Management Process Knowledge in the Subject Area and Notion Of Contextual Dependence

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Abstract – For the best results in any area work should focus on the right combination of people and technology. Context-sensitive methods of control are effective to manage the process of acquiring knowledge. The context act accumulated knowledge or part of the general knowledge base of the organization. Using context provides data and knowledge, which are available at the moment and meaningful for a particular task. The context properties tapering region databases or knowledge bases, emerging area with significant information and therefore the problem that organize solution more quickly and accurately.

Key words – data, knowledge, context, database, knowledge base.

I. Introduction

Characteristics of some knowledge enable you to develop and achieve success in any area of any system. Based on existing knowledge in the process of analytical thinking, new conclusions gained new knowledge and so on. The process of knowledge creation can call endlessly and play important role in given process of the accumulation and transmission of acquired knowledge.

While exchanging information between people, not all data is transferred directly - they can be provided indirectly. This is not a direct way, which can be realized through:

• The environment where the exchange of information is done. This environment can include time, place and circumstances of information exchange.

• Previous experience of participants. Some facts transmitted by the exchange may have radically different interpretation, if one or more people have specific experience.

• Preliminary steps information exchange. For example, the use of pronouns in language is almost entirely based on this principle.

Thus, we can conclude that much of the information that is a part of this exchange can be interpreted correctly only while analyse of a particular set of factors that are called context.

Different sources give different definitions of context, the difference mainly depend on the area of research.

According to Wikipedia,

Context (lat. Contextus - close relationship wreath) - segment of the text written or oral language with complete idea that allows you to accurately set the individual words or expressions that are part of it. This is of particular use of language units in speech and its linguistic environment, the situation in communication.

Talk based on context - means not to repeat what was said just that, using current concepts used in the discussion of abstraction and semantic field. Losing context means losing the ability to understand, based companion, or interpret his words in a different sense than what followed from the context.

Kontekstualnist (conditionality context) - a condition for meaningful use of a particular language units, in view of its linguistic environment and situation of speech communication [1].

In a work of art aesthetic load each element of the text defines the close context (phrase episodes situation) and a wide context (work, writer).

In a broader sense of context - an environment in which there is an object (such as "Library and the book in the context of time"). From a formal point of view context is a specific reference system namespace.

These definitions can be considered to classical notion of context. However, there are other definitions which also have the right to exist.

For example, the context is widely used through the Internet - in order to provide information that is specific for one of the millions users who access the resource. Among the factors that shape the context, including the location of user's previous queries to this or other resources and more.

When the context is an understood area within which knowledge was acquired and, therefore, which they can be considered as reliable. The use of context in the acquisition of knowledge restricts the reliability of the acquired knowledge and indicates a point of knowledge as the most correct.

In the field of human-machine interaction and computer programming context is considered property, which is inherent interaction. Context is regarded as the accumulated knowledge that shares objects involved in the interaction. Interaction and context restrict each other, context specific situation determines on the behavior of objects in this situation; behavior, in addition, changes the context of the situation.

Under artificial intelligence associated with work of knowledge bases and ontologies, context is a part of the knowledge base, which is involved in the process of inference, solving some problem. Using context provides data and knowledge, current at the moment and meaningful for a particular task. Context narrows the field of databases or knowledge bases, forming a region with important information in this situation [2].

By the basis generalized notion of context the task is to ensure that the context for the situation on the basis of the analysis which can be obtained is relevant to the current job information.

From a formal point of context is a system of namespace references. Namespace is a set of somehow related names or terms. Namespaces are an important part of the context as using names, since the actual meaning of the name may vary depending on whether the namespace is it [4].

Examples of namespaces are IP addresses namespace Wikipedia, taxonomy wildlife, chemical nomenclature, UDC (Universal Decimal Classification) and others.

Objects context may make domain objects, tasks that are coming, the ways in which context can manage knowledge

domain. Given the development of information technologies and their orientation to the user, the elements that constitute the extended context so that the user application and environment are also elements of context.

Context is any information that can be used to describe a situation in which there is currently an object, and information that can be obtained from this object at the same time as the object can be a user, environment, physical object and application. Regarding the application context provides information that affects decision making.

The above definition clarifies the concept of common situations. This characterized the situation arising from the interaction of objects. Thus, the context information forms part of the space used by objects in their interaction.

