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Solutions for Support for Quality Management Systems

Abstract: *Quality Management Software helps companies automate and improve their activities of quality management, all in the purpose of improving efficiency. Companies have developed a large number of software solutions in the purpose of better and more efficient quality system management. This paper will present basic modules of software for QMS (Quality Management Software), and perform a comparative analysis of some of the available commercial solutions.*
Keywords: *QMS, software*

1. INTRODUCTION

Globalization of the market has very much increased the potential for the profit of companies, but it has also increased the competition and the pressure to produce faster and at a lower price. In addition, the standards and regulatory demands make the situation all the more challenging. Those who face the largest number of challenges are managers of quality – ranging from monitoring the product's quality to organizing the paperwork and management, all according to regulations. Quality Management Software helps companies automate and improve their activities of quality management, all in the purpose of improving efficiency. Companies have developed a large number of software solutions in the purpose of better and more efficient quality system management. This paper will present basic modules of software for QMS (Quality Management Software), and perform a comparative analysis of some of the available commercial solutions. It will also point out the advantages and disadvantages of software solutions based on the Internet environment, and present the concept of software solution based on the Internet open-source platform.

2. QUALITY MANAGEMENT SOFTWARE (QMS)

Every company is aware of the fact that working on its improvement is necessary to maintain the positions in the competitive world (pic1.). Important segments of every process of continual improvement are planning, following, monitoring and managing activities, tasks and processes. Companies need to computerize all of their processes using standard software applications. QMS needs to provide companies with proactive control with the emphasis on improvement. By using highly configurable web platform, QMS enables small and medium enterprises to easily record, monitor and analyze, and it provides reports on all the activities related to quality, as well as data concerning document control, non-conformance, corrective actions, audit planning, maintenance actions etc. By implementing standard access to quality with an efficient QMS system, companies can prevent costly errors/product shortcomings,

inefficient corrective actions, unfavorable services, non-conformance etc.

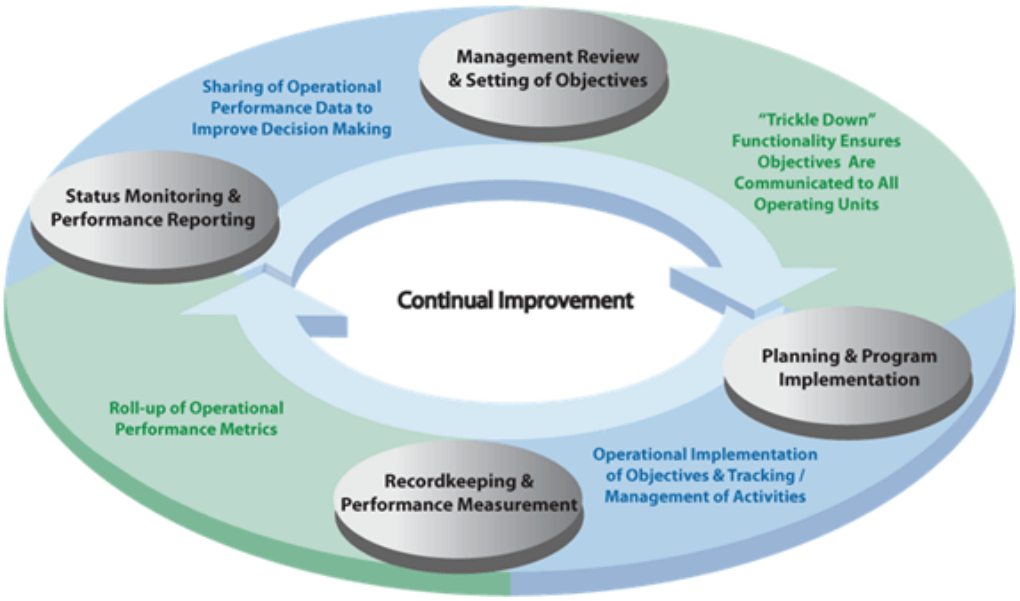

Figure 1. Process of continual improvement in companies

QMS is simple and accessible software for quality control and improvement, which helps quality management, environment, health and safety of the system. Since it is based on the web, it is accessible from any time and place by using a simple Internet connection. It is also scalable according to the needs and the size of the company.

