozessor = general report creation processor) is a high level programming language created by the German software company SAP.

**ABAP Workbench:** a set of programs for developing enterprise resource management (ERM) applications that runs in the R/3 subsystem from SAP.

**Chopper:** A device used to cut the paper.

**CS (capacity selling):** a production form in which the production is done based on the customer's requirements

**Duet:** complementing part in the SAP-system, which makes SAP business applications accessible through Microsoft's Office programs

**ERP:** Enterprise Resource Planning

**ETO (engineering to order):** a production process in which the good or the service is produced, after which the customer can place an order-

**An Executive Information System (EIS):** a type of management information system intended to facilitate and support the information and decision-making needs of senior executives by providing easy access to both internal and external information relevant to meeting the strategic goals of the organization.

**Field:** the location of a piece of data in SAP.

**Field Group:** fields grouped together within SAP.

**InfoSets:** a special storage of the collected data, intended to be used in the Queries.

**InfoSet (Ad Hoc) Query tool:** One of the Query reporting tools within SAP ERP-system, enabling a simple creation of reports for one user group.

**LDB (Logical database):** a special ABAP program that retrieves data and makes it available to application programs. It provides a particular view of database tables in the R/3 System

**Local Field:** A new field created in the Query with specified calculations.

**MTS (made to stock):** a production process based on predictions and the production program created according to the predictions. The products are sold from the stock to the end-user.

**MySAP Business Suite:** an SAP-application, supplementing the R/3 software with additional products and components.

**Oracle Corporation:** a company that specializes in developing and marketing enterprise software products — particularly database management systems.

**Query:** the report created with the help of one of the Query tools provided by the SAP-system.

**Quick Viewer:** One of the three reporting tools within the SAP-system, enabling a quick and simple creation of reports for personal use.

**Repository Info System:** A “dictionary” to search for objects in the SAP System

**SAP AG:** the name of the German company that developed the SAP software

**SAP R/3:** standard business solution ERP software, which stands for Systems, Applications and Products in Data Processing.

**SAP Query tool:** a tool, used to do database searches and create reports not already contained in the default, from scratch without programming

**SAP User Group:** group of SAP users allowed running the queries.

**Selection criteria:** criteria according to which the SAP user will execute the report.

**SQL (structured query language):** a programming language for querying and modifying data and managing databases

**Spexcel:** is a product family that includes the components of company’s information management that ERP, CAD, PDM and CRM systems cannot handle.

**Tambour Roll:** a part in the winding-up section, in the end of the paper machine, where the nearly finished paper web is wound up the roll.

**Transaction:** commands that execute the various functions within the Sap system.

**Transparent table:** a table that exists with the same structure both in dictionary as well as in database exactly with the same data and fields.

**VAT-testing environment:** an environment in the Sap-system of Vaahto Roll Service, which enables testing without affecting the actual production part.

**Where-Used-List:** A device to enable the search of data in the SAP system.