

Monitoring Open Order Backlog in SAP R/3

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ABSTRACT

The thesis is intended to justify the use of SAP transaction MD4C (Multilevel Order Report) over the previous practice of manual monitoring open order backlog. The thesis is also aiming to improve the current process of monitoring open and delayed order backlog by coming up and providing improvements and development ideas to MD4C.

As open order follow-up and order backlog monitoring both belong to the main daily tasks of Customer Service Representatives (CSRs) at Distribution Center Europe (DCE), it is extremely important to find ways to work with the best available tools, options and practices in such way that it takes as little effort and time as possible.

All these aim at improving the effectiveness of CSRs office hours, improve customer loyalty through keeping promises and enable CSRs to timely inform customers about possible delays in advance. One of the reasons behind this thesis is also to make the supply chain more transparent for CSRs, thus removing the need to contact purchasers as much as before, by empowering CSRs with a clear and simple tool for checking the statuses of orders. Before MD4C, the CSRs mostly relied only on receiving a notice from purchasers about upcoming delays.

The earlier the possible delays are spotted by the CSRs, the easier they are to avoid by asking purchasers to contact suppliers and ask for better lead time and in time deliveries. As purchasers use different tools to follow-up their own purchase orders, there might be cases where something is left unnoticed. Thus it's important for CSRs to be able to spot possible errors and inform about these in advance.

Key words: order backlog, SAP, MD4C, customer service, supply chain, order processing, sales, effectiveness, customer loyalty

ABBREVIATIONS AND TERMS

DCE	Distribution Center Europe
SSO	Sales and Service Office
CSR	Customer Service Representative
MAC	Mining and Construction
MD4C	SAP transaction, Multilevel order report
VA05	SAP transaction, List of sales orders on item level
VA05N	SAP transaction, List of sales orders on order level
MD04	SAP transaction, Stock/Requirements list
VA02	SAP transaction, Change Sales Order
VA03	SAP transaction, Display Sales Order
SOC	Sales Order Confirmation
PO	Purchase Order
SMEs	Small- and Medium Sized Enterprises
ICPO	Intercompany Purchase Order
ICSO	Intercompany Sales Order
ISA	Internet Sales

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1 INTRODUCTION

The volumes Metso Minerals Distribution Center Europe supplies are huge (134000 order lines in 2011, ~520 order lines per day), thus it's extremely important on customer's perspective that these delays can be foreseen and timely informed.

Monitoring open and delayed order backlog is one of the main tasks at the DC Europe Customer Support. Reliability is one of the key issues of DCE customer service and performance, and it includes keeping promises and on time deliveries. It's also one of the key performance indicators, and is measured by how many outbound order lines have been dispatched to customer on promised ship-date. As the amount of open orders and order lines is huge in DCE, it's essential that the order backlog can be easily manageable.

1.1 Metso Corporation

Metso Corporation is a Finnish company working globally and employing around 30 000 people in over 50 countries worldwide. Approximately 30% of the employees are located in Finland. Metso was formed after the merger of Valmet, paper and board machine supplier, and Rauma, supplier of fiber technology, rock crushing and flow control solutions, in 1999. The employees of Metso are working in engineering, production, procurements, services business, sales and other operations.

Countries with Metso operations 2011:



FIGURE 1. Countries with Metso operations 2011

Metso Corporation has three different segments:

Mining and Construction, consisting of minerals processing solutions, crushing and screening equipment and services business lines.

Automation, consisting of process automation systems, flow control and services business lines.

Pulp, Paper and Power, consisting of paper, fiber, power and services business lines.

The net sales of Metso Corporation in the year 2011 were 6,646 million euros. The biggest and most profitable segment is Mining and Construction technology, covering over 40% of the total sales.

Net sales EUR 6,646 million
(2010: EUR 5,552 million)

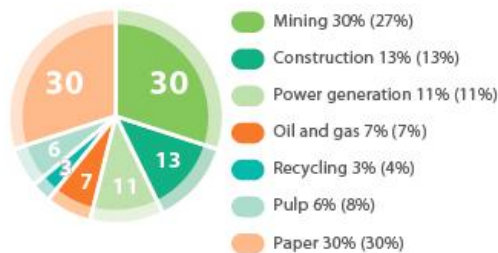


FIGURE 2. Metso net sales in 2010

1.2 Mining and Construction, MAC

Metso Minerals Mining and Construction Technology (MAC) is, as previously mentioned, the biggest and most profitable segment. The net sales of MAC segment were over 40% of Metso's overall net sales in 2011, the situation remained close to the same as in 2010, when Metso's overall net sales were 5 522 million and MAC's net sales 2 235 million (40,3%). When considering the number of employees, MAC was the second largest segment of Metso in 2010.

In 2009 MAC was divided into two business lines: Services Business Line (SBL) and Systems Business Line. The service business line provides a wide amount of spare and wear parts for crushers and screens, technical assistance and maintenance service.

The main customers of Metso Mining and Construction Technology are quarries and contractors, and also it's currently market leader in mining crusher business.

1.3 Distribution Center Europe, DCE

The thesis will be for Metso Minerals Distribution Center Europe, located in Tampere, Finland. DCE is employing around 60 people, and is purchasing and providing spare and wear parts for Metso manufactured crushers and screens.

In the spring of 2011 DCE went through organizational change and there are now five different teams. The teams are Customer Support team, Logistics team, Parts Support team, Supply team and Warehousing team.

Customer Support team is divided into two different teams as well; Distributors and Export team and Europe team, based on customers each team is providing services for. Distributors and Export team is in responsible for Metso's Sales and Service Offices and Distribution Centers located outside Europe, and also Metso's Distributors all around the world, including the ones located in Europe. Whereas Europe team is in responsible for Metso's Sales and Service Offices and Distribution Centers inside Europe. The main tasks of Customer Support teams include order handling, order follow-up, customer data management, answering customer's requests and questions. Customer Support team is the main connection between DCE and external, as well as internal, customers.

Logistics team is in charge of all the issues concerning logistic aspects of parts deliveries, including flight, truck and ship bookings, contacting forwarding agents, tracking of shipments, and providing solutions for urgent and special deliveries, creating documents related to exporting and customs clearances, and also invoicing.

Parts Support team is providing technical assistance concerning parts and materials supplied by DCE, sending out quotations to customers for DCE supplied spare and wear parts, pricelists and pricing of parts, customers feedback and warranty handling, answering lead time questions and also sending requests for quotations for DCE's suppliers.

Supply team is contacting suppliers, and also Metso’s own distribution centers, procuring spare and wear parts, keeping stock levels at the right levels in both of DCE’s warehouses, Metso’s own Warehouse in Tampere and outsourced warehouse of SKF in Tongeren, inventory planning, forecasting demand, and searching for alternative suppliers for urgent and breakdown cases. They are also informing Customer Support team about delays of parts.

Warehousing team is handling all the issues related to warehousing at both of DCE’s warehouses, Tampere and Tongeren, such as inbound and outbound problems, improving the systems and processes of warehousing, issues concerning packaging of goods, solving problems related to warehousing and coordinating the returns of materials from customers.

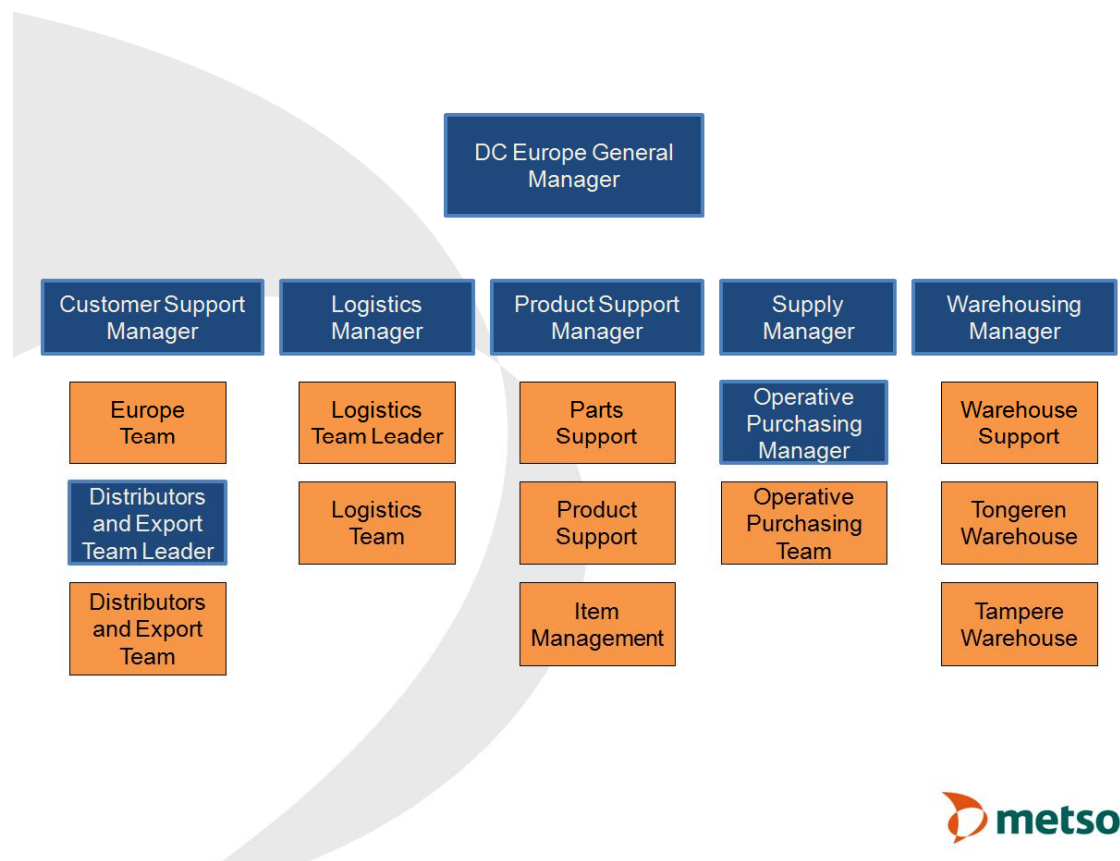


FIGURE 3. DC Europe Organizational Chart

1.4 Intended outcome of the thesis

The thesis is intended to justify the use of SAP transaction MD4C over the previous practice of manual monitoring open order backlog. The thesis is also aiming to improve

the current process of monitoring open and delayed order backlog by coming up and providing improvements and development ideas to MD4C, and also to familiarize the CSRs with the MD4C report and empower them to apply it to their weekly work routine.

The previous process of monitoring open order backlog in SAP in DCE is too time consuming, clunky, and doesn't provide enough transparency and tools for the Customer Support Representatives to be able to efficiently be on top of the open order lines' situation. The MD4C report brings a change to this, and the thesis gives all the required information to fully apply this report to the weekly routines of DCE's CSRs. It gives detailed instructions on how to use the report, what information can be found from the report, and how these should be interpreted.

Also the perks and features of proactive customer support will be introduced to identify what direct, as well as indirect, advantages come out of using MD4C in order backlog monitoring. The concept of proactive customer support might not be clear enough for the Customer Support Team in DCE, and the thesis will go through them in detail in order to attract the CSRs to use the report even more.

The improvement ideas, explained in the final section of the thesis, are aiming to make the report even more end-user-friendly in order to make the monitoring of open order backlog as efficient as possible, via the use of MD4C.

As open order follow-up and order backlog monitoring belong to the main daily tasks of CSRs at DCE, it is extremely important to find ways to work with the best available tools, options and practices in such way that it takes as little effort and time as possible.

All these aim at improving the effectiveness of CSRs office hours, improve customer loyalty through keeping promises and enable CSRs to timely inform customers about possible delays in advance. One of the reasons behind this thesis is also to make the supply chain more transparent for CSRs, thus removing the need to contact purchasers as much as before, by empowering CSRs with a clear and simple tool for checking the statuses of orders. Before MD4C, the CSRs mostly relied only on receiving a notice from purchasers about upcoming delays.

The earlier the possible delays are spotted by the CSRs, the easier they are to avoid by asking purchasers to contact suppliers and ask for better lead time and in time deliveries. As purchasers use different tools to follow-up their own purchase orders, there might be cases where something is left unnoticed. Thus it's important for CSRs to be able to spot possible errors and inform about these in advance.

Also Metso's values (Driving customer success, Seeking innovation, Performing together, Respecting each other) are in deep connection to the intended outcome of the thesis; Driving customer success by timely informing them about delays and enabling them to take proper measures caused by the delays, to reduce the amount of delays in general, thus improving customer loyalty by improving reliability. The Seeking innovation value is highlighted by coming up with new and better work practices through MD4C. Whereas Performing together is linked to driving customer success, through interacting with customers and keeping them informed, as well as inside the office by helping purchasers at DCE to notice if some shipments from suppliers haven't arrived, are delayed or are forecasted to be delayed. And finally Respecting each other; placing value and respect for customer's business by keeping them informed about the status of their orders– linked to the same reasons as the first value, Driving customer success, on customer point of view.

The thesis is also intended to act as a guidebook, thus helping the CSRs of Metso Minerals DCE with their daily tasks by making the monitoring of order backlog more manageable.

1.5 Structure of the thesis

The thesis will first go through ERP systems in general. Explain what they are, how they are used in multinational companies, what are the advantages they bring to the table and name the most known ERP systems present in the world. After the general overview of ERP systems is given, the thesis will introduce SAP in more detail, which is the ERP system currently in use in DCE.

Then the attention moves towards the practices of monitoring open order backlog at DCE and customer support in general. The concept of proactive versus reactive customer support is explained; what is the relation between proactive customer support and

monitoring of open order backlog, and how it affects the CSRs of DCE. The thesis will explain what are the advantages of proactive customer support and how important being proactive is in the current business environment.

The next section of the thesis will then concentrate on the situation before MD4C was introduced as a part of the daily tasks of CSRs. This is done by explaining the cumbersome nature of manual order backlog monitoring by using printed Sales Order Confirmations, having to go through every sales order line separately, bouncing between different SAP transactions and close to zero visibility.

After the old procedure is explained, the concentration moves towards MD4C. The thesis will introduce the SAP transaction MD4C by going through its current features, tools and capabilities. This section of the thesis will explain the advantages and disadvantages of MD4C in its current state and also step-by-step instructions how to use MD4C together with Open Sales Order lists VA05 and VA05N are included.

The final part of the thesis will concentrate on possible improvements to MD4C by giving ideas to make the transaction easier to interpret, adding new functions and adjusting already existing functions of MD4C to work in a preferable way.

1.6 Research methods

The study concerning the use of MD4C will be based on feedback from colleagues through a survey, comments from DCE's SAP personnel, personal experience of working with MD4C and experience from MD4C two month -testing period.

The theory concerning proactive versus reactive customer support, as well as ERP systems, is based on literature and articles concentrating on customer support, supply chain management and ERP systems, and moreover articles about SAP.

2 ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS

2.1 What are ERP systems

ERP, or Enterprise Resource Planning, system is a software providing users with consistency, visibility and reliability across their business processes. “An ERP system is a packaged business solution that is designed to automate and integrate business processes, share common data and practices across the enterprise, and provide access to information in a real-time environment” (Deloitte & Touche, 1999). An ERP system should:

- have real-time access to the same data;
- integrate business processes fully (i.e. position-based budgeting sees the human resources data, customer relationship management sees and posts to live inventory data for orders); and
- enable users to move seamlessly from one function to another.

