

# PROCEEDINGS

## ICIST

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## 2015

**5<sup>TH</sup> INTERNATIONAL CONFERENCE ON  
INFORMATION SOCIETY AND TECHNOLOGY**

KOPAONIK 8. - 11. MARCH 2015.



# **ICIST 2015**

## **5<sup>th</sup> International Conference on Information Society and Technology**

### **Proceedings**

**Publisher:** Society for Information Systems and Computer Networks

**Editors:** Zdravković, M., Trajanović, M., Konjović, Z.

**ISBN:**978-86-85525-16-2

**Issued** in Belgrade, Serbia, 2015.

## **ICIST 2015**

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# Comparative Analysis of Local and Global Innovation of Knowledge Sources in Standardized Subfields of Health Care Technology

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**Abstract** — This paper presents a comparative analysis of knowledge sources innovation on the examples of standardized subfields of health care technology. Based on standardized quantity, value and intensity of innovation of knowledge sources, the clusters, as well as the frequency of innovation in analyzed standardized subfields, have been defined. What follows is the realization of a knowledge base system (KBS) in practice, with the insurance of resources for the quality of final products. This is enabled by using PDCA methodology, on the (standardization) platform, with classified areas of technology. On the examples of health care technology, with 11 standardized subfields, original trend lines (towards the KBS) have been formed. The study results enable further development and application of the methodology, as well as standardized solutions to the issues of health care.

## I. INTRODUCTION

The paper deals with a comparative analysis of international (ISO/IEC) and local (SRPS – label for standards in Serbia, [1]) knowledge sources in the subfields of health care technology. Knowledge pathways in this field differ from those in other standardized technologies. One of the objectives of the work in the field of health care technology is to determine the importance of local in relation to global knowledge sources. According to the international classification of standards (ICS1 - classification of the first level), health care technology is classified in 11 subfields of the second level (ICS2 = 11.xy0, [2]):

11.020 Medical sciences and health care facilities in general,

11.040 Medical equipment,

11.060 Dentistry,

11.080 Sterilization and disinfection,

11.100 Laboratory medicine,

11.120 Pharmaceutics,

11.140 Hospital equipment,

11.160 First aid,

11.180 Aids for disabled or handicapped persons,

11.200 Birth control. Mechanical contraceptives and

11.220 Veterinary medicine.

According to [3], “Quality is free” philosophy was present in the previous century. Nowadays, standards are extremely costly.

## A. The initial hypotheses and objectives of the research

Initial hypotheses are proven and the research objectives are realized in the standardized subfields of health care technology through the PDCA quality loop:

**Hypothesis\_1** - P (Plan) Planning and prediction of necessary future resources and financial requirements are possible for the evaluated units of knowledge sources and responsibilities for each individual subfield (for ICS2 = 11.xy0) and for all of them together, in subcommittees and development stages of new projects (from a practical point of view – ISO/IEC and SRPS),

**Hypothesis\_2** - D (Do) Research and evaluation of knowledge sources units enable the formation of explicit mathematical relations, as well as regression trend lines of knowledge (from a practical point of view),

**Hypothesis\_3** - C (Check) Definition of clear correlations between obligations and knowledge with the intensity of innovation of valued knowledge sources units is possible on the relations between ISO and SRPS (clustering),

**Hypothesis\_4** - A (Act) It is possible to define the relations between the continuous (according to the PDCA) and discontinuous knowledge innovation of individuals, with the ultimate goal of improving the teamwork (knowledge base system) and innovation of industrial products on the platform of SRPS and ISO standardization.

## II. RESEARCH METHODOLOGY AND FRAMEWORK

The statistical methodology of dynamic analyses and deductive - inductive reasoning methods were used for predicting the future development and innovation of the pragmatic framework. Methodologically, statistical indices were formed for the comparison of ISO - SRPS relations in the field of health care technology (ICS1 = 11) with other fields of human endeavor, including: Quantity indices (Iq), value index (Iv) and index of quantitative variation for ranking (Iqi).

The PDCA methodology, statistical research and multicriterion analyses have been applied.

## A. Study framework

Quantity indices (Iq), defined and determined for both ISO and SRPS, refer to: Samples (Iqs), Published standards (Iqp), Standards Under development (Iqu), Standards Withdrawn from use (Iqw), Deleted projects











