False-Positive (FP). Hence, the accuracy of 75% should be improved in the further study in the field of business process diagrams evaluation against modeling rules.

Conclusion. In this paper, the relevant engineering problem for improving the modeling rule conformance of business process diagrams has been solved by developing an appropriate software solution. Improving conformance to modeling standards in business process diagrams is critical because it promotes uniformity and consistency in the representation of business processes, making them easier to understand, analyze, and communicate. Adherence to modeling standards improves clarity, minimizes ambiguity, and enables more effective collaboration among stakeholders, resulting in better decision making, process optimization, and overall operational efficiency.

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SOFTWARE TOOL FOR BUSINESS PROCESS MODEL COMPREHENSIBILITY ASSESSMENT

ANDRII KOPP, VADYM SHEVELIEV, YAGIZ ALI TURGUT
(andrii.kopp@khpi.edu.ua, vadym.sheveliev@cs.khpi.edu.ua, yagiz_ali.turgut@cs.khpi.edu.ua)
National Technical University «Kharkiv Polytechnic Institute»

Abstract. *This study addresses the important engineering problem of business process models comprehensibility improvement. Improvement of the of business process models comprehensibility is critical since it has a direct influence on an organization's performance and efficiency. Hence, the object of this study is the process of business process models comprehensibility assessment. The subject of the study is the software for business process models comprehensibility assessment. The study aims to improve the business process models comprehensibility by developing a software tool for its assessment.*

Problem statement. Many organizations today use conceptual models to capture their business processes. These models provide a framework for activities related to the business process life cycle, such as process analysis, process redesign, process evaluation, and so on [1]. Hundreds of models have been created by designers with different backgrounds as a result of various modeling projects for these processes. Inadequate quality assurance is one of the major barriers to more effective implementation of these process models. This paper lays the groundwork for the development of automated analysis approaches that can provide such quality assurance.

In fact, a large number of business process models suffer from quality problems, with reliability issues affecting 5% to 30% of models. At least some of these are motivated by the increasing number of business process modeling projects. Such inadequate development leads to problems at the model design and maintenance stages as well. Employees are increasingly involved in the modeling activity. Because many of these inexperienced architects lack modeling expertise and training, the newly created models aren't always of high quality.

As a result, poorly designed business process models that are incomprehensible to interested participants and other stakeholders can lead to errors when such business processes are executed or reviewed for future refinement. These misinterpretations can result in workflow execution failures, monetary costs, or even catastrophic impacts to essential business activities involving human activity and nature.

In addition, the fact that many organizations maintain thousands of models requires automatic quality assurance, which is typically lacking in today’s systems. Automated verification and revision of business process models is a potential way to increase the quality of the process model.

Study aim and tasks. The proliferation of process modeling efforts that require dozens of architects with varying levels of experience to create and maintain thousands of models raises the question of how quality assurance can be specified and performed in an automated manner. Understanding the traceability of business process model elements provides the foundation for developing such automated solutions.

Therefore, the object of this study is the process of business process models comprehensibility assessment. The subject of the study is the software for business process models comprehensibility assessment. The study aims to improve the business process models comprehensibility by developing a software tool for its assessment.

The following tasks must be completed in order to fulfill the research purpose:

1) propose an algorithm for business process models comprehensibility assessment;

2) develop the software implementation of the proposed algorithm;

3) use the software to assess the business process models comprehensibility.

Research results. Let us use Business Process Model and Notation (BPMN) to describe and represent business process models. According to empirical studies, process models in reality do not always match the requirements for identifying activities, such as the “verb-object” style. There are three types of activity labeling styles [2]. First, the verb-object style specifies an activity label as a verb followed by a business object. Second, there are several methods to define an “action-noun” as an activity label. In this scenario, the action is expressed as a gerund or predicate verb rather than a verb. There is also a third type of activity label that has nothing to do with the activity. For example, “information system” does not refer to the activity as either a verb or a noun.