There are also other explanations for ERP systems, such as the definition by American Production and Inventory Control Society (2001) “a method for the effective planning and controlling of all the resources needed to take, make, ship and account for customer orders in a manufacturing, distribution or service company.” And also a short and powerful definition by Tadjer, 1998 “One database, one application and a unified interface across the entire enterprise”.

The main task of an ERP system is to integrate all the processes, departments and functions inside a company into one system which will improve the transparency of each and every segment of the company, and enable the users with better visibility of the processes. All the decision making and execution is done through ERP systems in companies that have an ERP system implemented.

2.2 The rise of ERP systems

The rise of ERP systems came shortly after the major developments in computer hardware and software systems. In the 1960s many organizations had implemented their own centralized computer systems to cover their own needs.

Material Requirements Planning (MRP) systems were introduced in the 1970s and these were mostly concentrating on forecasting upcoming parts and item requirements. After MRP systems, came Manufacturing Resource Planning (MRP II) systems in the 1980s. The difference between MRP and MRP II systems were that MRP II also aimed at optimizing manufacturing processes through combining raw material requirements with production planning.

MRP II systems included areas such as shop floor and distribution management, project management, finance, human resources and engineering.

ERP systems started their journey to the public in the late 1980s and the beginning of 1990s. The rise of ERP systems was based on the technological foundations of MRP and MRP II systems.



FIGURE 4. Evolution of ERP

2.3 Main features of an ERP system

ERP systems integrate business processes including (Seminar report 2010):

- Manufacturing
- Distribution
- Accounting
- Financial
- Human Resource Management
- Project Management
- Inventory Management
- Service and Maintenance
- Transportation

The ERP systems provided the companies with accessibility, visibility and consistency across the enterprise.

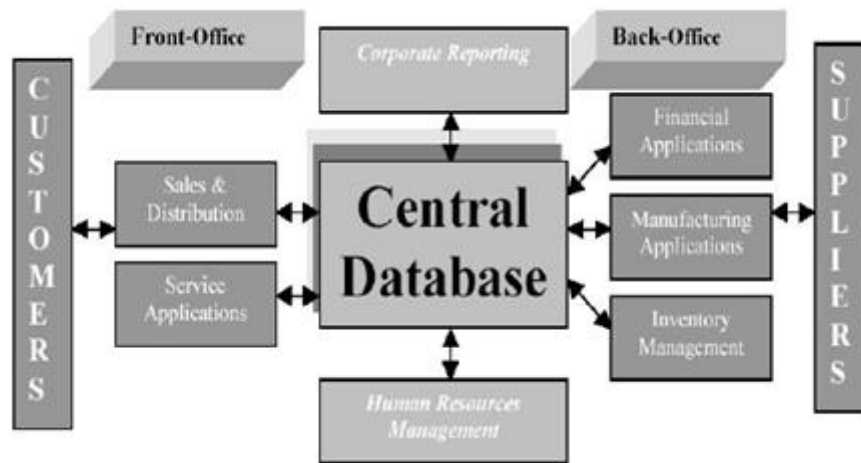


FIGURE 5. Concept of ERPs

The major features of ERP and what ERP can do for the business system are as below (VAMA Industries Limited website, 2009):

- Facilitates company-wide Integrated Information System covering all functional areas like Manufacturing, Selling and Distribution, Payables, Receivables, Inventory, Accounts, Human Resources, Purchases etc.
- Performs core corporate activities and increases customer service and thereby augmenting the Corporate Image
- Bridges the information gap across the organization
- Provides for complete integration of Systems not only across the departments in a company but also across the companies under the same management
- Is the only solution for better Project Management
- Allows automatic introduction of latest technologies like Electronic Fund Transfer (EFT), Electronic Data Interchange (EDI), Internet, Intranet, Video conferencing, E-Commerce etc.
- Eliminates the most of the business problems like Material shortages, Productivity enhancements, Customer service, Cash management, Inventory problems, Quality problems, Prompt delivery etc.
- Not only addresses the current requirements of the company but also provides the opportunity to continually improving and refining business processes.

- Provides business intelligence tools like Decision Support Systems (DSS), Executive Information Systems (EIS, Reporting Data Mining and Early Warning Systems (Robots) for enabling people to make better decisions.

2.4 Advantages of implementing an ERP system

There are direct and indirect advantages for implementing an ERP system to a company. When talking about direct advantages, these include enhanced efficiency, all information inside the company is integrated thus decision making is easier as all data is shown and taken into consideration, system becomes more flexible as ERP systems has integrated different languages, currencies, accounting standards in one system.

Indirect advantages include better corporate image due to professional and unified looking Sales Order Confirmations, Purchase Orders etc., improved customer satisfaction due to faster response times because material and parts planning is integrated and the system has all the needed information available and in connection to each other, improved reliability because orders can be easily tracked etc. The indirect advantages are numerous, as ERP systems improve the work quality as a whole and this also shows to the customers.

ERP systems are especially advantageous for multinational companies. The information flow between different offices in multiple countries is improved, as all the offices share the same integrated system and data. Also, the data is in-real-time, meaning that, for example, once an order is processed it instantly becomes visible in the system, and the employees from each different office are able to see it.

Also, as ERP system has many languages and currencies integrated, it eases the multinational aspect of global companies, due to same data being available in the needed language/currency. ERP systems make it easier to cover many markets without needing to manually adjust to the said country's needs.

2.5 Disadvantages of implementing an ERP system

The biggest problems arise from poorly executed implementation of the system, training of employees, and the capital costs of implementation.

In order for the ERP system to be successful at a company, it requires skilful and experienced employees to work with the system. The employees need to be properly trained to use the functions of the system, so they have a total understanding of what they are doing, and how to do it, and how it affects the supply chain and business process. Also, the employees need to have a complete understanding of the functions and options they use, to minimize the errors. Even though ERP systems are huge, and the functions and options they provide are countless, even one miss click of a mouse can cause severe damage, as it can affect such a variety of different things due to integrated data.

The turnover of employees is also one thing that should be taken into consideration. The new employees have to be properly trained again, and in companies where the turnover of employees happens often, the new employees aren't thoroughly trained, as also the training costs companies money and time. They are rather only introduced to the basic functions and tools the system offers, and which they will be mainly using. This creates employees with a tunnel view, and thus are unable to think outside the box when a problem occurs within the system due to no comprehensive knowledge.

The implementation of an ERP system is substantially costly, usually ranging from 30,000 USD (small enterprises) to 500,000,000 USD (huge global companies), and because of this it limits the ability of small companies to acquire one. They simply can't afford the investment an ERP system requires. Also, as small enterprises, especially companies working only nationally, wouldn't benefit from it as much as big multinational companies the investment seems rather unreasonable. Also some ERP providers require the users to renew their licenses annually, without taking into consideration the size of the company.

For some companies the ERP systems might seem to be too rigid and difficult to adjust to their business processes, as the customization of an ERP system is limited. In some instances the needed customization might require changing the basic structure of the

ERP system, and this is usually not allowed. Also the flexibility in implementation and usage may be too restricted for some companies.

2.6 ERP system providers

SAMPLE VENDORS		
Tier I	Tier II	Tier III
SAP Oracle Oracle eBusiness Suite Oracle JD Edwards Oracle Peoplesoft Microsoft Dynamics	Epicor Sage Infor IFS QAD Lawson Ross	ABAS Activant Solutions Inc. Baan Bowen and Groves Compiere Exact Netsuite Visibility Blue Cherry Exact HansaWorld Intuitive Syspro

FIGURE 6. Top ERP vendors by Tier

The above figure shows the top ERP vendors of each tier. The tiers illustrate to what sized business each ERP vendor is offering solutions for. Tier I ERP providers are for large enterprises, Tier II for medium-sized enterprises and Tier III for small businesses.

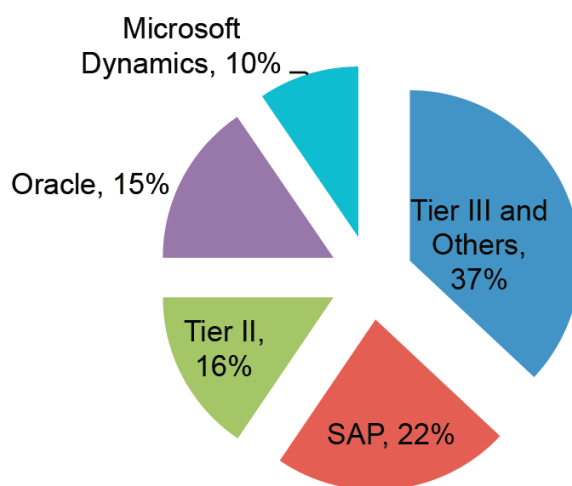


FIGURE 7. Top ERP vendors by market share, period February 2006 – May 2012

SAP is still dominating the ERP markets as a sole system provider with 22% of the total market share. Oracle is ranked second with 15% and Microsoft Dynamics third with 10%. The whole tier II is controlling only 16% all together, whereas tier III has a sub-

stantial share of 37% of the market share. But it has to be taken into consideration that tier III has multiple vendors, and there is no comparison between a single vendor of tier III and any of the tier I vendors.

The ERP system packages the tier I providers offer are listed below.

- SAP
 - SAP Business Suite, SAP Business ByDesign, SAP Business One, SAP Business All-in-One
- Oracle
 - JD Edwards EnterpriseOne, Oracle e-Business Suite, PeopleSoft
- Microsoft
 - Microsoft Dynamics (AX, NAV, GP, SL)

2.7 SAP AG: Systems, Applications and Products in Data Processing

SAP AG is a German multinational software corporation, that was founded in June 1972 by five former IBM employees in Mannheim, Germany. The headquarters of SAP are currently located in Walldorf, Germany, and SAP offices can be found in more than 130 countries employing around 56,000 people worldwide. The acronym SAP stands for “Systems, Applications and Products in Data Processing.

Present day, it is the world’s market leader in creating business softwares, and the third highest software company in the world in revenues. SAP has approximately 183,000 customers in 120 countries (SAP annual report 2011).

The idea behind founding SAP was to enable users to work with a common corporate database. Today, SAP offers ERP packages for firms of all sizes: ranging all the way from small enterprises to huge multinational corporations. Like all ERP systems, SAP also aims at integrating all business processes into a single platform to help the users with optimizing their business performance. “With the support of SAP application, company could perform their daily business activities into an end-to-end business process, a real time executive environment.” (Prince, Dennis L. 1998)

2.7.1 SAP solutions

SAP solutions are divided in to three categories, based on the size and business objects of the users' companies: SAP, with enterprise components for human resources, logistics, financials, sales and distribution among others, is aimed at big organizations, whereas SAP Business All-in-One solution, SAP Business One application and SAP BusinessObjects Edge solutions combining management and business intelligence software are for small and medium sized enterprises.

The solutions for SMEs are less expensive, easier to implement and go live, but do not offer as wide variety of applications, tools and functions as the solutions for larger companies. The solutions for larger companies require substantially bigger investment, and also require a longer time to implement.

2.8 The reasons for SAP implementation in Metso Minerals Globally

The main reason behind deciding to take on the SAP implementation in Metso Mining and Construction (MAC) Technology was to harmonize the processes and master data globally and implement a single system platform. SAP provides continuous support for business growth and significantly improves the operational efficiencies and long term profitability. It also provides a framework to develop the business processes and systems even further and also gives a better risk management tool.

The aim was also to define and build permanent organizational structures and processes via SAP that are needed to support further development of globalized processes and increase process management maturity. This is done by linking business activities across the entire MAC organization and allowing all business units to contribute to and benefit from producing and selling offerings more efficiently and effectively.

Metso's business units and departments were functioning more as a separate entities rather than partners, and SAP was needed in order to break through these barriers by giving more transparency between the different locations, which in turn further enhanced the transformation of Metso MAC into a more process oriented business in a global scale.

2.8.1 SAP Implementation Process of Metso Minerals in Finland

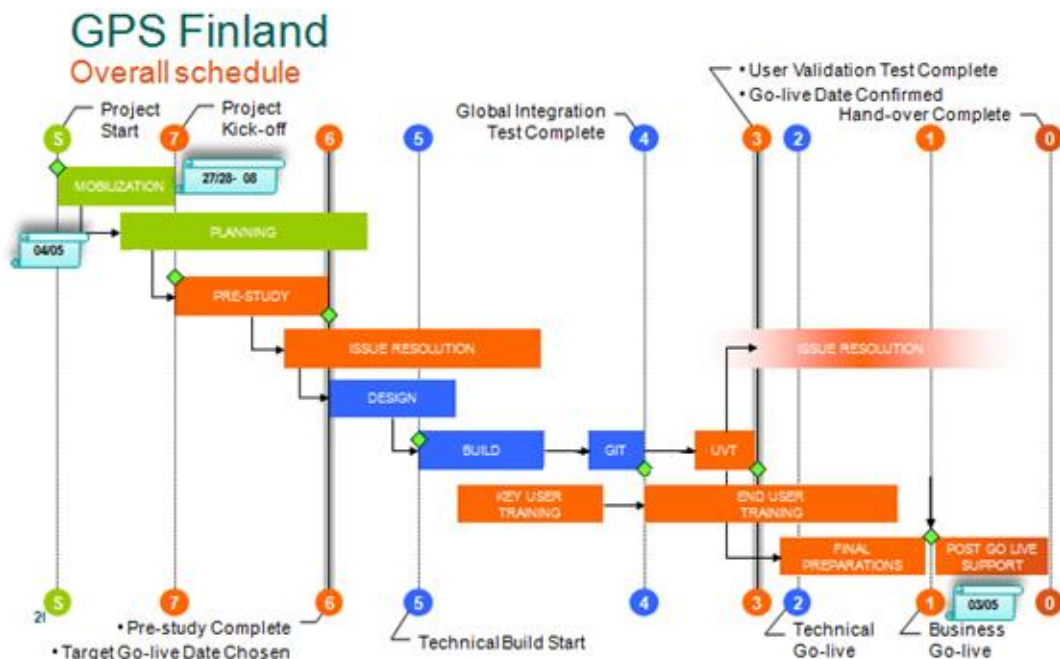


FIGURE 8. SAP implementation, overall schedule

The figure above illustrates the phases of SAP implementation in Metso Minerals Finland. The overall process was divided into five different phases: pre-study, design and build, user validation test, final go-live preparations and post go-live support.

Phase 1. – Pre-study

In the pre-study phase, a global template was validated to fit to local business processes, interfaces, data, forms and printouts, as well as key reports. The issues that came were collected and documented, and then prioritized from business perspective, from critical (required to be fixed at this stage, relevant to go-live) to less critical (to be fixed in the future). Key local requirements were also identified at this stage to specifically fit the needs of users in Finland.

The pre-study phase included developing a general understanding of the software for the people involved in the implementation project.

Phase 2. Design and Build

In the design and build phase the identified issues were resolved, such as document gaps in process, data and organization and functional designs for reports, interfaces, conversion, enhancements and forms were completed. All these configurations were tested and

end-to-end business processes were executed to ensure that the functionality, results and information met expectations.

After this was done, the key users were trained and roles and authorizations were prepared for them. The key users were required to develop a thorough understanding of business processes and in-depth knowledge of SAP functionality. An end-user training plan was constructed in preparation for phase 3, user validation test.

