



Global Information Systems:

Cultural Aspects

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Contents

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 - Hofstede
 - Trompenaars & Hampden-Turner
 - Henderson
 - Pawlowski / Richter
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- ▣ Implications for Global Information Systems



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The Open Unified Process – Disciplines

- Architecture
 - Architecture Notebook
- Configuration and Change Management
- Development
 - Design
 - Build
 - Developer Test
 - Implementation
- Project Management
 - Iteration Plan
 - **Project Plan**
 - Work Items List
 - **Risk List**
- Requirements
 - Supporting Requirements Specification
 - Vision
 - Use Case
 - Glossary
 - Use-Case Model
- Test
 - Test Case
 - Test Log
 - Test Script
- Roles
- Artefacts / Support

[Source: <http://www.epfwiki.net/wikis/openup/>]



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Definitions of Culture

- ❏ “Culture is the collective programming of the mind which distinguishes the members of one category of people from another.” (Hofstede, 1984)
- ❏ “Most social scientists today view culture as consisting primarily of the symbolic, ideational, and intangible aspects of human societies. The essence of a culture is not its artifacts, tools, or other tangible cultural elements but how the members of the group interpret, use, and perceive them. It is the values, symbols, interpretations, and perspectives that distinguish one people from another in modernized societies; it is not material objects and other tangible aspects of human societies. People within a culture usually interpret the meaning of symbols, artifacts, and behaviors in the same or in similar ways” (Banks et al. 1989)

Definitions of Culture

- ❏ Culture is defined as the “[...] definitive, dynamic purposes and tools (values, ethics, rules, knowledge systems) that are developed to attain group goals” (Mabawonku, 2003)
- ❏ Culture includes “[...]every aspect of life: know-how, technical knowledge, customs of food and dress, religion, mentality, values, language, symbols, socio-political and economic behavior, indigenous methods of taking decisions and exercising power, methods of production and economic relations, and so on.” (Verhelst, 1990)
- ❏ The system of shared beliefs, values, customs, behaviours, and artifacts that the members of society use to cope with their world and with one another, and that are transmitted from generation to generation through learning (Bates, Plog, 1990)



How does culture influence GSD / GLIS?

- Impact on
 - Working style
 - Group behavior
 - Communication
 - Design
 - ...
- How to represent culture / which aspects should be analyzed?
- How do these aspects influence design and development processes?

More perspectives on “culture”

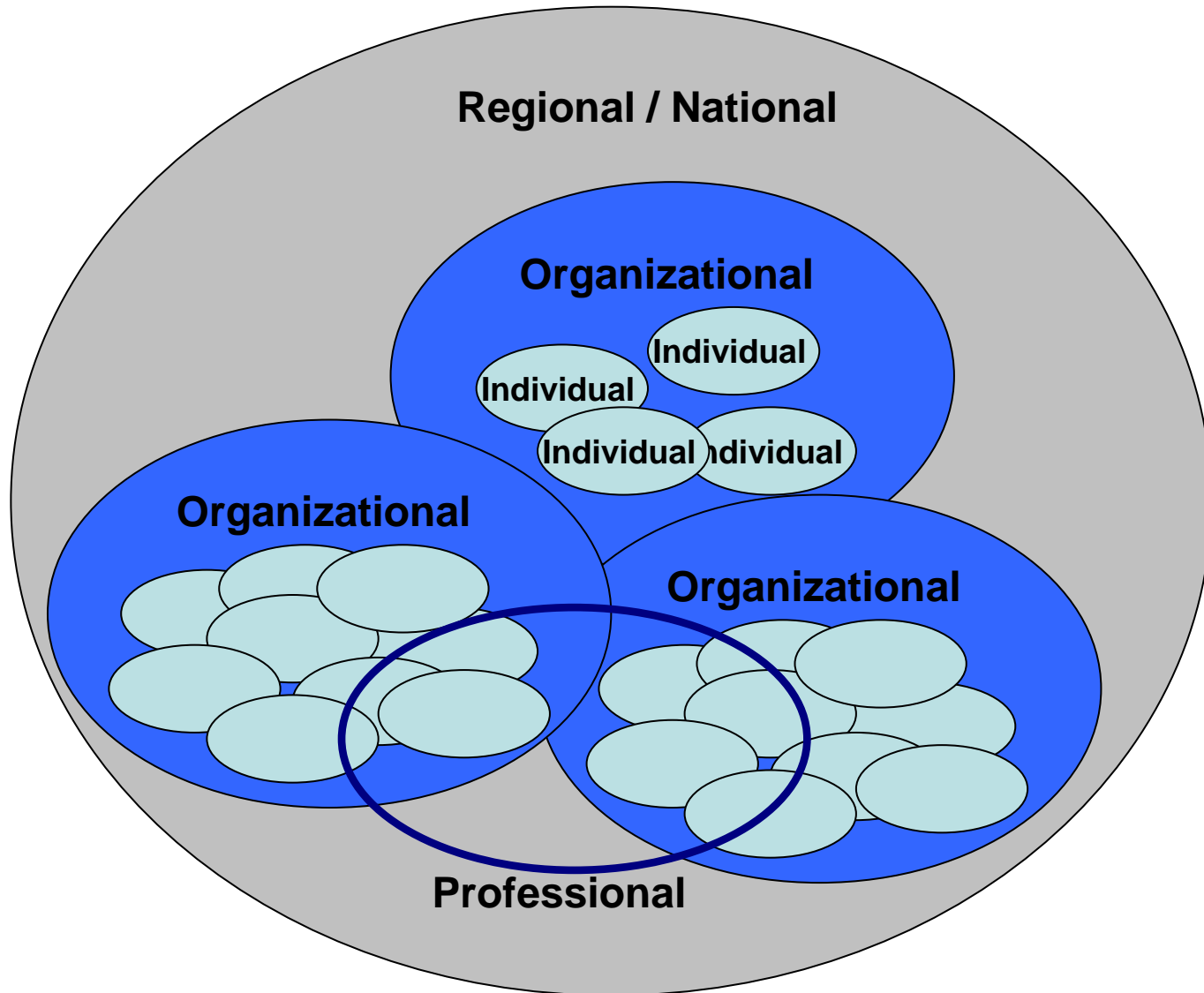
- ❏ Organizational or corporate culture: Management style, rewards, working atmosphere
- ❏ Professional culture: Formal education within a group of professionals
- ❏ Functional culture: functional roles within the organization
- ❏ Team culture: common work experiences



