



TJTS568 Global Information Systems:

Introduction to Global Information Systems – A Helicopter View

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& Henri Pirkkalainen 09.09.2013



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Global Information Systems, University of Jyväskylä (JYU)

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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Global Information Systems, University of Jyväskylä

The Team



Kati Clements



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Henri Pirkkalainen



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Contents

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



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[Source: <http://www.english.com/>]

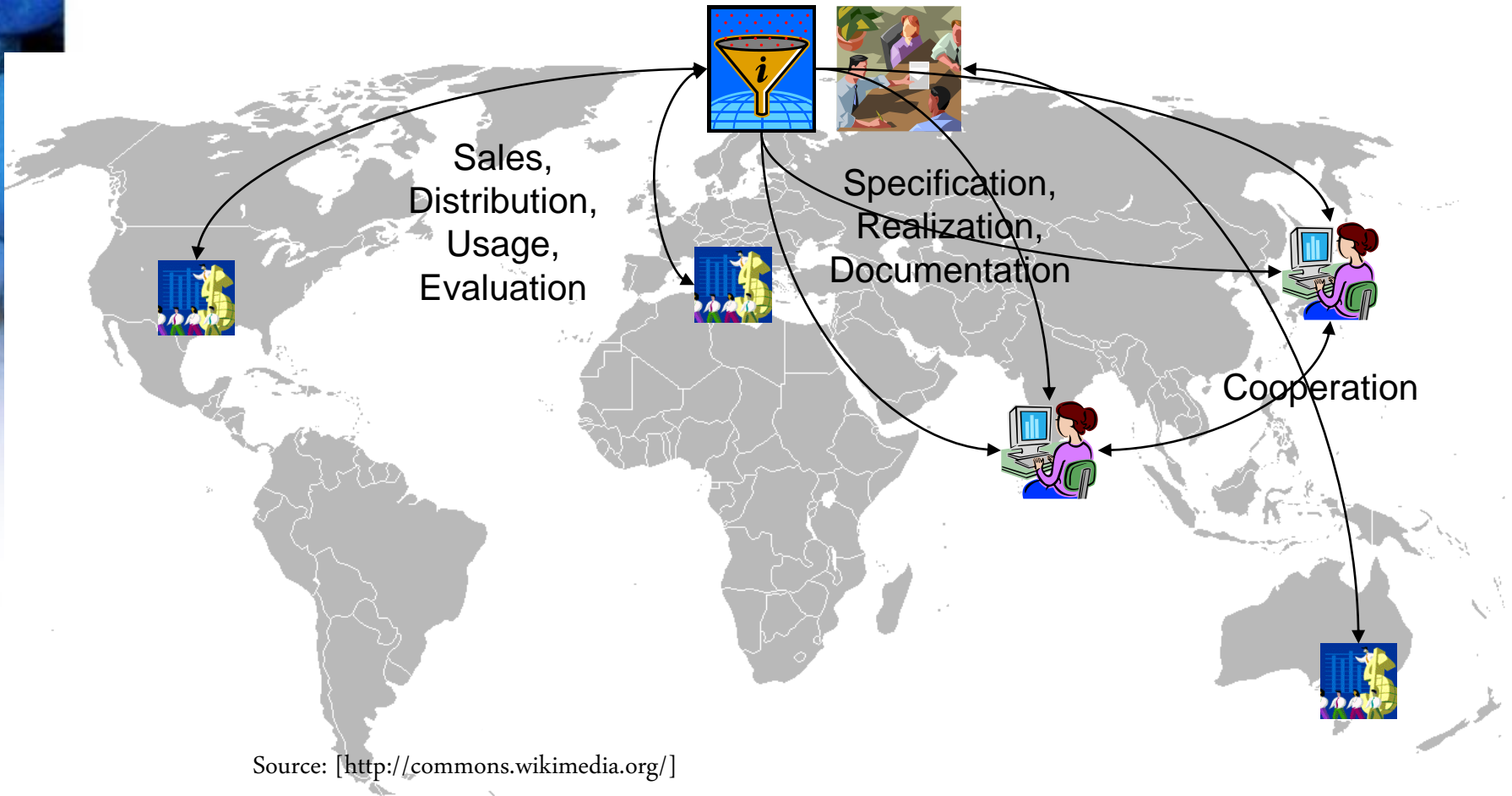


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A First Scenario

Project Idea &
Management



Sample: yahoo.co.kr

Windows Internet Explorer
http://kr.yahoo.com/

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Google Los geht's! Lesezeichen 636 blockiert Rechtschreibprüfung Senden an Einstellungen