QMS in consisted of configurable user friendly and connected modules, which automate, improve, and efficiently manage document control, audit, client complaints, employee training, corrective and preventive action (CAPA), change control, non-conformance and other processes based on quality and business processes within a web platform. These modules enable company to direct a process or an entire system of quality management. They can operate either together or independently.

Advantages:

- General decrease in time, administration and general cost increases efficiency;
- Easy implementation and efficient standard management (ISO 9000, ISO 14000, OHSAS 18001) and FDA regulations (21 CFR part 11, etc.) with the insurance that the company follows common procedures and standards;
- Simple structure that demands minimal training;
- Provides accessibility for identified users from any place in the world at any time;
- Makes sure that all the users are always looking at the latest version of the approved document;
- Full correlation of all actions;
- E-mail notifications to users about working tasks;
- Safe infrastructure with daily back-ups.

Companies that produce QMS also provide the necessary technical support.

They offer their buyers expertise, infrastructure and flexibility in order to satisfy every buyer's needs, from the initial installation of the software to regular maintenance. Also, they have universal training programs (training on the spot, or online via website, recorded training), which serve as a basis for successful software application. This way, the investment in the software is quickly paid off.

3. SOFTWARE SOLUTION MODULES FOR QMS

3.1. Document control

Document control is the core of the QMS applications. It integrates all the quality processes, such as change, customer complaints, corrective and preventive actions, revision etc. In real conditions control and document management are of vital importance for achieving quality, because in order to control quality paperwork must be efficiently controlled as well.

Document control automates and manages the process of document control efficiently in a logical and simple manner, all in the purpose of ensuring coordination with ISO and quality standards, as well as regulatory demands (such as FDA 21 CFR Part 11).

Document control helps increase efficiency of the system quality by automating tasks, directing, planning, monitoring, escalating, revising and approving all documents.

Main characteristics:

- A compatible system that enables continual maintaining of the paperwork, by keeping quality system always ready for revision.
- Automatic document diverting and approving decreases the time cycle and excludes escalation for untimely tasks.
- Advanced tracking of the documents according to status (in a process, entirely) or from history is enabled. Reports of the revision or history are easily reviewed.
- It secures paperwork integrity – controlling standards of the internal and external documents ensures that the users are provided with only the latest version of the document, in order to avoid errors made by using outdated or unapproved documents.
- Working according to ISO standard
- Advance analysis and ability to report give standard and adjusted reports so as to increase management monitoring.
- Significantly reduces time needed to introduce the new product to the market and accelerates the process of document modification, approving, notifying and distribution.

Manual systems are inefficient and demand a lot of time for directing documents, approval and signature acquisition, researching and finding documents during inspection and revision, exchanging information about changes is frequently done in person etc. Document control automates directing, delivery, escalation and document approval, regardless of the type of the documents and the software used for their creation. Functions are centralized which enables the user to easily search and find documents during inspection and revision.

In a system based on papers and a hybrid system, employees manually review the paperwork and other materials (sketches, charts etc.). Monitoring the activities of any document is made difficult. In order to perform the modifications in documents it is necessary to submit requests for modification or discuss them in person. Document control gives the opportunity for the modifications to be set in motion and approved electronically. It also ensures that only the current version of the document is available. The system itself monitors all

the modifications and makes them available to users through reports. Users can access the documents at any time from any place.

In companies that rely on different tools and processes for managing the system of quality, it is likely that at one point a communication disruption will occur. Inefficient communication leads to significant delay and a bad outcome. Document control connects all the subsystems such as managing modifications, corrective and preventive actions, training and revision. Since they are web-based documents, they are available to authorized users from any place at any time.

