Workflow in Treatment Process

Dr. Sumagna Patnaik, Dr. Towheed Sulatna

Professor, J. B. Institute of Engineering & Technology, Hyderabad, Telangana, India

ABSTRACT

This paper presents an overview of treatment processes. In order to discuss the workflow in a treatment process, treatment activities must be defined and analyzed. This paper describes the number of treatment activities which will be considered for defining the Treatment process.

Keywords: Workflow, TReatflow, Activity

INTRODUCTION

According to the golden rule "First organize, then computerize". This implied that processes were developed with the implicit assumption that the treatment process would primarily be managed by people. Then an organizational structure would be developed under which groups of related people or departments were assigned particular tasks. Then people consider information systems could partially support the task. We have now reached to a point that we first design the treatment processes in a more abstract way, without considering its implementation, and then we design the information systems. In fact, we can decide whether each activity in a process should be performed by an information system or a person.

Information systems are used to reduce people's workload, particularly in hospitals. By thoroughly analyzing what people in hospitals they do - by asking why they do it - the following information processing functions have been identified: registration, writing symptoms, and filing the registration form and communicating information to the respective patients, doctors and administrators.

These analyses have led to the development of the following products or services : word processors, drawing systems, spreadsheet systems, database systems and electronic-mail systems. All these systems are generic in nature:

These are not limited to a specific business application - as, say, accounting systems are and so are widely used. Thanks to software which is of high quality but relatively cheap. (In fact, accounting systems are widely usable, but not as extensively as word processors.)

Previously the functional structure of an organization helped us to know the details about the organization which played the most important role in how it was organized. Now it is the business processes which are crucial. For this, a good frame of understanding the system is required so that business processes can be clearly defined and analyzed.

Similarly in order to discuss the workflow in a treatment process, treatment activities must be defined and analyzed.

Definition is important when preparing a (re)design, and before deciding whether to actually implement a new treatment process it is very important to first establish whether it will work properly. To do this, one must be able to analyze the treatment process defined. This can be done in a number of ways. For example, formal methods can be used to identify processes' properties, or lack of them. Another analytical method uses simulation techniques, sometimes supported by computer animation. Supporting software tools are essential to this.

This paper presents a reference framework for defining treatment processes. In so doing, extensive use is made of Petri nets, a formal concept. Another useful property is that it is easy to understand and eases communication between designers and users. There also exist software tools which support the definition and analysis of processes. Once new business processes have been developed, they then have to be implemented.

The management and the execution of treatment processes are carried by people, with the help of information systems. As already mentioned, during recent years a new class of generic software has been evolving: Workflow management systems. This software supports business processes by taking on their information logistics. In other words, workflow management systems ensure that the right information reaches the right person at the right time, or is submitted to the right computer application at the right moment.

This paper begins by describing the organization of workflows. This is important in order to be able to understand the role which workflow management systems can play, and how they should be applied. There follows the modeling workflows. This includes a simple introduction to Petri-net theory and covers the management of resources which contribute to business processes. These resources may be people, but can also be machines or computer systems. Techniques for analyzing processes are also considered. Then workflow management systems are introduced, with both their functions and architecture being covered. There then follows a methodology for developing workflow applications.

Organizing Treat flows:
Firstly, it is used to define the Treatment process-management context within which workflow management systems operate. Secondly, it is used to model and analyze processes. And thirdly, it is used to describe the functionality and architecture of workflow management systems.

Processes:
There are many different types of work. For example: Registration, undergoing blood test, diagnosis and prescribing for treatment etc. In all of these examples, we can see the one tangible 'thing' which is produced or modified: the administrative staff, the patient, the doctor. Here, we shall call such a 'thing' a *case*. Other terms used are treatment, report etc. A case does not need be a specific object; it can also be more abstract - like, say, a lawsuit or an insurance claim. A building project or the assembly of a car in a factory are also examples of cases. Working on a case where every case has a beginning and an end, and each case can be distinguished from other case. Each case involves a treatment *process* being performed. A treatment process consists of a number of treatment activities which need to be carried out and a set of *conditions*

which determine the order of the activities. A treatment process can also be called a *procedure*. A task is a logical unit of work which is carried out as a single whole by one *resource*. A resource is the generic name for a person, machine or group of persons or machines which can perform specific activities.

As an example of a treatment process, we shall examine how a hospital deals with a patient for treatment. We can identify the following activities:
1. Registration of patient
2. Entering the symptoms of patient
3. Provision of *emergency treatment*
4. Differentiate the type of treatment
5. Checking the patient's health insurance *policy*, to confirm that it does in principle cover what has been claimed for
6. R*ejection*, if task 4 has a negative result;
7. Producing a *rejection letter*;
8. Estimating the *amount to be paid*, based upon the treatment
9. Recording of patient's *reaction*: acceptance or objection;
10. Payment for treatment
11. Closure of treatment process file

Here we can see 10 activities which do not always need to be performed in the order shown. Two or more treatment activities which must be performed in a strict order are called a *sequence*. For some cases, certain activities do not need to be carried out. One example is the appointment of a doctor, if the claim report is clear and the amount of the claim is below a particular value. Other treatment activities which do not always need to be performed are: sending patient to emergency treatment or sending patient information. Sometimes, therefore, a choice between two or more treatment activities can be made. This we call a *selection*. There are also activities which can be performed *in parallel*, for example checking the blood pressure and undergoing blood test. These activities must both be completed before the 'rejection' task can begin. This is called *synchronization*.

This example of a treatment process also includes *iteration*, or repetition - namely, the repeated treatment of a patient until the BP and blood sugar level becomes normal. In theory, this could go on forever. Figure 1.1 shows the order of the treatment activities as a *process diagram*: an arrow from task A to task B means that A must be done before B. We

can also see that the diagram contains more information than the list of activities. For example, it shows that a treatment process can only be terminated once any emergency treatment measures required have been taken. Each activity is indicated by a rectangle. If a activity has more than one successor activity – that is, if it has more than one arrow leading from it - then precisely *one* of these subsequent activities must be chosen during the activity in question. If a activity has more than one predecessor - more than one arrow leading to it - then *all* of these must be completed before that activity can begin (synchronization). The circles indicate where particular workflows meet or split. The gray circles have *several* precursor activities and only *one*

subsequent activity. They indicate that only one of the preceding activities needs to be performed in order to continue. The black circles have *one* predecessor and *several* subsequent activities. They show that all the subsequent activities must be performed. (The circles can be regarded as 'dummy' tasks).

Conclusion:

It is used to define the Treatment process-management context within which workflow management systems operate. Secondly, it is used to model and analyze processes. And thirdly, it is used to describe the functionality and architecture of workflow management systems.