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# Knowledge standardization in road vehicle engineering

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## Abstract

The paper presents a part of the research and a segment of comparable statistical analyses of trends in international standardization of ISO/IEC in the field of road vehicle engineering. The paper is focused on the results of current state at the end of the first decade of XXI century. The aim of the paper is to provide and improve educational and financial resources for knowledge quality of both graduated and future engineers (primarily road vehicle engineers).

**Key words:** road vehicles, education, knowledge, standardisation, quality

## 1. Introduction

Philosophy “quality is free” [1] may be used to interpret the final product quality in any organized system, including education system. However, if a disorganized system (system without standards) prevails in an environment, then non-quality presents a problem which can have serious consequences. Moreover, it is harder and more expensive to achieve knowledge all at once than gradually.

In recent years, we have all been witness to the growing problem of continuous improvement of individual knowledge as compared to the standardized (partly public and collective) knowledge of new technologies for higher quality products. Unlike patents and licenses, this “social” knowledge is public and commercial. The problem is not only reflected in the price of knowledge, but also in the continuous improvement of product quality (educational services). Knowledge is primarily based on the innovations of standardized engineering principles and individual knowledge necessary for the target level and quality system. The results of standardization analysis and a part of collective knowledge presented in the paper are primarily based on ISO/IEC standardization supported by the documentation for operationalization

of the process by individual knowledge – without the protection of internal and/or national knowledge by patents and production licenses, [2].

The gap between collective and individual knowledge has become increasingly pronounced in recent years. It becomes bigger and more obvious with the use of information technologies. Moreover, financial crises cause further problems regarding education.

Knowledge and experience in the area of road vehicle engineering that have been accumulated over the years are of major importance. The quality of the latest vehicles requires multidisciplinary approach and teamwork of experts and professionals in many fields.

According to the International Classification for Standards – ICS, road vehicles engineering has been standardized within 10 sub-fields, [3]: 1– Road vehicles in general (ICS = 43.020), 2– Road vehicle systems (43.040), 3– Internal combustion engines for road vehicles (43.060), 4– Commercial vehicles (43.080), 5– Passenger cars. Caravans and light trailers (43.100), 6– Electric road vehicles (43.120), 7– Motorcycles and mopeds (43.140), 8– Cycles (43.150), 9– Special purpose vehicles (43.160), 10– Diagnostic; maintenance and test equipment (43.180).

### 1.1 From goals to key components of research results

The initial hypotheses and research goals of the paper are of major importance. The paper aims to present some interesting and important trends and key results through the answers to some relevant questions:

- a) how much and which of the available knowledge in standards is necessary for professional work, improvement of road vehicles quality and problem solving?