Phase 3. User Validation Test

In user validation test phase, key users were assigned for each functional area. They then identified the training needs and requirements and modified training materials to fit their assigned area. After the training material was modified and prepared, the coordination of end-user training sessions began and was executed by the key users. Key users were also required to participate in trainee evaluations actively after the training sessions in order to ensure effective learning process.

Finally, after the end-users had developed basic understanding of their respective SAP processes and tools, the go-live planning started and business go-live date was confirmed.

Phase 4. Final Go-live Preparations

At this stage, the end-user training was finished and they had developed a full understanding of their daily processes in SAP. Also, the plan for post go-live support was constructed and key users were introduced to key user networks and their roles and authorizations were finalized and then granted, according to their functional areas.

When the users were fully prepared to take SAP into their daily work, interfaces configured and documented, it was time to plan the business go-live “freeze period” and “slow motion period”. And when everything was in order, SAP implementation was executed and finished.

Phase 5. Post Go-live Support

In post go-live support SAP was already up and running in everyday work. This phase was more concentrated on providing process and system support to the users for smooth

transition to using SAP daily. The processes, transactions and data were monitored so that they would work as expected.

Collecting input from the users also began, in order to ensure the constant development of enhanced business practices and arising issues and concerns to be resolved.

2.8.2 SAP implementation in Distribution Center Europe

DCE was using a software called Projector from the year 1995, after which MFG Pro was implemented in the autumn of 2003. DCE worked with MFG Pro for around 7 years, and finally in the autumn of 2009 the implementation of SAP began.

The implementation of SAP was a massive project, and it took almost a year to complete. There were several problems during the implementation process. Problems occurred in pricing, with discount and surcharges, routing of deliveries was not fully functional, problems with customs codes, problems with all dates in SAP, such as the customer requested date and item availability date. SAP was not giving the correct dates for when parts should be available for shipping to customer, and this was a major problem. Also all customers, both internal SSOs and external distributors, went into credit block without a reason, and their shipments couldn't be dispatched. Problems were also noticed in all the printed documents that came through SAP.

Finally, after solving the problems and postponing the go-live date by a month from the originally scheduled, SAP was introduced as the main tool for business processes in every day work for DCE's employees. Present day, everything is handled through SAP, ranging all the way from order handling and creating quotations to managing customer data and invoicing. Even now, after DCE has been using SAP for two years, there are still minor problems occurring now and then in SAP data or functions and server crashes.

SAP is such a wide system that new functions and tools of SAP are constantly found, even after working with the software for two years, and implemented to everyday work. A good example of this is MD4C, which was introduced to Customer Support team this year. It seems that the learning process of using SAP properly is still ongoing, and will

continue to do so as the personnel of DCE are constantly improving their knowledge of the system as a whole, and thus finding new and improved ways of working with it.

2.8.3 SAP in Distribution Center Europe

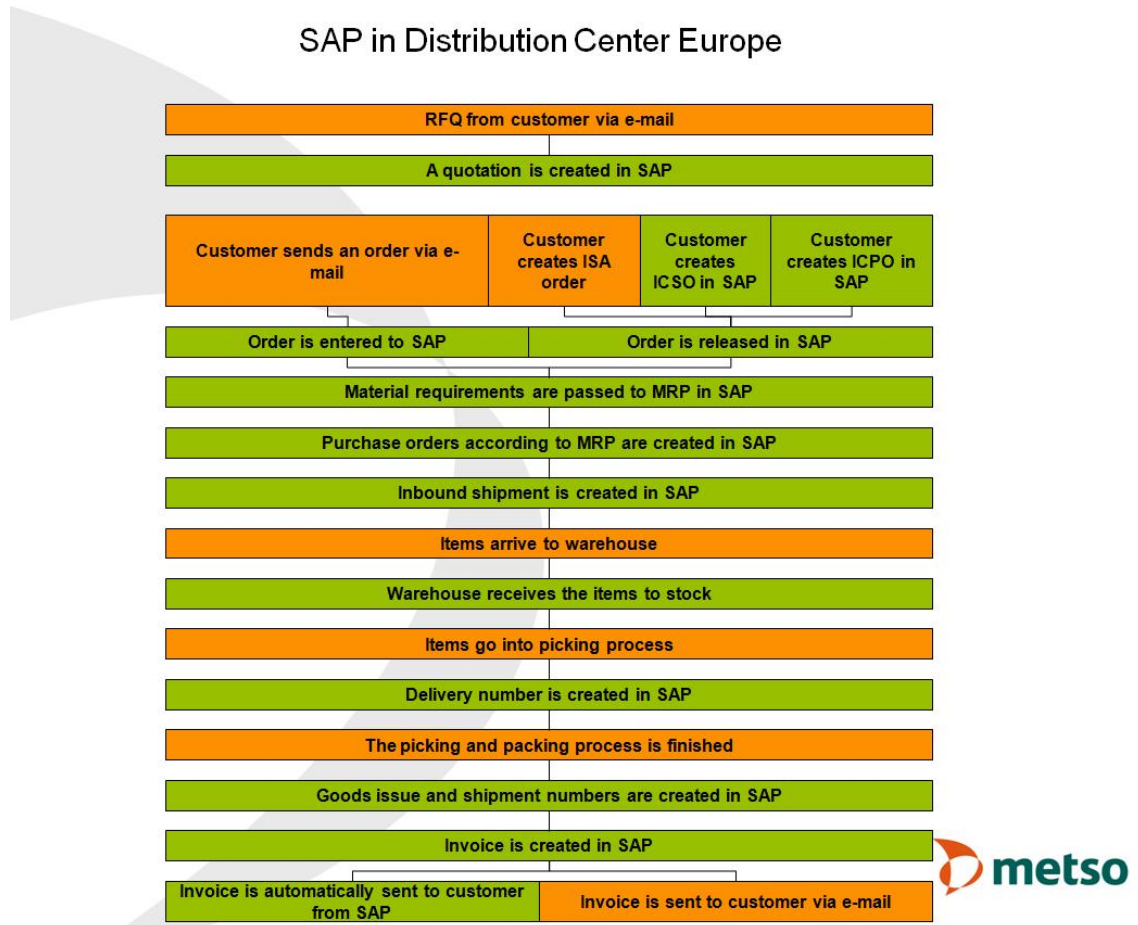


FIGURE 9. SAP in Distribution Center Europe

The above figure illustrates the normal procedure and steps in order handling and how SAP is implemented in the process. Green boxes in the graph indicate that the action is happening in SAP, and orange boxes that the actions are outside SAP.

The process may start off with customer sending a request for quotation via e-mail to parts support. Then the quotation is processed in SAP and sent back to the customer. When customer has received the quotation from DCE, they will create and order. This step is often skipped, as majority of delivery times and prices of DCE's spare parts are already known to customer.

The normal order handling process begins with a customer sending an order to DCE's CSR. There are four different types of orders depending on the customer.

1. Order via e-mail: Customer sends an order via e-mail which is then entered to SAP by a CSR.
2. ISA order: Customer goes to ISA (Internate Sales) website, enter their order there and then the order is transferred automatically to SAP and CSR checks that the order is alright, and releases it.
3. ICSO: Customer enters ICSO (Inter Company Sales Order) directly to SAP and CSR checks that the order is alright, and releases it.
4. ICPO: Customer enters ICPO (Inter Company Purchase Order) directly to SAP and CSR checks that the order is alright, and releases it.

When the order is processed and/or released, the material requirements are passed to MRP, from which the planners receive purchase requisitions in SAP and process these accordingly. Then SAP will create an inbound shipment for the materials.

When the materials arrive to warehouse, the warehouse personnel will check what is received and enter them to SAP as available stock. After this is done, SAP allocates the materials to the sales orders and creates a delivery/outbound shipment for the materials. This indicates that the materials have gone to picking and packing process.

When the picking and packing process is finished, a shipment and goods issue delivery are created in SAP indicating that the delivery/outbound shipment is ready for dispatch. After this is done, an invoice can be created.

The invoice is created in SAP with reference to the delivery/outbound shipment number. Depending on customer, the invoice is either sent automatically from SAP or it is sent via e-mail to customer.

3 MONITORING OPEN ORDER BACKLOG IN SAP

Monitoring open and delayed order backlog is one of the main tasks of DC Europe Customer Support. The volumes Metso Minerals supplies are huge (134000 order lines in 2011, ~520 order lines per day), Reliability is one of the key issues of DCE customer service and performance, and it includes keeping promises and on time deliveries.

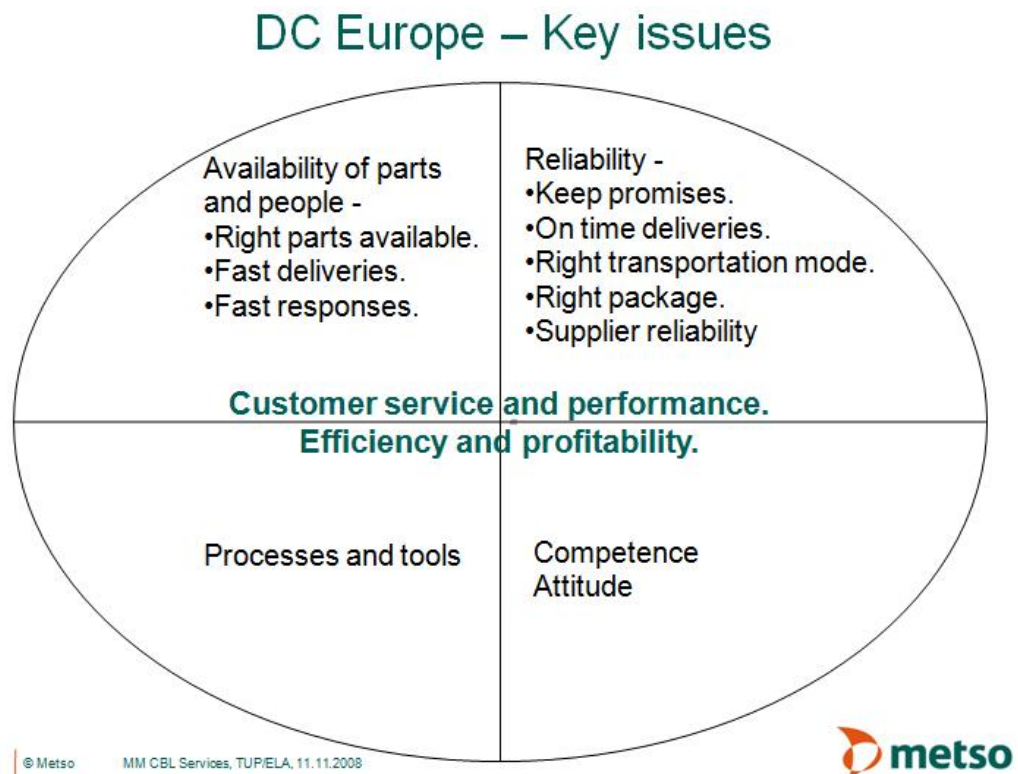


FIGURE 10. DC Europe – Key issues

Through proper open order follow up, the aspect of keeping promises is more likely to be guaranteed. And in case parts are delayed due to some reason, customers are timely informed about the delay, thus allowing them to take the needed actions with their end customers well in advance. In the present day business environment proactivity is highly appreciated, and interaction between supplier and buyer is the key for a successful cooperation and partnership.

Also, continuous follow-up of open order backlog helps to reduce the delays caused by system, as there are sometimes problems caused by SAP, which could cause parts to be delayed. Below are examples of some of the possible system related causes for delays

- Missing or outdated data in purchase info record of the part

- The lead time is set too short
- Supplier no longer supplies the part, or the supplier for the part has changed
- SAP doesn't have the ability to determine a different lead time for different quantities of items ordered, if there is currently no stock. I.e. the same lead time is given whether the ordered quantity is one piece, or a hundred pieces.
- SAP's incompetency to cross reference the stocks of DCE's two warehouses, Tongeren and Tampere.
 - Some of the parts DCE is supplying are procured from external suppliers that can only deliver to one plant. For example, a part can only be delivered to Tongeren warehouse by the supplier, but when the part is sold from Tampere, the purchase info record's lead time has usually been set to only 8 days, which is the time a stock transfer from Tongeren warehouse to Tampere warehouse takes. In case there is no stock for the part in Tongeren, SAP still gives the lead time of 8 days, although also the manufacturing and transportation time of supplier should be taken into consideration.
- Among others.

If the orders and order lines are followed daily and properly, some of these errors can be spotted before they have an effect on the delivery date of the part, thus improving two of the main issues of Reliability key issue – Keeping promises and on time deliveries. These are considered as proactive actions when problems are spotted and taken care of before they have had an effect, and in current business environment, proactivity is highly valued.

3.1 Proactive versus Reactive Customer Support in DCE

Proactive refers to forecasting and anticipating issues and taking care of them, in this case delays, before they have affected the business or reached the customer. Reactive means that problems are taken care of when they arise, and initiative to resolve the issue has come from planner or customer. In other words, proactive is preventing and reactive is fixing.

Proactive approach is clearly the more preferable option, as it increases the quality of customer support significantly. Proactive way of working doesn't create as much stress as reactive, due to problems not being so urgent when taken care of in advance, creating customer loyalty, due to keeping them informed, and creating a feeling for the customers of being valued by DCE. Being proactive will solve customer's issues before they are even aware of them, and has a direct impact on the extent of how committed the company is to the customer, thus improves the customer satisfaction and meets their expectations.

High concentration on proactivity can be considered as a competitive edge, and high quality of customer service is often looked upon as a competitive differentiator. As these two are very important aspects in the present business environment, being able to anticipate problems is not a thing to undermine. That said, being proactive oriented will help to create long lasting customer relationships.

Proactive approach also helps DCE to reduce costs involved when problems have been solved before they have happened in the first place. When the issues can be taken care of in advance and in a normal way (f.ex. nominated forwarding agent) rather than being forced to come up with an alternative, very often costly, option (f.ex. fast special delivery), the costs will be naturally lower.

A proactive approach will (Gianforte, Greg. 2003):

- Exceed customer expectations by giving them answers before they even ask a question
- Strengthen customer relationships by tangibly demonstrating commitment to their satisfaction
- Reduce costs by reducing inbound phone and email traffic
- Allow more customers and more products to be supported with existing staffing levels
- Deliver competitive advantage by out-servicing non-proactive rivals

When only working with reactive approach, problems and issues often become bigger, more expensive, more urgent and harder to solve in all ways than when working proactively. Reactive approach does solve customer problems and concerns and does improve their customer experience, but it is often too late as the problem has already occurred.

Granted, reactive way of working is more common and may seem easier as it's simply acting upon commands, "Do this, do that".

In reality, there is no possibility that the CSRs of DCE could be purely proactive, as there are issues that arise on a very small timeframe, leaving no time for anticipation. An example of this is when an item is lost or delayed during transport from supplier to warehouse, and neither one, supplier or forwarding agent, provide a notification of this delay. This results in the CSRs and purchasers falsely assuming that the part should be available as indicated in SAP, but when it indeed is delayed or worst case scenario, lost, and this is noticed, a new solution has to be found fast. The solution can be for example another supplier or a new express order via air freight from the same supplier, taking reserved materials from other, not so urgent, open orders, changing the forwarding agent with which the part would be dispatched to customer to a faster one (often a lot more costly option), or offering an alternative item, which fits the needs of the customer.

