TJTS568 Global Information Systems:

Introduction to Global Information Systems – A Helicopter View

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**Focus area**
- Global Information Systems (GLIS)
- Knowledge Management & E-Learning
- Internationalization / Globalization; support of globally distributed groups
- Cultural aspects for learning and knowledge management
- Support through Information and Communication Technologies
- Standardization, Quality Management and Assurance for E-Learning
- Adaptive Systems

**Projects**
- OpenScout: Management education in Europe and North Africa as application field for open content
- COSMOS / Open Science Resources: Exchange of Scientific Content
- ASPECT: Open Content and standards for schools
- iCOPER: New standards for educational technologies
- Nordlet: Nordic - Baltic community of Open Educational Resources Exchange
- LaProf: Language Learning Open Educational Resources for Agriculture
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The Team

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Contents

- Motivation
  - Introductory Scenario
  - Expectations
- Outlook on the Course
- Global Information Systems
  - Definition and Scope
  - Examples
  - Questions, problems, opportunities
WARNING!

Please don't disturb other clients when you play any game in or around the pools while you are drunk.
A First Scenario

Project Idea & Management

Specification, Realization, Documentation

Cooperation

Sales, Distribution, Usage, Evaluation

Source: [http://commons.wikimedia.org/]
Sample: yahoo.co.kr
Sample: yahoo.de
Course Organization

- Introduction, Introduction to the group work
- Cultural aspects
- Global Information Systems: Framework and Design Approaches
- Globally Distributed Teams
- Localization and Internationalization
- User Interface Design
- Competences for global workers
- Tools and Technologies

- Case Study
Approach

Course outline
- Lectures
- Assignment / Case Study & Presentation
- Final examination

Interaction & Discussion
- Preparation: Slides, readings & recent papers
- Preparation (2): Questions on Papers
- Questions: E-Mail, Forum, Skype (jan_m_pawlowski)
Important notes

- Register for one group in Korppi
- If you decide not to do the course, unregister until 24.09.2012
- Exam: 50%, Case Study 50%
  - Both have to be passed
What can you expect?

- Analyze and evaluate management and development problems in globally distributed organizations
- Decide whether an information system should be build in an international environment
- To identify differences in culture in general, in management and communication
- To design and develop systems to be used in a international context
- To evaluate systems’ adaptation and adoption
Characteristics

- Economical, organizational, technological factors
- Strategy and management of globally distributed processes
- Communication in distributed teams
- Coordination of geographically distributed processes
- Technical infrastructure
- Usability
- Cultural issues
- Domain specific issues
- ...

- Decisions: Outsourcing (Organization), Offshoring (Location), ...
- Competencies: Management, cooperation, cultural issues
Definitions

- Global Software Development (GSD): Developing software in geographically distributed teams

- Global Information Systems (GLIS) are systems produced and/or used in a global context

- $\text{GSD} \subseteq \text{GLIS}$
Interaction point #1

Discuss in groups which aspects make global information systems development challenging.
Motivators (Sangwan, 2006)

- Limited trained workforce
- Differences in development costs
- Shorter production life-cycle through shift models
- Technological advancements
- Closeness to target markets
Some facts on outsourcing (1)

[Source: DiamondCluster 2005: Global IT Outsourcing Study
http://diamondconsultants.com/PublicSite/ideas/perspectives/downloads/Diamond
2005OutsourcingStudy.pdf]
Some facts on outsourcing (2)

[Source: DiamondCluster 2005: Global IT Outsourcing Study
Some facts on outsourcing (3)

**BUYER GROWTH TRENDS OVER THE NEXT 3-5 YEARS**

- India
- United States
- United Kingdom
- Canada
- Philippines
- Eastern Europe
- Ireland
- Mexico
- Latin America
- China
- Russia

- Buyers - 3-5 years
- Buyers - Today

**PROVIDER GROWTH TRENDS OVER THE NEXT 3-5 YEARS**

- India
- United States
- United Kingdom
- China
- Eastern Europe
- Canada
- Latin America
- Russia
- Mexico
- Ireland
- Philippines
- Israel

- Providers - 3-5 years
- Providers - Today

(Source: DiamondCluster 2005: Global IT Outsourcing Study
Influence Factors

CARMEL (1999)
- Geographical dispersion
- Loss of communication richness
- Coordination breakdown
- Loss of team awareness
- Cultural differences
Influence Factors

- Trust
- Level of dispersion
- Type of stakeholders
- Type of projects
- Synchronicity
- Complexity
- Systems methodology
- Perceived distance
- Policy and standards
- Culture
Success Factors

SANGWAN et al. (2006)

- Reduce Ambiguity: e.g., processes, management, design
- Maximize Stability: e.g., design specifications, informal communication
- Understand dependencies: e.g., temporal, functional, technical
- Facilitate coordination: e.g., guidelines, standards, meetings
- Balance flexibility and rigidity: e.g., working culture, decision making
Lessons Learned - 1  
(Prikladnicki, 2003)

- Project management and, in particular, risk management need additional effort and steps.
- The existence of a well-defined software development process is responsible for many advantages in distributed projects.
- Knowledge management stimulates the information sharing and stimulates the learning from experience.
- Requirements engineering is the main challenge for the software development process point of view.
The planning phase is important to organize and manage the distributed projects properly.

The investment in recruiting and training global teams can minimize the difficulties related to the nontechnical dimension.

Tools can act as a facility in the distributed interaction.