Startseite (M) Feeds (J) Drucken Seite

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YAHOO! KOREA

가기 | 동영상 | 이미지 | 지식 | 사전 | 뉴스 | 쇼핑

추천: 미스코리아 출신 아나 - 같은웃 입은 스타 실시간: 1 번양군 편지 +539

뉴스 홈 스포츠 연예 재테크

[조선] "변실장, 신정아와 노골적 연애편지 약100통 주고받아"
홍 당측... 노대통령 '진노' 고교수학여행, 중국서 집단 성매매 '충격'
이승엽이 겪은 '추한' 일본아구 | 선정성 논란, 광천화 롬패자 문제

 **동성 중인 민주노동당 간부 홍기에 질려 중앙**
박근혜, 5년 후 기약하나?... 홍기에 심경 밝혀
박성호 "박준형 배신 미안해 속의금 500만원"
이상우 "발달장애 아들 위해 '인간극장' 출연"

» 서울 (26°C) ☀ 구름조금 · 2007대선 · 긴급의료상황 · YTN Live
금융 급락? 테마주는 '독야청청' | '당분간 1700~1900'

오늘의 추천 콘텐츠

 비행중 날개꺾는 초음속 폭격기
참으로 징그러운 사마귀 기생충
살아있는 듯 빗겨지는 신비한 옷
불가사의 자연지형, 뭇개는 가짜
일인4역 아카펠라 밴드 록음악

 수입 중고차 값의 진실
면도날보다 정교하고 날카로운 실
업론에 소개된 식당 맛없는 이유
비타민C, 지방 합쳐치면 암발생?
30~40대, 뇌졸중으로 사망가능

아후! 콘텐츠 순위

실시간 인기 검색어

- 1 번양군 편지 +539
- 2 광천화 키웠으면 +771
- 3 라운경 아들 (NEW)
- 4 신정아 (NEW)
- 5 채정안 과거 +760
- 6 자두 친동생 +424

09월10일 18시22분

감때까지 간(?) '막장' 검색어

- 1 '더 순결한19' 더 막나가도 돼?
- 2 막장커플, 임신부 치고 뽕소녀!
- 3 박영수의 거성소, 막말 토크쇼?
- 4 막가파 네티즌, 왜 이지경일까

동영상 갤러리 이미지 갤러리

아후! 코리아 해외 투게터 **ASBEST**

뉴스직업 "교감습내방" 위수
277528 점

아후! 디렉토리

뉴스 신문, 스포츠
방송 TV프로, 드라마
여가 게임, 자동차
엔터 음악, 영화
경제 쇼핑, 금융
건강 질병, 다이어트

» 더보기

이벤트

- 지마켓 추석 이벤트
- 제스카키친 리부추천
- 로봇청소기를 받아라
- 인기있는 신상품

한층 더 안전해진 로그인: 로그인 신규회원 가입

메일 블로그 금융

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소중한 분들께
전하세요

쇼핑 가격비교 패션소호

옥션	인터파크	추석선물	신세계몰	GSestore
GS이슈	OTTO	G마켓세일	이마트	빌라리리
G마켓	등대문닫집	옥션추석	롯데imall	상상몰

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꾸러기 영파약방
좋은 학부도 되는 법 나누고 배우보세요.

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http://kr.yahoo.com/r/pjfo Internet 100%

Sample: yahoo.de

Yahoo! Deutschland - Windows Internet Explorer

http://de.yahoo.com/

Datei Bearbeiten Ansicht Favoriten Extras ?

Google Los geht's!

