

Modelo Continente Hipermercados Portugal, Europe

**Gold Award 2006, Europe; nominated by
iProcess and Tlantic SI, Portugal**

EXECUTIVE SUMMARY

This paper presents the experience of the implementation of workflow technology in Modelo Continente Hipermercados (MCH), the largest retailer in Portugal. Started in the later 90's, motivated by the challenge to take advantage of the best technologies available, MCH's experience involves more than 23 automated processes covering virtually all business areas. The company has adopted workflow technology in a corporate and strategic way, establishing a new management paradigm. The benefits obtained are way beyond the expected, resulting in expressive efficiency gains for the company. Workflow technology contributes to MCH's strategic goals, building concrete competitive advantages.

OVERVIEW

MCH is a diversified retail company that executes a huge amount of business processes. Due to several reasons mentioned in the next section, there is a great interest to make them more efficient, faster and under control.

The first workflow system started to be developed in late 90's. The good results stimulated the development of new systems, reaching the number of 22 systems in production on August 1, 2006 (20 on February 1, 2006), while six other are presently in pilot production or being developed. These systems have automated processes as distinct as product repair, goods transfer, contract management, travel request and purchase order approval. They encompass a total of 1750 process activities, of which 647 are human activities and 1103 are automated steps (the average process has around 80 steps).

Despite the variety of developed systems, it is easy to find common benefits to all of them. Process control, increased productivity, improved service and cost reduction were the reasons of the success of MCH's experience. The company used workflow technology to connect all parties of its business processes – customers, employees, managers and suppliers – creating totally virtual processes. In a dispersed organization as MCH, this was the key to overcome the obstacles to productivity, efficiency and control.

These common benefits came from a set of process improvements. Among them we can find faster customer response, task automation, process rules enforcement, paper elimination, reduced store stocks, automatic integration with legacy systems and better employee organization.

In this movement towards massive adhesion of workflow technology, a basic element was user involvement. In all the stages of the development, end users were present and made decisions about each system. User satisfaction with workflow can be measured by the usage and new developments required in a proactive way.

Thus, the current experience of MCH portrays a new and powerful culture of work in the corporation. This powerful culture, stimulated by strong user participation, places MCH in the front line, becoming consistently more efficient and competitive.

THE KEY BUSINESS MOTIVATIONS BEHIND THE PROJECT

MCH is the largest retail company in Portugal, and currently has 342 stores distributed in more than 60 cities. Its total selling area is more than 500,000 square meters. In 2005, its sales reached € 3.1 billion (US\$ 3.95 billion). Food retail sales were around € 2.3 billion and non-food retail sales were € 771 million. MCH is also the largest employer in Portugal, joining more than 20,000 employees. MCH belongs to Grupo Sonae (Sonae Group), Portugal's largest private group. Grupo Sonae operates in several different industries such as retail, manufacturing, real estate, telecommunications, media, software development, tourism, logistics and venture capital. The company is in 8 countries from 3 continents.

Several reasons led MCH to implement workflow technology. Some were external, defined by the market, while others were internal. Besides that, as the use of the technology expanded, the benefits of the systems became clearer, and stimulated even more the implementation of new workflow systems. The following subsections illustrate these motivations.

Accelerated expansion requires process consolidation

Since its foundation, MCH has experienced a fast expansion. The business diversified from food into a multitude of food and nonfood formats.

It is clearly not viable to sustain such growth rate without adequate processes and tools in place. Only they can guarantee the standardization of best practices, bring maximum operational efficiency and give managers a precise picture of the actual business performance. Naturally, MCH first focused the automation of basic core processes through the ERP packages for back and frontoffice. After these had been adequately handled, the next target was set for the vast amount of MCH-specific processes.

Search for innovation leads to workflow technology

MCH has always been an innovative company. When it started its operations, in 1985, MCH brought to Portugal a new concept for the local market – the hypermarket. Later, in the mid-90s, MCH was also a pioneer in the development of new non-food retail formats. This innovative spirit, shared by the whole company, leads the MCH's IT Department to continuously evaluate the best technologies available, looking for ways to bring practical advantages to the business. The company started to evaluate workflow technology in the late 90s, defining a strategic vision on *business process virtualization*, which allowed for connecting people and legacy systems.