Distributed Software Development is a maturity process.
Sample scenarios (by location)

- Offshore outsourcing of software development / programming
  - Main aspects: coordination, communication

- Software development for multiple markets / countries / cultures
  - Main aspects: Culture, systems / interface design
Key Concepts: Enterprise Unified Process

**Development Disciplines**
- Business Modeling
- Requirements
- Analysis & Design
- Implementation
- Test
- Deployment

**Support Disciplines**
- Configuration and Change Mgmt.
- Project Management
- Environment
- Operations & Support

**Enterprise Disciplines**
- Enterprise Business Modeling
- Portfolio Management
- Enterprise Architecture
- Strategic Reuse
- People Management
- Enterprise Administration
- Software Process Improvement

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Key concepts: Hofstede’s “Dimensions of Culture”

**Analysis dimensions**

- **Power distance index (PDI):** Common position to diversities within a country and the people’s position towards authorities.
- **Individualism-index (IVD):** Degree, to which individuals in a country wish to be free from dependencies to other persons and the authorities.
- **Masculinity index (MAS):** Degree to represent gender-roles as part of common norm, school, family and workplace as well as politics.
- **Uncertainty avoidance index (UAI):** How do individuals feel threatened by uncommon or insecure situations.
- **Long term orientation (LTO):** Time-orientation of a society (e.g., planning horizon).
Distributed Teams: Issues

- Staffing: Finding, selecting and initiating virtual teams
- Coordination of tasks and dependent work items
- Communication between teams
- Cultural aspects, barriers, and solutions
Key Concepts: Distributed teams

- Managing cultural differences
- Considering adjustment to calculate productivity and potential difficulties
- Phases of cultural adjustment
  - Enthusiasm
  - Conflict Stage
  - Integration Stage
  - Adaptation Stage
Definitions: Internationalization

Internationalization (I18N) is the process of generalizing a product so that it can handle multiple languages and cultural conventions without the need for redesign. Internationalization takes place at the level of program design and document development (W3C, 2007)

Localization (L10N) is the process of taking a product and making it linguistically and culturally appropriate to a given target locale (country/region and language) where it will be used (W3C, 2007)
Key Concepts: Competences

- **Domain specific competences** focusing on domain competences adapted for the international context.
- **ICT competences / Literacy** ranging from basic computer skills and skills to operate different programs to more complex knowledge about IT Architectures, Security and Management and Information retrieval.
- **Project Management and Leadership competences**, which could also be referred to as Coordination competences, covering areas such as basic business competences, team management and work distribution.
- **Collaboration and Knowledge Management competences** including knowledge sharing and transfer as well as work attitudes in an international team.
- **Communication competences** which focus strictly on the exchange of messages and information in verbal and written form including choice of communication style and management of communication.
- **Intercultural competences** including cultural awareness and understanding of cultural differences.
Internationalization Competences

**Communication**
- Ability to communicate sensitively taking into account other personalities and cultures
- Ability to listen to others and consider their thoughts
- Ability to communicate clearly and articulately
- Ability to focus on key points during communication

**Collaboration**
- Ability to build national and international relationships and networks on a professional level
- Ability to share information and knowledge with the team
- Ability to collaborative problem resolution
- Ability to understand other peoples perspectives, needs

**Project Management**
- Ability to manage own work
- Ability to use other peoples expertise and knowledge
- Ability to take responsibility
- Ability to make decisions

**Culture**
- Foreign language skills (e.g. English)
- Understanding of the influences and implications culture has in work life
- Ability to adjust to different cultures
- Ability to evaluate perspectives, practices and products from multiple cultural perspectives

**ICT**
- Ability to align ICT with the business requirements
- Understanding of importance and limitations of different information sources
- Ability to find quality information with the help of ICT
- Ability to identify problems with ICT

**IS Competences**
- Subject A
- Subject B
- Subject C
- Subject D

**Related Subject Competences**
- Business
- …
User Interface Design

Aspects to consider (Marcus, 2001)

- **Metaphors**: Fundamental concepts communicated via words, images, sounds, and tactile experiences. Concepts of pages, shopping carts, chatrooms, and blogs (Weblogs) are examples. The pace of metaphor invention and neologism will increase because of rapid development, deployment, and distribution through the Web.

- **Mental models**: Structures or organizations of data, functions, tasks, roles, and people in groups at work or play. Content, function, media, tool, role, and task hierarchies are examples.

- **Navigation**: Movement through the mental models, i.e., through content and tools. Examples include dialogue techniques such as menus, dialogue boxes, control panels, icons, tool palettes, and windows.

- **Interaction**: Input/output techniques, including feedback. Examples include the choices of keyboards, mice, pens, or microphones for input and the use of drag-and-drop selection/action sequences.

- **Appearance**: Visual, auditory, and tactile characteristics. Examples include choices of colors, fonts, verbal style (e.g., verbose/interse or informal/formal), sound cues, and vibration modes.
Collaboration tools

- Collaborative tools
  - Development environment
  - Administration tools
  - Workflow tools
  - …

- Virtual management tools
  - Document library
  - Shared calendar
  - Online meetings (video- / phone conferencing)
  - Online scheduling and planning
  - Discussion forum
  - Awareness tools (IM, location-based tools)

- Knowledge management tools
Summary

- Wide field with a variety of approaches
- Different scenarios leading to different solutions
- Some influence factors are common to all approaches, e.g.,
  - Communication / coordination
  - Stakeholder
  - Infrastructure / systems architecture
  - Culture
Questions

- How can global software development processes be classified?
- Which factors affect the development process?
- Which advantages / disadvantages do you expect from a distributed development process?
References

References


More references in each unit
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