The best practice would be to mix these two approaches, by solving customer issues when they arise, but still thinking proactively and trying to prevent problems from happening in the first place.

4 Monitoring of open order backlog before MD4C was introduced

The follow-up was based heavily on manual work, bouncing between SAP transactions VA02 (Change Sales Order) or VA03 (Display Sales Order) and MD04 (Stock/Requirements List), together with printed SOC (Sales Order Confirmation). CSRs were required to check each order line individually; copy the item number from VA02 or VA03 and paste it to MD04. As one Sales Order can contain several hundred item lines and there can be dozens of Sales Orders, this was extremely exhausting and time consuming.

The procedure before the introduction of MD4C (Multilevel order report) was lacking transparency, was too time consuming, and all in all didn't quite provide the CSRs of DCE with means to be as proactive (i.e. informing about delays and preventing delays from happening, well in advance) as expected. There was a reactive way of working present, when in majority of the cases CSRs only took a look at delays after receiving a notification from planners, or being contacted by the customer. Ergo, the pros of being proactive were not applicable.

4.1 Survey: Open order follow-up before MD4C

Total of five CSRs of DCE from both, Europe team and Export and Distributors team, were asked about how they were handling the open order follow-up before MD4C was introduced.

The questions they were asked can be seen below.

- How did you monitor your open order backlog before MD4C was introduced?
- How often did you go through the open order backlog (daily, weekly, more seldom)?
- Did you go through only one SOC at a time, or all of them?
- Did you pay attention to the possible delays, or did the initiative for this come from purchasers and/or customers?
- The biggest problems you encountered (shortly)?

All the CSRs answered that they were using the combination of VA02 or VA03 and MD04, together with printed SOCs. This procedure is explained, in depth, in the next chapter.

According to the replies, three people answered that they went through the open order backlog daily, and the remaining two once a week. Also, whether they went through one order at a time or all of them varied. Three people pushed through all the printed SOC's every time, whereas two people preferred to go through only those SOC's that were scheduled to be leaving the same day, or needed a transportation booking the same day. As there was no single report that would show the whole open order backlog, with the option to spot the possible delays, it was time saving to only go through those that needed immediate attention.

Forecasting of delays was a pain before the introduction of MD4C. The initiative for upcoming delays came almost solely from either purchaser or the customer who was asking to confirm that the dates in SOC's were still valid. There was no proper tool to track the backlog this way, and if possible delays were spotted by the CSRs, it was mostly a lucky coincidence.

Major problems the CSRs encountered according to the replies were that it was extremely time consuming and exhausting, forecasting of delays was practically impossible which affects the quality of customer service, and overall uncertainty of the state of complete order backlog.

Next chapter will go through exactly what needed to be done for each SOC, and it will give some perspective how the follow-up of open order backlog was handled.

4.2 Step-by-step approach to monitoring open order backlog, before MD4C

The procedure to check the availability of an item before MD4C was introduced is explained below step by step, in order to give an understanding of how complex the procedure actually was.

Step 1: Entering Sales Order

Going to the order via VA02 or VA03 – Writing the SOC number in the “Order” –field.

FIGURE 11. Change Sales Order: Initial Screen

Step 2: Selecting the part number

Inside the Sales Order, copy the item number to check availability for.

Item	Material
40	7001548126
50	N15605001
60	N74129029
70	N74129030

FIGURE 12. Change Standard Order: Overview

Step 3: Moving to MD04, Stock/Requirements List

Move to MD04, write the item number in “Material” -field and define MRP area and plant.

FIGURE 13. Stock/Requirements List: Initial Screen

Step 4: MD04, Stock/Requirements List

Inside MD04 it can be seen that the item, or the ordered quantity, will not be available at requested date.

Stock/Requirements List as of 11:18 hrs

Show Overview Tree | Source list | Sales prices | Material data | PIR

Material: N74129029 THRUST BRNG LOW
 MRP area: FI03 FI03 Tampere DC
 Plant: FI03 MRP type: YX Material Type: YHAM Unit: EA
 Displ. Filter: Selection rule: Y03 Without PIR & Fore...

A.	Date	MRP ...	MRP element data	Rescheduli...	E..	Receipt/Reqmt	Available Qty	Su...	St...	R..	S...
	25.07.2012	Stock					0				
	01.08.2012	CusOrd	0301576634/000060/0...			1-	1-				
	02.08.2012	ShpgNt	4400048683/00010	25.07.2012	10	1	0	FI91	TDW1	00	

FIGURE 14. Stock/Requirements List

As can be seen in the MD04 screen, there are no pieces in stock, and one piece is ordered. According to MD04 screen, the part would be delayed by a day. In this case, the CSR contacts a planner and asks if the piece could be obtained a day faster. If the delay can't be avoided, the CSR will inform the customer that the part in question will be delayed until the given date.

Below are explanations of the different columns and rows of the MD04 screen that should be paid attention to.

Columns seen on the picture

- Date column refers to date an action is to happen.
- MRP element refers to which action is to happen.
- MRP element data refers to SOC or PO number, and the exact item line the item number can be found in the SOC or PO.
- Rescheduling date refers to date when the PO was changed.
- Receipt/Reqmt refers to amount of pieces the SOC or PO contains of this item number. SOC has negative numbers, because it is reserving pieces from stock, PO has positive numbers because it's providing pieces to stock.
- Available Qty refers to quantity of pieces available at each date an action is to happen.
- Suppl./Receiving plant is shown only on purchasing related rows, indicating the plant from which the transfer of the piece is coming, or to which plant the transfer of piece is going.

Rows seen in the picture.

- Stock refers to the stock situation at the moment

- CusOrd (Customer Order) refers to SOC
- ShpgNt (Shipping Notice) refers to a confirmed PO, or other inbound shipment

Other possible receipt element rows

- POitem refers to unconfirmed Purchase Order, which means that the PO has been issued, but not yet confirmed

A..	Date	MRP ...	MRP element data	Rescheduli...	E..	Receipt/Reqmt	Available Qty	Su...	St...	R...	R..	S...
	22.08.2012	POitem	4500609381/00010	15.08.2012	10	1	1	TDW1	255	B		

FIGURE 15. Stock/Requirements List

- PurRqs refers to Purchase Request, which means that the system has created a request for a purchaser to create a PO

A..	Date	MRP ...	MRP element data	Rescheduli...	E..	Receipt/Reqmt	Available Qty	Su...	St...	R...	R..	S...
	03.08.2012	PurRqs	0017376413/00010		06	1	1	FI91	TDW1	255	00	

FIGURE 16. Stock/Requirements List

- PldOrd refers to Planned Order, which will in time become a Purchase Request

A..	Date	MRP ...	MRP element data	Rescheduli...	E..	Receipt/Reqmt	Available Qty	Su...	St...	R...	R..	S...
	27.02.2013	PldOrd	0008189513/STPO			2	2	FI04	TDW1	00		

FIGURE 17. Stock/Requirements List

It’s clear that this way of working wasn’t preferable, as this needed to be done for each separate item line, and as previously mentioned, it was a lot of manual work. Also, nowadays companies are paying more and more attention to the environment, and being “green”, this approach for order backlog follow up required the printed SOCs.

5 INTRODUCTION OF MD4C

5.1 Step-by-step approach to run MD4C report together with VA05N and VA05

Step 1 is different depending on whether the list is run for ICSOs or normal Sales Orders. Run the open orders list for normal Sales Orders in VA05N and for Intercompany Orders in VA05.

Step 1: VA05N, Normal Sales Orders

Go to SAP transaction VA05N. Fill in the fields highlighted in the picture below. After fields are filled, click the “clock” icon in the upper left corner.

List of Sales Orders

Docum.Data

Document Number to
 Order Type to
Sold-To Party 953601 to
 Document Date to
 Material to
 Purchase Order Number to

Persons Responsible

Partner Functions Responsible
 Personnel Number Responsible to
 Created By to

Organizat. data

Sales Organization to
 Distribution Channel to
 Division to
Sales Office 0504 to
 Sales Group to

Selection Crit.

Open Sales Orders
 All Orders

FIGURE 18. List of Sales Orders

Step 1.1: VA05N, Normal Sales Orders

When the list is run, select the “Document” column, and right click. Then choose “Copy Text”.

List of Sales Orders

Docum	Copy Text	Description	Sold-to pt	Created on	Doc. Date	Purchase order number	Funct	Pers.resp.	Created by	SOrg	DChl	Dv
301422	Hide	Jard Order	953601	27.09.2011	27.09.2011	7069			TREVITAPT	FI00	10	10
301430	Show...	Jard Order	953601	11.10.2011	11.10.2011	7530				FI00	10	10
301433	Optimize Width	Jard Order	953601	17.10.2011	17.10.2011	7717				FI00	10	10
301438	Freeze to Column	Jard Order	953601	28.10.2011	28.10.2011	7931				FI00	10	10
301440	Sort in Ascending Order	Jard Order	953601	28.10.2011	28.10.2011	8030				FI00	10	10
301442	Sort in Descending Order	Jard Order	953601	01.11.2011	01.11.2011	8075				FI00	10	10
301447	Find	Jard Order	953601	09.11.2011	09.11.2011	8343				FI00	10	10
301447	Set Filter...	Jard Order	953601	09.11.2011	09.11.2011	8339				FI00	10	10
301462	Total	Jard Order	953601	30.11.2011	30.11.2011	8884				FI00	10	10
301466	Subtotals	Jard Order	953601	02.12.2011	02.12.2011	8733				FI00	10	10
301471	Spreadsheet...	Jard Order	953601	12.12.2011	12.12.2011	9105				FI00	10	10
301472		Jard Order	953601	13.12.2011	13.12.2011	9292				FI00	10	10
301473352	0 Sales order YOR Standard Order	Jard Order	953601	14.12.2011	14.12.2011	9343				FI00	10	10
301473355	0 Sales order YOR Standard Order	Jard Order	953601	14.12.2011	14.12.2011	9342				FI00	10	10

FIGURE 19. List of Sales Orders

Step 1: VA05, Intercompany Sales Orders

For ICSOs (Intercompany Orders), the list of open orders needs to be run in VA05, due to not enough filtering criteria in VA05N. The process for ICSOs is a lot more time consuming, complex and including more steps than what it is for normal Orders.

Step 1.1 : VA05, Intercompany Sales Orders

In VA05, select “Organizational data” and fill in the criteria of the ICSO orders you want to see, Sales Organization, Distribution Channel and Division. In case ICSO-orders, you want to see, only have one Sales Office, fill it as well. Below picture is an example of Metso Minerals United Kingdom’s ICSOs criteria. After all the needed fields are filled, click the green “Continue” button.

List of Sales Orders

Further sel.criteria **Organizational data** Partner function...

Sold-to party

Material

Purchase order no.

Sales order data

Document Date To

Selection Open All ord

Organizational Data

Sales Organization	<input type="text" value="6B00"/>	MM UK
Distribution Channel	<input type="text" value="10"/>	Metso Minerals
Division	<input type="text" value="10"/>	Metso Minerals
Sales office	<input type="text" value="1700"/>	MM UK Sales Office
Sales Group	<input type="text"/>	

FIGURE 20.List of Sales Orders

Step 1.2 : VA05, Intercompany Sales Orders

In case the ICSO country has more than 1 sales office, click “Further sel. criteria” in the VA05 screen. From this pop up, check the box of “Sales Office” as shown in the below picture. After this, click the green “Continue” button.

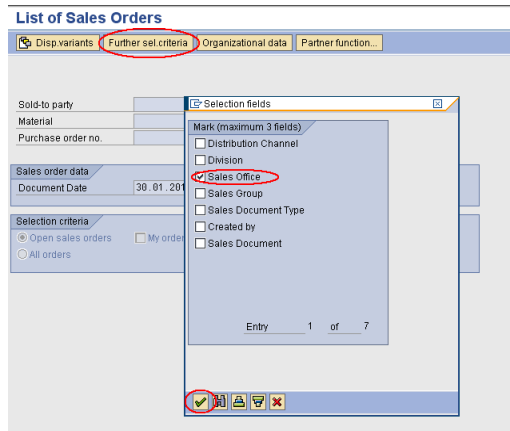


FIGURE 21. List of Sales Orders further selection criteria

Step 1.3 : VA05, Intercompany Sales Orders

A new pop up will open. Fill in the sales offices your ICSO country is using and click the “Continue” button again.

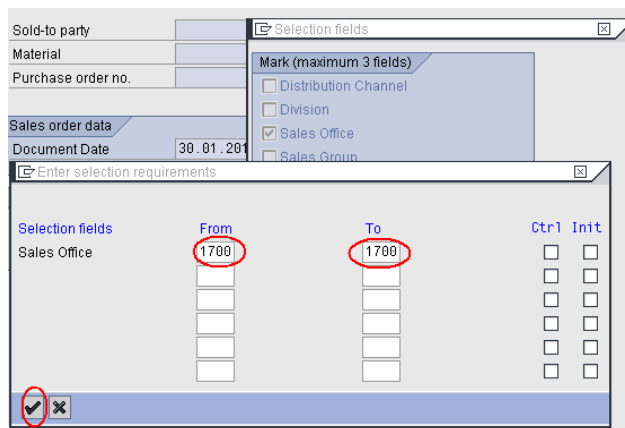


FIGURE 22. List of Sales Orders selection requirements

Step 1.4 : VA05, Intercompany Sales Orders

After this is done, remove the first date in the VA05 screen field “Document Date” and fill in the current date to the second field. Choose “Open sales orders”. Press Enter.

List of Sales Orders

Further sel.criteria Organizational data Partner function...

Sold-to party

Material

Purchase order no.

Sales order data

Document Date To

Selection criteria

Open sales orders My orders

All orders

FIGURE 23. List of Sales Orders

Step 1.5 : VA05, Intercompany Sales Orders

SAP will run a list of all the open order lines for the criteria you have chosen. Go mid-way through the list and find “Plant” column. Select this column, and click “Set filter” in the upper left corner.

Open sales orders

Doc. date 01.11.2011 To 29.02.2012

UoM	CdCur	Net price	per	Unit	Net value	Net Value	Dv	S	Status	SOff.	SGrp	SOrg.	SU	ShPt	DChl	Goods Issue	Curr.	Plant	Order qty	Descrip
		4,60	1	EA	68,40	9,20	10	A	Not delivered	1700		GB00	EA	GBRU	10	15.03.2012	GBP	GB01	0	
		4,60	1	EA	68,40	9,20	10	A	Not delivered	1700		GB00	EA	GBRU	10	09.03.2012	GBP	GB01	2	
		1,10	1	EA	68,40	2,20	10	A	Not delivered	1700		GB00	EA	GBRU	10	09.03.2012	GBP	GB01	2	
		4,60	1	EA	68,40	9,20	10	A	Not delivered	1700		GB00	EA	GBRU	10	15.03.2012	GBP	GB01	0	

FIGURE 24. List of Sales Orders

Step 1.6 : VA05, Intercompany Sales Orders

In the “Set filter” window, define the supplying plants of your choosing and click the green “Continue” button.

Determine values for filter criteria

Select

Plant to

FIGURE 25. List of Sales Orders filter criteria

Step 1.7 : VA05, Intercompany Sales Orders

Then select the “SaTy” (Sales Document Type) column and click “Set filter”.



