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Documentation in a wood industry business system from the viewpoint of filing

Dokumentacija u poslovnim sustavima preradbe drva sa stajališta njezine određenosti za popunjavanje

ABSTRACT • *In the recent period, documentation in business systems has undergone changes mainly due to new technologies, which make up an integral part of a modern business system. The document recording medium is in the process of change, and the electronic medium has gained in importance. Also the content, form and, in particular, the systems of document designation are in the process of change. A proposal for such a system, adapted as appropriate to the characteristics of the wood industry, is described in greater detail of this article. Document designation has an important role both in the documentation flows between the various entities and processes in a business system and in the process of filing. The latter is especially stressed in the article. The study was carried out in a wood industry company.*

Key words: *documentation, archive, designation*

SAŽETAK • *Odnedavno, dokumentacija u poslovnim sustavima pretrpjela je promjene uglavnom zbog novih tehnologija, koje tvore integralni dio modernog poslovnog sustava. Medij za pohranu podataka neprekidno se mijenja i od sve veće važnosti je elektronički medij. Isto tako, mijenjaju se sadržaj i izgled, a posebice sustav određenja dokumentacije. U ovom radu prikazan je vrlo detaljno prijedlog za takav sustav prilagođen potrebama prerade drva. Određenje dokumenta od velike je važnosti i za protok dokumenta između različitih elementata procesa i poslovnog sustava i za proces njegova popunjavanja, što je detaljnije prikazano u radu. Istraživanje je provedeno u radnim uvjetima tvrtke za preradbu drva.*

Ključne riječi: *dokumentacija, pismohrana, određenost*

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1 INTRODUCTION
1 Uvod

Companies are confronted with development of various technologies which directly influence the manner in which individual parts of the business process are carried out. In particular, the fast development of information and telecommunication technologies (ITT) and its strong impact on the information- and documentation-related concept of business operations in a company are the basic reasons for organisational changes in a business system. The introduction of modern ITT into business operations requires, on the one hand, technical changes connected with the technical characteristics of the new information technologies and, on the other hand, organisational changes resulting from the new media of data transmission and recording, the form and content of communication interfaces between individual subjects, as well as the availability of operational and other data for all levels in the organisational structure. Simultaneously with the opening of new possibilities by new technology it is also necessary that in the business system certain conditions be established so that such technology could in fact be introduced. In the framework of this article we present a segment of the preparation of a documentation basis from the viewpoint of the recording medium, the form, content and, in particular, the designation of documents. The latter has an important role both in the documentation flows towards external business entities (suppliers, customers...) and towards the processes and entities within the business system itself, as well as in the process of filing, which is especially pointed out in the article. The study was carried out in a wood industry company.

2 DEFINING THE PROBLEM AND OBJECTIVES
2 Postavljanje problema i ciljevi

In the wood industry, production companies encounter problems resulting from a great number of documents, which accompany a particular customer's order. A great problem is also the paper medium of data recording which is, on the one hand, very rigid in so far as any changes and corrections are involved, and, on the other hand, in spite of the relative permanence of the recording, rather unsuitable for archival storage, in particular because of the requirements for large space and the time consuming search for documents in a file. The problem is further increased by the ever rising quality criteria as demanded by customers. And such a quality level can be ensured by the producers in the first place by the introduction of modern document handling processes.

In addition to the problem of the great scope of documentation, which accompanies a single customer order, in the company there also occurs the problem of a great number of diverse orders resulting from production based on a known buyer. This implies a very great number of different designations for individual documents, and these must be systematised as appropriate so that a particular document could be uniformly defined. With regard to the content each document (information) is classified and allocated to its function, sub-function and to the working phase of the business system. In this way the significance, importance and the advantage of the information and documents are evaluated which are all important for the decision-making process when managing the production process or the entire business system. It gives an assurance and respect to the hierarchical structure of document management. One of the objectives of the study was to determine a manner and system of document designation, which would ensure their traceability and, ultimately, uniformly define place in the file.

3 DOCUMENTATION IN A BUSINESS SYSTEM
3 Dokumentacija u poslovnim sustavima

3.1 Types of documentation

A document can be defined as »a record on a piece of paper (note of the author: or any other writing medium) with official validity, which shows or confirms the existence of something« (Turk, 1987). Recorded on the document are the data whose structure and/or content depend on its designed purpose. The term documentation should be deemed to mean a group of documents belonging together on the basis of a certain clue; such a code is ordinarily the process in which the documentation is being used, for example, production, sales and similar documentation. But documents can also be assembled in documentation on the basis of other requirements.