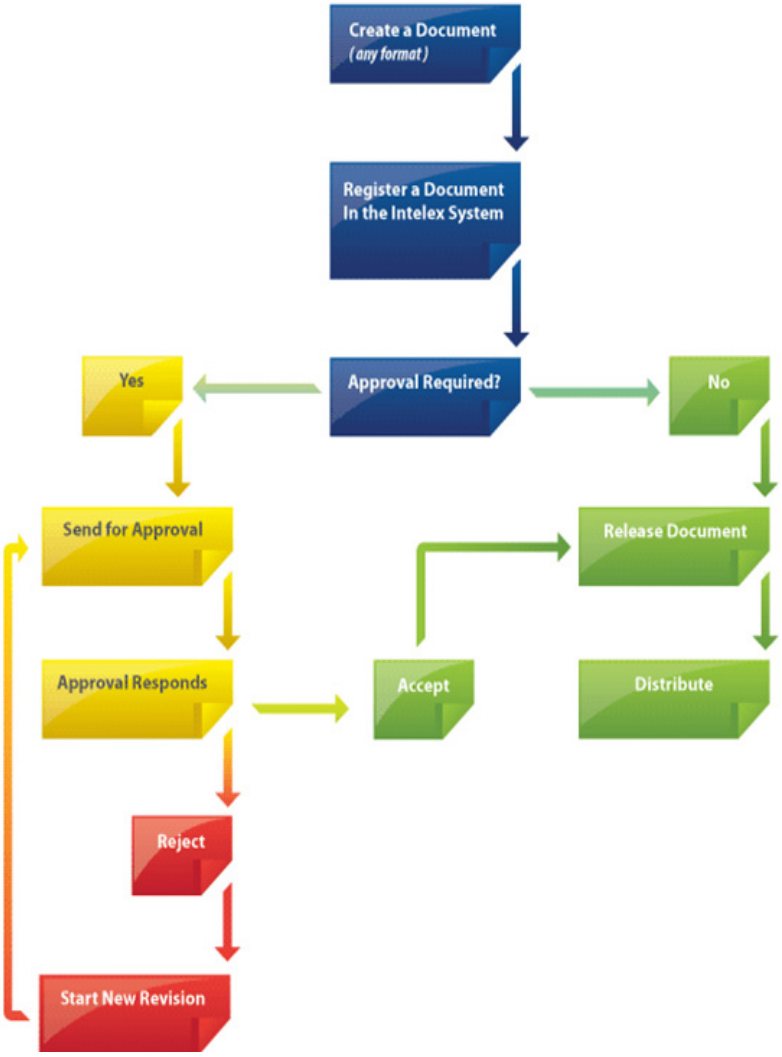

Figure 2. Intelex manufactorers' solution for file management

Timely and accurate reports are difficult to make when electronic tables and charts are used. Without a coherent report system, managers cannot get a general image of the quality system management. Document control gives an advance analysis and ability to report, including special reports and online charts.

Through reports managers get a review of quality process in real time and they can be more active with the improving the quality system.

Document control functions as a central web portal for organizing and storing all of its business documents. The system is designed so to manage an unlimited number of documents available to the whole organization. The access to the documents is strictly limited. Unique security settings are given to users, so as to secure a limited access to confidential files. User can only access the documents they are authorized to access. Files are also encoded and cannot be modified, deleted or copied by the users without authorized access. System administrators renew back-up and save data base on daily basis.

Within the system, users can register files, assign them revision dates, and send files to revision and/or approval. System will automatically save and store revision/approval. The file control cycle itself is strict. The new version of the file can be generated only as a result of modification authorization by the relevant parties. When a new version is created, the previous versions are automatically stored so that they can be on standby in the case of revision, but also for legal and scientific purposes.

Document control is integrated with any application that can be shown over the Internet, for example Microsoft Office applications, Adobe Acrobat PDF, HTML, jpg, mpeg and others. Files supported by the software can be traditional text documents, sketches, charts, project plans, multimedia files and many more. Basically, files can be seen and exchanged through standard Windows applications. There is no need for the files to be retyped every time, they are simply imported.

Advantages:

- Reduced administration costs:
  - General decrease in time spent on the administration, which means more efficiency and with that smaller costs;
  - Storing costs are eliminated;
  - Saving time by eliminating file distribution, which directly effects efficiency;
  - Eliminating paper supply in manual systems.
- More efficient bussines transactions:
  - Finding needed information more quickly;
  - Paper document distribution is not only costly, but also slow;
  - Introducing new employees to the system is easier, which leads to significant improvement of their personal productivity.
- Safety:
  - Only the authorized user is able to access the system first, and then see the documents that he is authorized for;
  - By applying the lock-out system when a wrog password is submitted, and by limited copying of ID/password combination, the risk of unauthorized access is drastically reduced;
  - Only the authorized users can modify files;
  - Easier monitoring and maintenence of file safety than in systems based on papers or hybrid systems.

3.2. Complaints Management

Customer complaints are inevitable in any type of bussines. Companies cannot ignore customer complaints, because they are the final indicator of the quality of product/service. Every complaint must be properly evaluated, investigated, and the problem must be resolved. Customer complaints are particilarly significant for industrial production, where they can point to serious problems. Modernisation and simplification of the customer complaint process boosts essiciency through the company and maintains cost coordination.