KEY BUSINESS INNOVATION

Workflow technology impacted MCH's business in several ways. The next chapters highlight some of the innovations and benefits brought by workflow.

Greater customer convenience

One of the advantages brought by workflow technology was the improvement of customer convenience. Certainly the best example comes from the Product Repair Workflow. This workflow manages the complete process of repairing a product (whether it was purchased in a MCH store or not). From the customer's perspec-

tive, this is a time-sensitive process, since he/she generally wants to recover the product as soon as possible.

Workflow technology allowed to completely reengineer the service provided. On average, the total repair time fell by 37 percent.

Increasing convenience is also one of the goals of the Suggestions & Claims Workflow. This system allows for faster response times and more effective solutions for any customer demand.

Improved collaboration with business partners

Efficient collaboration with suppliers and other business partners was a significant achievement. Once more, the Product Repair Workflow is a good example. After the goods reception, a multitude of different partners (logistic operators, repairers, manufacturers, product component resellers etc.) may participate in the process, according to the established business rules. These rules are workflow system controlled and may define, for instance, that a product within warranty will be sent to its manufacturer instead of a repairer. Service level agreements (e.g. time to repair a TV) are defined and monitored by the system.

All these partners interact directly with the workflow system through a *Repairer Portal*. This allows real-time communication among all parties, with process traceability. The system is so well accepted that today more than 500 repair-related partners use it, executing around 35,000 instances per month.

Better partner collaboration was also the goal of the Goods Devolution-Supplier Workflow. This workflow controls the reverse logistics process of returning goods from a store directly to the supplier. A clear understanding of each party (MCH store, MCH central stock management and supplier) duties is enabled, streamlining the process and having proper exception handling.

Also, the Item Creation Workflow improved the interaction with suppliers. Using this workflow a supplier can easily suggest new items to be added to the company's retail product range. The workflow assists the evaluation of the suggestion and helps correct classification and registry in the retail front-end ERP.

