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Vladimir L. Uskov  
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# Multi-agent Smart-System of Distance Learning for People with Vision Disabilities

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**Abstract.** This article focuses on the design of smart-system of distance learning (DL) for people with impaired vision (PIV) based on multi-agent approach. There are considered the most common multi-agent platforms and based on them practical applications. Particular attention is paid to Java Agent Development Framework platform (JADE), there were analyzed the advantages and disadvantages. There were considered main problems of DL for people with impaired vision to provide high-quality engineering education in the shared laboratories (SL) with modern equipment. There was offered an integrated solution to this problem by the use of cognitive, ontological, statistical, intellectual and multi-agent approaches. Were developed the structure and the algorithm of functioning of the smart-system of DL for PIV using different agents.

**Keywords:** Distance learning · People with impaired vision · Multi-agent smart-system · JADE · Integrated approach

## 1 Introduction

Nowadays, distance learning (DL) is one of the most important form of education, which during the process of formation united in himself all the best from the teaching and learning experience [1]. Thanks to the flexibility and universal approach, DL becomes competitive with conventional systems of learning, offering new methods of modernization of educational activities based on the use of the latest technology, the latest achievements of computer technology and modern telecommunication devices [2, 3]. The introduction of modern approaches and technologies improve the quality of education and increase its effectiveness. The most promising is the DL based on intellectual systems and smart-technologies that have broad capabilities to ensure the highest level of learning [4]. Modern smart-systems of DL offer affordable environment