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Culture Levels



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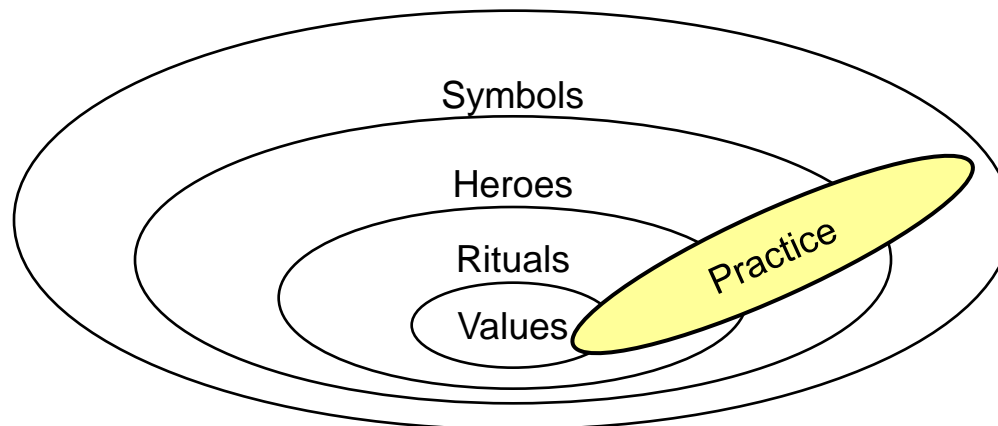
Eastern vs. Western Management (Haghirian, 2007)

Western Management	Eastern Management
Hierarchical, egalitarian command, segmented concern	Free-form command, roles loosely defined, holistic concern
Professional managers, position related to function	Social leaders often with high sounding titles for low ranking jobs
Particularism, specialized career path possibly with rapid evaluation and promotion, individually oriented	Non-specialized career paths, slow evaluation, regimented promotion, socially oriented
Decentralization of power	Centralization of power
Mobility Stability	Diversity Unity
Direct approach	Indirect approach
Systematic analysis, standardization, categorization, classification, conceptualization, precision	Ambiguity, reaction, adaptation
Long-term set planning	Often lack of formal set planning, high flexibility in adjustment
Explicit control mechanisms	Implicit control mechanisms
Organizations and systems adapt for change	Leaders/managers adapt to change

Adapted from: Haghirian, P.: Management in Japan – The kaisha in the 21st Century, Keio University, Japan, 2007

Hofstede's "Dimensions of Culture" (1)

- Model to compare cultures
- Culture as a set of typical attributes / behaviours (manifestations of culture)
 - Values
 - Rituals
 - Heroes
 - Symbols
- Based on a study for IBM in 64 countries / follow-up studies
- http://www.geert-hofstede.com/hofstede_dimensions.php



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Hofstede's "Dimensions of Culture" (2)

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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Hofstede's "Dimensions of Culture"