Documentation forms the basis for the transmission of data and information between individual business subjects. Usually, documents are recorded on paper, but with the development of information and telecommunication technologies (ITT), in the recent period the role of electronic documents has

become increasingly more important. Naturally, this is just the basic classification of documents (documentation), for these can also be classified according to their content, place of origin, place of use etc.

On the basis of the above the types of classification of a business documentation system based on a few principal criteria allow one to become aware of the complexity of the problems relating to document management in a business system and to the reviewability of the documentation used in reference to any kind of business event, activity or process in a business system.

Due to the above mentioned considerations, which are directly connected with documentation, it is very important that each individual document has an appropriate form and, in particular, such content as corresponds with the actual need for the data at the place of use of the document. A document must comprise just those data, which are necessary or sufficient for a particular process in which they are being used. The data must be precise and should not be repeated in one and the same document even if expressed in a different form. In designing documents, one should also take into consideration the purpose of a document used for transmitting the data between two business subjects.

In addition to the foregoing, a business documentation system should also take into consideration the principle of traceability and of the uniform designation of documents. In a business system the documents have to be classified and allocated according to the business functions to which the documents refer and provide the information. These documents have an important influence on the decision making process of a particular business function.

3.2 Designation and traceability of documentation

Each document should be uniformly designated, and this is usually ensured by setting up a system of designation in which to each document a designation or identification number is assigned. Such designation must ensure a uniform determination of a document, so that by means of such a designation the document can be easily found among the whole of the documents and, it must make possible the determination of the group of documents (the documentation concerning a client's order) to which such a document belongs.

The latter characteristic of designation results from the need for the traceability of the documentation, which is important in

particular in ensuring quality management and direction of the business process (according to ISO 9000, which suggests a functional organisation of documents - information). The principle of the traceability of documentation ensures that a document can be traced throughout a business process, including the collection and storage of documentation for filing purposes. This can best be achieved by assigning the appropriate designations to individual documents, which must then make possible the generating of a new document coming next in the business process and, ultimately, the determining of the group to which a particular document belongs (Vujoševič, 1992). The latter is very important in the case of the re-use of a document of an older date (e.g., in responding to complaints) or of a search for specific technological solutions that were already used in reference with an order in the past.

According to ISO 9001, a document designation system should ensure the uniform designation and traceability of documents. A comprehensive document identification comprises the following (Potočnik, 1996):

- document number (in practical cases mostly consisting of a designation for the type of document and of the number itself),
- name of document,
- consecutive number of the issue (version),
- date of validity,
- first name, family name and signature of the person responsible for authorisation,
- first name, family name and signature of the person who prepared the document,
- page number (e.g., 2 through 5).

The document number and its contents are the key part of the documentation designation in so far as traceability is concerned. Such designation represents a uniform identification of the document which provides the basis for setting up a system of tracing documents throughout the business process, as well as for setting up a document filing system which makes possible efficient and precise searching of a specific document in the file. In practice, an identification number mostly consists of a document number, which is most often the consecutive number of a particular event within the business system (customer's order, workshop documentation, sales documentation, paying documentation,) and the designation of a document type, which specifically determines each document within a set of different documents in one documentation (those con-

cerning a particular event). Document designation is very important when using modern document handling technologies.

3.3 Computer-aided documentation flows

At home and abroad, for the exchange of data or documents between entities within a business system and in the outward direction (with business partners and their processes and entities), modern business systems use information and telecommunication technology (ITT) more and more. This technology makes possible the preparation of documents by means of computer processing, the transfer of such documents via a telecommunication network, on-line use of transferred data in the receiver's process and, last but not least, an efficient collection and storage of such data in a file, where these are always accessible for use as often as required. In the case of computer processing of a document what is very important is in particular an efficient and precise system of designation (Kropivšek, 1996).

An essential advantage of computer-aided documentation flows in all phases of the above mentioned use of ITT is precision and a quick transmission of data between entities, and these two factors are closely linked with the quality and usefulness of the information transmitted by the data (Gričar, 1988). Precision of data is ensured on the one hand by an efficient transmission of data between two subjects directly from one computer to another and, on the other hand, by the introduction of such mechanisms in the entire systems as to prevent any unnecessary occurrence of mistakes.