Complaints Management is considered a crucial part of the quality system. Complaints Management automates the customer complaint process and facilitates coordination with the ISO standards. It performs record keeping, monitoring and resolving a sample of customer complaints. Also, this simple and efficient solution enables reports on any standard discrepancy stemming from complaints.

In a manual system, customer complaints can be acquired from various sources (e-mail, telephone, fax, letters, website etc.). If there isn't a formal standard procedure for processing those complaints, they can sit stored in an inbox. Complaints Management is a centralized platform for receiving and recording complaints in an easy and methodical way. A cohesive system records all the information on time and it enables easy search and finding complaints and similar data. Every complaint history is easily accessible and it enables up-to-the-minute status on how the complaints move through the organization and what measures are taken, if any are. Without a cohesive system it is next to impossible to form a strategy for complaint processing.

Complaints can be submitted by any user. They are then on directed to qualified administrators, who sort them according to the type of complaint and product. Complaints can be submitted from any given place.

If the companies use different tools, which are not connected, difficulties in monitoring complaints can occur. There needes to ba a standard response to complaints, so that the problem may be corrected. Complaints Management connects the process of complaint management with the rest of the processes in quality system. It provides the links for corrective actions and unfavorable events. For example, a link can be posted on a company web site within the CRM application (or any other application that supports URL links), so that the employees, buyers and partners can easily start the link. This connection will help managers monitor complaints and give them the possibility to proactivly improve complaint management process.

Complaints are assigned with a level of severity, and then it is decided whether to inform other users about the complaint, or to investigate the cause of the complaint first. If the results of the corrective actions are insatisfactory, the investigation is renewed, and corrective actions are repeated if nacessary. Complaints Management also keeps records on all the resolts of the investigations, sample analysis and recomended actions.

Lost complaints that come from various sources, incomplete information, the lack of monitoring and inadequate answer are characteristic in manual systems. All of this leads to a delayed complaint consideration. Complaints Management reduces the complaint process cycle by improving and consolidating several complaint sources within a single platform. It provides recording af all necessary information and automatic complaint monitoring through e-mail notifications and it incorporates escalation in order to react on time.

Advantages:

- Efficiently resolving complaints contributes to a pozitive respons from the buyers;
- Improvement in providing services affects a higher level of buyers confidance and business management;
- If the complaints are resolved efficiently, a bigger buyer loyalty is achieved, and less time and money are spent on attracting new customers;
- Attracting new customers by oral advertasing from satisfied customers;
- Complaints can reaveal basic business problems, which would remain hidden and turn into serious problems otherwise.

3.3. Audits Management

Managing audit requests is becoming more complicated and the traditional way of management, such as programs with table calculators and independent software programs are becoming inefficient.

Audits Management has centralized a web based solution for audit quality that provides flexibility of audit quality, which is particularly important for companies with various products and facilities, aften around the world. It enables companies to be prepared for internal and external quality audits during the whole year and to perform efficient risk assessments according to regulations and standards.

Audits Management automates, improves, and efficiently manages quality audit process.

Audits Management is a complete and robust solution that integrates various steps (preparation, planning, report, verification, realization) necessary for the success of the quality audit. Its flexibility and simplicity of use makes it possible for the most complex and unusual audits to be logically and quickly planned and realized. Opinions on quality audits are divided. Some maintain that the audit preparation and performance take up too much time, and that the Pass/Fail result does not show improvement. The software should minimize general costs of creating and enforcing audits, and be able to change performance trends over time.

Main characteristics:

- Collecting, monitoring, and reporting daily tasks (centralizes audit information);
- It improves efficiency, by reducing doubling of employee efforts by the use of a central portal, where all of the business paperwork is stored;
- Advanced CAPA functionality;
- Implementation of quality audits stram throughout the company;
- Sending automatic e-mail notifications to the employees and/ir their supervisors about the audits that have expired or put on hold;
- Reporting in real time;
- Succes measurment; reviewing audit history in order to predict and improve future performances of the audits;
- Establishing safety control, by defining unique safety settings for different levels of user access.