List of Sales Orders By partner - Schedule lines

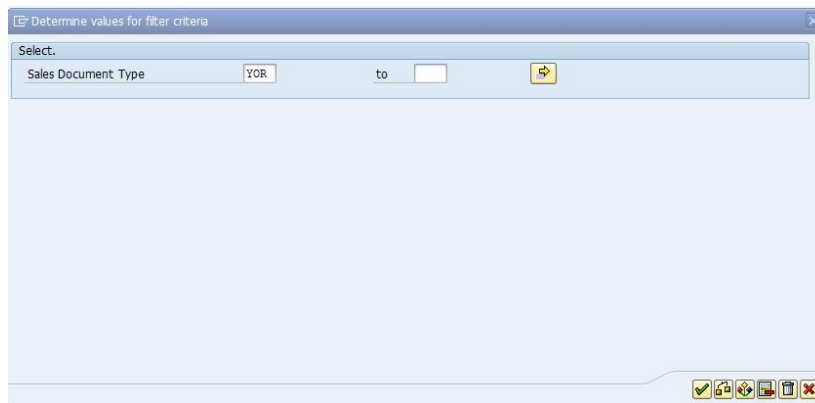
Open sales orders
Doc. date 00.00.0000 To 25.07.2012

Document	Item	SLNo	S	Description	SaTy	Doc. Date
301623472	10	1		FRAME SEAT LINER@	YOR	25.07.2012
301623472	10	2		FRAME SEAT LINER@	YOR	25.07.2012
301623472	20	1		MAIN FRAME LINER@	YOR	25.07.2012
301623472	20	2		MAIN FRAME LINER@	YOR	25.07.2012
301623472	30	2		THRUST BRNG LOW@	YOR	25.07.2012

FIGURE 26. List of Sales Orders

Step 1.8 : VA05, Intercompany Sales Orders

In “Set filter” window, fill in “YOR” to the first field and click “Continue”.



Determine values for filter criteria

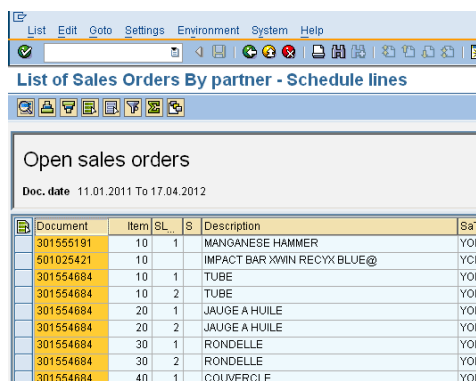
Select.

Sales Document Type: YOR to []

FIGURE 27. List of Sales Orders filter criteria

Step 1.9 : VA05, Intercompany Sales Orders

Now you have filtered the VA05 list to show only the open orders you need to pay attention to. Then select the document column and right click it, then choose “Sort in ascending order”.



List of Sales Orders By partner - Schedule lines

Open sales orders
Doc. date 11.01.2011 To 17.04.2012

Document	Item	SL	S	Description	SaT
301555191	10	1		MANGANESE HAMMER	YOF
501025421	10	1		IMPACT BAR XWIN RECXYX BLUE@	YCF
301554684	10	1		TUBE	YOF
301554684	10	2		TUBE	YOF
301554684	20	1		JAUGE A HUILLE	YOF
301554684	20	2		JAUGE A HUILLE	YOF
301554684	30	1		RONDELLE	YOF
301554684	30	2		RONDELLE	YOF
301554684	40	1		COUVERCLE	YOF

FIGURE 28. List of Sales Orders

Step 1.10 : VA05, Intercompany Sales Orders

After this, choose the “Document” column again, right click and choose “Spreadsheet”.

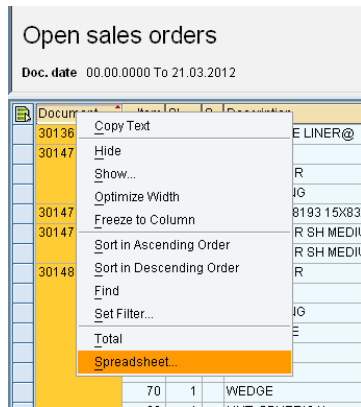


FIGURE 29. List of Sales Orders exporting to excel

Step 1.11 : VA05, Intercompany Sales Orders

Save the file to destination of your choosing in “Excel (MHTML Format)”-

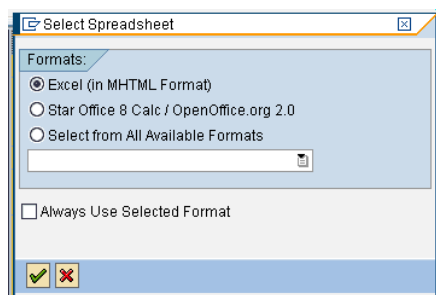


FIGURE 30. List of Sales Orders exporting format

Step 1.12 : VA05, Intercompany Sales Orders

The list will now automatically open in an Excel file. In Excel, select column “A” (Sales Document), and then from Excel’s “Data” tab, choose “Sort” then “Remove Duplicates”

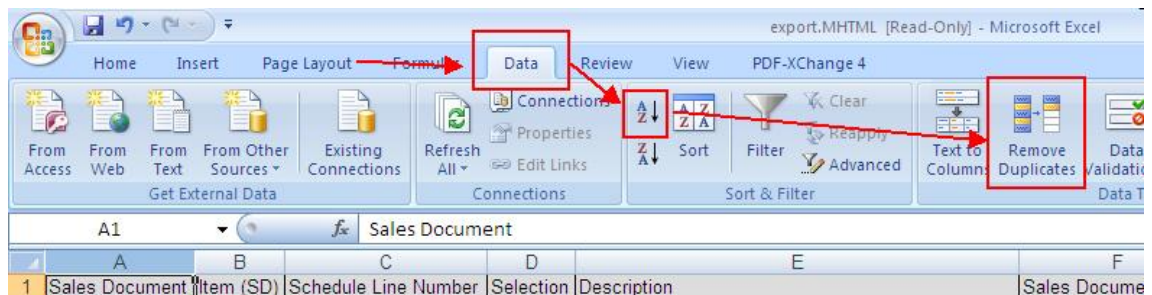


FIGURE 31. List of Sales Orders in excel spreadsheet

Step 1.13 : VA05, Intercompany Sales Orders

Select only “Sales Document” from the window and click “OK”.

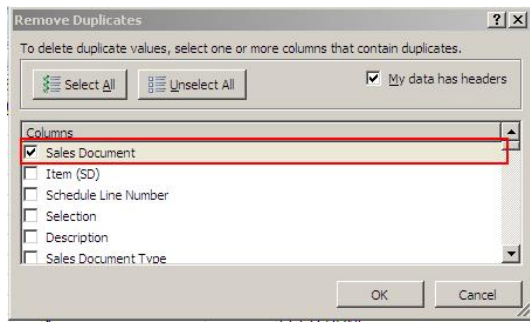


FIGURE 32. List of Sales Orders in excel spreadsheet

Step 1.14 : VA05, Intercompany Sales Orders

Now you have a list of open ICSOs, without duplicate Sales Document numbers, as seen below.

	A	B	C	D	E	F	G	H	I	J	K
	Sales Document	Item (SD)	Schedule Line Number	Delivery Date	Confirmed Quantity	Delivered quantity	Status	Description	Sales Document Type	Document Date	Purchase order no.
2	301525069	460	2	22.3.2012	1	0	Not delivered	PLATE	YOR	5.3.2012	4500502334
3	301525069	470	2	22.3.2012	1	0	Not delivered	PLATE	YOR	5.3.2012	4500502334
4	301522190	20	2	15.3.2012	2	0	Not delivered	SEAL KIT	YOR	29.2.2012	4500497612
5	301516838	40	2	8.3.2012	2	0	Not delivered	SHIM	YOR	21.2.2012	4500491795
6	301512330	40	2	1.3.2012	2	0	Not delivered	FEED PLATE	YOR	14.2.2012	4500486430
7	301512330	50	2	1.3.2012	4	0	Not delivered	FEED PLATE	YOR	14.2.2012	4500486430
8	301512330	120	2	1.3.2012	38	0	Not delivered	BACKUP TIP SET	YOR	14.2.2012	4500486430
9	301512330	160	2	1.3.2012	4	0	Not delivered	CLAMP PLATE	YOR	14.2.2012	4500486430
10	301509810	20	2	15.3.2012	1	0	Not delivered	PUMP	YOR	9.2.2012	4500482809
11	301500399	60	2	16.2.2012	1	0	Not delivered	BOWL SET	YOR	27.1.2012	4500471872
12	301479781	40	1	19.1.2012	26	26	Partially delivered	V-BELT	YOR	27.12.2011	9716
13	301476439	30	1	8.3.2012	6	0	Not delivered	CROSS BEAM	YOR	20.12.2011	9443
14	301476439	40	1	8.3.2012	2	0	Not delivered	CROSS BEAM	YOR	20.12.2011	9443
15	301476439	130	1	2.2.2012	12	0	Not delivered	PROTECTION	YOR	20.12.2011	9443

FIGURE 33. List of Sales Orders in excel spreadsheet

Step 1.15 : VA05, Intercompany Orders

Copy all Sales Document numbers, and they can now be taken to MD4C.

The steps below are applicable for both order types, ICSOs and normal Sales Orders.

Step 2: MD4C, for both Sales Orders

Go to SAP transaction MD4C. First the Sales Document numbers need to be imported. In MD4C screen, click the “Sales Order Number” row’s “Multiple selection button”, pointed by the red arrow.

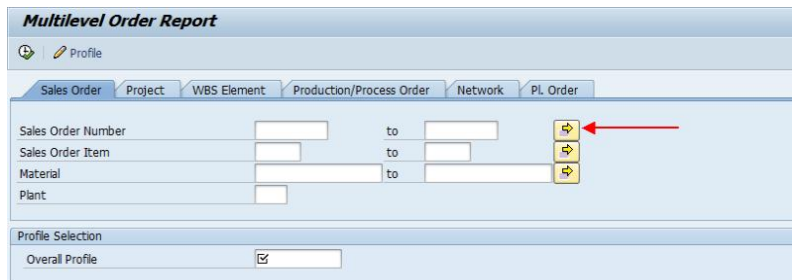


FIGURE 34. Multilevel Order Report

Step 3: MD4C, for both Sales Orders

In the window that opens, click the briefcase icon, “Upload from clipboard”. This will bring all the copied Sales Document numbers to the list. Then click the clock icon, “Copy”.

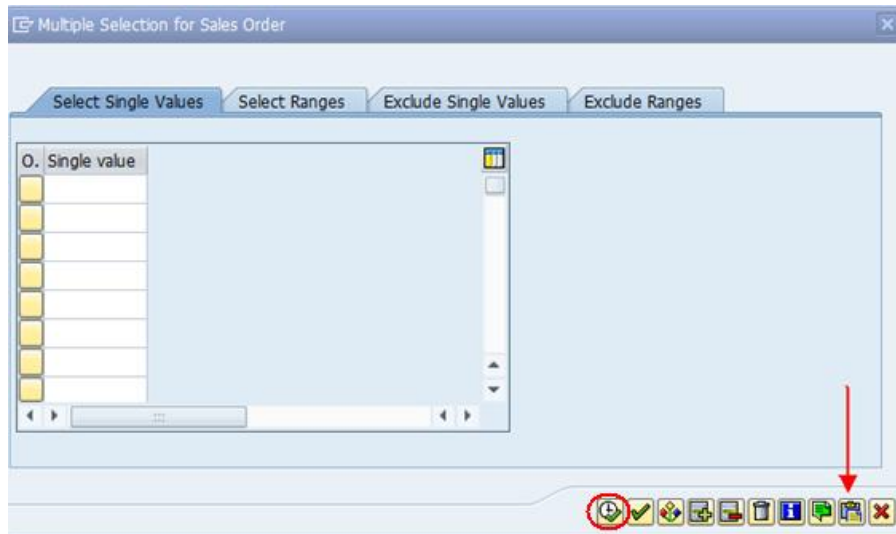


FIGURE 35. Multilevel Order Report

Step 4: MD4C, for both Sales Orders

Next the “Overall Profile” needs to be changed to YMM003. This is a profile created with settings applicable for DCE’s needs.

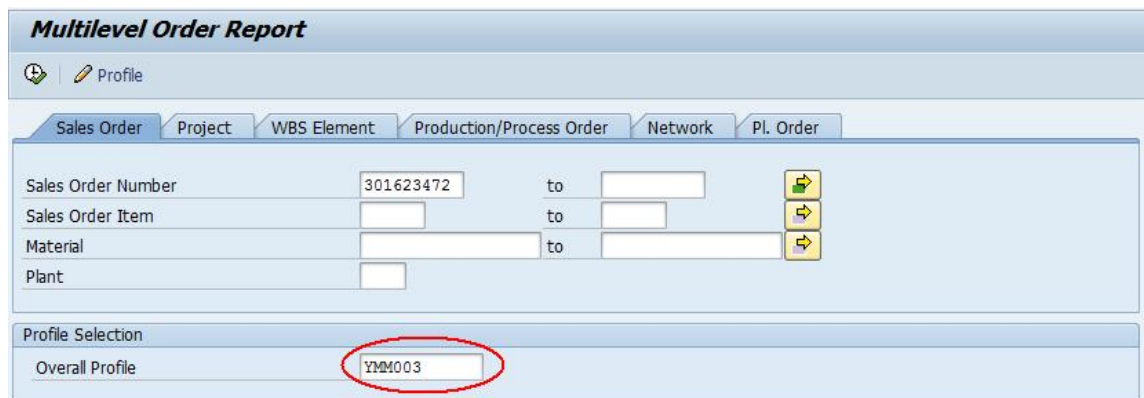


FIGURE 36. Multilevel Order Report

Step 4.1: MD4C, for both Sales Orders – Customers that have Tampere as nominated supplying plant.

Go to “Profile”.

Multilevel Order Report

Profile

Sales Order | Project | WBS Element | Production/Process Order | Network | Pl. Order

Sales Order Number: 301623472 to []

Sales Order Item: [] to []

Material: [] to []

Plant: []

Profile Selection

Overall Profile: YMM003

FIGURE 37. Multilevel Order Report

Change “Number of Hierarchy Levels” to 2. This will bring sub-rows below each order line containing materials that are only purchased to Tongeren and will be moved to Tampere via internal stock transfer, thus being dependent on the stock situation in Tongeren as well.

Change Settings

Profile: YMM003

Profile Settings

Selection Criteria

Number of Hierarchy Levels: 2

Read Order Report from Buffer

Display from

Consumption-Based Material

Bulk Material

Pipeline

Co-Product and By-Product

Additional Data About

Materials

Receipt Elements

Availability Calculation

Receipt Date

ATP Logic

Safety Stock Available

Exceptions

MRP Exceptions

Exceptions for Quantity Deviation If

Operation Qty Difference Greater Than [] %

Exceptions for Schedule Deviation If

Actual Delay Longer Than [] DAY

Expected Delay Longer Than [] DAY

FIGURE 38. Multilevel Order Report

Step 5: MD4C, for both Sales Orders

Leave the “Plant” field empty. The settings are now ready and the list can be run. Click the clock icon in the upper left corner to run the list.