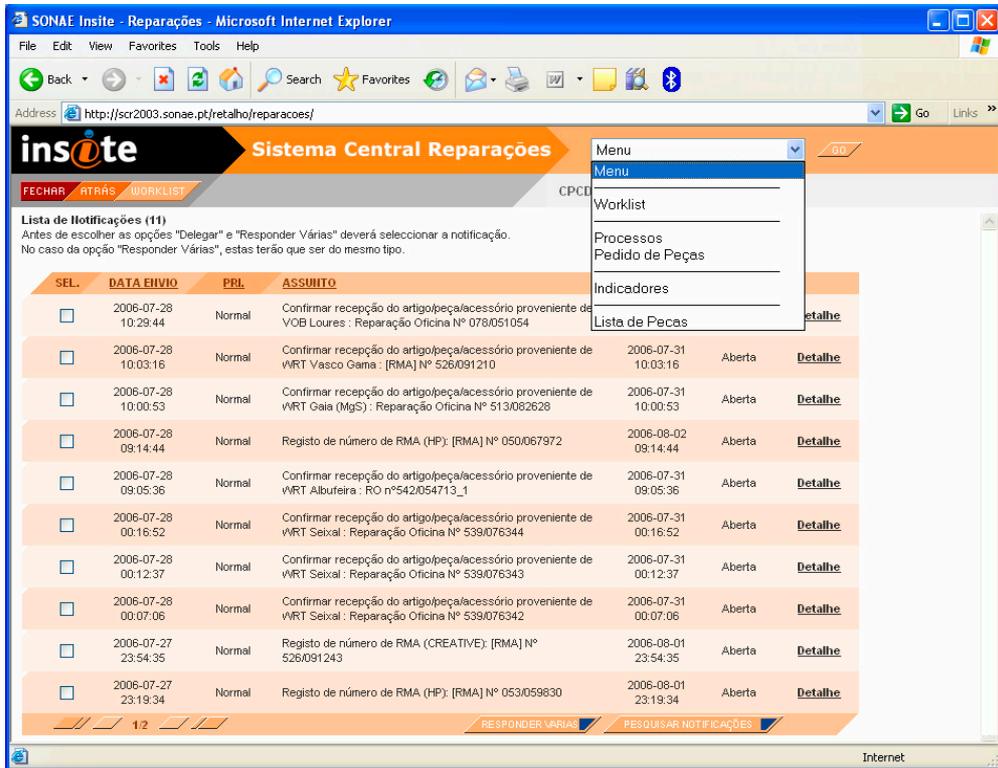


Figure 1. Repairers can log in the Repairer Portal and check their worklist. They can also monitor process status and initiate new ones.

Optimized stock management

Stock management is one of the most impacting issues for a retailer's profitability. MCH was able to optimize it through a variety of workflow systems, namely: Goods Devolution-Distribution Center, Goods Devolution-Supplier, Goods Transfer and Quality Problem. Several reasons can origin the start of a process in these workflows:

- a store wants to return goods to the distribution center
- the Central Stock Manager decides to balance goods among stores with excess and lack of stock
- the manufacturer issues a product recall and the related goods have to be collected
- there are excess goods after a marketing campaign

The handling of these situations in an efficient way can be complex. For instance, frequently it is cheaper to destroy a product than to send it back to the supplier or to the Distribution Center. A correct evaluation has to consider factors such as the type of product, the location where it is, the amount that has to be transferred, environmental rules and commercial agreements. The best decisions are the ones that allow the company to maintain the lowest possible stock, without stock-outs, and with less management costs.

The developed workflows guarantee that all these complex processes are followed in a controlled and disciplined way, allowing MCH to effectively optimize its stock management. With these workflows, the best practices were shared and available to all stock managers, and a significant stock reduction was achieved.

Improved employee interaction

Streamlined employee interaction is an important issue for any company. This was the goal of a group of workflow systems: Vacation Scheduling, Internal HR Recruitment and Work Contract Change. All of them fit into the concept of a *self-service portal*, allowing employees to start requests and have the related decisions formalized and implemented. As known, one important reason of employee dissatisfaction is not receiving appropriate feedback regarding their demands.

The Internal HR Recruitment Workflow is an excellent example of the impact brought by workflow in the relationship of MCH with its employees. This system allows any employee to apply for any open position within the company. The results are better process consistency – all approvals and validations are correctly made – and transparency – the rules and steps are known by everyone. This guarantees that the selection process is fair and that company policies prevail over any personal preferences.

Effective indicator-based process management

Workflow technology facilitates automatic process data generation and recording. MCH soon realized that the collected information was precious to improve process management. Indicators were defined and automatically generated for key processes. These indicators are monitored using a tool called *Indicators Portal*, where process managers can apply filters and see information in different formats (tables, graphs etc.). This feature expanded the perception of managers, which did not have accurate information in the past to take the best decisions.

KEY PROCESS INNOVATION

Workflow technology brought several innovations to MCH's processes. With workflow, processes became faster, more efficient and better controlled. The next sections explain these innovations in further detail.

Intelligent Process virtualization

Intelligent process virtualization was one of the main process innovations brought by workflow technology. Virtualization, in this sense, means the elimination of all possible restrictions of location and time, imposed to process performance, joined with intelligent automation. In practical terms, it involves:

- substitution of paper forms by Web applications and digitizing of paper documents
- automatic data and business rules validation, increasing productivity and avoiding rework
- automatic process routing, eliminating the need for physical document transfer and/or manual process forwarding
- access to worklist through the enterprise portal
- centralized database, keeping all forms, document and workflow information
- workflow activity UI (user interface) tuned for user productivity
- extensive use of alerts to minimize activity deadline loss
- automatic data and transaction integration with legacy systems
- ability to monitor processes regardless of the store or department where they are being executed

Intelligent process virtualization was applied to all the workflows, and has allowed MCH to achieve gains such as: greater agility, reduce human work/rework (freeing several employees to more value-added activities), reduce the use of paper

(reducing both costs and ecological impacts), increase user productivity and improve management control.

