Test Document for Abstracts

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Summary of the schools topics

1.1 Distance Collaboration for Factory Planning

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[alpha] Over the last couple of years several factors have changed the behavior of companies. They are forced to act faster and more diverse due to globalization and international activities. Big corporations as well as small and medium-sized companies are affected in the same way. Distributed production and global activities make it difficult to collaborate with co-workers, employees, and shareholders.[1]

Visualization is one of the most important mediums for human communication and interaction. In the realm of collaboration tools and visualization, new developments can offer solutions to handle problems which are caused by time and space differences.[2] Distance collaboration is a suitable approach due to the ability to handle the key characteristics of spatially diverse but synchronous activities. Since the communication and cooperation is not limited to organizational and divisional boundaries, processes will be handled faster and complexity can be reduced.[3]

The visualization within a Virtual Reality (VR) provides the user with the most possibilities of interaction and participation in real time.[4] Especially during the factory planning process, digital models and their representation can visualize problems and prototyping beforehand. Unfortunately, current digital collaboration tools are not able to exploit the full potential they might offer with immersive systems. Current research work for factory planning focuses on either specified planning jobs or a local solution in virtual environment. A comprehensive approach is not found.[2]

Hence, this research focuses on the needs of an immersive VR implementation in field of factory planning, containing collaborative activities as an important support during different factory planning phases. The aim is a collaborative tool, which does not require specific display devices. It should not be limited to only immersive systems or only non-immersive systems. Users should be able to collaborate and interact within VR using every visualization method that suits their needs in the most effective way.

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[1] Bracht, U., Geckler, D., Wenzel, S.: Digitale Fabrik. Methoden und Praxisbeispiele; Springer; 2011.

[2] Wagner, U., Müller, E.: Einsatz- und Nutzenpotentiale von Kooperations- und Kommunikationswerkzeugen im Fabrikplanungsprozess. In: Müller, E., Spanner-Ulmer, B. (Hrsg.): Nachhaltigkeit in Planung und Produktion – VPP2010; 2010.

[3] Redaelli, C., Lawson, G., Sacco, M., D'Cruz, M.: DiFac: Digital Factory for Human Oriented Production System - InTech; 2009.

[4] Burdea, G.C., Coiffet, P.: Virtual reality technology; Wiley-Interscience; 2003.