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# Knowledge acquisition in information technology and software engineering towards excellence of information systems based on the standardisation platform



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## ARTICLE INFO

### Article history:

Received 26 January 2014

Received in revised form 17 July 2015

Accepted 9 September 2015

Available online 24 September 2015

### Keywords:

IT

SE

Knowledge acquisition

IS excellence

standardisation

## ABSTRACT

This paper presents a study of the collective knowledge in information technology (IT) and the comparative analyses of innovative trends in the standardisation of the roads of knowledge in the subfields of software engineering (SE).

The focus is on the amount of required innovation that will be necessary in the examples database of standardised units in IT and SE for the improvement of the information systems (IS). The goal is to determine how to obtain appropriate knowledge in IT and SE to model the excellence of IS.

The contribution to the modelling of IS excellence in PDCA (Plan-Do-Check-Act) is presented.

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## 1. Introduction

The paper investigates standardised collective knowledge in information technology (IT), especially in the subfields of software engineering (SE) and (information systems) IS. IS is “An *information processing system*, together with associated organisational resources such as human, technical, and financial resources, that provides and distributes *information*” [1] (terms noted in italics are standardised). The term “*collective knowledge*” is defined by standardised term “*knowledge source*” — a source of *information* from which a *knowledge base* has been created for a specific kind of problem [2]. Sources of information for collective knowledge are the ISO/IEC standards (International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC)) [3], SRPS standards (SRPS — designation of standards in Serbia) and sources of information for local knowledge [4]. *Knowledge base* (or K-base or KB) is abbreviated in the vocabulary [1] (01.06.18) and in [2] (28.04.06) — in IT Vocabulary — part 28th, Section 4, term 6. In the present century in IT, we have witnessed the growing problem of continuous improvement in individual knowledge in relation to evolved and standardised knowledge (partly public and collective). One aspect of the problem is *knowledge acquisition*, continuous improvement

of the quality of the product (education services), a second is based on *knowledge representation* [1,5], and a third refers to the quantity and value of the required *knowledge engineering*. On a more practical level, according to the International Classification of Standards (ICS) from a population of standards in all areas for ICS-1 (from 1 up to 99), they may include sub/fields such as:

- The evolutions of IT standardisation to E-learning (ICS-3 = 35.240.99), that had not been published previously,
- The evolution of studies of the SE discipline (ICS-2 = 35.080), to IS excellence,
- The future trends defined in boundaries and subfields of IT, SE to IS, as a product.

Today it is not a “problem” to develop IS. Manipulation of information in some integrated IS and creation of “our own” public opinion (including standardisation of design and implementation [6]) is more important. The research presented in this paper relates to the trend analyses of the innovation intensity of *knowledge sources* (KSs) [2] and the required individual knowledge.

Decision-making “problems” based on IS and/or expert systems (ESs) is not completely new. An ES, is “a *Knowledge-Based System* — KBS, that provides solving problems in a particular domain or application area by drawing *inferences* from a *knowledge base* developed from human

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