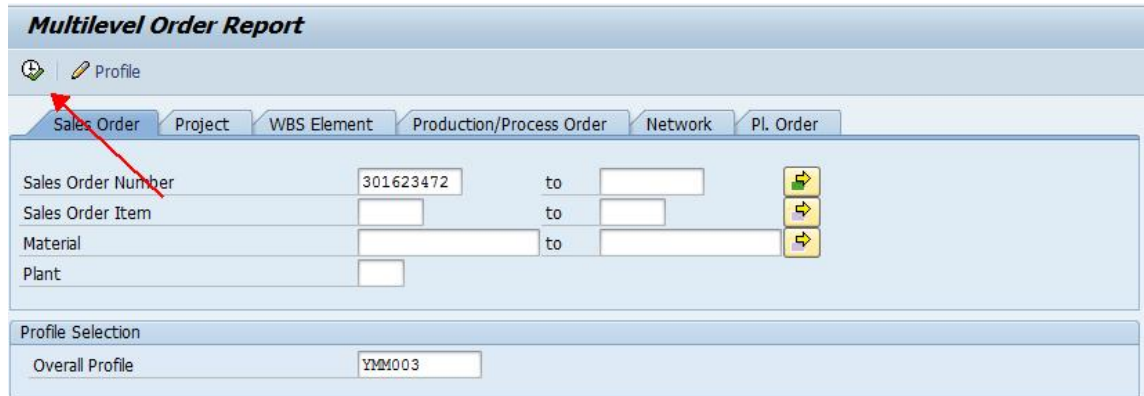


FIGURE 39. Multilevel Order Report

Step 6: MD4C, for both Sales Orders

A pop up will appear, which can be clicked away with the green “Continue” button. The pop up shows lines from Sales Documents that have already been delivered, and will not be shown in the MD4C list.

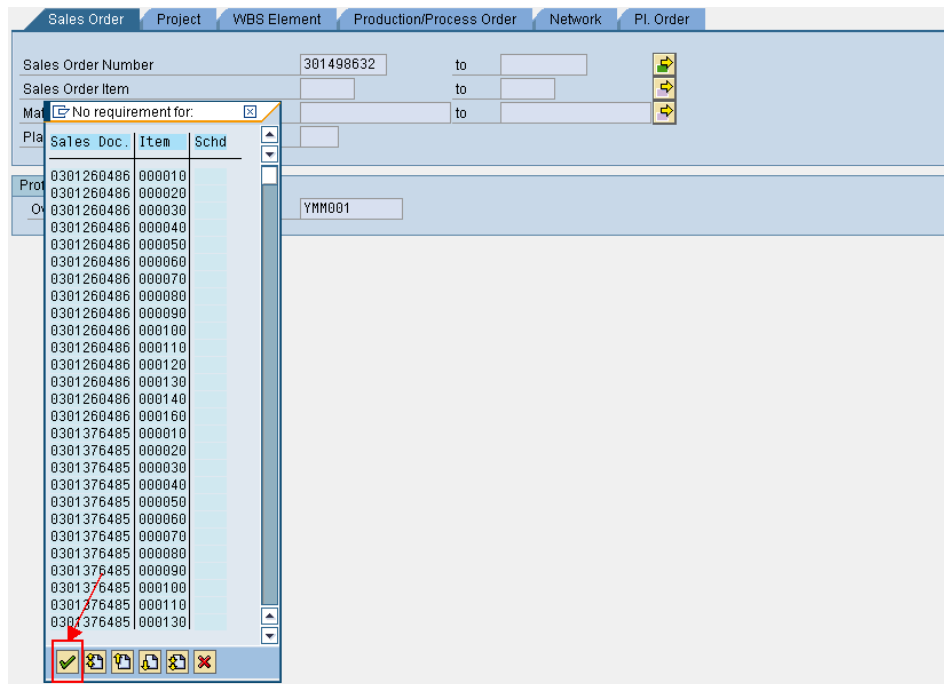


FIGURE 40. Multilevel Order Report

Step 7: MD4C, for both Sales Orders

The MD4C list of open order lines is now shown.

Stock/Requirements List as of 15:05 hrs

Order	MRP	Req.	Description	Requirement	Rec./	Plant stock	Custo.	Rece.	Receipt Date	Receipt Eleme.	Error message
0301512385											
949628506200	FI91		10 FRAME BUSHIN...	14.03.2012	1-	4	0	Stock			
495606-A	FI91		20 CNTRL PLATE S...	14.03.2012	12-	11	0	ShpgNt	09.03.2012	4500487637	
495606-B	FI91		30 CNTRL PLATE S...	14.03.2012	8-	19	0	Stock			
704002859970	FI91		40 PARALLEL PIN I...	14.03.2012	8-	92	0	Stock			
952429	FI91		50 SLIP RING GP1...	14.03.2012	1-	2	0	Stock			
949641830800	FI91		60 SCREW G800-S...	14.03.2012	1-	52	0	Stock			
949641826000	FI91		70 SEAL G258-SER...	14.03.2012	1-	28	0	Stock			
949641827400	FI91		80 PROTECTION B...	14.03.2012	1-	1	0				
941532	FI91		90 THRUST BRNG ...	14.03.2012	1-	11	0	Stock			
705303970000	FI91		100 ROCKER BRNG ...	14.03.2012	1-	10	0	Stock			
941233	FI91		110 SEAL GP100/GP...	14.03.2012	1-	3	0	Stock			
705302980000	FI91		120 TAPERED ROLL...	14.03.2012	2-	24	0	Stock			
405302055000	FI91		130 ROLLER BRNG ...	14.03.2012	1-	7	0				
949641827000	FI91		140 BUSHING G800...	14.03.2012	1-	14	0	Stock			
171564	FI91		150 BRNG BUSHIN...	14.03.2012	1-	0	0	ShpgNt	22.02.2012	4500410382	Finish date in the past
949638681800	FI91		160 SEAL 220/280X2...	14.03.2012	1-	18	0				
949641826900	FI91		170 BUSHING G800...	14.03.2012	1-	16	0	Stock			
949628506300	FI91		180 RING G800-SER...	14.03.2012	1-	0	0	ShpgNt	28.02.2012	4500492139	
MM0218708	FI91		190 SHAFT SEAL DL...	14.03.2012	2-	71	0	Stock			
949638683200	FI91		200 BRNG HOUSIN...	14.03.2012	1-	0	0	ShpgNt	09.03.2012	4500489951	

FIGURE 41. Multilevel Order Report Stock/Requirements List

The list shows Sales Document number in one row and the parts that haven't been delivered in sub rows.

5.2 Features of MD4C, Multilevel order report

In this section, the basic and most important features of MD4C open order report, that CSRs should pay attention to, are gone through. When the report is run for the orders under inspection, MD4C window should look like in the picture below.

Stock/Requirements List as of 09:11 hrs

Order	MR...	Re...	Description	Requiremen...	Rec...	Plant stock	Cust...	Rec...	Receipt D...	Receipt Elem...	Error message
MM0344864	FI03		50 REPAIR SET 36...	15.08.2012	1-	1	0	Stock			
NS3001204	FI03		60 SEAL SET	01.08.2012	2-	0	0	ShpgNt	31.07.2012	4400050452	
0301593503											
MM0221051	FI03		30 V-BELT PULLEY...	15.08.2012	1-	0	0	ShpgNt	15.08.2012	4500584861	
0301598356											
N01532887	FI03		10 BOLT, HEXAGO...	24.07.2012	12-	54	0	Stock			
N01626321	FI03		20 PLAIN WASHER...	24.07.2012	12-	22	0	Stock			
931468	FI03		40 WASHER C200, ...	24.07.2012	44-	44	0	Stock			
931481	FI03		50 BUSHING C200,...	24.07.2012	12-	12	0	Stock			
MM0216562	FI03		60 SIDE PLATE C200	03.10.2012	1-	0	0	ShpgNt	04.09.2012	4400050601	
MM0232319	FI03		90 WEAR PLATE C...	24.07.2012	1-	1	0	Stock			
MM0257670	FI03		100 GUIDE PIECE C2...	24.07.2012	4-	0	0	ShpgNt	19.07.2012	4500587215	Finish date in the past
N01532912	FI03		110 BOLT HEX DIN9...	05.09.2012	28-	0	0	ShpgNt	31.08.2012	4500586096	
N01563299	FI03		120 NUT HEX DIN93...	05.09.2012	28-	0	0	ShpgNt	31.08.2012	4500586096	
578272	FI03		130 TIGHTENING B...	24.07.2012	3-	3	0	Stock			
578274	FI03		140 BUSHINGS C-SE...	24.07.2012	3-	3	0	Stock			
0301598359											
MM0216564	FI03		70 SIDE PLATE C200	03.10.2012	1-	0	0	ShpgNt	04.09.2012	4400050601	
0301599119											
MM0232317	FI03		10 REAR EDGE C200	08.08.2012	1-	0	0	ShpgNt	04.09.2012	4400050601	Reschedule in (08.08.12)
0301599121											
917172	FI03		10 FRONT END C200	16.01.2013	1-	0	0	ShpgNt	04.09.2012	4400050601	

Material	MM0321707	JAW PLT FXD SPCL C140 OS-QUARRY + HIP-IN
MRP area	FI03	FI03 Tampere DC
Plant	FI03	MRP type YZ Material Type YZAM Unit EA
Displ. Filter		Selection rule Y03 Without PIR & Fore...

A. Date	MRP ...	MRP element data	Reschedul...	E...	Receipt/Reqmt	Available Qty	St...	R...	S...
30.07.2012	Stock						11		
12.06.2012	ShpgNt	4500485702/00010			07	4	15	IDW1	00

FIGURE 42. Multilevel Order Report Stock/Requirements List

Two thirds, on the upper part of the window, show the open Sales Document number in one row and the parts that haven't been delivered from that Sales Document in sub rows. The meaning of the different columns of the report will be explained later on.

One third, on the lower part of the screen, is showing MD04, Stock/Requirements list. The part number MD04 screen is showing can be determined by double-clicking any of the part numbers under Sales Document number. This window can be enlarged, in case a better view is needed.

Also, MD04 in full screen mode can be accessed quickly through "Hide Overview Tree" button in the upper left corner. This will take the user directly to the MD04, Stock/Requirements list, of the selected part number.

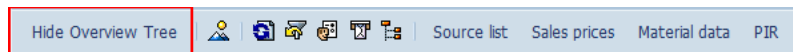



FIGURE 43. Multilevel Order Report Stock/Requirements List

And going back to MD4C screen from MD04, is just as quick through "Show Overview Tree" button in MD04. *Note: Do not press the green arrow, "Back" icon . This will take you to MD4C starting menu, and you need to run the report again.*

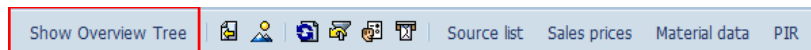


FIGURE 44. Multilevel Order Report Stock/Requirements List

If "MRP area" or "Plant" fields are changed in MD04 screen, and then "Show Overview Tree" button is clicked, the below screen will appear.

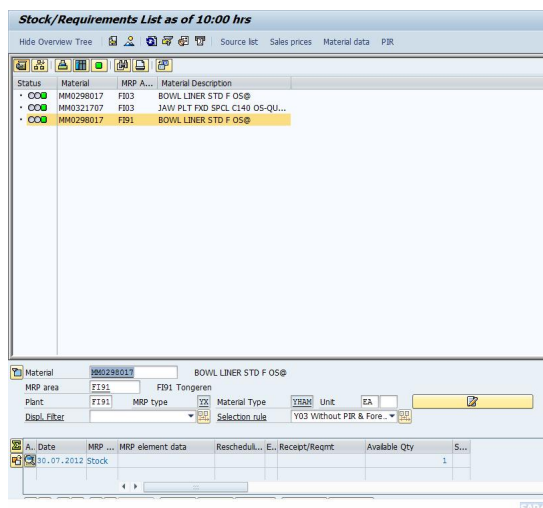


FIGURE 45. Multilevel Order Report Stock/Requirements List

When you need to access the MD4C report from this screen, click “Order Report” icon.

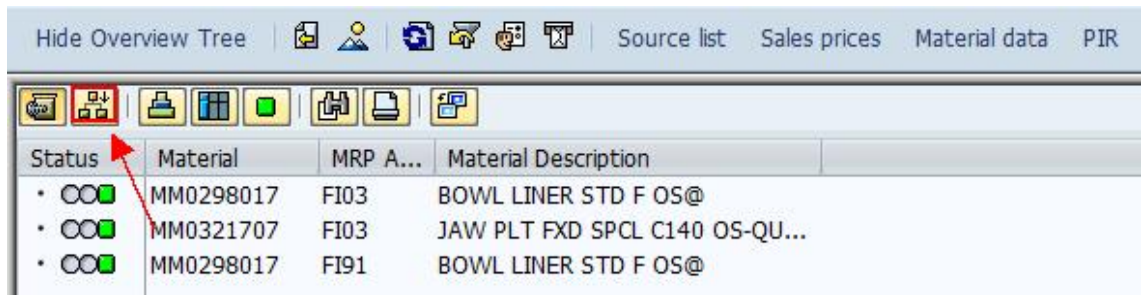


FIGURE 46. Multilevel Order Report Stock/Requirements List

Explanations of the different columns in MD4C report

- MRP Area: Supplying plant
- Requirements date: Date when the part should be available at stock in order to be delivered on the required date.
 - In case the Requirements date is highlighted, either in yellow or red, there is a problem with the item – possible upcoming delay, already delayed etc.
- Rec./reqd qty: Ordered quantity of parts
- Plant stock: The current stock situation at plant.
- Receipt element: Shows the inbound shipments, or planned inbound shipments. If it says “Stock”, then the part has already been in stock when the order was processed.
- Error message: Shows if there are delays or other notifications for the receipt element.
 - Reschedule in: The part will not be available on required date. The date of inbound shipment has been changed.



FIGURE 47. Multilevel Order Report Stock/Requirements List

- Finish date in the past: The inbound shipment is already late.

Stock/Requirements List as of 11:15 hrs

Hide Overview Tree | Source list | Sales prices | Material data | PIR

Order	MR...	Re...	Description	Requiremen...	Rec...	Plant stock	Cust...	Rec...	Receipt D...	Receipt Elem...	Error message
0301584913											
•	917549	FI03	30 BRNG C200B	01.08.2012	15-	25	0	Stock			
•	917421	FI03	320 FASTENING ITE...	08.08.2012	4-	4	0	Stock			
•	N21950803	FI03	380 RUBBER LINER	01.08.2012	5-	0	0	ShpgNt 26.07.2012	4400050849		Finish date in the past
•	N21950804	FI03	390 RUBBER LINER	01.08.2012	5-	0	0	ShpgNt 26.07.2012	4400050849		Finish date in the past
•	N69250814	FI03	400 PROTECTION@	01.08.2012	16-	18	0	Stock			
•	7092251901	FI03	430 GEAR ASSY MV...	19.09.2012	6-	0	0	ShpgNt 02.08.2012		4400053534	
•	N41871012	FI03	520 GEAR MV2@	26.09.2012	10-	10	0	Stock			
•	N69250860	FI03	590 PROTECTION	08.08.2012	8-	0	0	ShpgNt 07.08.2012		4500601479	

FIGURE 48. Multilevel Order Report Stock/Requirements List

- Start date in the past: Outbound Stock transfer delivery hasn't been created in time.