Lesezeichen 636 blockiert Rechtschreibprüfung Senden an Einstellungen

Yahoo! Deutschland Startseite (M) Feeds (J) Drucken Seite

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YAHOO! DEUTSCHLAND

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Suche: **Web-Suche**

Das Web Seiten auf Deutsch [Seiten-Einstellungen](#)

Autos

Chat

Clever

Dating

Finanzen

Flickr NEU!

Groups

Grüßkarten

Horoskope

Lifestyle

Lokale Suche

Mein Yahoo!

Mobile

Movies

Musik

Reisen

Shopping

Spiele

Sport

TV

Alle Y! Services

Yahoo! Magazin



"Bereue nichts"

Renn-Rentner Michael Schumacher hat auch ein Jahr nach dem Rücktritt keinerlei Sehnsucht nach einem Comeback. » Mehr

- Aktuelles aus der Formel1

Michael Schumacher im Netz

- Renn-Rentner Schumi "bereut nichts"
- Ballack: Comeback-Zeitpunkt ungewiss
- Eine Ladung Videos von den Foo Fighters
- Neues vom Dino-Killerasteroiden

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[Mail](#) | [Messenger](#) | [Wetter](#)

[Musik](#) | [Lokale Suche](#) | [Movies](#)

Auf der IAA vom 13.-23. September Halle 6



Anzeigen - Ihre Meinung

Die neue kommerzielle Suche ist da!



Werbung regional schalten

Anzeigen in Minuten live stellen. Schon ab 5 Cent pro Klick.

» weitere Infos

Yahoo! Trends

Die beliebtesten Konzert-Tourneen!

- LaFee
- Die 'Jetzt erst recht' Tour 2007
- Revolverheld
- Rocken bundesweit!
- Gentleman
- Reggae-Vibes aus Deutschland
- Gogol Bordello
- Das Gipsy Punk Ensemble live!

» Weitere Konzerttipps

Gefunden: Beliebte Suchen zum Thema Herbst

- Oktoberfest
- Basteln
- Wellness
- Winterreifen

Nachrichten

Abgeschoben
Pakistan weist Exministerpräsident Sharif aus

- Frankfurt: Angriff auf Rabbiner offenbar antisemitisch
- Sarkozy mit Merkel zusammengetroffen
- Teheran will Uran-Anreicherung fortsetzen
- Schrecksekunde bei 50 Cents MTV-Auftritt
- Fast zwei Dutzend Nadeln im Körper

» Mehr: [Nachrichten](#) | [Panorama](#) | [Unterhaltung](#) | [Videos](#)

Börse: **DAX: 7431 (-0.07%)** | **TecDAX: 906 (-0.53%)**

Aktienkurse: **Suchen**

Top Angebote



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...& SMS* in alle dt. Netze zahlen. Ohne

Werben mit Yahoo!

- Search Marketing
- Sponsored Links
- Media Sales
- Händlerintegration

Weitere Services

- Handy
- Jobs
- Immobilien
- Lotto

Fertig

Internet 100%

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



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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 24.09.2013
- Exam: 50%, Case Study 50%
 - Both have to be passed



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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



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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



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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
- ❏ $GSD \subseteq GLIS$



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Interaction point #1

Discuss in groups which aspects make global information systems development challenging.



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Motivators (Sangwan, 2006)

- ❏ Limited trained workforce
- ❏ Differences in development costs
- ❏ Shorter production life-cycle through shift models
- ❏ Technological advancements
- ❏ Closeness to target markets



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Some facts on outsourcing (1)



	Buyers					Providers	
	Today			2004	2002	Today	
	OVERALL	ONSHORE	OFFSHORE	OVERALL	OVERALL	ONSHORE	OFFSHORE
Satisfied	78%	81%	62%	74%	69%	84%	86%
Neutral	7%	11%	30%	16%	8%	16%	7%
Dissatisfied	15%	8%	8%	10%	23%	0%	7%

[Source: DiamondCluster 2005: Global IT Outsourcing Study

<http://diamondconsultants.com/PublicSite/ideas/perspectives/downloads/Diamond2005OutsourcingStudy.pdf>]