Audits Management easy check list making, and it attaches it to a certain file. The audit check list can be made with the help of a previous one, or it can be new. When the list is made, auditors with corresponding domain and access to the file in certain departments are identified. The check list can be modified, and then saved under a different name.

Audits can be planned at any time. At the same time, they can be planned in different departments with the same check lists, but different auditors. The date of the beginning and duration of the audit chan be modified.

An audit can be Pass/Fail or numerically graded. If the grade if the audit is Fail or numerically low, that also requires a comment of the auditor. After the audit, a report with the gained results is formed. All of the authorized users can see the report at any moment, but they cannot modify it. All of the audits are stored in the system.

In manual systems, the audit process is not connected to corrective and preventive actions (CAPA). The lack of connection can lead to bad data collecting and slow change implementation, and slow CAPA. Audits Management connects the audit quality process with the rest of the quality system. For the quality system to be coordinated its subsystems must be well interlinked and they must function well. A holistic approach gives the possibility for the CAPA to be run directly from the audits, by connecting these two processes, which largely simplifies the process. The relevant pieces of information from the audit are automatically submitted to

CAPA. Also, it is possible to show the history of the entire audit process.

Audit quality processes are repeated. Their conduction and frequency depend on the size of the company and the nature of the business. Audit planning in manual systems, esp. in companies with numerous quality audits, can be more difficult. Audits Management automates planning of all activities, which are repeated and are connected to the quality audit, in order to ensure that not a single activity would be neglected. This possibility eliminates the need to start the tasks manually. Also, it enables planning the tasks ahead.

By using different electronic charts and paper files, it is hard to make accurate and timely reports. Without efficient report tools, managers are not able to view the whole picture of their quality audit program. Audits Management enables an advanced analysis and ability to report, including special reports and online draft. Through the reports, audit process review in real time is gained, and the managers can be more proactive in improving quality system. Advanced report options include some of the following special reports:

- Quality audit review – a brief review of all participants in the process;
- Details of quality audits – detailed analysis review concerning quality audit including connection with CAPA;
- Report by cause;
- Quality audit by standards – audit list categorized by standards and regulations;
- Quality audit by auditors – audit lists sorted by auditors that keep them.

Advantages:

- Notable maintaining the standards with minimal money and time spent;
- Boosts user confidance;
- Gives users the opportunity to define an unlimited number of business areas;
- Quick and easy audit planning minimizes coordination costs;
- Access to necessary checklists and frequent reuse of questions from the checklists saves time and diminishes the possibility to forget important questions.

3.4. Training management

In ISO environment, the companies are required to implement and document employee training, in order to ensure that their employees are qualified to perform their duties within the company. An adequate and continuing employee training is considered crucial in production of safe, reliable high-quality products.

Training management is a robust solution, simple to use and designed in such a way to efficiently run the training process, and to be integrated with other processes within the quality system, such as customer complaints, corrective and preventive actions, and revision.

Main characteristics:

- Coordination of training throughout the company ensures that the employees receive necessary training with unequivacally established processes and procedures.
- Course schedule and training assignment can be performed according to job title, work group, location, the employee etc.
- Automatic e-mail sending to the employees about future, current and expired trainings.
- Monitoring and reporting on training expenses can also be performed according to job title, work group, location, the employee etc.
- Reporting in real time.
- Storing of training history, in the purpose of preparing for internal and external revision throughout the year.
- Improving administration through training.
- It defines unique security settings for different levels of user access, so that only the authorised employees have access to confidential information.

Evidents on employee competence are more and more researched by testing. The company employees find it harder to follow trainings, esp. If the work on different locations and in different shifts. Systems based on papers will likely lead to vast paperwork, delay and incomplete training tasks. Training management efficiently runs the training and automates orientation and training task delivery, and even enables automatic grading of online tests. It provides a secure, centralized, web based storing of all the files concerning the training.

Training management is designed to enable companies to efficiently conduct the best methods in employee training. Bu monitoring employee skill level, simplification of training for administrative affairs, and accurate reports on training costs, the companies can consistently record increase in their overall performance. Training management gives the companies possibility to check if their employees have read and understood the procedures and other files related to them, and so decrease responsibility, because they have evidence that the employees have in fact understood what is required of them.

When the company is performing modifications in files, it almost always requires new employee training. If the training process is not connected to other quality processes, it will not be possible for training tasks to be realized. Training management connects the training process to other processes in the quality system. Any course or modified and again approved file will automatically start training tasks for all interested trainees. Also, the courses can at any time be modified, added, deleted, the questions can be changed, or the whole test can be erased.