Stock/Requirements List as of 13:11 hrs

Hide Overview Tree | Source list | Sales prices | Material data | PIR

Order	MR...	Re...	Description	Requiremen...	Rec...	Plant stock	Cust...	Rec...	Receipt D...	Receipt Elem...	Error message
0301585915											
•	7002150038	FI03	230 PUMP R1A6160...	08.08.2012	1-	0	0	PurRqs 03.08.2012		17376413	Start date in the past

FIGURE 49. Multilevel Order Report Stock/Requirements List

- Coverage not provided by master plan: No receipt element has been created for the parts yet. Usually the order has been entered on the same date as the list is run.

List Edit Goto Settings Environment System Help

Stock/Requirements List as of 13:19 hrs

Hide Overview Tree | Material Documents | Source list | Sales prices | Material data | PIR

Order	MRP	Req	Description	Requirement	Rec./	Plant stock	Custo	Rece	Receipt Date	Receipt Eleme	Error message
0301500164											
•	7016901004	FI91	30 LOCKING PLAT...	02.03.2012	2-	0	0				Coverage not provided by master plan
•	9651136200	FI91	40 FILTER CRTRD...	16.02.2012	1-	1	0				Coverage not provided by master plan
•	MM0254872	FI91	110 AIR FILTER ACL...	16.02.2012	1-	1	0				Coverage not provided by master plan
•	7085402009	FI91	160 CROSS BEAM@	23.02.2012	3-	0	0				Coverage not provided by master plan
•	7085402009	FI91	160 CROSS BEAM@	02.04.2012	2-	0	0				Coverage not provided by master plan
•	N34100328	FI91	170 SPRING BRACK...	13.04.2012	1-	0	0				Coverage not provided by master plan

FIGURE 50. Multilevel Order Report Stock/Requirements List

5.3 Survey: How did the introduction of MD4C affect open order backlog follow-up

Same five CSRs, who answered to the previous survey, were also asked how did the introduction of MD4C affect their open order backlog follow-up.

Below are the questions they were asked.

- Did MD4C make the open order backlog follow-up easier?
- Did it affect the frequency of open order backlog checks?
- Do you now also pay attention to the possible upcoming delays (in addition to only checking the already delayed orders)?
- Overall opinion on MD4C – Do you consider it easy to use/practical?
- In your opinion, what are the biggest problems (shortly)

There were two CSRs who haven't been using MD4C at all, so the results are based on the replies of three CSRs who have taken MD4C as a part of their routine.

The general opinion of all three CSRs was that MD4C made the order follow-up easier, as it provides a clearer view of the overall order backlog situation and also it's a lot easier to forecast possible delays. It also gives the CSRs a better control over the whole order backlog, as situation of all the orders can be seen in one single report. And they're not completely dependent on the notifications from planners when it comes to parts being delayed.

All three CSRs answered that the implementation of MD4C did not affect the frequency of open order backlog checks, but it made the checking faster.

The CSRs also pay attention to forecasting possible upcoming delays, and have been able to reduce the amount of these already. Before the implementation there was no easy way to do this and the transparency to the purchasing and planning (inbound shipments) section improved drastically with MD4C.

The usability and attractiveness of MD4C to the CSRs still has some improvements to go through, as it's being seen as quite difficult and complex to use. The report requires some time to get used to, because there are so many fields and information to consider. MD4C receives compliments about the ability to forecast upcoming delays as it's a new

tool for the CSRs, but the report should still be made more user-friendly. This is one of the main reasons why some of the CSRs haven't included MD4C as a part of their daily routine.

According to the answers the main problem with MD4C is that it's not reliable. The data it shows is not 100% correct at all times, because there are supplier shipments which are late, the cross-referencing between stocks of different warehouses isn't available in SAP and some sales orders, especially Inter Company Sales Orders, have a setting that makes the report show a wrong date as the requirement date for a part to be available.

The disadvantages and problems of MD4C are explained more in depth in the next topic of the thesis.

6 PROS AND CONS OF MD4C

6.1 The advantages of MD4C

The main perk that came with the introduction of MD4C is a graphical overview of the open order backlog situation. This creates a feeling for the CSRs that their own order backlog is more manageable and tangible when it can be seen in one single report. The amount of open orders and order lines is more visible than before, when the most visible indication of the amount of open orders and order lines was simply the quantity of printed paper SOCs.

Also, the introduction of MD4C improved transparency for the Customer Support team, as they can now easily check whether order lines will be shipped in time or if they could be delayed. This takes away some of the responsibility the planners in DCE have to take care of the notifications of delays (but in any case, it's still reasonable for planners to do so) by giving CSRs tools to also keep up with the situation at hand. Granted, SAP data is correct and updated in real time.

As previously mentioned, MD4C also brings the tools for proactive customer support. The advantages of proactive approach in customer service such as preventing delays in advance, stress level is lower when problem cases do not become urgent if taken care before occurring, creating customer loyalty by keeping them informed about changes concerning their orders, and also improving customer satisfaction by showing how committed DCE is to them and thus creating long lasting customer relationships. Also costs will drop when, for example, possible delay cases don't require special and costly transportation if they're taken care of in advance. The proactive approach improves the quality of customer service substantially and thus creates a competitive differentiator for DCE. More information concerning proactive approach in customer service can be found in chapter 3.1.

By having the ability to notice parts that have a possibility to be delayed, and being able prevent the delay, the reliability of DCE should improve drastically. Not only in customer's perspective, but also in relation to DCE's performance meters, measuring the overall performance of the Distribution Center.

6.2 The disadvantages of MD4C

At first look the MD4C report may seem a bit complicated to interpret, especially directly after the old procedure of checking one item line at a time. But it only takes a few moments to get the hang of it, as it is basically quite simple once the meaning of each section of the report is known.

When the CSRs notice a possible delay on the report, there is still no other way to get rid of it than to contact the responsible planner. And because MD4C takes in to consideration also the goods processing time of three days for all the order lines (unless removed by the planner from the inbound shipment), some of the delays listed in the report are not actual delays. If the list shows a delay of one day, it might very well be that the part will not actually be delayed, because the buffer of three days is not completely used in most cases. This creates unnecessary e-mail flood, work and stress to the planners, if every line that is listed as having a one day delay is requested to be checked.

There is also a problem with cross referencing between the stocks of the two warehouses, Tongeren and Tampere. As previously mentioned, SAP is incapable of checking the stock situation at the other plant, when external supplier is only able to supply to one plant and the part is sold from another. In these cases the system shows that the item could be available in around two weeks, when in reality the lead time could be substantially longer. The problem with this from MD4C's perspective is that the system will create an immediate stock transfer request, even if there are no parts available in the supplying plant. In internal stock transfers, the supplying plant is the plant the parts are shipped from, and the receiving plant is the destination plant. Outbound shipment is created to supplying plant, and inbound shipment to receiving plant.

MD4C considers stock transfer requests be actual inbound/outbound shipments, even if they are not confirmed. These cases are not shown on the list as delays, and are quite hard to spot without going through each line of the report separately. But practice and experience gives some kind of perception as to which kind of parts this could affect, and thus they are easier to spot from the list.

Also, one problem is that MD4C takes in to consideration all the data that is in the system, and isn't able to filter out the irrelevant, confirmed or unconfirmed, inbound ship-

ments. For example, if there are old and delayed inbound shipments that have been left in the system for one reason or another, the report indicates that the order lines containing these items are delayed as the inbound shipment has never arrived to the warehouse (Error message: Finish date in the past). There are cases when even two to three month old shipments, that have been blocked for some reason or are basically just invalid and will never arrive, are still visible in the system.

It doesn't matter whether there is a new inbound shipment allocated to the order line and this new shipment is arriving as requested. In these cases the parts will actually meet the deadline to be dispatched to the customer on the confirmed date, but this will of course create unnecessary confusion for the CSRs when looking at the report.

6.3 MD4C: Pros versus Cons

There are still clearly more pros, and more over critical advantages, in comparison to the cons to support the use of MD4C. The advantages brought with proactive customer support approach are too important to be passed on, whereas the cons can't be considered as major ones, and in no way provide a reason to be hesitant to use MD4C.

The disadvantage of MD4C being hard to interpret at first, can easily be overcome by running the report a few times and looking at the report with some thought to get the basic understanding of what each row and column mean. Whereas the problems occurring with stock transfer items, are not too common, and mostly only happen with parts sold from Tampere warehouse.

All in all there is no reason not to use MD4C at its current state over the old open order backlog follow-up procedure. This is simply because it's faster, easier, provides more tools and approaches to customer support and makes the whole process more manageable. It is a handy tool, but there are still some improvements that could be made. Some ideas to improve MD4C will be explained in the next chapter.

7 IMPROVEMENTS TO MD4C

Although MD4C is a great tool already and provides many possibilities for the CSRs to monitor open order backlog, there are still some aspects that could be improved. This chapter will introduce some of the ideas that could make MD4C even more attractive for the CSRs.

7.1 Removing the need to use VA05 or VA05N for the list of Open Sales Documents

As previously explained in the thesis, MD4C requires the open orders list to be run from either VA05 or VA05N. The startup screen of MD4C should provide a possibility to run the report according to customer number as well, in addition to the current options. This would reduce the overall time it takes to run the MD4C report and would therefore make the transaction more attractive to the CSRs, as there would be no need to bounce between different transactions. However, the possibility to run the report with customer number is only applicable to normal Sales Orders.

In case of ICSOs, the menu should have Sales Office and Sales Organization fields as well. At the moment the procedure to run MD4C report for ICSOs is very time consuming, and adding the possibility to run the report from one single transaction would help to simplify the process significantly.

7.2 Making “Send Mail to MRP Controller” link work

MD4C has a link the upper part of the screen that says “Send Mail to MRP Controller”.

Order	MR...	Re...	Description	Requiremen...	Rec...	Plant stock	Cust...	Rec...	Receipt D...	Receipt Elem...	Error message
0301260486											
MM0321707	FI03		230 JAW PLT FXD S...	05.09.2012	1-	11	0	Stock			
0301538934											
928380	FI03		100 PITMAN ASSY C...	27.08.2012	1-	0	0	ShpgHt 23.08.2012		440004763	
0301541572											
MM0298017	FI03		50 BOWL LINER ST...	05.09.2012	2-	27	0	Stock			
MM0298017	FI03		60 BOWL LINER ST...	03.10.2012	2-	27	0	Stock			
MM0298017	FI03		70 BOWL LINER ST...	31.10.2012	2-	27	0	Stock			
MM0298017	FI03		80 BOWL LINER ST...	29.11.2012	2-	27	0				
MM0298017	FI03		90 BOWL LINER ST...	02.01.2013	2-	27	0				
MM0298017	FI03		100 BOWL LINER ST...	06.02.2013	2-	27	0				
MM0298017	FI03		110 BOWL LINER ST...	06.03.2013	2-	27	0				
MM0298017	FI03		120 BOWL LINER ST...	03.04.2013	2-	27	0				
MM0298019	FI03		170 MANTLE STD F ...	05.09.2012	2-	18	0	Stock			
MM0298019	FI03		180 MANTLE STD F ...	03.10.2012	2-	18	0	Stock			
MM0298019	FI03		190 MANTLE STD F ...	31.10.2012	2-	18	0	Stock			
MM0298019	FI03		200 MANTLE STD F ...	29.11.2012	2-	18	0				
MM0298019	FI03		210 MANTLE STD F ...	02.01.2013	2-	18	0				
MM0298019	FI03		220 MANTLE STD F ...	06.03.2013	2-	18	0				
MM0298019	FI03		230 MANTLE STD F ...	03.04.2013	2-	18	0				
MM0298019	FI03		240 MANTLE STD F ...	30.04.2013	2-	18	0				
0301549810											

FIGURE 51. Multilevel Order Report Stock/Requirements List

At the moment it's not used nor valid, as for some reason the path between the material number and MRP controller's e-mail doesn't exist in this function, although there is an assigned MRP controller for every material in SAP. The MRP controllers' numbers, identifying which MRP controller is in charge of which material number, can be brought to MD4C screen from "Change layout..." option, but this is not critical to go through at this stage.

When the "Send Mail to MRP Controller" link is clicked, below error will show.



FIGURE 52. Multilevel Order Report Stock/Requirements List: Send Mail to MRP controller

At this stage when this function is not working, the error message has to be ignored to move forward.

Next screen that appears looks like this.

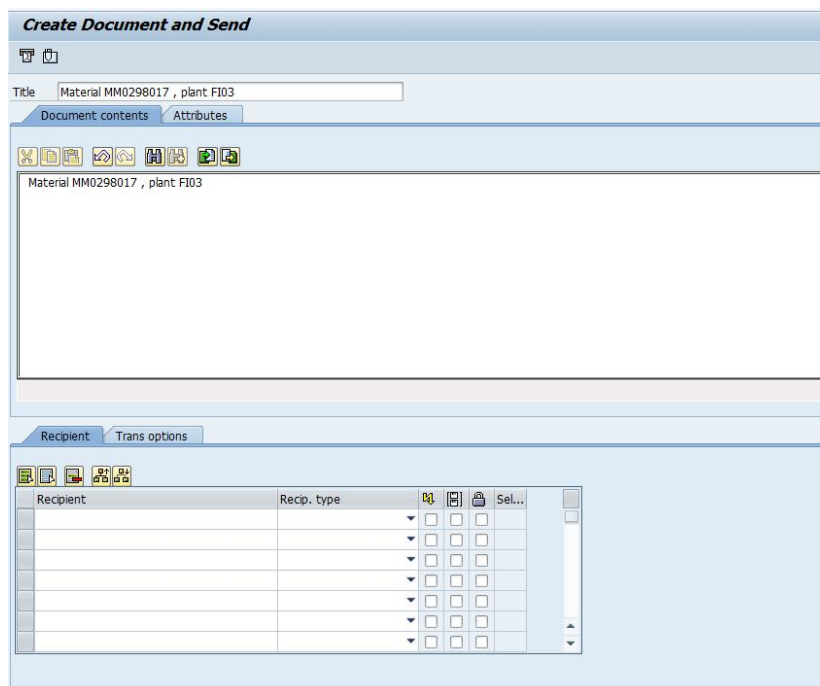


FIGURE 53. Multilevel Order Report Stock/Requirements List: Send Mail to MRP controller

There is a title for the e-mail up top, and below it there is the message the e-mail will include. The lowest part of the screen has the recipient options and recipient type, none of which work at the moment.

If this was functional, the title and contents of the e-mail should also be tweaked a bit to provide more information, in order to be as clear as possible for the planners. Information the title should include, in addition to material number and plant, are Sales Document/Order number and ordered quantity. Currently there is a restriction of 50 characters for the title, so in order to meet the restriction, the descriptions (Material and plant) could be removed as MM0298017 clearly refers to material and FI03 to plant.

The contents of the e-mail should include these as well, but also the Requirements Date and the Receipt Element Date.

Below is an example of how the fields should be filled.

Create Document and Send

Title: MM0298017, Req. Quantity 2, FI03, 301541572

Document contents | Attributes

Sales Document	301541572
Plant	FI03
Material	MM0298017
Quantity	2
Requirements Date	05.09.2012
Receipt Element Date	12.09.2012

FIGURE 54. Multilevel Order Report Stock/Requirements List: Send Mail to MRP controller

This is the information that has been agreed to be sent to the purchasers when asking for status update of an item.

If the link between the material number and MRP Controller's e-mail was valid, the next step would be to click "Send..." in the upper left corner.