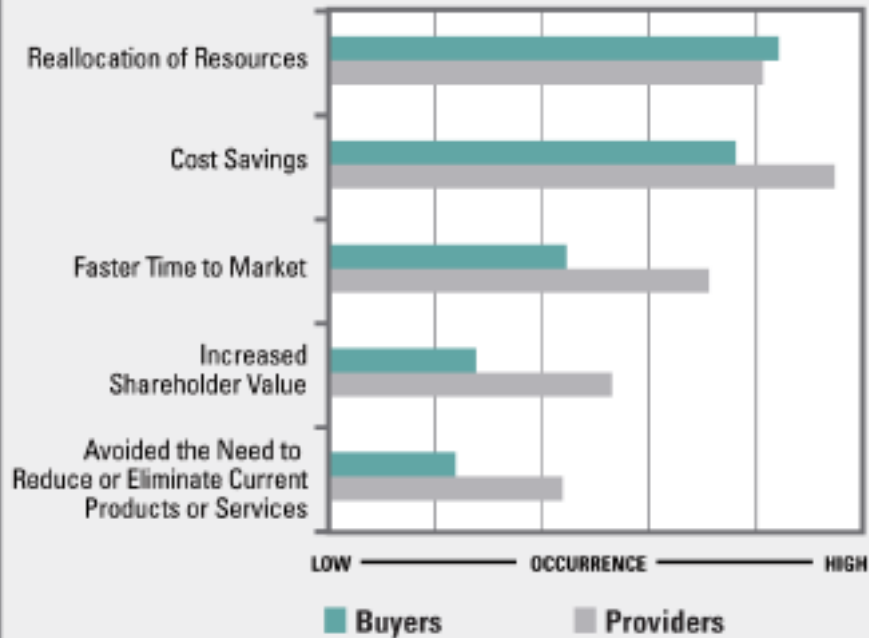


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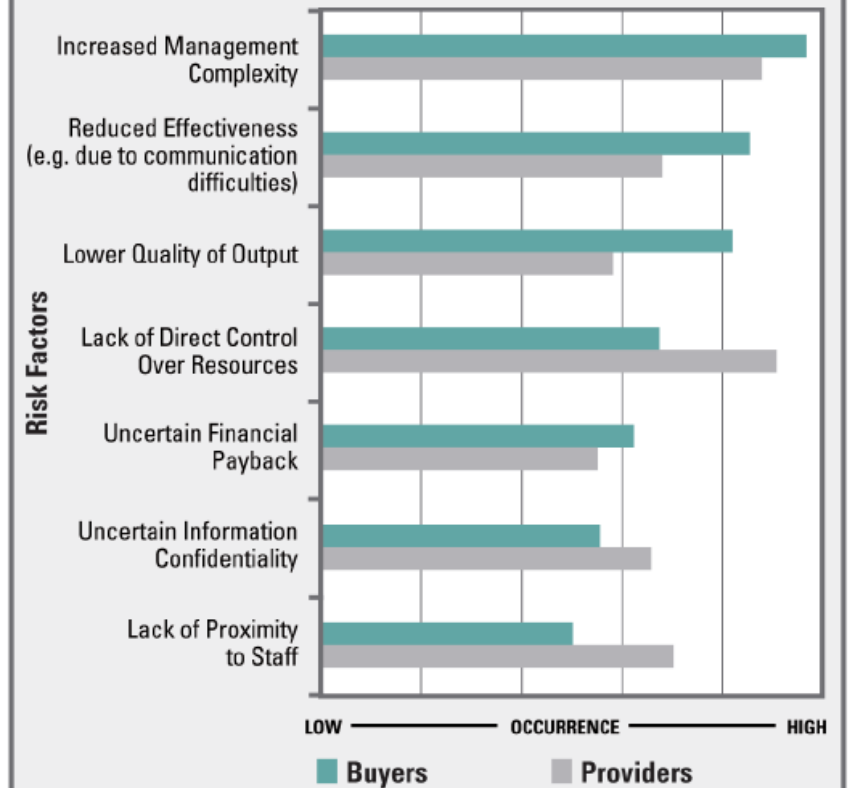
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Some facts on outsourcing (2)