Back-office processes, such as Invoice Validation, Travel Request, Purchase Order Approval, Reimbursement and Expenses Approval, were the most benefited with intelligent virtualization. Some of the results were:

- 6,400-hour annual saved in the Purchase Order process
- 60 percent reduction in the Invoice Validation process time
- automatic invoice validation in Travel Invoice Validation grew from 20 percent to 65 percent
- near-zero rework in all processes
- These benefits will be described below in further detail.

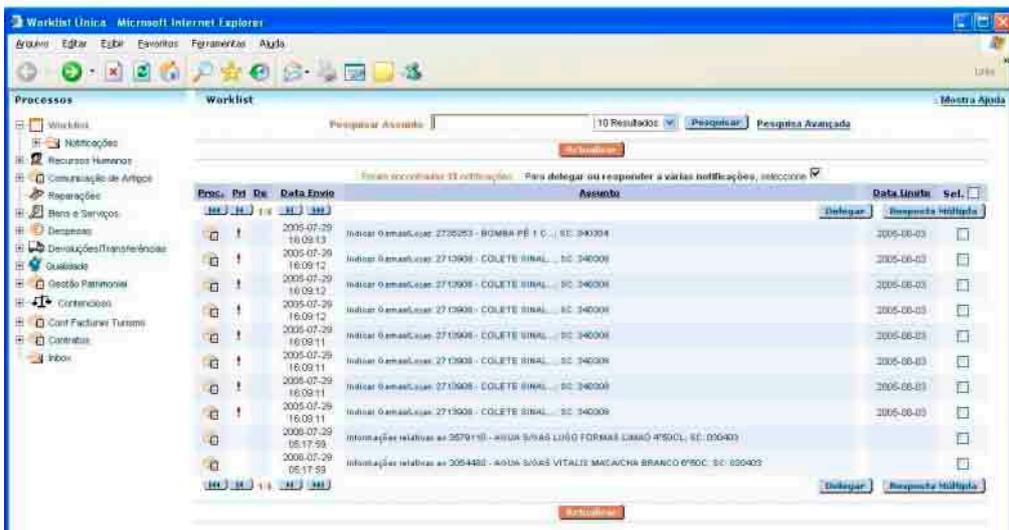


Figure 2. Unified User Worklist showing tasks from all workflow systems. The left pane shows all workflow systems available, each one with specific options.

Increased flexibility to improve processes

Creating and maintaining alignment among a large number of people about process definitions is certainly a challenge for any company. In the traditional way, process definitions have to be communicated through normative documents, and often audited to verify proper execution. This also means that any change to current processes requires a reasonable amount of work and re-training. In some situations, this effort may even become an inhibitor to process change and evolution.

MCH soon discovered that the resources provided by workflow technology made process evolution much easier than before. Since systems are designed to ‘guide’ users through the process, it is necessary just to update them to reflect the desired process changes. The required training is much shorter, and the new process can begin to operate in a very short time and to a large audience, with minimal flaws. This flexible behavior has stimulated business users to take effective control of their processes, running a continuous cycle of analysis and improvement.

KEY TECHNOLOGICAL INNOVATION

Workflow technology success in MCH was only possible due to several technological innovations. The topics below present some of the most important facts.

Heavy investment in usability

Since its conceptualization, workflow technology was thought as a tool for user productivity. Thus, heavy investment has been made in interface usability, focusing on minimizing user’s effort; having a pleasant look-and-feel and enforcing consistent behavior among all systems.

Reduced user’s effort was achieved through a series of interface design decisions, such as:

- automatic consolidation of information from several systems, avoiding the need to use several applications
- automatic pre-validation of business rules, highlighting topics for user’s attention and suggesting actions
- allowing user to act on several tasks at once (batch)
- The picture below, from the Goods Devolution Workflow, illustrates this approach.