Aspect application allows to use context, not directly on the logical conclusion to limit its only significant of the rules or procedures. The context is a meaning to manage knowledge bases, thus avoiding redundancy and optimize knowledge extraction. Submission of context in a formalized form allows interpretation based on user context to provide an explanation of the program chosen by the decision, for example the hypothesis. Thus, in terms of the application, the context makes better use of the resources of the system operations environment. In terms of user context gives real, relevant and available to solve tasks information [3].

II. Types And Properties Of Context

The distribution of species in the context depends on the respect of an object using a context for chosen properties he considered.

Regarding changes in the context that arise during interactions while using context objects are considered two: static and dynamic contexts.

The static context includes the knowledge that has no changes in the interaction between objects. They respond knowledge of the subject area.

Dynamic context describes the changing of knowledge.

The dynamic nature of context manifests during using real context, for example, when solving the problem.

There are three types of context depending on the types of knowledge, which have engaged in some situations, objects and knowledge used in this situation:

1) The external context or contextual knowledge – of the context of interest in this situation for the user. Contextual knowledge is the knowledge, implied or accumulated with which objects using the context encountered in the process of solving this or similar problems.

2) External knowledge - of the context, is not included in the contextual knowledge. The external context is not related to a specific problem to be solved, it is a knowledge additionally known to all objects that use context.

3) internal or procedural context - is part of contextual knowledge concretized according to the current target. That goal may be a solution to the current problem or

performing an action. The amount of knowledge that make up the procedural context, should be sufficient to achieve current goals. [6]

In relation to the context-driven systems there are different types of context like shared calculating context, the context of the user and the physical context (Figure 1).
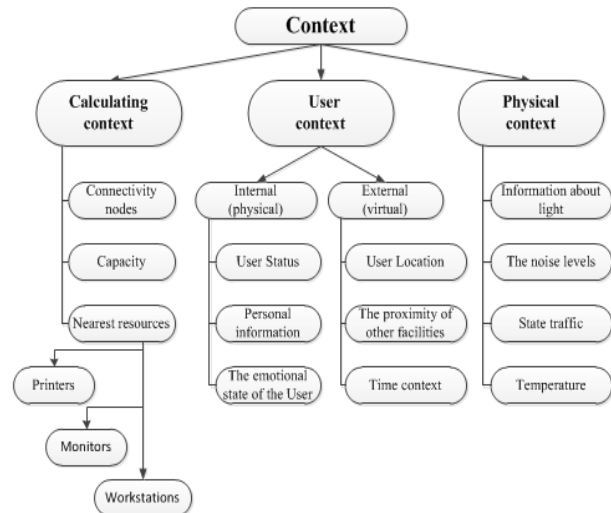

Fig.1. Separation of context regarding context-driven system

Another division of context with respect to the user includes:
- Physical context (the user's location and time);
- environmental context (weather, light, noise);
- user feelings (health, mood, planned activities);
- social context (work group, the presence of members);
- Context application (sent or received e-mail messages, visit the web page).

In terms of man-machine interaction context consists of a user context, the context of problem and application interaction.

In terms of representation obvious context for objects that use it to produce explicit and hidden contexts. The interaction of objects context should include knowledge, known to all objects. Part of this knowledge can not be described explicitly formalized or not, but it is assumed that all objects possess this knowledge. These include general knowledge (universal) knowledge or knowledge of objects of each other, discovered earlier in the previous stages of interaction. When said knowledge is hidden it is implicit context. Clearly described knowledge is explicit context.

The basis of the separation context is to abstract and concrete the same idea as when divided by explicit and hidden contexts. Abstract structure provides information that is potentially available on the current situation. The concrete contains a clear description of the current situation. Sometimes it is called the outside abstract context. The model management context is a model of representation [7].

There are several properties of the context given in Table 1.

TABLE 1

CONTEXT PROPERTIES

Property	Consequence
1. Context arising from the interaction of objects	Context exists in the interaction of objects. In this case, the context describes a common, shared information known to all objects that are involved in the interaction.
2. The general context, which occurs in the interaction of objects includes context data objects	The inference execution may be within specific contexts within the overall context. Moreover, within the overall context forms of inference (such as non-monotonic logical conclusion, robotics, pattern designs) may be different. In the case of contexts that make general context, allocate context of problem, and this problem can be decomposed into subtasks and context - context subtasks, respectively, for each solution subtasks can use a mechanism opinion.
3. Background to the interaction of objects vary	The result of changes in the context of this process is due to changes related to the context of relationships.
4. Context includes implicit knowledge and information	This property has two implications: 1) as much contextual information should be presented explicitly; 2) use pattern of change and the context can display new context based on previously used contexts.
5. Context can describe a relationship between elements of abstract models and specific application data abstractions	This property has the ability to create as a result of the current context used abstract context that in the future may be specified for other conditions.
6. Provide relevant and reliable information objects that are involved in cooperation to solve the current problem (achieving current goals)	Interpreting used real context, you can get relevant information to solve the current problem.