OUTSOURCING BENEFITS



PRIMARY CONCERNS



[Source: DiamondCluster 2005: Global IT Outsourcing Study

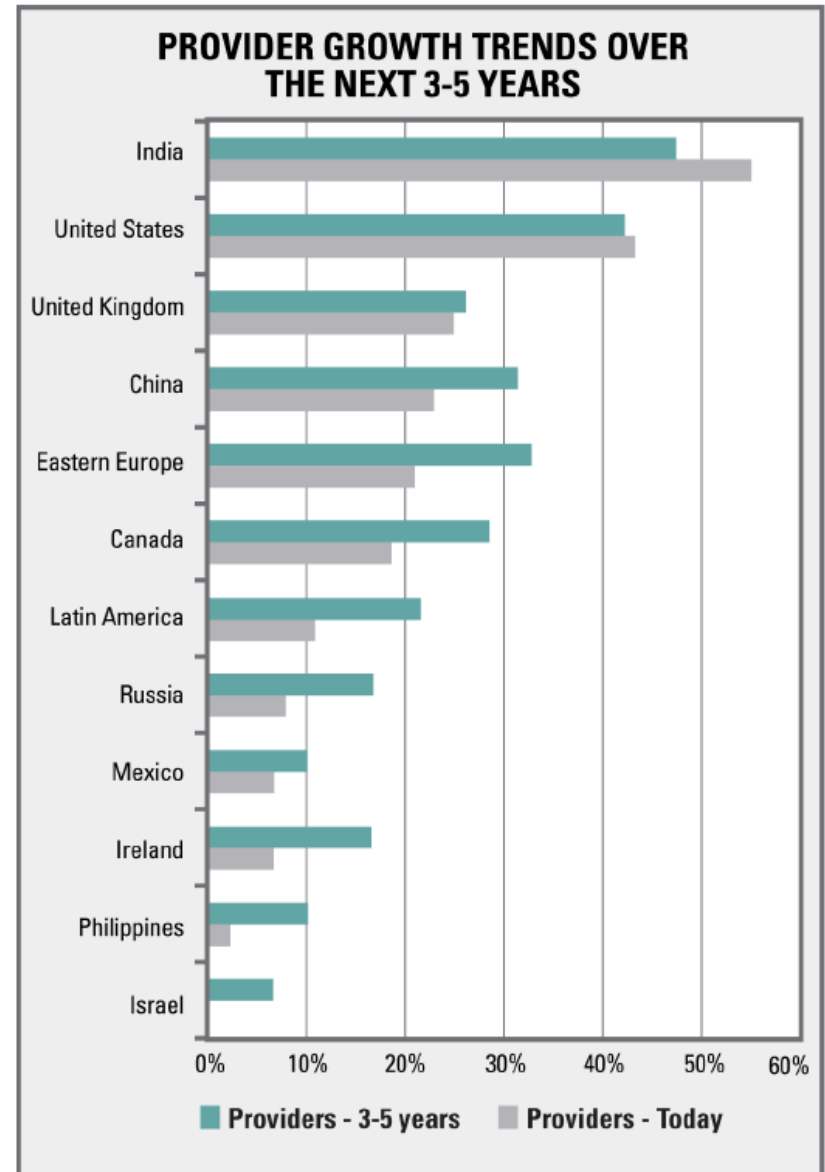
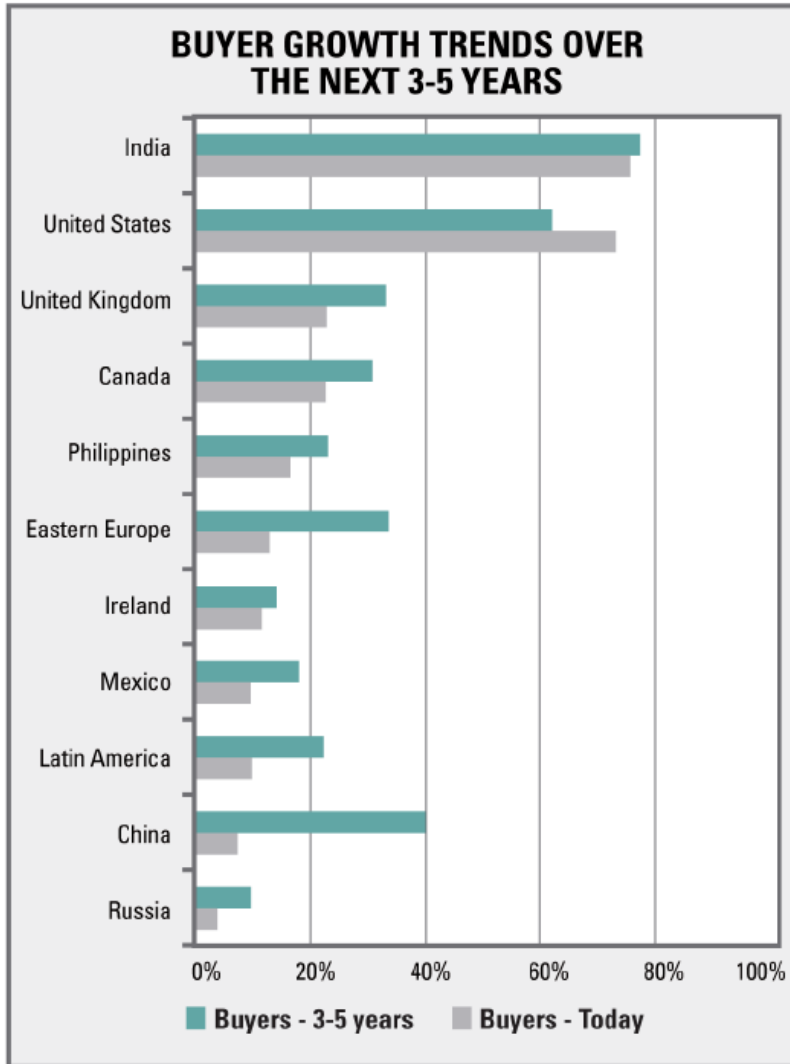
<http://diamondconsultants.com/PublicSite/ideas/perspectives/downloads/Diamond2005OutsourcingStudy.pdf>]