Country/Region	Score	Rank	Country/Region	Score	Rank	Country/Region	Score	Rank
Germany	26	70	Germany	67	18	Germany	66	11-13
Austria	11	74	Austria	55	27	Austria	79	4
France	68	27-29	France	71	13-14	France	43	47-50
Spain	57	45-46	Spain	51	30	Spain	42	51-53
Portugal	63	37-38	Portugal	27	49-51	Portugal	31	65
South Korea	60	41-42	South Korea	18	63	South Korea	39	59
Brazil	69	26	Brazil	38	39-40	Brazil	49	37
Guatemala	95	3-4	Guatemala	6	74	Guatemala	37	61-62

Values for Power Distance Index (PDI)

Country/Region	Score	Rank
Germany	65	43
Austria	70	35-38
France	86	17-22
Spain	86	17-22
Portugal	104	2
South Korea	85	23-25
Brazil	76	31-32
Guatemala	101	3

Values for Individualism Index (IDV)

Country/Region	Score	Rank
Germany	31	25-27
Austria	31	25-27
France	39	19
Spain	19	35-36
Portugal	30	28-30
South Korea	75	6
Brazil	65	7
Guatemala	n.a.	n.a.

Values for Masculinity Index (MAS)

Values for Uncertainty Avoidance Index (UAI)

Values for Long-Term Orientation Index (LTO)

[Source: http://www.geert-hofstede.com/hofstede_dimensions.php]



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Power distance index (PDI)

Small

- Teachers treat students as equals
- Students treat teachers as equals
- Student-centered education
- Students initiate some communication in class
- Teachers are experts who transfer impersonal truths

large

- Students dependent on teachers
- Students treat teachers with respect
- Teacher-centered education
- Teachers initiate all communication in class
- Teachers are gurus who transfer personal wisdom

Individualism index (IVD)

Individualism

- Purpose of education is learning how to learn
- Students' individual initiatives encouraged
- Students are expected to speak up in class when they need or want to
- Students associate according to interests
- Diplomas increase economic worth and/or self-respect

Collectivism

- Purpose of education is learning how to do
- Students' individual initiatives discouraged
- Students only speak up in class when sanctioned by group
- Students associate according to in-groups
- Diplomas provide entry to higher-status group: are sometimes bought

Masculinity index (MAS)

Masculinity

- Brilliant teachers admired
- Best student is norm
- Competition in class
- Praise for good student
- Students over-rate own performance
- Competitive sports belong to curriculum
- Failing in school is a disaster

Femininity

- Friendly teachers most liked
- Average student is norm
- Over-ambition unpopular
- Praise for weak student
- Students under-rate own performance
- Competitive sports extra-curricular
- Failing in school is a minor incident

Uncertainty avoidance index (UAI)

Strong

- Students want to know right answers
- Teachers supposed to have all answers
- Emotions in class can be expressed
- Pressure among students to conform
- Teachers inform parents

weak

- Students want good discussions
- Teachers may say “I don’t know”
- Emotions should be controlled anywhere
- Tolerance for differences in class
- Teachers involve parents

Long term orientation (LTO)

Long term orientation

- Students attribute success to effort and failure to lack of effort
- Studying hard is norm
- High performance at mathematics
- Talent for applied, concrete sciences
- Children learn to save

Short term orientation

- Students attribute both success and failure to luck and occult forces
- Enjoyment is norm
- Low performance at mathematics
- Talent for theoretical, abstract sciences
- Children learn to spend

Critical Analysis

- Empirical study in a corporate culture
- Results were evaluated in hundreds of settings
- Relative values seem to be stable (while absolute values are changing)
- Not applicable to all contexts
- Interpretations for GSD and specific components (e.g., communication) are questionable



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7 Dimensions of Trompenaars and Hampden-Turner