Communication must exist between the training coordinator and a trainee. With the Training management trainees are automatically notified about new training tasks. The also have access to their personal folder, which contains all of their trainings and that displays the last training, training deadline, and future trainings. Training management supports the possibility of automatic revision so that only one authorized user can revise certain training material. Coordinators and trainees can be certain that there is not more than one version of the course.

In paper and hybrid systems, it is difficult to learn who needs which training, when and how many of the employees have or haven't passed the training. Also, it is nearly impossible to get a current status of the training program. Training management enables an advance analysis and research. Coordinators can start the report based on employee demands or after the training completion, and learn how many employees have completed their tasks. Also, they are provided with automatic analysis of oversights for all the trainings ate the same time.

Advantages:

- Establishing expertise level and generating a strong buyer confidance.
- Coordination with regulatory bodies, which demand evidence of
- Automation of training process coordination;
- Early detections of gaps in coordination and their qick recovering;
- Facilitated hiring newemployees;
- It easily sorts tests and quickly gives results;
- It ensures a cosistent ability to access the training throughout the company.

3.5. Change Control

Nowadays companies are expected to establish procedures for control system in the purpose of providing product quality and safety. Also, they are expected to keep exhaustive records on all the performed modifications.

Change Control improves the modification process in many ways. It

enables all the relevant information to be sent to a responsible person according to a schedule and in a predetermined way. As soon as one task (at a certain phase) is completed, the document will be sent to the person responsible for the next phase. Each user should complete the work on time (they have to meet a certain deadline). This method enables an interactive and responsible work regiment between geographically distant locations. This saves time, reduces costs and enables efficient communication.

Change Control helps accelerate productivity. It is designed in such a way to help companies to automate and efficiently manage every step in change control process. The company is able to assemble a team of users that are to be responsible for all of the phases in change process. The team is now able to track progress, for the management system is automated. Process control is improved; it saves time and reduces overhead expenses. Good change system management leads to a satisfied user, production efficiency and lower production costs.

Lack of coordination in the control context can mean the lack of change monitoring, notification delay, tasks that were not performed in due time, suppliers that can perform modifications without a proper and timely notification etc. Change Control connects different departments through data and processes within a secure and centralized system. This way, efficiency is improved through automatic task assignment, direction, planning, notification and escalation of incomplete tasks. Since it is web based, all of the participant in change control can access it from any place at any time

Up-to-dateness is necessary in change control. A manual system that relies on paper files is most likely to have a bad turn-around for changes. Change Control integrates and simplifies the whole procedure of change control for a faster turn-around. If something goes wrong, users will be able to go back and see what happened. Change Control contains a priority level (it identifies changes as a routine, as temporary, or as urgent) and escalation. Each high level of change includes a high level of effect on the product. Also, necessary reports provide a status for not only the change control tasks, but also the entire quality system in real time. It is easier to manage changes if the right information is available. The decision makers will be able to know which processes have been completed, how many are in progress, and who is responsible for each of the processes, etc. This will provide a faster and a more reliable report than a manual one.

In manual systems employees training is not integrated with change control. Employees find it difficult to keep up with all the changes, since these processes are not linked in quality system. Change Control integrates with training application. Each change that demands new training will automatically be shown in training tasks.

3.6. CAPA Software

CAPA Software is the core of every quality system. It improves product quality and provides coordination with the standards and other regulatory demands.

CAPA Software is robust software, simple to use, designed to efficiently manage corrective and preventive processes and integrate them with other quality processes.

System that are based on papers and hybrid systems are cost less in the beginning, but in a long term they are inefficient, they demand a huge delay in the sense of directing CAPA tasks and paperwork, detting and approving signatures, manual research and finding paperwork during inspection and audits. CAPA Software automates the orientation, notifications, delivery, escalation and approval for CAPA and the paperwork.

It basically automates the entire

CAPA process from initiative, through investigation, to realization. Along with that, it provides secure, centralized web storage for all CAPA files.

Quality audit, customer complaints, or other quality system processes are not interlinked in manual and hybrid systems, so the data gathering is slow and incomplete. This can lead to the loss of information of critical value. CAPA Software integrates all the processes of corrective and preventive actions with the rest of the quality system.

