

ABSTRACT

This paper, entitled „Collaborative platform for the design processes of motor vehicles braking systems”, falls within the current theme related to the implementation of the concepts from Industry 4.0. Designing and manufacturing of products is today a general concern for specialists both from the point of view of collaborative principles and from that of quality and productivity in a competitive system.

The purpose of this thesis is highlighted in the first chapter, namely identifying the possibilities of improving the design activities within an organization by implementing an effective and efficient collaborative platform from both the employees' and employers' perceptions.

The second chapter offers a description of the possibilities of design methods and means, the way these operate, as well as the activities related to effective design. In this respect it is necessary to identify the manner in which the computer aided design and manufacture are made by understanding the principles underpinning these virtual work environments. For collaboration, a detailing of the way in which these programs and modules can communicate, interact and work together is required, more precisely a detailing of the way in which they exchange information and make this information compatible.

Chapter three presents the theories, models and tools used in the collaborative environment in order to achieve a broader view of the field, regardless their relationship to engineering. This chapter offers details about: the 3C Model, the model for knowledge growth, the 7 level model, the flux model, the FBS-PPRE model and the CPM model. A distinct subchapter was intended to present the theory of the ThinkLet theory which in the latter part, presents the facilitation model process. At the same time, within the whole chapter, it is pointed out that there is information outside the engineering field which could bring added value to this research. Further on, different types of collaborative platforms are described, as well as their benefits with explanations on collaborative softwares for conceptual maps, collaborative editing and publishing, respectively collaborative teaching and learning.

The fourth chapter is intended to design a generic-representative model that meets all the requirements and needs that both the employees and companies have in their activities. It

outlines the model's logic closely related to its potential to be translated into an applied form, a platform, in order to use visual elements in its description. Being a collaborative model, it must allow all the personnel (design, simulation, testing engineers, project managers or managers,) to interact with each other but also to bring real benefits to them and the company in terms of quality of work , efficiency, effectiveness, satisfaction and increased interest.

The presented model is a theoretical one, based on observations and understanding of human nature in order to capture their interest in a new way of working, as well as on a bibliographic research of specialized literature regarding the organization of the collaborative systems.

In chapter five the collaborative platform is described in detail with its functionality, virtual elements and the way they relate to each other A questionnaire is presented that addresses both the employees who have already interacted with the labor market and the classic system approach, as well as for the managers who have a broader view of the organization, of the people they lead, and of the processes in organizations.

Chapter six covers the application and validation of the proposed model using as a case study the design of a component within the braking systems of motor vehicles.

The seventh chapter presents the conclusions of the research conducted as well as the future research directions and own contributions.