


# Cultural Differences in Temporal Perceptions in Global Teams and the Design of an Aware Calendar to Circumvent these Differences

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## Introduction and Motivation

- Today's globalization and computerization has created international virtual teams
- Cultural differences between members of these teams have created problems in their operation
- One such cultural difference is how people perceive and use time
- The motivation for this research is to
  - understand what types of temporal perception differences might cause problems
  - Inform the design of calendar tools that can better support global virtual teams

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# Temporal Structures

10:00	10:00 am-12:00 pm ⌚
11:00	CAA Meeting
12:00	12:00 pm-1:00 pm ⌚
	Faculty Lunch - Faculty Club
1:00	
2:00	2:00 pm-3:00 pm Chair's Meeting
3:00	3:00 pm-4:30 pm Planning Committee
4:00	
5:00	5:00 pm-6:00 pm ⌚
	Office Hours
6:00	

- **Temporal structures** are patterned organizations of time, used by humans to help them manage, comprehend or coordinate their use of time.
- Examples from calendar on left
  - **CAA Meeting** occurs monthly – *explicit temporal structure*
  - **Faculty lunch** – informal lunch with any faculty who show up on Wednesday – *implicit temporal structure*
  - **Office hours** held when students have no classes – *temporal structure relationship*
- Bluedorn & Denhart, 1988, Anaconda et al, 2001, Orlikowski & Yates, 2002

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# Temporal Perceptions

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- **Temporal Perceptions** represent an individual's or culture's understanding of time and accepted time usage
- Examples from Calendar on Left
  - Expectation of meeting length = 1 hour
  - Lunch occurs midday
  - Meetings begin on the hour
  - Meetings can be scheduled from 10 AM to 6 PM
  - Culture uses 8 hour clock
- House et al, 2004, Zerubavel, 1979, 1981, Hofstede, 1980

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## Temporal Rigidity

- Members of my **local team** get upset when meetings run past their end time.
- Members of the **remote team** get upset when meetings run past their end time.



*"Mr. Dyer says he has no interest in speaking to anyone who would remain on hold for so long."*

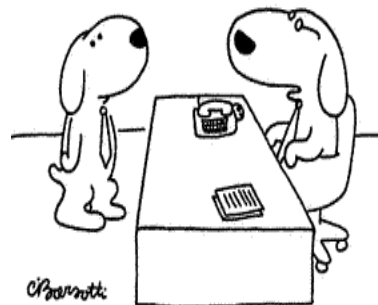
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## Future Orientation

- Members of my **local team** place more emphasis on solving current problems than focusing on future problems.
- Members of the **remote team** place more emphasis on solving current problems than focusing on future problems.



*"And when the time comes the company will put you to sleep at its own expense."*

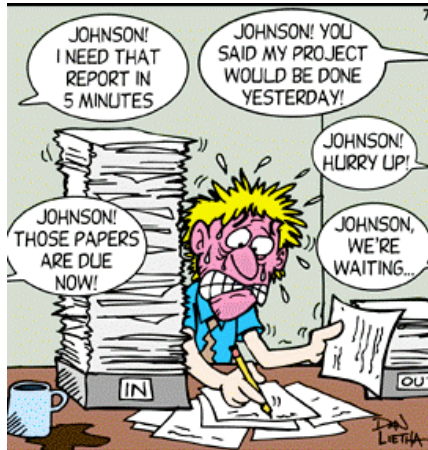
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## Temporal Urgency

- Members of my **local team** get very nervous if we start to fall behind.
- Members of the **remote team** get very nervous if we start to fall behind.



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## Lateness Attitude

- My **local team** members believe it is okay to be a few minutes late for a meeting.
- My **remote team** members believe it is okay to be a few minutes late for a meeting.

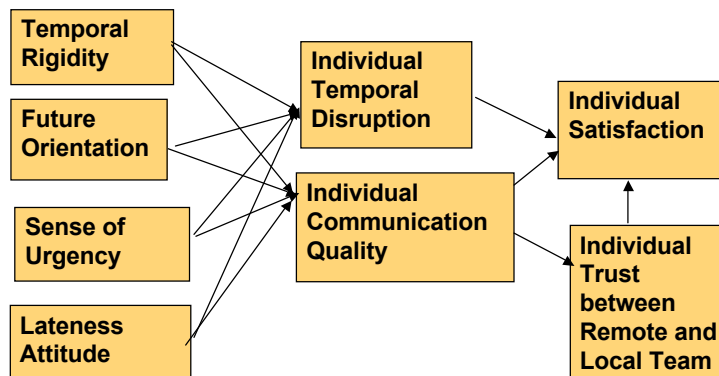


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## Research Model



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## Data Collection

- Questionnaire being administered to Global Software Development Teams in 3 Fortune 500 Companies
  - Company 1 - almost complete
  - Company 2 – in text phase
  - Company 3 – testing expected to start in late May