If the customer complaints, the data on disadvantageous events and incidents which can start CAPA, can only be gathered manually, there is no guarantee that all the crucial information will be acquired. CAPA Software can be started directly from another module (for example Complaints Management etc), to direct a process and avoid errors when resubmitting data.

Misuse of CAPA can stem from a lack of capability to follow and monitor an open CAPA system and proactively improve the CAPA process. CAPA Software follows incidents that can escalate within CAPA, such as customer complaints, audit results etc. It provides an advance analysis and the ability to report, through reports and online charts, so that the managers get a review of CAPA processes in real time. This way, managers can be more active, they cam follow the entire quality management cycle and can improve they quality system.

3.7. Non-conformance

Non-conformance of the products, materials or components can lead to costly alterations or even withdrawal of the product from the market. The quality, reliability and safety of the product very much depend on the conformities of its technical features and parameters.

Non-conformance is configurable software, simple to use. It is designed to automate, administer and direct paper processes for identifying, evaluating, reviewing and managing material, components, segments and finished products with any non-conformities.

Non-conformance does not only help meet standards, but also maintain conformities for a longer period of time, by optimizing non-conformities process; it accelerates turn-around and keeps the quality system always prepared for inspection and audit.

In manual and hybrid systems reports and the response to non-conformities are unrelated, which leads to decision delays. The non-conformance process that is unrelated to the CAPA system can cause serious problems in timeliness and data accuracy, as well as paperwork thoroughness, which are crucial for conformance. Non-conformance links the non-conformance process to other quality processes. It also provides connecting all of the responsible parties in the purpose of efficient and timely con-conformance management. Also, it can connect with the CAPA module, in the purpose of an automatic escalation when the situation requires.

A manual system is essentially inefficient. Papers can remain sitting in someone's desk, and for a process like non-conformance, this means a delay in resolving incidents. Non-conformance automates data gathering, orientation, monitoring, and the escalation of non-conformance cases. Review and signature of the authorized personnel can be done electronically. The users without authorization have limited access.

Paperwork is followed by a long physical labor. In a manual system it is nearly impossible to identify and avoid obstacles. Non-conformance follows the direction of information and data submitted in an electronic form and enables obstacle identification.

4. COMPARATIVE ANALYSIS OF SOFTWARE SOLUTIONS FOR QMS

For the analysis we used 6 software solutions for QMS (Chart 1.) which facilitates management in domains of quality, environment, health and safety in companies. These software solutions can be applied in different areas of industry (General Manufacturing, High Tech, Healthcare, Pharmaceutical, Biotechnology, Chemical, Medical Devices) by using an adequate combination of modules that the softwares have in their disposal.

Software / Modul	Master Control QMS	HQMS	Iso Tracker	Intelex QMS	*TheSINIC CAQ System*	Vivaldi Software
Document Control	✓	✓	✓	✓	✓	✓
Administering Management Support		✓				
Client Relationship Management		✓		✓		
Complaint Management	✓	✓	✓		✓	✓
Audits Management	✓	✓	✓	✓	✓	✓
Training Management	✓	✓	✓	✓		✓
Change Management	✓	✓				
Non-conformance Management	✓	✓		✓		
Appointment and Contact Management		✓				✓
Preventive Actions	✓	✓		✓		✓
Corrective Actions	✓	✓		✓		✓
Other						

By comparing these software solutions we came to the conclusion that the most significant modules are Document Control, Complaints Management, Audits Management, Training management and CAPA. With the use of these modules quality system processes throughout the companies are linked, as well as the personnel responsible for those processes, and efficient process management is enabled.

It is also clear that Internet environment provides number of advantages for collaborative and flexible software solution.

We suggest development of web based software solution for support for quality management system. (Figure 3 and 4).

