

# On Temporal Aspects in Cross-Cultural e-Collaboration Between Finland and Japan Research Teams

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## ABSTRACT

Time is an essential dimension in cross-cultural e-collaboration among research project teams. Understanding temporal aspects and project dynamics in cross-cultural research e-collaboration and related processes can improve team members' skills in cross-cultural communication and increase their cultural competence. The present case cultures are Finnish and Japanese, and the case universities are the University of Jyväskylä (Finland) and Keio University (Japan). Three issues are addressed in this article. First, cultural dimensions and time models in the cross-cultural e-collaboration context are discussed. Second, temporal aspects related to e-collaboration activities are introduced. Third, formal, ontological approaches for identifying and describing temporal entities in cross-cultural e-collaboration are presented and examples of applications are given. The objectives of this article are (1) to deepen the knowledge and understanding of temporal aspects (informal and formal) in a cross-cultural e-collaboration environment (CCeCE) and (2) to create know-how for designing CCeCE-like systems.

## KEYWORDS

Cultural Dimensions, Finland, Japan, Multidisciplinary, OWL-Time, Temporal Entities, Temporal Regions, Time Models, Time Ontology

## INTRODUCTION

Because of globalization, Asian and Western cultures meet each other increasingly in connection with business, research, environmental protection, emergency situations, higher education and medical care. Cross-cultural actions are carried out in the virtual world via e-mails, web meetings and collaborative virtual work spaces, as well as in the physical world with face-to-face meetings. In situations like these, people may experience cultural differences related to business, research and social etiquette, language structure, thought structure, attitudes toward time, personal space, face-saving, communication style, acceptance and use of silence. What is culture? According to Wang (2009), culture is embodied in how people interact with other individuals and with their environment; culture is a way of life formed under specific historical, natural and social conditions.

Cultural sensitivity has become an important dimension for success in today's international research arena. Despite the globalization trend, research project managers, project teams and

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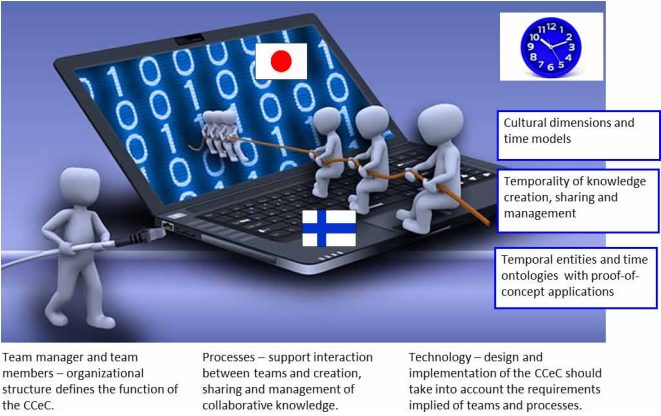
team members may find themselves uncertain in situations due to culture-dependent differences in communication protocol, language and value systems (Berry et al., 2011; Shaules, 2015). Consequently, people involved in cross-cultural project transactions are usually advised to be aware of their colleagues' cultural backgrounds. Cultural competence might help project teams achieve project goals and support the teams to promote a creative and motivated atmosphere throughout the whole collaboration.

Today, international joint research projects are often carried out in e-Collaboration environments defined as "collaboration, which is conducted without face-to-face interaction among members of virtual teams engaged in a common research task using information and communication technologies (ICT)" (Adam, 2006; Bettoni et al., 2015; Johnson and Keane, 2017). E-Collaboration is increasing not only because of its economic and environmental benefits but also due to its flexibility for establishing dynamically new cross-organizational and -cultural innovative teams (Watanabe, 2017). In virtual collaborative spaces, geographic borders and time zones are easy to cross. In addition, such spaces should support members' joint activities. To model, design and realize these spaces, an understanding of the processes to be carried out by the e-Collaboration community is necessary, as well as an understanding of the related cultures, contexts and project knowledge. In e-Collaboration, the importance of cultural awareness and sensitivity are emphasized because of the lack of face-to-face communication.

In joint research projects between the University Y (Japan) and the University X (Finland), the ultimate objective is to model, design and implement a prototype of a cross-cultural e-Collaboration environment (CCeCE) that will support cross-cultural research teams in communication, in joint activities and in knowledge creation, sharing and management. The case cultures are Finnish and Japanese. For realizing a CCeCE, different kinds of approaches, models, methods and technologies were tested. The whole system includes several aspects (team manager and team members, processes and technology) as illustrated in Figure 1. The focus of this article is on temporal aspects related to cross-cultural e-Collaboration, and especially do the competence of cross-cultural temporal aspects between the team members improve smooth e-Collaboration. The study results indicate that in-depth understanding and knowledge about temporality among team leaders and team members in cross-cultural e-Collaboration context promote efficient and successful team working and projects' implementations according to give schedules.

The article is organized as follows. First, cultural models and their implications for cross-cultural e-Collaboration are introduced. Secondly, time models in cultural contexts and temporality in e-Collaboration are discussed. As a formal approach, the authors define temporal entities and describe OWL-Time ontology, temporal aggregates (an extension of OWL-Time) and the temporal

Figure 1. Cross-cultural e-Collaboration environment



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