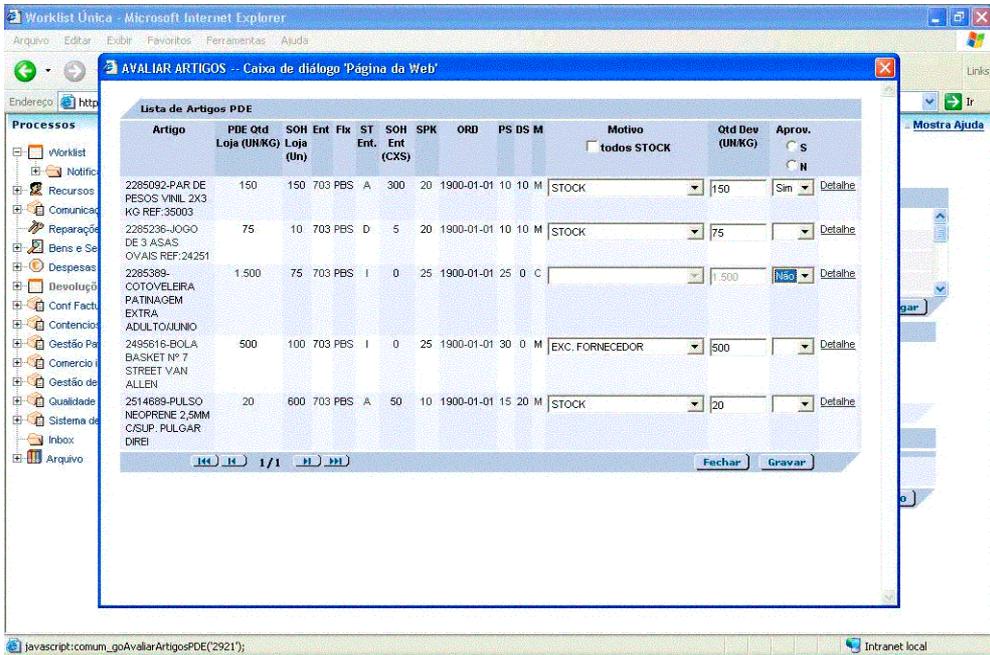


Figure 3. The stock manager receives a screen consolidating information from Retail Front-End ERP and the workflow system itself. Business rules are pre-validated and an action is automatically suggested. The user can easily act on several instances in batch (worklist in the background).

Extensive technology integration

As any large company, MCH uses a multitude of different systems and technologies. Integrating all of them in an organized, coherent way is critical for two main reasons:

- to allow the creation of “virtual work environments” where users can receive all necessary information without having to logon to several systems

- to allow a high level of process automation, eliminating manual tasks as much as possible

The most important systems and technologies integrated were:

- Oracle Workflow: workflow management engine
- Retek: retail ERP, stores all product and inventory information
- SAP: financial and accounting data
- MS SharePoint: enterprise portal framework
- IXOS: document digitalization and storage
- Crystal Reports: workflow reporting
- LDAP (MS Site Server): stores user and profile information
- ASP, .NET, XML and XSL for application development
- Web Services and RPC for application integration

To assure appropriate reuse, these integrations were bundled in a *workflow framework*, and are accessible to any workflow system developed in MCH.

New methodologies for offshore development

In 2004, MCH started to offshore workflow system development to Tlantic, a So-nae-owned software company based in Brazil. Obviously, this required the revision of the development methodology in place. The main changes were:

- adoption of a formal software development process (Tlantic is currently CMMI Level 2 certified)
- more precise definition of project phases and artefacts
- clearer separation of MCH's and software company's duties. More business-related activities (e.g. process redesign) were left to MCH while technology-related ones were left to Tlantic
- detailed project planning to assure that workflow analyst can complete his/her work in 2-3 weeks (average time spent in a Brazil-Portugal travel)
- software test team prepared to detect language flaws in user interface

These actions have achieved the desired results, and offshore development has been a great success. Currently, all MCH workflow systems are being developed in Brazil.