The degree of business process model comprehensibility (explained as the correspondence of activity labels to “verb-object” naming style) may be described as follows [3]:

$$C(ProcessModel) = \frac{1}{Number\ of\ activities}\sum Verb - object\ activities.$$

The metric values range from 0 to 1, where 0 indicates poor correlation of business process activity labels with the verb-object labeling style, and therefore poor understandability. On the other hand, 1 indicates an extremely good correlation of business process activity labels with the verb-object labeling style and therefore very good comprehensibility.

As a result, the following is the basic algorithm that may be used in this study to assess the comprehensibility of business process models:

1) gather all “Task” and “Sub-Process” components from the BPMN file;

2) get text labels for all objects obtained;

3) divide each text label into individual words, obtaining the first one for each label;

4) using textual analysis, determine if each initial word is a verb;

5) calculate the overall correlation to verb value for all initial words

6) calculate the average correspondence value for entire BPMN model.

The proposed algorithm is illustrated in Fig. 1.

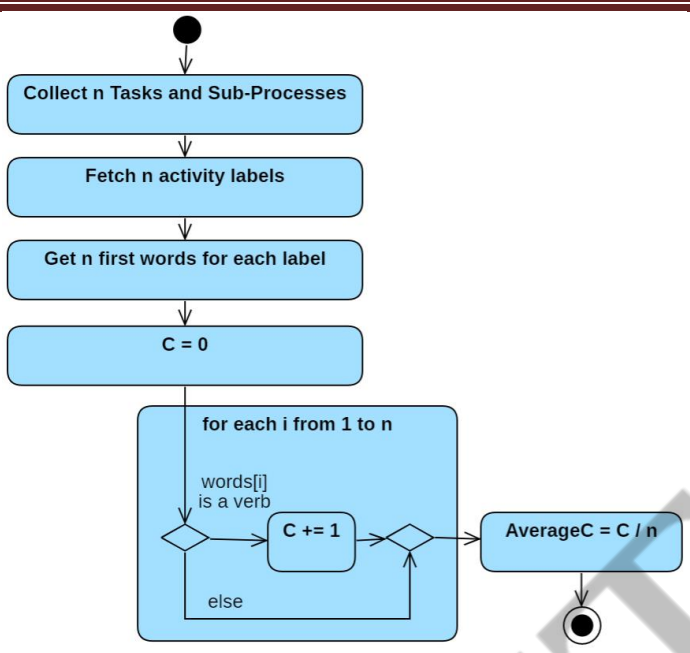

Figure 1 – The algorithm for comprehensibility assessment of BPMN models

The software implementation of the proposed algorithm (Fig. 1) uses the 3-layer client-server architecture, based on Java platform for the backend, MySQL as the database management system (DBMS), HTML (Hyper Text Markup Language) and CSS (Cascading Style Sheets) for the frontend.

To make experimental computations, let us use business process BPMN models provided in the Camunda GitHub repository [4]. Participants in Camunda's training sessions generated all of these models. Fig. 2 depicts one of these BPMN models, which defines the goods dispatch business process.