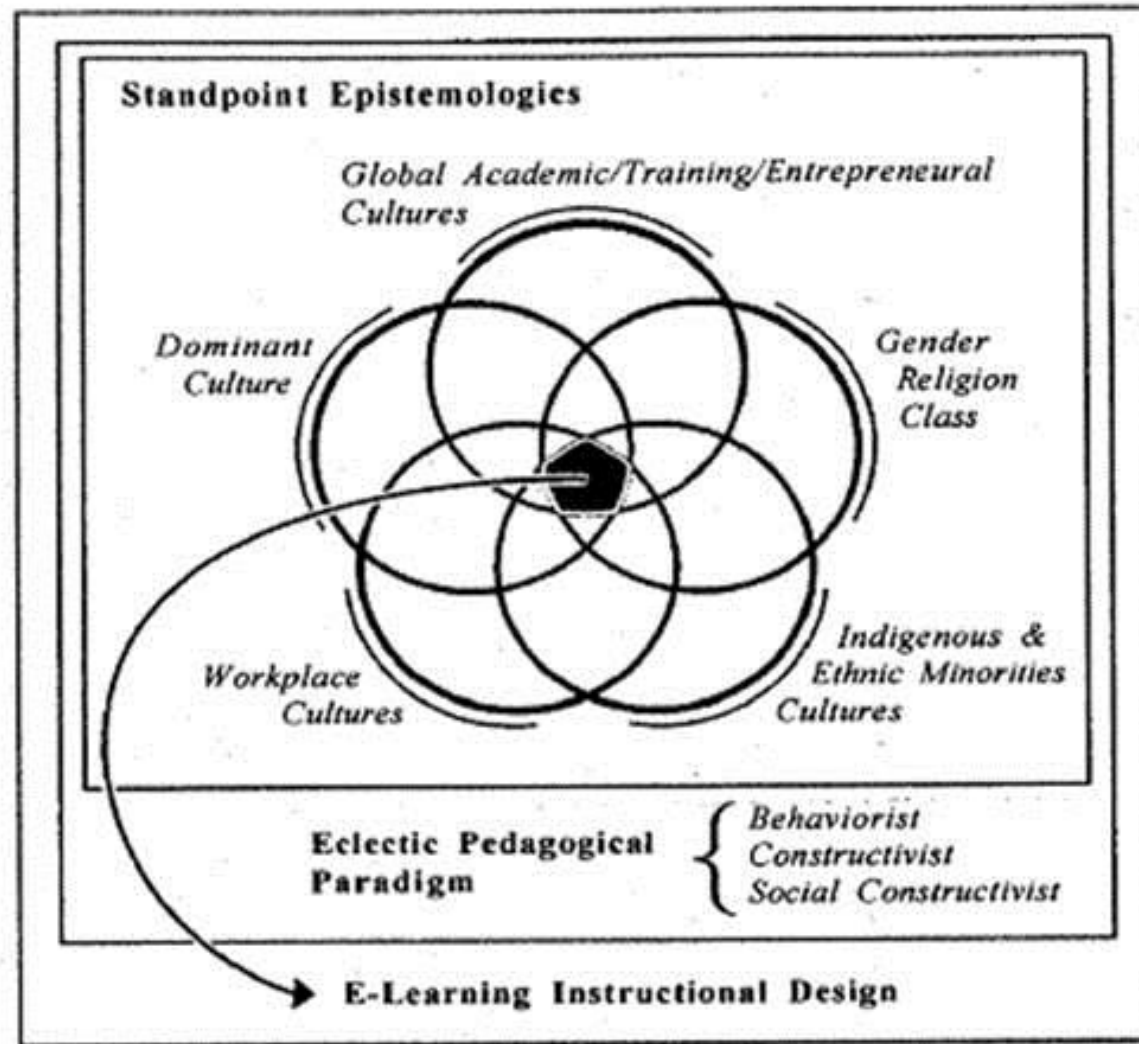
- universalism versus particularism
 - Rules vs. relationships
 - Ideas can be applied anywhere – or regarding certain circumstances
- individualism versus collectivism
 - IDV
- neutral versus affective
 - Emotional involvement
- specific versus diffuse
 - proximity between people, involvement in activities
- achievement versus ascription
 - relationship to other people
 - Is reputation based on people's „objective“ achievement or there position
- past, present, or future and sequential or synchronous
 - relationship to time and sequencing
- internal- or external-oriented
 - dealing with the environment



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Multiple cultures theoretical model (Henderson & Cook)



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14 Dimensions of Henderson (in the field of education / learning)

- Epistemology: Objectivism – Constructivism
- Pedagogical Philosophy: Instructivist – Constructivist
- Underlying Psychology: Behavioral – Cognitive
- Goal Orientation: Sharply-focused – Unfocused
- Experiential Value: Abstract – Concrete
- Teacher Role: Didactic – Facilitative
- Program Flexibility: Teacher-Proof – Easily Modifiable
- Value of Errors: Errorless Learning – Learning from experience
- Motivation: Extrinsic – Intrinsic
- Accommodation of Individual Differences: Non-Existent – Multi-Faceted
- Learner Control: Non-Existent – Unrestricted
- User Activity: Mathemagenic – Generative
- Cooperative Learning: Unsupported – Integral
- Cultural Sensitivity: Non-Existent – Integral



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Epistemology

Objectivism	Constructivism
<p>Knowledge is</p> <ul style="list-style-type: none">•comprehensive•structured•accurate•measured by tests	<p>Knowledge is</p> <ul style="list-style-type: none">•Individually constructed•with multiple perspectives•‘measured’ by the ability to create learning strategies
<p>The implication is that, once learners have learned about X learning units, they have mastered the topic.</p>	<p>Course allows participants to learn about X learning units, but then they are required to cite examples of how they could adapt the knowledge to accommodate each style.</p>

Pedagogical Philosophy

Instructivist	Constructivist
<ul style="list-style-type: none">•stress goals and objectives•are founded in behavioral psychology	<ul style="list-style-type: none">•encourage meta cognitive learning strategies•based on previous concepts or schema
<p>Courses have clearly identified and measurable learning objectives, so participants know exactly when they have 'learned' the desired material</p>	<p>In the course participants are asked to relate the learned material to examples they have seen in their work or lives</p>

