



ICGSE 2007 Workshop: Offshoring of software development  
- Methods and Tools for Risk Management -

Further Steps in **Analyzing** the Dimensions of  
**Hofstede's Model of National Culture for Potential Relevance to Risk Analysis in GSD**

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**Risk Management  
(in Global Software Development)**



Risk Management is:

- Anticipation of possible events ...
- ... with impact on people, schedule, budget and quality.
- Influencing possible impact of selected events by controls.

Events/Risks:

- Opportunities (positive impact)
- Threats (negative impact)

Tasks:

- Identify risks
- Determine likelihood of occurrence (e.g. low, medium, high)
- Determine the degree of impact (e.g. low, medium, major)
- Define controls to avoid or mitigate impacts of selected risks
- Execute controls

Risk Sources Specific to Global Software Development (GSD):

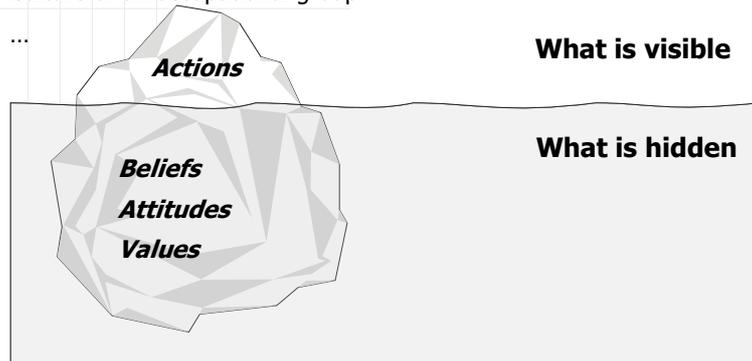
- Geographical distance
- Different time zones
- **Cultural distance**  
(**culture of locations** and **cultural diversity** between locations)

Sources: Ågerfalk et al. (2005), Klem (2004)

## Some Levels in Society where the Concept of Culture can be applied



- National culture
- Organizational or corporate culture
- Culture of an occupational group
- ...



*Iceberg model's source [modified]: Duarte and Snyder (2006)*

*Further sources: Hofstede and Hofstede (2005), Schein (2003)*

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## Hofstede's Model of National Culture



- Empirical foundation  
(value survey among IBM employees, replication studies)
- 5 Dimensions → measures:
  - Power Distance (PD) → power distance index (PDI)  
(How far are differences in power accepted and expected?)
  - Individualism (vs. collectivism) (IDV) → individualism index (IDV)  
(Are groups major social constructs or should everybody care for himself?)
  - Masculinity (vs. femininity) (MAS) → masculinity index (MAS)  
(How strong do gender roles overlap? high MAS for low overlap)
  - Uncertainty avoidance (UA) → uncertainty avoidance index (UAI)  
(How much fear do ambiguity and unknown situations cause?)
  - Long-term (vs. short-term) orientation (LTO) → index of long-term orientation (LTO)  
(How far are virtues fostered that promise future rewards?)
- Rich set of data  
(74 countries (PDI, IDV, MAS, UAI) and 39 countries (LTO))

*Source: Hofstede and Hofstede (2005)*

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## Possible Benefit of Hofstede's Model for Risk Management in GSD



### Support of:

- Judgment of possible events:
  - Likelihood
  - Impact
- Development of controls:
  - Deeper insights into local culture
    - construct controls with respect to local culture
    - judge efficiency of controls with respect to local culture
- Assure sensibility for cultural differences between locations

### Possible Questions:

- Is Hofstede's model of practical relevance to GSD? Do we see effects of culture that can be explained by the dimensions?
- Are there other (cultural) factors to consider?
- Can examples be given for the benefits of the model to risk management in GSD?

## Applying Hofstede's Model to Survey Data



### A Qualitative and explorative survey among 21 users of GSD

- Expert interviews, interview guidelines
- Research questions: Goals, processes, effects of cultural distance, ...
- Data processing with open coding
- Not primarily undertaken to evaluate Hofstede's model for risk management

#### Experts from:

- Germany (17)
- UK (2)
- Switzerland (2)

#### Off- / Nearshore locations in focus:

- Spain (1)
- Bulgaria (1)
- Czech Republic (3)
- Poland (1)
- Estonia (1)
- India (8)
- Romania (1)
- Belarus (2)
- Ukraine (3)

Source: Krick (2007)

## Practical Relevance to GSD and the Effects of (National) Culture



Dimension	PD	IDV	MAS	UA	LTO
Effect	(✓)	✓	?	(✓)/⚡	✓
Description	issues related to hierarchy and communication	in-group effects: additional services, efficient solving or avoiding of escalations	-	productivity, value of time; tolerance to ambiguity: specification & work instructions	willingness to do long hours
Other factors	OGC / CC: process orientation	-	-	NAC: cyclical perception of time OGC: process orientation	-

- ✓ effect as Hofstede's model suggests
  - (✓) effect as Hofstede's model suggests in some locations, further factors necessary to explain differences among locations
  - ⚡ effect opposite to suggestions by Hofstede's model
- NAC: national culture  
 CC: corporate culture  
 OGC: occupational group culture

## Using Hofstede's Model for Judgment of Risks and Construction of Controls



### For locations with low IDV (*Hypothesis*):

- Risk / Opportunity: Preferred Treatment as in-group member.
  - Impact: medium or high
  - Likelihood: high
  - Control:
 

Given the limited effectiveness and efficiency of contracts for international relations, the typical budget for contract design should be reduced (in comparison to locations with higher IDV) in favor of reserving resources for establishing and maintaining personal informal relations (e.g. travel, social events).  
If location has high PDI, informal relations should also be supported between higher and top management of both sides.