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Some facts on outsourcing (3)



Influence Factors

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



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Influence Factors

- EVARISTO (2003)
 - 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



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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



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Lessons Learned - 2

(Prikladnicki, 2003)

- ❏ 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



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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



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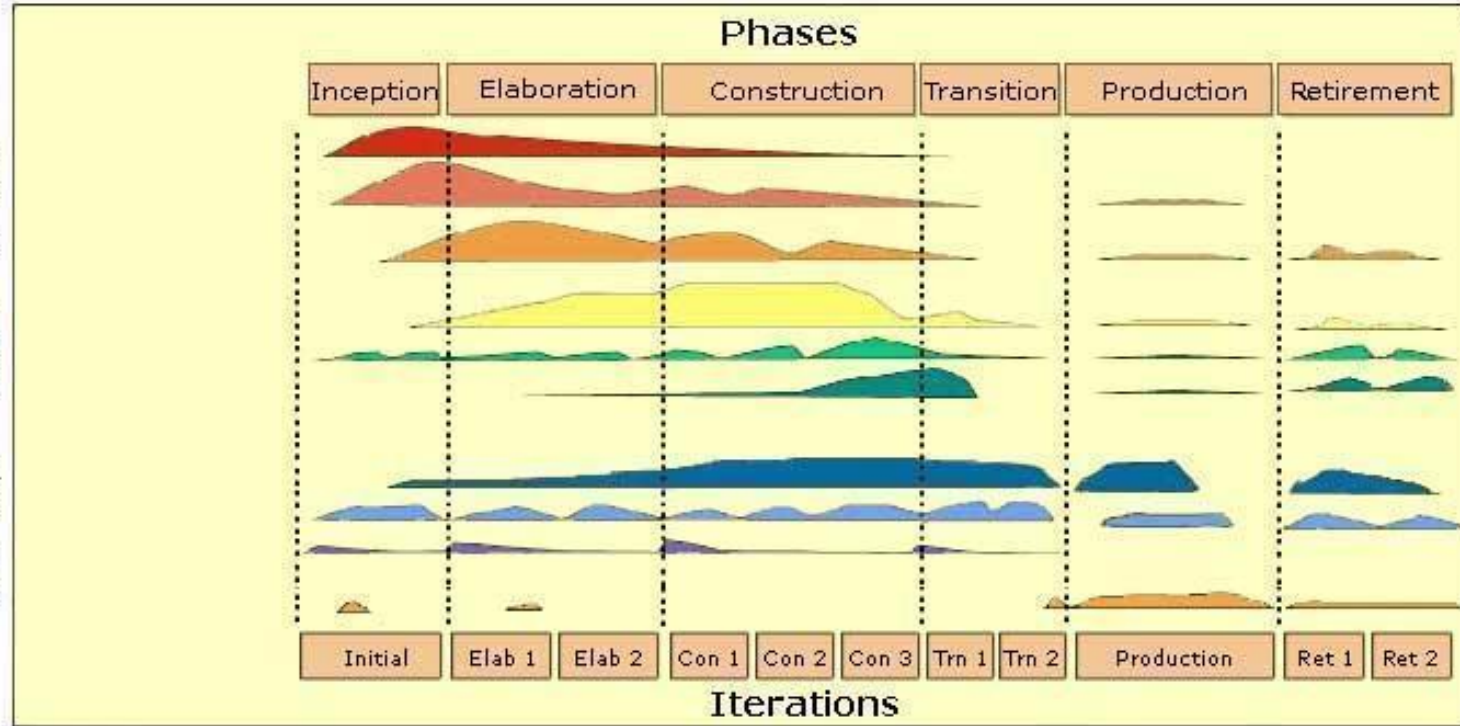
Key Concepts: Enterprise Unified Process