Underlying Psychology

Behavioral	Cognitive
•only 'correct' responses accepted	•learners are allowed to build knowledge based on previous experience
Learners are expected to complete tasks exactly as ordered	Learners are allowed to integrate their experiences into learning

Goal Orientation

Sharply-focused	Unfocused
<ul style="list-style-type: none">•clearly defined, pre-set goals	<ul style="list-style-type: none">•No pre-set goals•Self set goals
<p>If the learner knows the material, they have successfully achieved the goals</p>	<p>One activity in the course has participants reflecting on what they learned and how they learned it, then analyzing their own learning style based on what they discovered.</p>

Experiential Value

Abstract	Concrete
<ul style="list-style-type: none">•Abstract•indicating 'removed from reality'•“ignores” specific influence factors of the real world	<ul style="list-style-type: none">•indicating relevance to the learner's world•takes all influence factors into account
<p>Learners are not expected to relate content to their past or potential experiences. Focus on models</p>	<p>Learners are encouraged to apply 'knowledge' to their activities at work</p>

Teacher Role

Didactic	Facilitative
<ul style="list-style-type: none">•Teacher presents the knowledge•Focuses on lectures	<ul style="list-style-type: none">•Teacher facilitates learning without controlling outcomes•Focuses on group works and assignments
<p>The instructor of the course is the expert and all questions or concerns can be resolved by this expert</p>	<p>When students have questions or concerns that they could, with some help, resolve or discover answers on their own, the instructor helps them learn to find the solution themselves.</p>

Program Flexibility

Teacher-Proof	Easily Modifiable
<ul style="list-style-type: none">•Course and learning activities are fixed•No Changes are possible	<ul style="list-style-type: none">•Teacher accepts suggestions and errors•Program can be changed if necessary
<p>The instructor contributes knowledge; it is up to the student to learn it. The teaching techniques would not be the cause of faulty learning.</p>	<p>The instructor recognizes his/her faulty instructional activity and modifies it to suit the learners</p>

Value of Errors

Errorless Learning	Learning from experiences
<ul style="list-style-type: none">•Errors are not tolerated in any way•Students learn until either they generate no errors	<ul style="list-style-type: none">•Errors are a part of the learning process•Errors will be analyzed to learn from them
<p>Once students can consistently and errorless define and describe the content, they have 'learned'.</p>	<p>If students make a mistake, they are offered another opportunity to learn by recognizing their error and then correcting it</p>

Motivation

Extrinsic	Intrinsic
<ul style="list-style-type: none">•Motivation originates from factors separate from the learner•“the need to get the best grade”	<ul style="list-style-type: none">•Motivation originates from within•“a true desire to learn”
<p>Students are memorizing facts and definitions to pass the course.</p>	<p>Students are genuinely interested in learning new knowledge or skills and applying them to real life situations</p>

Accommodation of Individual Differences

Non-Existent	Multi-Faceted
<ul style="list-style-type: none">•Differences of individual learning style and strategies are not considered	<ul style="list-style-type: none">•knowledge and learning presented in a variety of ways•learners can utilize what most suits their preferences
<p>Only text reading and drill-and-practice are offered as course activities</p>	<p>Students can read text, watch online videos or analyze case studies in order to learn.</p>

Learner Control

Non-Existent	Unrestricted
<ul style="list-style-type: none">•The learner must learn along a predetermined path•Learning activities and their order is fixed	<ul style="list-style-type: none">•learn by discovery, which means the learner has unrestricted control of the path•The learner can control what to do when
<p>The learners are sequentially mastering the content and will know when their learning is complete</p>	<p>The learners can chose the learning activities that appeal to them</p>

User Activity

Mathemagenic	Generative
<ul style="list-style-type: none">•Learners have the opportunity to access the same content, but in different ways	Learners are engaged in the process of creating learning material
Learners access pre-set learning material.	Learners are allowed to expand upon other uses of knowledge and are asked to research an example

