

# STATISTICAL ANALYSIS AND DATA MINING

Research Article

## Construction of association networks from communication in teams working on complex projects

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### Abstract

This paper introduces a semi - automated method for extracting the associations among components of a complex engineering project by mining transcripts of design discussions about the engineered artifact. We contribute a novel method for deriving network data from communication data. This method uses relational text analysis to construct networks representing associations among designed pieces of the artifact. Our analysis shows that association networks extracted with this method correlate highly with those extracted by humans, and those constructed based on expert interviews. This method can help scholars and practitioners understand the nature and evolution of the relationship between tasks and components, and the successful execution of complex projects. The association networks produced by our method can be used to reveal key properties of the project and may suggest the coordination required among project members. Collaboration technologies could potentially take advantage of these networks to infer gaps in actual coordination, discover changes in dependencies among team members as they emerge, and suggest appropriate courses of action to managers and people whose work is related. © 2011 Wiley Periodicals, Inc. *Statistical Analysis and Data Mining* 4: 547–563, 2011

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