With having regard to the scope of the use of ITT in the business operations of a company, we distinguish between (Kropivšek, 1996):

1. *computer-aided internal business operations of a company:* the term covers the preparation, transfer and storage of data/documents in the framework of a business system by means of ITT; from a technological viewpoint, these are primarily the various CAD tools (designing), business information systems (computer networks, central data base, screen interfaces, ...), data bases, computer systems for production management and control, and

2. *computerised data exchange with partners*: this comprises the so-called inter-organisational systems based on information technology; technological bases for such systems are provided by computers, telecommunications and standards, which make possible the flow of information, also known under the term electronic data interchange (EDI).

Both applications of ITT in company business operations are very important from the viewpoint of the control, collection and storage of documents/data involved in internal business operations as well as in business transactions of the company in the outward direction. In this field it is important to mention the period of archival storage on an electronic medium. For some documents this period is regulated by legal acts (3-6 years). The rest of the documents are stored in the archive for shorter or longer periods depending on their usefulness for the business process. The period of storage has a great impact on the electronic archive capacity and therefore has to be consistently monitored and considered.

4 RESULTS
4 Rezultati

4.1 Research activities and area of research

The problem was studied in a wood industry company. In the initial part of the research, we carried an analysis of the existing situation in the company concerned, and it was established that in the entire business system more than 1.7 million documents, or more than 5.6 million A4 paper pages had to be managed. These two figures dictate the need for the use of a modern approach to document handling as made possible by the recording media developed in the recent period and on which document designation also depends, and, on the other hand, they also require the setting up of an efficient system of organisation of files, otherwise it would in the opposite case be impossible or at least time consuming to find a particular document or piece of information in a file. With this in mind, a proposal was prepared which takes into consideration both issues: the part of the organisation of document handling and the ultimate document filing relating to the documentation proper and the part relating to the technological processes. Here, our attention will focus on the first part, that is, the one relating to documentation.

4.2 Document content and recording medium

As the primary role of a document is to transmit data between entities within a business system and outside it, to other business systems, it is the contents of the document that makes the usefulness of the document greater or smaller. In this connec-

tion it is important that the document should contain just the data which are necessary and sufficient for a particular process. The data must be precise and should not be repeated in a document even if they are expressed in other forms. This is because repetitive data are often accompanied by inconsistencies, which render the preparation and maintenance of the information system more difficult.

When analysing the documentation flows in a business system under consideration, we established that the content of certain documents overlapped at various places, and that with the introduction of a computer-aided information system some documents were no longer needed (e.g., the dispatch document, which just informs the accountancy department that a certain order has been completed and that it is ready for dispatching from the warehouse, would no longer be needed if in the accountancy department this information could be obtained independently in the general operational data base.).

The content of the document has a major impact on the form of the document. Documents must be in the form corresponding to their designed use. Thus, all documentation should be adapted to the place of use, and it should be easy and unambiguous to read regardless of whether it is recorded on paper or electronic medium. The form and content of documents in the case of automatic data exchange with business partners are clearly defined by document standards. In the case of internal transactions, the basic outlines are provided by ISO 9000.

With the introduction of electronic documents into business operations, both the content and form of documents undergo changes. The content changes in so far as this is supported by the more simple connections between business subjects. Certain fields in some documents will become superfluous because they are copied from some other document, which, in electronic medium, is simply "appended" to the former, but they are stored separately. In this way we gain in transparency and also as regards the quantity of the stored documentation. The form of electronic documents is adapted to the work in the electronic medium (screen interfaces). Instead of formatting paper documents for their use in a certain process and designing them as unalterable throughout the entire process, electronic documents are formatted for each working place separately. The content remains the same, but the form (in particular screen interfaces) changes in accordance with the workplaces. As regards

their form, documents should be user-friendly and specially adapted to the capabilities of the one for whom the document is intended. When entering certain data in such document, it is necessary to prevent logical errors (by introducing restrictions and simultaneous control of individual fields), which ultimately increases the reliability of the information contained in the document. The collecting of documentation on electronic medium in the file is also much more precise and practically errorless and without delays, which is due to the automated data flow; each document used and comprising all changes and additions travels to a standard place where it is then stored on a physical medium (temporarily). Thus, it is easy to control the received documentation, to update it in the case when its content has undergone changes during the business process, and also to search for a particular document needed in the process of consideration of complaints or in the case of any subsequent use of particular documents and data.