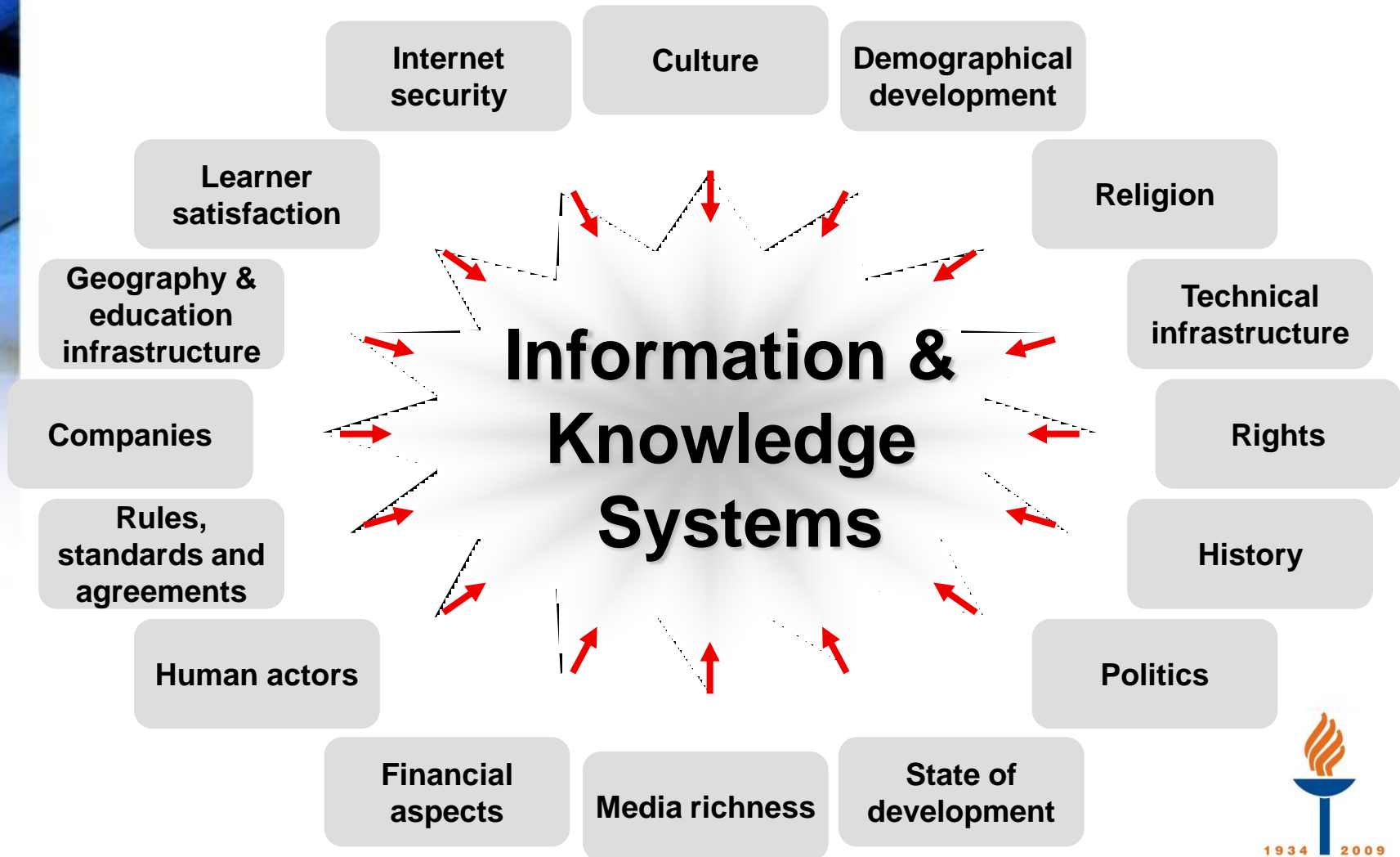
Cooperative Learning

Unsupported	Integral
<ul style="list-style-type: none">•Learners work independently of others•Individual work	<ul style="list-style-type: none">•Learning is encourage through cooperative activities among learners•Group work
<p>Each learner protects his or her knowledge, as success is determined by mastering the topic to the instructor's satisfaction</p>	<p>The instructor provides activities which allow learners to exchange ideas and experiences, thus augmenting the information and skills learned</p>

Cultural Sensitivity

Non-Existent	Integral
<ul style="list-style-type: none">•The cultural differences are completely ignored (even if unintentionally)	<ul style="list-style-type: none">•The cultural differences are an integral part of the course and learning
<p>The instructor assumes that all learners will learn equally by the way he/she teaches and by the activities presented.</p>	<p>The instructor or designer of the course attempts to keep images and examples free from stereo- types and uses internationally recognized symbols.</p>

Context Metadata (Pawlowski, Richter, 2007)



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Summary

- ❏ Culture models are abstract, focusing (in most cases) on national culture
- ❏ Take the models as an orientation
- ❏ Take the categories as factors to observe
- ❏ Don't forget to look at other cultural levels (e.g., professional) and individuals!
- ❏ Use the models as a discussion issue: observe, reflect, ask, discuss and share!