## Assuring Sensibility for Cultural Differences

### Two users reported that they have been surprised by the extent of cultural differences

- Both users from Germany
- Locations that caused the surprise:
  - Spain
  - Hungary
- Part of the described differences can be explained by higher PDI

Data for Hofstede's model for these locations:

	PDI	IDV	MAS	UAI	LTO
Germany	35	67	66	65	31
Spain	57	51	42	86	19
Hungary*	46	80	88	82	50

\* This location was not in the main focus of the interview, but mentioned by the expert.  
 Source: Hofstede and Hofstede (2005)

## Outlook

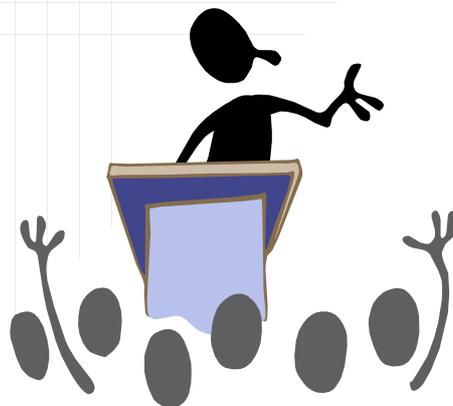
- Hofstede's model is of practical relevance to GSD, this could be indicated for four dimensions (PD, IDV, UA, LTO).
- Hofstede's model can help to
  - judge risks and controls
  - develop controls
  - assure sensibility for cultural differences between locations
 } especially with some experience with the location
- But, concerning one aspect it could be shown, that Hofstede's model leads to opposite expectations. For explaining some effects (differences between locations) additional cultural factors (corporate culture, national culture, occupational group culture) had to be considered.
  - Results of research if and how Hofstede's model can be applied have to be considered specific to a domain (e.g. GSD) and the location(s).
  - For new locations using Hofstede's model or transfer of the model's application has to be done with care. Here it can be used to make an "educated guess", if no further information is available.
  - Further – maybe quantitative – research is needed, which other factors have to be taken into account in which locations.

## References

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**Thank you for your attention!**  
**Questions?**



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## Discussion Resource: PDI

### PDI

Country	PDI	IDV	MAS	UAI	LTO
CH	26	69	72	56	40
DE	35	67	66	65	31
UK	35	89	66	35	25
EE	40	60	30	60	-
HU	46	80	88	82	50
CZ	57	58	57	74	13
ES	57	51	42	86	19
PL	68	60	64	93	32
BG	70	30	40	85	-
IN	77	48	56	40	61
RO	90	30	42	90	-

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## Discussion Resource: IDV

### IDV

Country	PDI	IDV	MAS	UAI	LTO
BG	70	30	40	85	-
RO	90	30	42	90	-
IN	77	48	56	40	61
ES	57	51	42	86	19
CZ	57	58	57	74	13
EE	40	60	30	60	-
PL	68	60	64	93	32
DE	35	67	66	65	31
CH	26	69	72	56	40
HU	46	80	88	82	50
UK	35	89	66	35	25

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## Discussion Resource: MAS

### MAS

Country	PDI	IDV	MAS	UAI	LTO
EE	40	60	30	60	-
BG	70	30	40	85	-
ES	57	51	42	86	19
RO	90	30	42	90	-
IN	77	48	56	40	61
CZ	57	58	57	74	13
PL	68	60	64	93	32
DE	35	67	66	65	31
UK	35	89	66	35	25
CH	26	69	72	56	40
HU	46	80	88	82	50

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## Discussion Resource: UAI

### UAI

Country	PDI	IDV	MAS	UAI	LTO
UK	35	89	66	35	25
IN	77	48	56	40	61
CH	26	69	72	56	40
EE	40	60	30	60	-
DE	35	67	66	65	31
CZ	57	58	57	74	13
HU	46	80	88	82	50
BG	70	30	40	85	-
ES	57	51	42	86	19
RO	90	30	42	90	-
PL	68	60	64	93	32

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## Discussion Resource: LTO

### LTO

Country	PDI	IDV	MAS	UAI	LTO
EE	40	60	30	60	-
BG	70	30	40	85	-
RO	90	30	42	90	-
CZ	57	58	57	74	13
ES	57	51	42	86	19
UK	35	89	66	35	25
DE	35	67	66	65	31
PL	68	60	64	93	32
CH	26	69	72	56	40
HU	46	80	88	82	50
IN	77	48	56	40	61