THE SYSTEM USERS AND WHAT THEIR JOBS NOW ENTAIL COMPARED TO PRE-INSTALLATION

The large-scale workflow usage at MCH affected the work of almost every employee. The most important changes were:

- greater organization at work, because one can easily check his or her worklist to see pending activities. This was very appreciated by business partners who often couldn't be easily communicated about a new task;
- access to documents and tasks anytime, anywhere. Fundamental to include business partners in the process;
- transition from paper documents to electronic documents, allowing several data validations, easing cooperation and speeding the process;
- transformation of manual tasks into automated ones, such as ERP validations and transactions;
- process transparency, making full history available and allowing one to know who's delaying the process;
- greater awareness about task deadlines due to work item information and to alerts;
- general feeling of control and organization.

THE BIGGEST HURDLES OVERCOME IN MANAGEMENT, BUSINESS AND TECHNOLOGY

Management

Considering the size and variety of workflow systems, management hurdles were smaller than expected. Some hurdles were faced, especially in the first workflow systems, due to the lack of a process culture among certain employees. This led to situations such as users printing all process documents before starting to work. After some months of training and supervision these obstacles were overcome, and users started to feel very comfortable with the virtual process.

Another hurdle was the practical complexity of offshore development. Besides the physical distance and time zone difference, there are significant variances in terms of culture and language between Brazil and Portugal. To overcome this, several measures were taken, such as extensive use of Web collaboration tools (web conferencing, MSN); conference calls to discuss document interpretation; formal document approvals and creation of glossaries to clarify word meaning.

Business

Customer-related workflows, such as Product Repair required an increased focus in the training and support of the front-line employees serving the clients. This is also a process heavily affected by seasonality, peaking after Christmas and Easter. Besides the tuning of usability issues and the right-sizing and monitoring of the IT platform, special care was taken in the management of change.

Technology

Several technological hurdles had to be overcome to ensure systems' success. One of the major ones was the need to accommodate different usability needs (directors, managers, employees, suppliers etc.). The solution was found in the creation of different user interfaces for suppliers and MCH-personnel, with several configurations that are automatically applied according to user profile.

Due to the diversity of technologies integrated, it is also a challenge to maintain and upgrade the systems. Since the workflow database is very large, any change operation has to be carefully planned.

Legacy system integration also presented some challenges, especially because, at the time of the first integrations, ERP vendors did not provide very open connectivity mechanisms.

THE NEW SYSTEM CONFIGURATION

The system infrastructure is divided in 3 main components:

- Workflow Server: a 4-processor (3 GHz), 8 GB RAM Intel machine running Red Hat 3.0, Oracle Database Server 9.2.0.6 and Oracle Workflow Server 2.6.3. External storage is used (150 GB)
- Application Servers (not dedicated to workflow): 2 servers, each a 2-processor (3 GHz), 4 GB RAM Intel machine running Windows 2003 and MS IIS. Internal storage is used (36 GB)
- External Application Servers (not dedicated to workflow): 2 servers, each a 2-processor (2 GHz), 512 Mb RAM Intel machine running Windows 2003 and MS IIS. Internal storage is used (36 GB)
- Legacy systems servers: Retek Server, SAP Server, IXOS Server, Exchange Server