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Consequences for research and practice

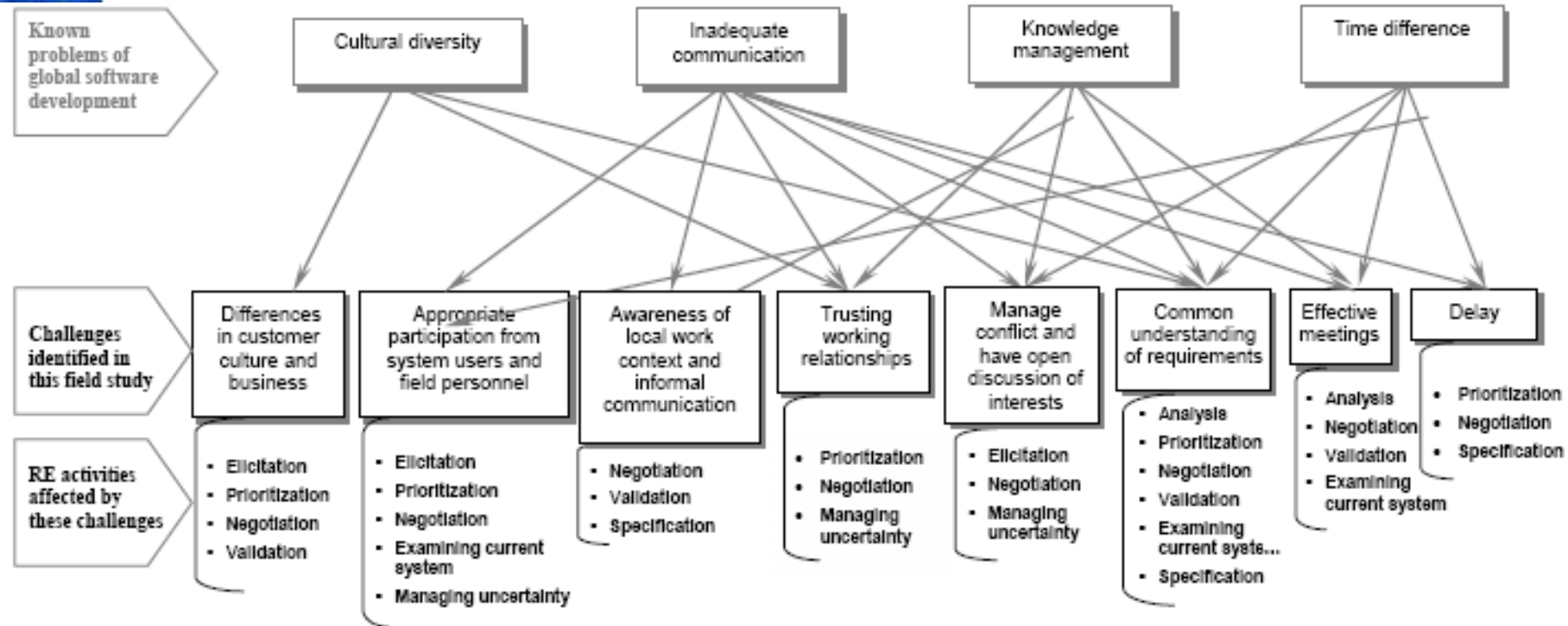
- How to relate cultural influence factors and development work?
- Culture as main driver for
 - requirements,
 - project planning,
 - coordination and
 - communication



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Requirements: Aspects and Relations (Damian, Zowghi, 2003)



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Requirements Engineering

❏ Planning

- Identifying user needs
- Formalizing user needs
- Development intention document (OpenUP)

❏ Conception: Requirement analysis

- Refining vision and project objectives
- Identifying functional and non-functional aspects
- Architecture
- Risks
- Use cases

❏ Review / Negotiation



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Requirements: Specifics in GLIS

- ❏ Participants: Involvement of people in remote teams
- ❏ Enable (self-)reflection and cultural exchange
- ❏ Embed culture awareness processes
- ❏ Common modeling language / tools (e.g., UML) to avoid misunderstandings
- ❏ Separate versions in case of distributed user groups (UI requirements)
- ❏ Non-functional requirements regarding cultural aspects
- ❏ Focus on clear review process
- ❏ ...

