

# An empirical study on Global Software Development: Offshore Insourcing of IT Projects

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# Offshore Insourcing

- Offshore Outsourcing
  - Contracting services with an external organization located in another country
- Offshore Insourcing
  - Contracting with a wholly owned subsidiary also located in another country
- The first has become fairly common, but difficulties abound in trying to develop a relationship with an unknown foreign partner that is time and geographically distant.
- Such issues have led select organizations to create their own software development centers in countries like India, Russia, Brazil, Ireland, etc.
- Although offshore insourcing bypasses some of the tough contracting difficulties, a whole different set of issues is created.

# Approach Taken

- To conduct a case study in order to identify, through empirical data, difficulties that organizations involved in offshore insourcing of IT projects have faced
- Case study conducted
  - multinational organization with worldwide units
  - SW-CMM level 2
  - software development units responsible for **internal client demand** worldwide
  - headquarters in the U.S.
- Data collection
  - primary sources (interviews) and secondary sources (document reviews and software development process)
  - 11 interviews conducted only in Brazil

# Results – key points

- Difficulties identified
  - Requirements engineering
    - Different processes
    - Requirements were not sufficient detailed
  - Standards
    - Code standards, documentation, templates
  - Communication and language
    - Time-zone, communication infra-structure, slang
  - Culture, context sharing, and trust
    - Trust acquisition only by e-mail or conference calls
    - Few face-to-face meetings

# Results – key points

- Solutions taken
  - Planning (Offshore distribution model)
    - The creation of a model to improve the planning of distributed projects and the engagement of distributed teams
  - Training
    - Training in soft skills, including leadership, culture, context sharing,...
  - Process standardization
    - Three strategies were considered:
      - forcing standardization;
      - blending methodological components from the various sites into one “new” methodology;
      - and imposing high-level guidelines.
  - Trust acquisition and integration
    - Increase face-to-face meetings for at least part of the global team involved

# Results – key points

- Critical Success Factors identified
  - Software development process
    - Need to be the same, according to the people interviewed
  - Planning
    - To evaluate the distributed projects correctly and to select the proper unit to receive each project
  - Training
    - Improve the team capability to interact with teams globally dispersed
  - Infra-structure
    - Communication infra-structure
    - Tools (global configuration management?)
  - Team integration, communication and feedback
    - Not only face-to-face meetings, but also the frequent communication and feedback for all team is necessary

# Lessons Learned

- The existence of a global and well-defined software development process is very important in distributed projects
  - 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 project management, and in particular risk management need additional effort and steps
- The investment in recruiting and training global teams can minimize the difficulties related to soft-skills

# Future Goals

- To continue the analysis of organizations, its difficulties and solutions
- Will go deep in the study of specific factors found in this work
  - Requirements engineering
  - Risk management
  - Project allocation (Offshore Distribution Model)
  - How other organizations in similar situations are dealing with all these problems?



# Challenges of doing research in GSD

- In general
  - Some studies need to be conducted with organizations; some studies can be conducted with academic students
    - My experience in Brazil the last two years (master course x agreements between global organizations and PUCRS University)
  - Logistics, intellectual property, organization interest (what is in for me?)
- Specifically in Brazil
  - Distributed development is not new, but GSD is
  - Number of global companies with software development centers are increasing (both offshore outsourcing and insourcing)
  - As far as I know, we have few research concluded in this area (including my master thesis), but we are improving this metric
  - One research group – MuNDDoS, formally created two months ago
    - Motivation: the growth of this field in Brazil and the interest of organizations and professors to continue the research

# Challenges of doing research in GSD

- Case studies
  - It is complex to have a case study in GSD (qualitative or quantitative), including all sites involved.
  - My experience: I conducted case studies considering only part of global software teams and their point of view
    - Limited results - for the next studies we are planning to involve other sites
- Surveys
  - Respondents selection
  - My experience: we need to have a formal agreement aiming at to apply surveys in organizations and an internal sponsor for each study
- Experimental GSD
  - We are planning an experiment to fully evaluate a requirement elicitation process in GSD, involving two sites (Brazil and the U.S.)

# Thank you for your attention!

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