III. Models Presenting Context

The task of presenting context is a formal description of the object of observation regardless of method of observation. Model presentation context is based on the formalism used. Some lower models are representations of context used in different approaches and systems:

• Contextual logic - applied to the context, which is defined as a set of axioms.

This logic is an extension of first-order logic, where axioms are regarded as true or not true within some context. Context has a given formal object and the relation ist (c, p), where c - context, p - an axiom.

The ratio ist (c, p) declares that the axiom is true in the context of p and c. Management context by using axioms that "move", which, in turn, carry the axiom from one context to another. Moved axiom in a new context should have the same truth-conditions which it had in its original context.

• Proposal expression - above axioms expressed offerings are used to formalize contexts in multiconceptual Knowledge Base Cyc.

According to the related ist (c, p) context is defined as a coherent set of proposal statements. Scope context defined set of objects, conditions, etc., for which statements about them are true. Between contexts established hierarchical relationships that allow to shape contexts different depth of detail. Management context using procedures that perform logical conclusion statements described in the general context in specialized contexts.

• The system rules - used for context, describing the structure of knowledge.

Formalism rule system represents the structure of knowledge of the rules package. It is used representation at the rules and the level of knowledge base.

Presentation which is used at filtering rules operated expressions.

Presentation at the level of knowledge bases divides knowledge base to set of some small bases directly controlled rules, causing packets to the rules of the "then", or iterations between packages of rules for information exchange.

• Frames - framing an approach to represent the context used in the approach, based on models of knowledge representation system laid down in Protégé.

In the context of this approach is the ontology data sources described by means of a global ontology.

• Context-sensitive graphs - context-dependent graph is a directed acyclic graph with a unique input and output and a series-parallel organization vertices connected oriented arcs.

The top can be used to represent actions, context-dependent concept recombination top or subgraph. Action meets the executable method, context-dependent concept - a concept that is implementing in this context, the recombinant top - the general concept (a more abstract concept), subgraph - sequence performed by the methods used in solving the problem. The ratio between the peaks show the sequence of actions. If there are several variations of this sequence, these options are closed by recombination node that after the passage of branches of sequence records that branch worked. Management

context is in a dynamic mode during solving the problem. It is based on fixing which is context-dependent concept implementation received at the moment and, conversely, if the procedure has worked, freeing realization and turning them into abstract elements.

• Situational theory - in this context model is a set of attributes describing the situation in general (abstract object in situational theory).

A set of attributes assigned values characterizing the specific situation (situation makes implementation of the abstract). Management context is based on the ratio describing rules depending on contextual information. Based on the rules of distribution it made changes in related contexts. To promote the changes service messages sent message services concerned about changes in contextual information (attribute values and a set of attributes).

Other models include context: the context of splitting semantic network, context as part of the contextual system, context as part of the tree of knowledge, and others.

As SIPPR (intellectual decision support) designed to work with the knowledge for systems representation of the most interesting models of context-based knowledge representation model. Modern and promising model that is used for knowledge representation and, consequently context is ontological model. This model allows to structure the accumulated information and provides semantic interoperability of objects involved in the interaction [5].

Conclusions

Knowledge is an essential part of human life. Possession by certain knowledge enables you to experience the advantages awareness, act according to the surrounding conditions as well as develop, adapt and expand their horizons, and thus acquire qualities such as speed, flexibility, strength and reliability. This applies not only to living systems, such as people, but dead - namely, the various organizations that are created and exist through the production of human activities, and systems that are the result of scientific human activities, such as existing and emerging systems of artificial intelligence and context-driven systems of intellectual decision support.

Context plays an important role in the acquisition and use of knowledge. This article examined the definition of context from different perspectives, types and properties and some models presentation context used in different approaches and systems. Thus, the context is an effective way to manage knowledge bases, avoiding redundancy and streamline the process of obtaining knowledge.

The main issue related to the research and application context -It identify relationships between context and adaptation to the context of current conditions and objectives. Management collects context, interpretation, storage and distribution of contextual information in dynamic mode and the discovery of the relationship between contexts through which it is possible to have effective management contexts. This is what will be described in the next article.

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