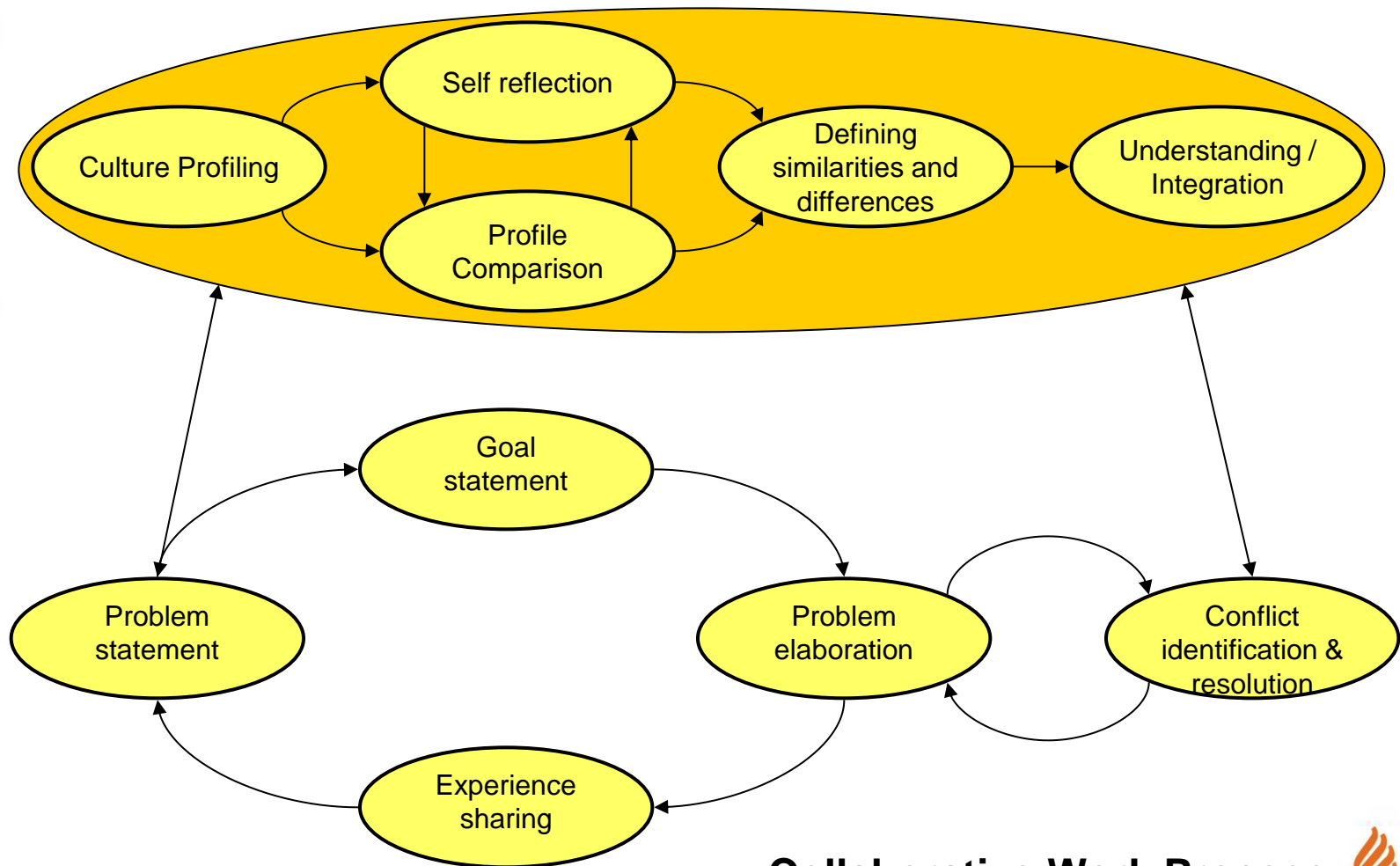


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Culture Awareness Process

Culture Awareness Process



Collaborative Work Process



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Culture Profiles

IMS LIP

- Identification
- Goals
- Qualifications
- Activities
- ...

Culture Profile Specification

- General
- Reference
- Educational
- Culture
- Communication
- ...

RCDEO

- Competency description
- Evidence
- ...

Culture Profile Instance (Nation / Region)

Culture Profile Instance (Group)

Culture Profile Instance (Actor)

- ...
- Experience 1: Study Netherlands
- Experience 2: Project Korea
- Native Culture: Germany
- ...

E-Portfolio

- Organizations
- Identification
- Resources
- Products
- ...

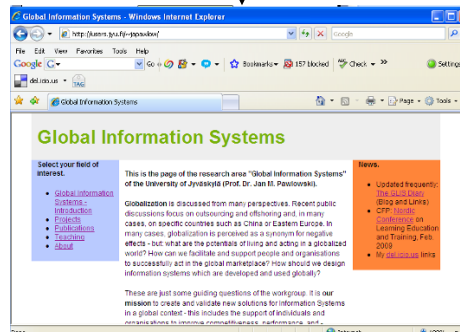
Instantiation

Contains Characteristic

Contains Product

Defined Culture Competencies

Presentation



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Summary

- ❏ Models to represent culture...
 - Have been developed for different purposes and context
 - Vary in their level of abstraction
 - Can be used as a guideline to identify influence factors
- ❏ No model is validated to cover all influence factors for a design and development process
- ❏ Besides: Other requirements have to be taken into account!



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At the end of this phase, the following results should be ready:

- Requirements planning
 - Analysis
 - Process
 - Review / negotiation
 - Requirements report
 - Architecture requirements
 - Use cases
- Cultural awareness
 - Culture profiles for countries, organizations
 - Culture specific requirements



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Questions

- ❏ Define culture as a generic term including different perspectives.
- ❏ What are the differences between the model of Hofstede and Henderson?
- ❏ How would you describe your own culture?
- ❏ Which aspects should be in the focus when designing a knowledge management systems?



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