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## Analysis

- Questions on Temporal Perception asked twice, once for local team and once for perception of remote team
- Gap analysis – difference between perception of local and remote team perceptions used as variable to test relationship to other captured variables
- Structural Equation Model will be built to determine if proposed relationships are significant

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## Results from Pilot Study

- Pilot study run on student software development teams that were not virtual
- Pilot study used to develop constructs
  - Cronbach's alpha > 0.8 on all constructs
  - Team members split into national groups according to the Globe Study (House et al., 2004)
  - Gaps apparent between cultures
  - Interviews indicated temporal issues that affected team satisfaction and performance
- Sorting task on constructs used in research indicated that 90 percent of questions sorted correctly

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## Conclusions

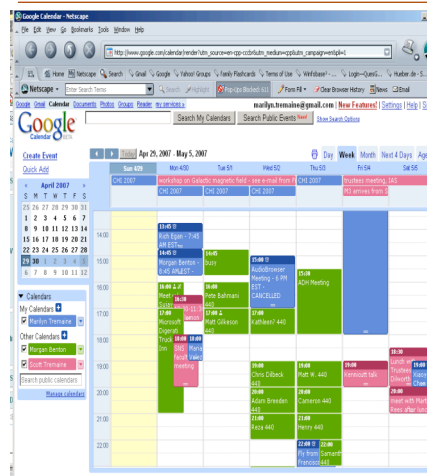
- ❑ Cultural differences in approaches to time and its management affect team operations
- ❑ Current electronic time management systems only allow users to manage a limited number of temporal structures – We need to handle more types of temporal structures
- ❑ We believe that these results imply that the use of time management tools that help to express these differences would make it easier for global team members to understand their differences and potentially manage their interactions more effectively

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## Aware Calendar Design



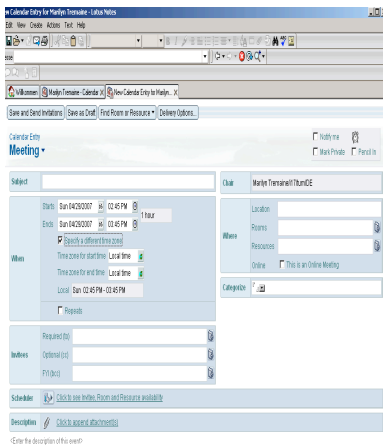
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- ❑ Google shared calendar
  - Allows overlap between calendars of different individuals
  - Allows the understanding of a co-workers schedule
- ❑ Can be used to create a culturally aware calendar
  - Colors used to signify importance of event in culture
  - Culturally aware calendar created from questionnaire or interviews with individuals

# Aware Calendar Design



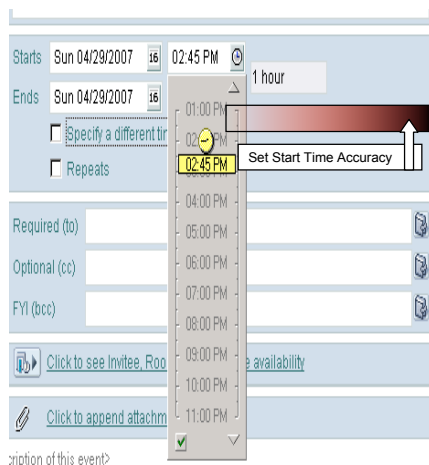
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- Lotus Notes shared calendar
  - Automatically adjusts appointments for time zone of viewer
- Can be used to create a culturally aware calendar
  - Times that conflict with culturally protected times – e.g. family time can alert person setting meeting
  - Such times could be set as part of an individual's profile

# Aware Calendar Design



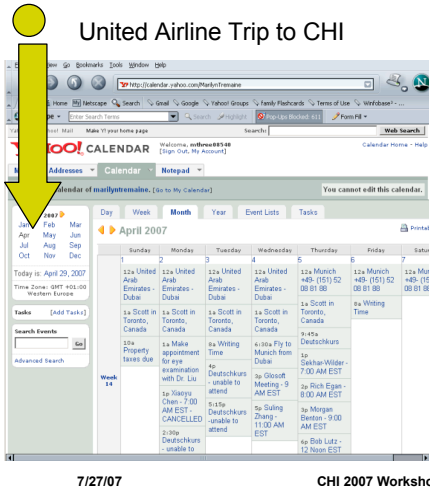
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- Lotus Notes shared calendar meeting setup
  - Meetings now setup with a rigid set of times
- Events could be established with a more flexible set of start and end times
  - Sliding scale to right of picture will set a begin and end time for an event that are approximate

# Aware Calendar Design



United Airline Trip to CHI

- Yahoo public calendar of author
  - Events can be dragged and dropped to calendar
  - e.g., United Airlines flight
- Events could be structured
  - E.g. time to travel to airport added to airplane flight time
  - Event structures could be created by companies and made available on web sites to be dragged and dropped

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# Summary

- Shared calendars already have a lot of potential for representing temporal perception differences
- We are capturing what these differences are in order to make them available to members of global teams through adaptations in calendar design

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