We suggest two user types using the QMS Application:

- Administrator (Admin)
- Quality Manager (Manager)

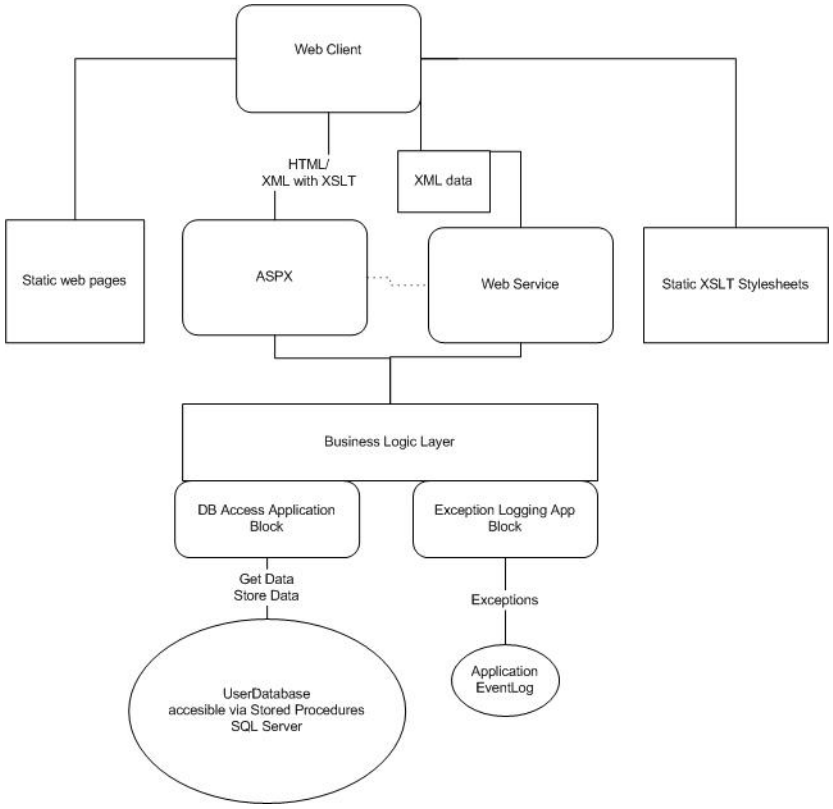

Figure 3 - Conceptual Architecture of Software Solution

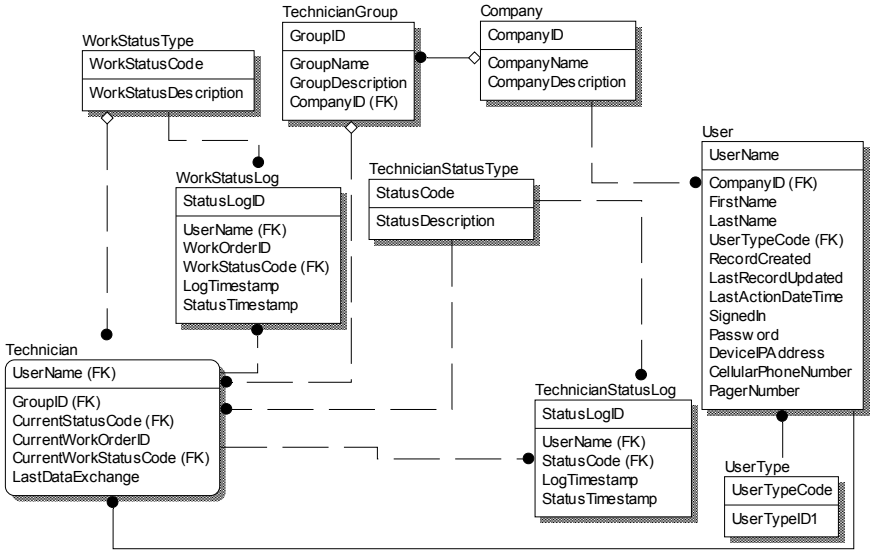

Figure 4 – Part of DB for QMS Application – Quality Tecnitinas and Users

Admin user type presents a dedicated group of user accounts with the following characteristics:

- Have permissions to execute administrative functions.
- Each administrator account belongs to the "Admin" user group/type – there could be more than one administrator logged at the same time.
- Each admin account will be associated with a single territory/company, multiple companies, or the whole system.
- Will be able to monitor statuses, and run reports

Manager user type will:

- Not have the administrative functional privileges.
- Be able to monitor statuses, and run reports.

Software solution based on web technologies could provide environment for multiple users, flexible approach from different hardware ans software platforms.

5. CONCLUSION

All of the compared software solutions provide companies with faster production, the reduction of overall costs and increased efficiency. The solutions are easy to implement, use and maintain. Also, they provide coordination with ISO standards and other regulations.

In this paper the main software modules for QMS from different software vendors are presented, compared and contrasted.

It is also suggested that Internet environemtn and web technologies are appropriate for flexible QMS solutions.

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