4.3 Designation of documents

Designation of documents in a business system should ensure:
- uniform determination of a document in the business system;
- traceability - to be able to know at all times the place in the system where a particular document can be found;
- precise location in the file assigned to particular documentation.

A document identification number is the key part in document designation. In automated data processing, numerical value represents one of the essential pieces of information for review and processing purposes. The document identification number in practical cases mostly consists of a document number, which is usually identical with a consecutive number of an event in the business system, and a designation for the document type.

On the basis of the analysis carried out, of the envisaged technological and technical solutions for documentation handling and the set-up of the organisation of filing, a proposal was prepared concerning the designating of documentation. The proposal is based on the following general assumptions:
- designation must be strictly numerical, because of the envisaged automatic processing of the designation in the framework of the data bases;
- the structure of document designation should make possible the various types of automatic processing in the framework of

the data bases which should include a list of the stored documents, as well as the tracing of documents throughout the business process;

- in the proposed manner of designation, documents should be separated, for the designation is different in the case of documents generated alongside the business process (plans, technical documentation) and the various operational documents (orders, workshop documentation, ...).

The designation proposed in the framework of this study envisages the following matrix for the formation of an identification number (Kropivšek, 1998):

1. *designation for documents generated alongside the production process* (plans, technical documentation, rules, ...) - comprises process management and direction documents

- this group of documents has a simpler designation because, in general, such documents are less numerous;
- the designation consists of one two-digit and two four-digit numbers delimited by a point:

ii.xxxx.yyyy

ii - document type (according to the code list)

xxxx - consecutive document number

yyyy - year of generation of the document

2. *designation for operational documents* (orders, delivery notes, workshop documentation, ...) - this is the documentation used for material and production processes management

- it must consist of four parts, each delimited from the other by a point:

ii.xxx.aaaaa.yyyy

ii - document type (according to the code list)

xxx - consecutive document number within one documentation set

aaaaa - designation of documentation to which a particular document

Key to designations:

- *document type* is a two digit number since the analysis revealed that in a business system there are no more than a few tens of different document types. For the purpose of developing the entire document

designation it is necessary first to determine the document types and prepare the so-called code list of document types according to which individual document groups are then classified;

- *consecutive number of document* defines a particular document in terms of time, and this satisfies the rule of the need for the traceability of the documents throughout the business process; this applies both to the first and the second group;
- *documentation designation* assigns each operational document to a precise location in the business system, as well as in the file, and this is most important because of the great number of different orders of a buyer in a business system (as pointed out already when defining the problem). This increases the transparency of the file and simplifies document management in the file and, of course, in the business system in general. It is the designation of a business event and the processes related to the same;
- *year of generation of the document* is a four-digit number designation and is so designed mainly on the basis of experience with two-digit designation systems in anticipation of transition into the new millennium.

Not only is a document uniformly designated by means of such designations, but also its content is easy to determine, for on the basis of the designation key information concerning the content of the document is obtained. In filing, in the case of electronic medium of document recording this designation is supplemented by additional fields, and this simplifies and improves the quality of the search for a document in the file. Key words can also be added, to make the designation even more comprehensive.