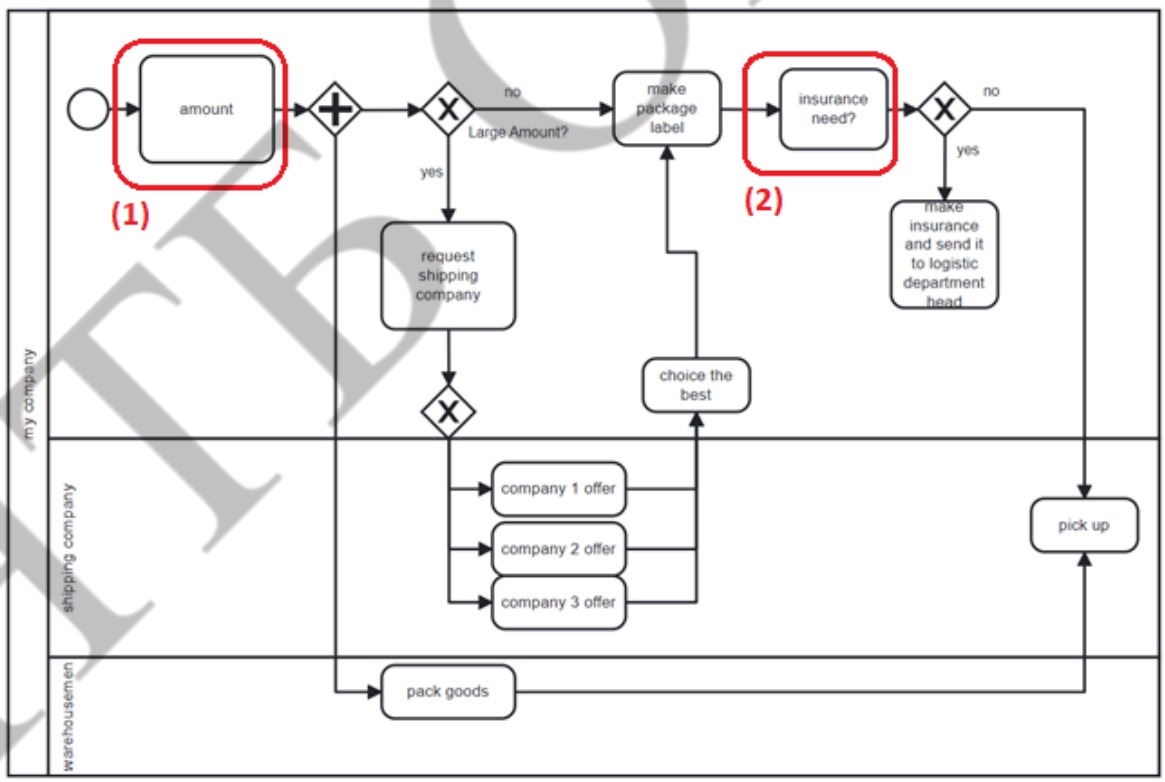

Figure 2 – Sample goods dispatch business process model [4]

Therefore, the BPMN model of goods dispatch process (Fig. 2) has a comprehensibility score of $C(ProcessModel) = 0.82$ because its activities (1) and (2), highlighted in the diagram above, do not follow the "verb-object" style [2].

Conclusion. The following tasks were completed in this study to solve the problem of business process models comprehensibility assessment:

1) the algorithm for business process models comprehensibility assessment is proposed;
2) the software implementation of the proposed algorithm is developed;
3) the software is used to assess the comprehensibility of BPMN process models.

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DEVELOPMENT OF TELEGRAM CHANNEL AND TELEGRAM BOT FOR THE EDUCATIONAL SCHOOL OF ENGLISH LANGUAGE

NIYAZDZHANOV R.R., ISMAILOVA R.T.(r.ismailova@turan-edu.kz)
Turan University

The relevance of the work is that the development of intelligent agent today has become actively gaining popularity, in every industry, because we all know that through a telegram bot we can safely get various references.

This work describes in detail the creation of an intelligent agent for the educational center of the English language school. The telegram bot is configured to sort the client base and identify the main directions and areas. To systematize the work of the language school and facilitate organizational moments, i.e. the Telegram bot is fully programmed through Python.

It is created as quickly and easily, for this purpose it is necessary to find the bot "BotFather" in the Telegram search engine and here too everything will be demonstrated step by step by photo. When you find the bot, be sure to find the official bot with a blue check mark. As shown in the picture immediately click on the icon "start" as in Figure 1 after which the bot provides a list of services that must be selected, here you must also select "newbot" After that the bot offers to write the name of the bot, then enter the bot, according to the template, which gives the bot, there may be errors if the name of the bot already exists, then you will need to enter a new one. This chat bot has been successfully created. Chat Bot for the educational center of English language is successfully created and connected, the platform for further work is created. And also immediately through "BotFather" you can edit our bot, add the necessary picture, write a full description of the bot, write data all these manipulations were carried out directly through the bot "BotFather" . and a very important point to save the bot token, because when you write the code it will also necessarily be needed to refer to the bot and it was working and commands run.(Figure 1).