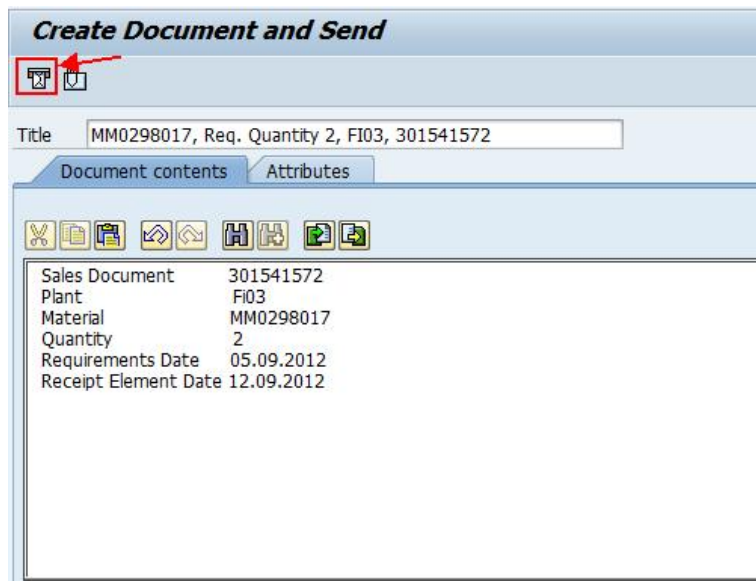


FIGURE 55. Multilevel Order Report Stock/Requirements List: Send Mail to MRP controller

This would be a really convenient way for the CSRs to notify planners of the possible delays, and would remove the need to write a separate e-mail manually. Also, the e-mails would have the same general look with only the critical information, and this in turn would reduce the time the planners need to interpret the e-mail and identify the problem.

7.3 Adding filtering options

At the moment MD4C doesn't provide any filtering options. The fields that include the most important criteria for filtering for delay forecasting needs can be found from MD4C, but for some reason the report can't be filtered in any way.

The first and foremost field that the report should be able to filter is whether Error Message exists or not for an order line. By filtering the MD4C report to show only those lines that have an Error Message present, it would solely show the materials that are forecasted to be, or already are, delayed. This would make it faster for the CSRs to see only the problematic order lines, without needing to browse through all the order lines that are currently open.

The second useful criteria for filtering is MRP Controller's number. This can be made visible from the "Change layout..." option of MD4C.

Order	MR...	Re...	Description	Stock	Cust...	Rec...	Receipt D...	Receipt Elem...	Error message
0301260486									
MM0321707	FI03		230 JAW PLT FX	11		0			Stock
0301538934									
928380	FI03		100 PITMAN ASS	0		0	ShpgNt 23.08.2012	4400044763	
0301541572									
MM0298017	FI03		50 BOWL LINER ST... 05....	2-	27	0			Stock
MM0298017	FI03		60 BOWL LINER ST... 03....	2-	27	0			Stock
MM0298017	FI03		70 BOWL LINER ST... 31....	2-	27	0			Stock
MM0298017	FI03		80 BOWL LINER ST... 29....	2-	27	0			
MM0298017	FI03		90 BOWL LINER ST... 02....	2-	27	0			
MM0298017	FI03		100 BOWL LINER ST... 06....	2-	27	0			
MM0298017	FI03		110 BOWL LINER ST... 06....	2-	27	0			
MM0298017	FI03		120 BOWL LINER ST... 03....	2-	27	0			
MM0298019	FI03		170 MANTLE STD F ... 05....	2-	18	0			Stock
MM0298019	FI03		180 MANTLE STD F ... 03....	2-	18	0			Stock
MM0298019	FI03		190 MANTLE STD F ... 31....	2-	18	0			Stock
MM0298019	FI03		200 MANTLE STD F ... 29....	2-	18	0			
MM0298019	FI03		210 MANTLE STD F ... 02....	2-	18	0			
MM0298019	FI03		220 MANTLE STD F ... 06....	2-	18	0			
MM0298019	FI03		230 MANTLE STD F ... 03....	2-	18	0			
MM0298019	FI03		240 MANTLE STD F ... 30....	2-	18	0			
0301549810									

FIGURE 56. Multilevel Order Report Stock/Requirements List

From the window that pops up, select MRP Controller on the right field and move it to the left field by clicking the lower arrow icon "Show selected fields".

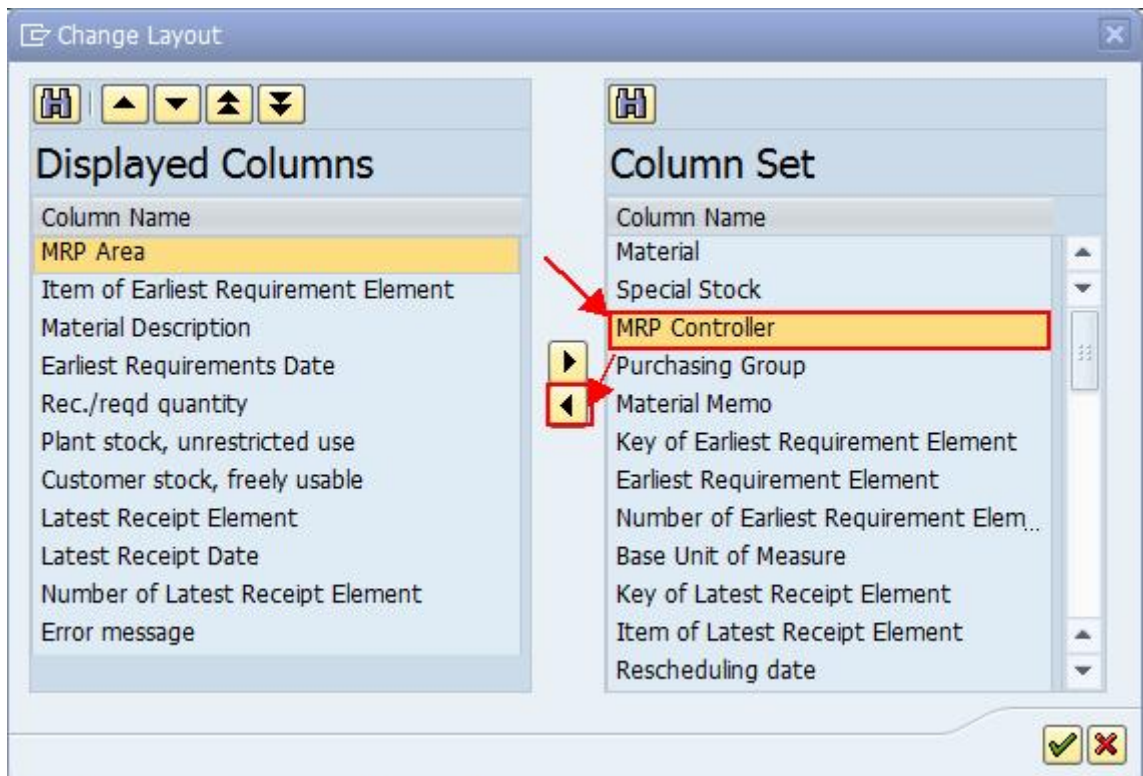


FIGURE 57. Multilevel Order Report Stock/Requirements List

This will bring a column indicating the numbers of the MRP Controllers to MD4C screen.

Stock/Requirements List as of 09:58 hrs

Hide Overview Tree | Source list | Sales prices | Material data | PIR

Order	MR...	Re...	Description	R...	Rec...	Plant stock	Cust...	Rec...	Receipt D...	Receipt Elem...	Error message	M...
0301260486												
•	MM0321707	FI03	230 JAW PLT FXD S... 05....		1-	11		0 Stock				484
0301538934												
•	928380	FI03	100 PITMAN ASSY C... 27....		1-	0		0 ShpgNt 23.08.2012		4400044763		414
0301541572												
•	MM0298017	FI03	50 BOWL LINER ST... 05....		2-	27		0 Stock				484
•	MM0298017	FI03	60 BOWL LINER ST... 03....		2-	27		0 Stock				484
•	MM0298017	FI03	70 BOWL LINER ST... 31....		2-	27		0 Stock				484
•	MM0298017	FI03	80 BOWL LINER ST... 29....		2-	27		0				484
•	MM0298017	FI03	90 BOWL LINER ST... 02....		2-	27		0				484
•	MM0298017	FI03	100 BOWL LINER ST... 06....		2-	27		0				484
•	MM0298017	FI03	110 BOWL LINER ST... 06....		2-	27		0				484
•	MM0298017	FI03	120 BOWL LINER ST... 03....		2-	27		0				484
•	MM0298019	FI03	170 MANTLE STD F ... 05....		2-	18		0 Stock				484
•	MM0298019	FI03	180 MANTLE STD F ... 03....		2-	18		0 Stock				484
•	MM0298019	FI03	190 MANTLE STD F ... 31....		2-	18		0 Stock				484
•	MM0298019	FI03	200 MANTLE STD F ... 29....		2-	18		0				484
•	MM0298019	FI03	210 MANTLE STD F ... 02....		2-	18		0				484
•	MM0298019	FI03	220 MANTLE STD F ... 06....		2-	18		0				484
•	MM0298019	FI03	230 MANTLE STD F ... 03....		2-	18		0				484
•	MM0298019	FI03	240 MANTLE STD F ... 30....		2-	18		0				484
0301549810												

FIGURE 58. Multilevel Order Report Stock/Requirements List

If the list could be filtered with the MRP Controller's number, together with the possibility to filter it to show only the problem lines, it would be easy to take a screenshot from the report and send it to the responsible planner.

Also, one option would be to make the "Send Mail to MRP Controller" link to be functional with multiple line selections. This would be the more preferable option, as if only the screenshot is sent, it won't be traceable from the e-mail. By making "Send Mail to MRP Controller" link functional and creating an option to also select multiple lines to be sent within the same e-mail, it could easily be tracked from the archive. At the moment MD4C doesn't let multiple lines to be chosen at once.

Another option would be to generate an excel -file from the report, after filtering, and then copy-pasting the materials to an e-mail. But if done this way, it would make the e-mail seem quite hard to read and confusing.

The third filtering criteria that could be useful, is to be able to filter the list to show those lines that are forecasted to be delayed by more than one day. This would require SAP to be able to identify the difference in requirements date and receipt date in the amount of days. For most of the inbound shipments, there is a goods processing time of three days, and most of the time this buffer is not fully used, and the lines are actually not delayed. But it could however be quite risky to filter these out as there are cases

when the parts are delayed, even if MD4C shows only one day delay. It's a matter of personal preference if this option is useful or not.

7.4 Option to display MD4C report with Goods Receipt Date instead of Goods Availability Date

The difference between Goods Receipt Date and Goods Availability Date is that Goods Receipt Date is the date the materials will be received at warehouse, whereas Goods Availability Date is the date when, according to SAP data, the materials should be available for dispatching. In normal scenario there is a three day difference between these two, as Goods Availability Date takes into consideration the goods processing time. Planners have a possibility to remove the three days goods processing time from the inbound shipments in urgent cases.

By creating an option to display MD4C report with Goods Receipt Date instead of Goods Availability Date, it would only show those lines that are indeed forecasted to be delayed, and would filter out the inbound shipments that will arrive before the requirements date and could still be sent out to customer as originally confirmed. It would again make the list a bit simpler, as only the lines that definitely need attention are displayed.

MD04 screen already has this option, and as MD4C is based on MD04 data, it should be possible to implement this to MD4C report as well.

7.5 Ignore irrelevant data

As previously stated in chapter 6.2 Disadvantages of MD4C, the report takes into consideration all the data that is visible in MD04 screen. This is problematic when the report shows delays incorrectly, as there are cases when MD04 shows delayed inbound shipments that have been left in the system for one reason or another, and interprets the order lines containing these items to be delayed, even though there is a new and confirmed inbound shipment arriving in time for the requirements date.

MD4C should be adjusted to show these lines as being able to meet the requirements date. The current situation creates unnecessary confusion when these lines are incorrectly shown as delays.

8 RECOMMENDATIONS FOR MD4C WEEKLY ROUTINE

The MD4C report should be run at least two times a week, in order to keep up with the status of the open order backlog. It only takes maximum half an hour in normal scenario to check the possible delays and current situation of the open order lines. The optimal weekdays to run the report are Tuesdays, due to planners handling the stocking-items' purchase orders from MRP on Mondays, and on Fridays to have a view of the whole week's open order situation, as all the stock transfer orders have been processed by the planners by the end of the week as well. CSRs should check if there are new order lines that could be subject to delay, and notify the planners of these to check if something can be done and the delay could be avoided.

Two times a week should be enough to cover the vast majority of possible problem cases, and it doesn't burden the CSRs too much or affect their other daily routines. This should be the baseline and all the customer support team should be instructed to apply this routine to their working week.

By personal preference, the CSRs can either run the report for all their customers at the same time, or to run the report for individual customers one by one. For me personally, it's easier to run the report for one customer at a time, because there are different settings (for example weekly dispatch dates for truck shipments) for the different customers. But there is no barrier to run the report for all customers at the same time, if the CSR feels comfortable doing so.

The main idea is to be able to finish the working week with a feeling that your order base is intact and you've done your best for the customers. By being on top of the situation, the customers will also feel that they can rely on you and the confidence level will go up. It's also easier and more stress-free to start a new week, when the order backlog is in good shape and there are no pressing matters left over from the previous week waiting on Monday morning.

9 CONCLUSION

As the originally intended outcome of the thesis was to justify the use of MD4C over the old practice and to come up with improvement ideas, it succeeds in identifying the advantages that MD4C brings in comparison to the old procedure of going through the delayed or to be delayed order lines, and these are clear and undisputable. There should be no room left for questioning whether MD4C overrules the old practice.

The thesis also acknowledges that MD4C is not a perfect tool, and should be developed further in order to be as efficient as possible. The improvements to MD4C explained in the thesis could have a great impact on how willing the CSRs are to use it. As many of the CSRs in DCE are still not using MD4C daily, or even couple of times a week, the thesis clearly points out what they're missing and will convince them that monitoring open order backlog is a vital part of customer service activities. And now as there is a tool available for this purpose, it should be applied and made use of.

The thesis also succeeds in acting as a guidebook to make MD4C more approachable to the CSRs by giving clear instructions of proper usage of the report and explanations to the information seen on the MD4C report screen.

As the personnel of DCE are continuously improving their practices, and paying attention to the key issues, such as reliability, MD4C brings yet one way to provide exceptional customer service. A project towards improving the reliability of materials' promised dispatching dates to customer (meaning that the parts are sent on the date indicated in SOCs) even higher has recently started, and regular use of MD4C should have an impact on this as well.

Today, MD4C has taken its place as the main tool for open order backlog monitoring in DCE. It is recommended to be used at least a couple of times a week to be able to be up to date with the order backlog.

The frequency of using MD4C depends on the individual CSRs, as they all have their own preferences in handling the backlog. Some use it more frequently than others, but everyone has the know-how to work with it.

For me personally when writing this thesis it came apparent that MD4C could, and moreover should, be used as a way to offer our customers the best possible customer service by being proactive. And if it's developed even further by implementing given improvement ideas, I have no doubt it would be a powerful tool and an advantage over competitors who have no access to similar function.

The ideal situation would be that all delays could be predicted and either avoided, or be informed to customer well in advance. But unfortunately in reality this is not possible, due to many factors affecting the deliveries of materials. However, a regular usage of MD4C and follow-up of open order backlog is definitely a move to the right direction.

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