Development Disciplines

- Business Modeling
- Requirements
- Analysis & Design
- Implementation
- Test
- Deployment

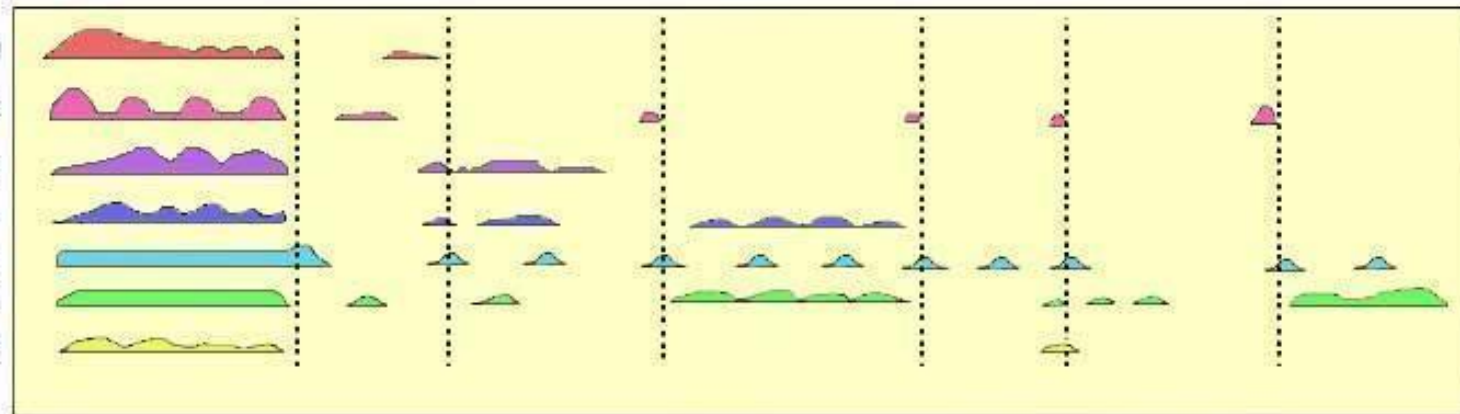
Support Disciplines

- 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)



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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



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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



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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.



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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 people's perspectives, needs

Project Management

- Ability to manage own work
- Ability to use other people's 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

influence

influence

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/terse or informal/formal), sound cues, and vibration modes.



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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



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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?



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References

- ❏ **Prikladnicki R, Audy J, Evaristo R (2003): Global software development in practice lessons learned. Software Process: Improvement and Practice, 8(4):267–281**
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