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ANNO 1919

# MEASURING SOFTWARE ENGINEER MOTIVATION IN GLOBALLY DISTRIBUTED PROJECTS

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38<sup>th</sup> Euromicro Conference on Software Engineering  
and Advanced Applications  
7<sup>th</sup> September, 2012

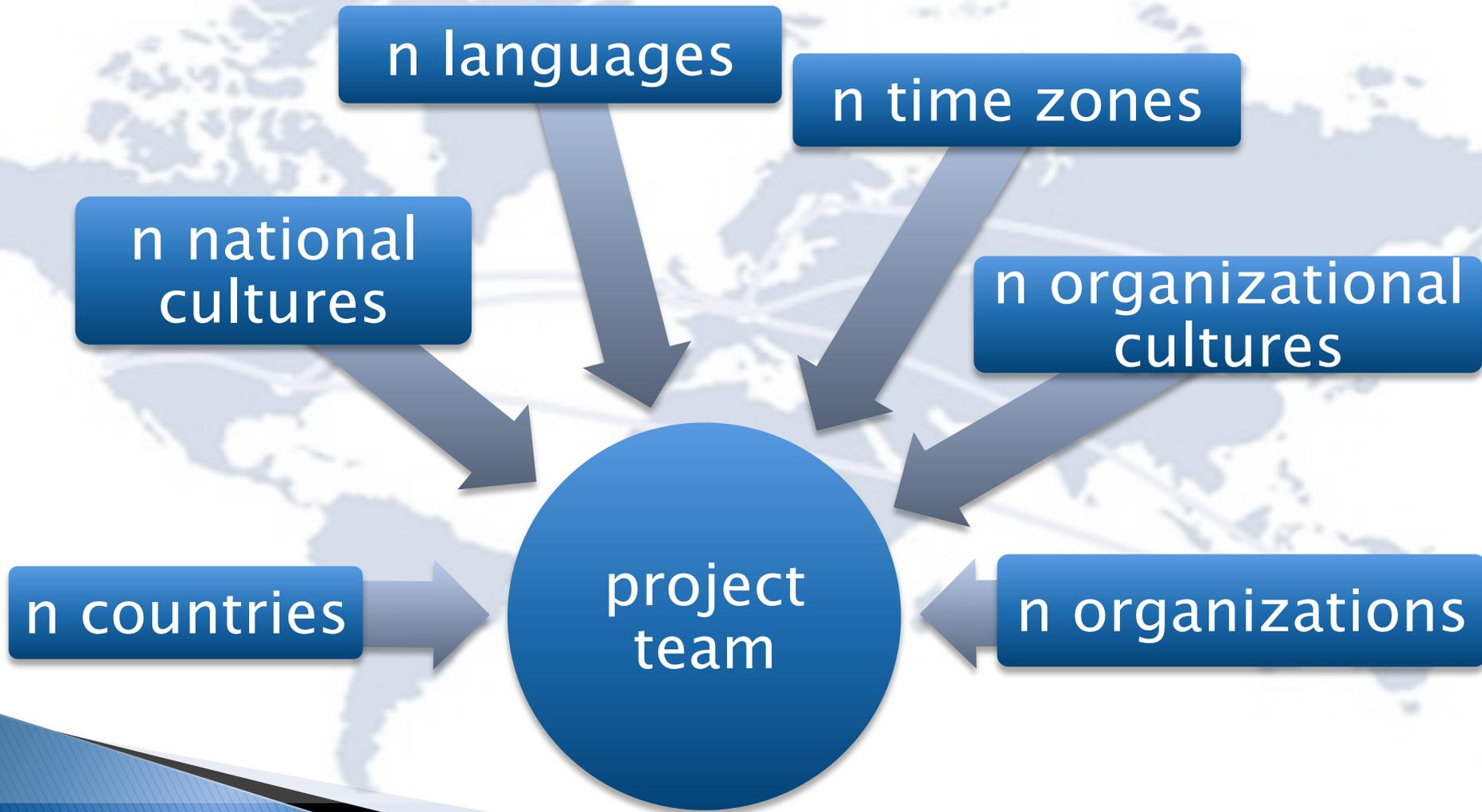


This work has been supported by ESF project No. 2009/0216/1DP/1.1.1.2.0/09/APIA/VIAA/044





# Globally distributed project



# Benefits and drawbacks of GSD



- + reduced development costs
- + large resource pool
- + reduced time-to-market etc.
- communication, coordination and control problems
  - ▶ low productivity
  - ▶ low conformance quality

# Why motivation is important?



Work motivation is the key determinant for retention and have large impact on productivity and software quality. (S. Beecham et al., 2008)





# Goal

To develop a survey instrument in order to explore motivational needs and assessment of present work motivation of software engineers working in globally distributed projects.



# Research questions

1

How to measure software engineer motivation?

2

Which aspects of project distribution are important in order to measure motivation of software engineers?



# Research method

- ▶ Literature analysis on work motivation
  - in general
  - in the context of software engineering
  - in globally distributed development
  - measurement tools
  
- ▶ Literature from different research fields:
  - software engineering
  - organizational psychology
  - management





# Results of literature analysis

Work motivation is most often studied

- ▶ in context of job satisfaction and work design
- ▶ measured indirectly by assessment of satisfaction with different motivational factors



# Survey

A survey for software engineers working in global software development projects comprises 2 types of questions about:

- ▶ motivation of individual software engineers
- ▶ project distribution and external signs of motivation to be answered by project managers



# Seminal work

- ▶ Lists of motivating and demotivating factors from Beecham's et al. "Motivation in software engineering: a systematic literature review" (2008)
- ▶ Survey structure and scoring from R. J. Hackman & G. R. Oldham "The Job Diagnostic Survey" (1974)
- ▶ Forms of questions from F. P. Morgeson & S. E. Humphrey "The Work Design Questionnaire" (2006)



# Questionnaire about work motivation

Comprises questions about:

- ▶ employee's demographic characteristics
- ▶ job characteristics
- ▶ satisfaction with different aspects of job
- ▶ growth need strength
- ▶ most highly evoked motivators of productive work behavior
- ▶ methods and engineering practices used in a particular project



# Questionnaire about project distribution

Comprises questions about:

- ▶ size
- ▶ type (maintenance vs new development)
- ▶ involved companies
- ▶ involved countries, sites
- ▶ number of employees per site
- ▶ time zones
- ▶ external signs of software engineer motivation (productivity, absenteeism, retention etc.)



# Research progress

- ▶ Survey has been pilot tested on 30 respondents
- ▶ The results showed interesting trends
- ▶ Identified ways how to improve the survey

# Expected results



At the end of the study we expect to have a large high quality data set, which would enable us to do a rigorous analysis and identify trends regarding motivational needs of software engineers working in globally distributed projects.

# Thank you!

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