4.4 Process of filing and designating of documentation

The filing process is closely connected with documents in the documentation flows of a business system, which form its substance, and with the designation of such documents, which is a powerful tool for use in managing the content of the file. Figure 1 shows documentation flows in a wood industry production company, with focus on the file and the documentation arriving from individual parts of the business systems into the file. The file is divided into several logical units, which are directed from a single centre. Documentation flows in the direction from the business system to the file are confined
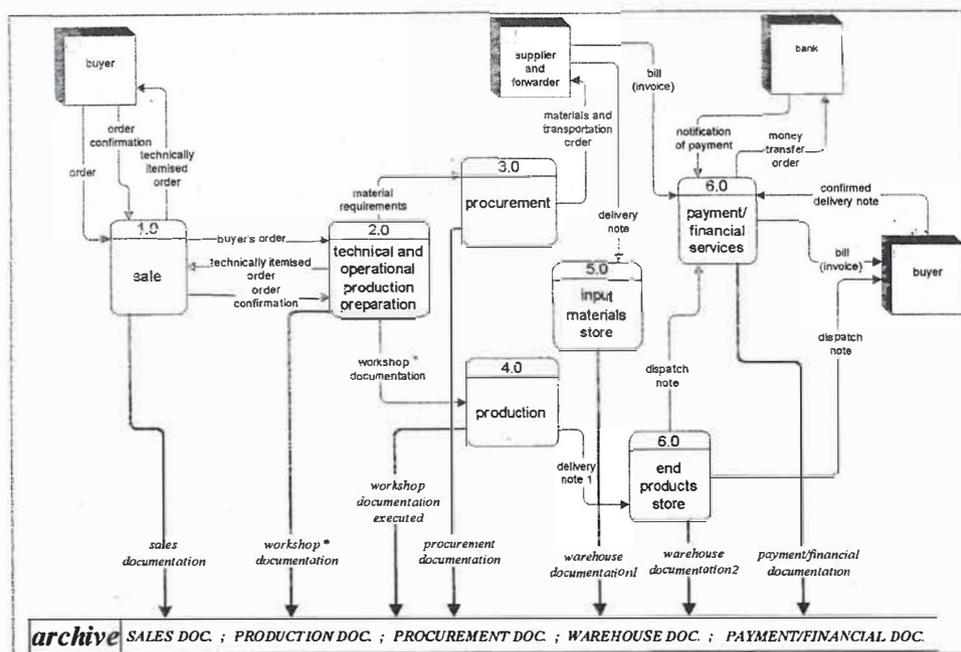
Figure 1.
Data flow diagram (DFD) in a wood industry production company, with focuses on the documentation flows for filing purposes ●
Diagram toka podataka u drvnoindustrijskoj tvrtki s poudarkom na toku dokumentacije za potrebe pismohrane dokumentacije

Key: *workshop documentation includes: work order, technological processes, lists of materials, other workshop documentation (recipes, ...)*

to documentation which, according to the definition of the designation process, belongs to the second group. The designation of each individual document should as a rule also comprise a designation referring to the documentation to which it belongs (designation »aaaa« in the above proposed matrix). This designation is important primarily because of more precise classification and allocation of documents in the file and because, ultimately, it ensures a more simple and efficient search for a specific document (belonging to a specific order of a buyer) in the file. The latter is the fundamental role of the file, which should store documents primarily with a view to ensure that these can be found and reviewed or re-used at any time. This is very important primarily in settling disputes (complaints) with business partners and in the decision-making process, for which the information is derived mostly from the file.

For a presentation of documentation flows the method of drawing data flow diagrams (DFD) is most commonly used (Kroenke, 1992). Here are presented all the important documentation flows from the aspect of archiving in the following DFD.

Of course, appropriate designation of documents and their filing at a common location are not enough for efficient document filing. In addition to the foregoing, an efficient file must in the first place be aligned with the structure and process of the business system, it must be designed in conformity with the modern technological trends in the field of information science, etc. Also, des-

ignation and filing of documentation must be carefully planned and in close correlation with the entire business system and its functions.

5 CONCLUSION
5 Zaključak

The part of the proposal relating to documentation deals with the content and form of the document, the recording medium and, in particular, the systems of designation. It has been established that the development of ITT has a major impact also on the documentation-related concept of the organisation of business operations of a modern business system. Its impact shows in particular in the need for new recording media, which must make possible the generation, transfer and storage of documents in an electronic form. Also dependent on such new recording media are the modified contents and form of the individual documents, which are in the first place more effective (they contain precisely those data which the receiver of the document needs for his/her work), and, of course, very flexible in the event of changes or corrections. Also, new document handling methods, as well as ISO 9000 recommendations require a specific manner of forming the identification number, which should ensure a uniform determination of the document in its active role, where what is of particular importance is the traceability of the same throughout the business process. Additionally, this also makes possible an

easy handling of a document in the file as well. A special matrix for the identification number was also defined, which ensures a uniform document designation and also provides the basic information about the contents of the document. This matrix for the formation of an identification number of the document is most suitable for computer-aided business operations and an electronic file. Documentation flows in a business system are clearly shown and defined in a schematic diagram, in particular from the viewpoint of the documentation flows in the direction from the business process to the file. Knowledge of these flows is very important in understanding the importance of document designation to ensure document traceability in a business process and in storing the documents in a file.

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