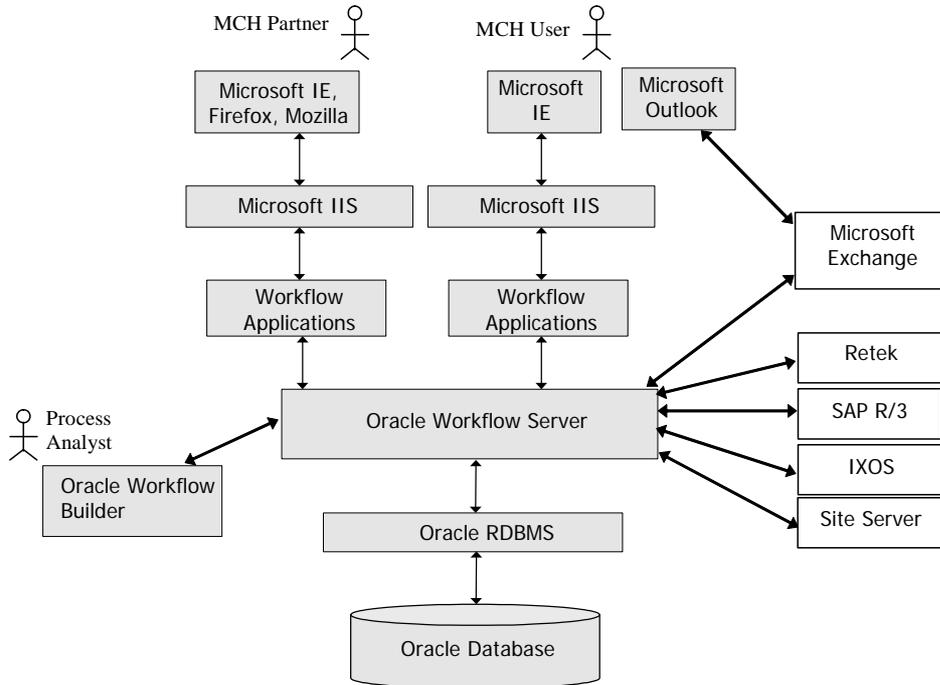


Figure 4. Global system architecture

Due to security reasons, all external access (e.g. business partners) is made through External Application Servers.

COST SAVINGS, INCREASED REVENUES, AND PRODUCTIVITY IMPROVEMENTS

Workflow technology has brought several tangible and intangible benefits to MCH. The table below shows some of the direct financial benefits achieved, and estimates the total savings obtained since the system entered in operation until August 1, 2006:

Workflow	Impact
Product Repair	more than 200,000-hour annual savings
Goods Devolution	several million Euros of store stocks reduction
Devolution Request	2000-hour annual saving (freeing time from stock managers)
Invoice Validation	3200-hour annual saving (reduced staff due to automation)
Purchase Order	6400-hour annual saving (reduced staff due to automation)
Reimbursement, Travel Request	12-minute saving per instance due to user productivity
Other workflows	10,500-hour annual saving (reduced staff due to automation)

Other benefits of a more intangible nature are generally connected to quality of service. Some of them had a significant impact:

Workflow	Performance Improvement
Product Repair	<ul style="list-style-type: none"> • 37 percentage process time reduction • increased revenue due to increased customer satisfaction and loyalty
Goods Devolution	<ul style="list-style-type: none"> • guarantee that devolution processes will have the lowest possible operational cost
Goods Transfer	<ul style="list-style-type: none"> • increased revenue due to increased customer satisfaction
Invoice Validation	<ul style="list-style-type: none"> • 60 percentage process time reduction
Travel Invoice Validation	<ul style="list-style-type: none"> • increased automation allows VAT (value-added tax) to be recovered earlier
Reimbursement, Travel Request	<ul style="list-style-type: none"> • safer, simpler and quicker approval
Internal HR Recruitment	<ul style="list-style-type: none"> • increased chance to find the best employee to the open position

IMMEDIATE AND LONG-TERM PLANS TO SUSTAIN COMPETITIVE ADVANTAGE

Workflow technology has conquered a very important place in MCH, thanks to the concrete business benefits brought by it. Since its introduction there is a permanent cycle of workflow usage expansion. Beyond the 23 systems already in production, 6 other are under development and 5 other are planned to start soon.

This pace is only possible because MCH has reached an extremely high maturity level in workflow usage. IT management has a perfect understanding of the technology and knows exactly when workflow should be used. There are mature methodologies to cover all the phases of systems development, turning workflow expansion an easier task.

Beyond the automation of new business processes, plans related to workflow and BPM comprise:

- development of a central database to extract better management information from process execution data
- technological alignment with SOA (service-oriented architecture)
- increased connection between process analysts and IT analysts
- expansion of BPM vision by transforming functional-oriented competencies and tasks into process-oriented structures