

Today's Lecture

- Why global software development?
- Criteria for successful global software development
- CT-SE

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Learning Outcomes

- After attending this lecture and reading the additional literature, you should be able to:
 - Understand what are benefits and problems of global software development
 - Understand the effect of culture on globalisation (and viceversa!)
 - Understand how CSCW can improve global software development

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Reasons for Global Software Development

- Globalisation
 - Acquisition
 - Global presence
 - Proximity to customers
- Reducing development cost and time (Follow-the-sun)
- Specialised talent
- Open Source software development

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Gains

- Development rigor
- Internal freshness
 - Cultural diversity
- Distance from distractions
- Specialisation
- Scale
- Organisational structure



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Losses

- Dispersion
- Loss of communication richness
- Management overhead
 - Coordination breakdown
- Loss of “teamness”
 - Lack of trust
- Cultural misunderstandings



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National Culture

- Hofstede's dimensions
 - Power distance
 - Revering hierarchy: Distance between managers and employees
 - Individualism vs. collectivism
 - Individual development or the common good
 - Masculinity vs. femininity
 - Masculine or feminine
 - Uncertainty avoidance
 - Stability or change
 - Long vs. short term orientation
 - Here-and-now or future

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Culture comparison (1)

The SD Model of professor Geert Hofstede

The SD Model of professor Geert Hofstede

The SD Model of professor Geert Hofstede

The SD Model of professor Geert Hofstede

Mexico

China

Pakistan

Japan

http://www.geert-hofstede.com/hofstede_dimensions.php

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Culture comparison (2)

The SD Model of professor Geert Hofstede

The SD Model of professor Geert Hofstede

The SD Model of professor Geert Hofstede

The SD Model of professor Geert Hofstede

Greece

France

Norway

Bulgaria

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Other forms of Culture

- Organisational culture (aka corporate culture)
 - E.g. Management styles, appraisals, rewards and communication styles
- Professional culture
 - Instilled through training – maintained through professional associations
- Functional cultures
 - Associated with functional roles within organisations – marketing, sales, finance
- Team culture
 - Insider jokes, language

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Cultural differences in development team

- Team composition
 - Short-term teams
 - Attribution of teammates
 - Motivation
- Teamwork
 - Planning the work
 - Decision making
 - Argumentation styles -conversational content/flow
 - Use of time

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Cultural differences in Groupware use

- Synchronous
 - Trust over distance
 - Video-conferencing: non verbal language is different
 - Brainstorming and anonymity
 - Decision-support system
 - Speaker identification
 - Time of day

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Cultural differences in Groupware use

- Synchronous
 - Distribution of e-mail
 - Content/communication style
 - Online discussions

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Is culture important?

- Language
 - Jargon
 - Cyber language
 - symbols
- Customs
 - Procedures
- Values
 - High versus low context
 - Trust
- Beliefs
 - Context and awareness

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CT-SE: Functions

1. Software Configuration Management (SCM)
2. Notification services (Awareness)
3. CASE and project management
4. Programming tools
5. Bugs and change tracking (versioning)
6. Team memory and knowledge centre

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Knowledge and Memory

- TWiki: An Open Source Web-based Collaboration Platform
 - Form-based editing from any browser
 - Using simple inline commands
 - Linking and grouping of pages
 - Text search facility
 - E-mail notification of changes
 - Dynamic content
 - Access control
 - Content structuring
 - Shared workspace through attachments
 - Version tracking of pages and attachments
 - Extensible using Plugins (PERL)

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How does TWiki work

- TWiki is a cgi-bin script written in PERL that reads a text file, hyperlinks it and converts it into an HTML file
- Every page has a menu

Topic OscarDeBruijn . ([Edit](#) | [Attach](#) | [Ref-By](#) | [Printable](#) | [Diffs](#) | [r1.1](#) | [More](#))
- Click on **Edit**

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How does TWiki work

- Simple formatting
 - Bold: put word or phrase in between asterisks **bold**
 - Italics: use underscores *italics*
 - Bullet list: 3 spaces, asterisk, 1 space * list item
 - Links: use WikiWord or URL
 - TopicName?
 - Use HTML

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How can TWiki be used

- To replace a static intranet. Content is maintained by the employees, thus eliminating the "one webmaster syndrome" of outdated and insufficient intranet content
- As a knowledge base and FAQ system
- To design and document software projects
- To track issues (i.e. bugs) and features
- As a document management tool
- To collaborate on common goals
- As a software archive
- As a message board, to disseminate knowledge and create memory

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GSD@Lucent Technologies

- Main motivation for GSD
 - Global presence
 - Being part of the same community as the competition
- Surveying the consequences
 - Problems take 2-4 times longer to solve
 - Highest priority work is delayed for 5 days per month
 - Work takes app. 2.5 times longer to complete
- Identifying the problems
 - Lack of informal communication
 - Lack of trust

Geographic Distribution

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GSD@LT Continued

- The solutions
 - Rear View Mirror
 - Presence-awareness and discussion tool
 - CalendarBot (picture)
 - Web-based scheduling tool
 - Running on PCs and UNIX machines
 - Expertise Browser (picture)
 - Displays relationships between people, organisations and the code they produce
 - Collaborative Interactive Viewing Environment (CIVE)(picture)
 - Awareness tool: local time at each site, grouping of people and their CalendarBots, phone directory and address book

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GSD@LT Continued


- The Bottom Line
 - The tools make it easier to
 - find organisational information
 - know the availability of people
 - have more effective meetings, especially spontaneous ones
 - However
 - Use of the tools has been mixed
 - Some enthusiastic users
 - The problem of critical mass

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Further Reading

- Carmel Parts 1 and 2 (Chapters 1 - 5)
- Carmel Chapter 7
- James Herbsleb et al., "An empirical study of global software development: Distance and speed" (link on the module's Web page)
- TWiki Home page: <http://twiki.org/>



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