Dynamic Distributed Software Development Competencies - DD-SCALE Project in progress

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Evolution of ICT potential

Management mantras
- Mass production systems
- Basic IT management reporting
- Matrix management
- Competitiveness

Focus and applications of ICT
- Network management
- Core processes
- Knowledge management
- Learning industries
- Co-created economy
- Supply chain communities
- Cross-industry portals
- Network/web systems
- Logistics systems
- Customer systems
- Management

Orchestration business

- Customers, suppliers, partners
- Knowledge networks
- Co-creation
Figure 1: Onshore, Nearshore, and Offshore Market Characteristics

- **Onshore**: Outsourcer typically located in the same country as client.
- **Nearshore**: Proposition closely related to offshore but uses similarities to client location and convenience to compensate for relatively high cost.
- **Offshore**: Use of foreign location to deliver benefits not available to local providers – e.g., Low cost base, access to skills. Aided by advances in technology, offshore is maturing from being a cost-based proposition to one that can offer high quality also.
Outsource "Buy"

Control

Insource "Build"

Onshore "National"

Location

Offshore "International"

Domestic outsourcing

Shared services

Offshore outsourcing

Internal offshoring

European view to offshoring

- India
- East Europe
- China, Philippines, Vietnam
- Brazil/rest of LatAm
- Africa
Research objectives

Focused on software development (SD) of the ICT-intensive companies, the general objective is to improve **competencies, methods and tools**, in developing SD work and operations with the comprehensive **performance evaluation system(s)**, and improve their **work expertise practices in managing dynamic distributed operations** in the global value networks.

According to the objectives the work packages of the DD-SCALE are:

**WP 1 – Appropriate performance measures – a concept for efficiency and performance monitoring framework**

**WP 2 – Tools and work expertise practices to support collaborative work**

**WP 3 – Distributed global (SD) operations management:**
- Location/site efficiency comparison &
- Customer value driven organizing principles of distributed R&D work
The Egyptian scarab beetle is a symbol of rebirth. Scarab rolls a dung "ball" which is a symbol to the sun travelling through the heavens.
Packages (RP1)

- Comprehensive knowledge of the SD work problem domain - What really matters in improving SD-work performance/efficiency
- Factors holding relevance in monitoring the efficiency of SD work
- An outline of the comprehensive efficiency framework
- Harmonising the work processes relating to the efficiency framework
- Piloting the framework
Packages (RP2)

- Characteristics of distributed high-performance teams?
- Supporting collaborative value creation of multisite R&D?
- Management capabilities for managing networked development in the future?
- Key assets (e.g., software platforms) and the enabling architectures (long-term)?
- Scaling (organising) from/with high-performing software teams to high-performing software-intensive enterprises?
- Achieving (agile) scaling across team / technology boundaries?
- Creating new work expertise practices
- Innovation efficiency
- Required skills of the high-performing units of organization ("right" people, competencies)?
Packages (RP3)

Location efficiency management

- Yardsticks for evaluation of diversity of company locations (sites)
- How to measure the impacts of on-/near-/off-shoring?
- New approaches on estimating the efficiency of locations – additional yardsticks to the cost of work metrics
- How can the SD-organisations of a multi-site company be appraised, and what are the appropriate comparison dimensions of software engineering organisations?
- What are the core/unique competencies of the multisite companies that manifest the operations/work to be held in “trusted hands” vs. to the out/off-shoring or distributing the work to the company’s low cost sites?
Customer project/ customer relationship

- New Services Level-practises for the customer relationship management
- Disseminating of knowledge and best practises within partner companies
- What are the means of quality assurance that ensure the customer loyalty and software design transparency to the customers in distributed settings?

General

- Sharing knowledge/ best practises
- Organised knowledge and learning (a centre in future)
Schedule

WP1. Appropriate performance measures & comprehensive efficiency monitoring framework
- Literature review
- Conceptualising -> Prototype -> Field research actions
- Pilots in one company
- Disseminating results / pilots
- Integrated measurement framework

WP2. Tools and work expertise practices for collaborative work
- Current state analyses in companies
- Focused collaboration in companies
- Synthesis conclusions -> Preparing and starting action plans
- Tools and methods to facilitate collaborative work

WP3. Customer value driven dynamic organizing principles & Distributed location management
- Outline of the principles of multisite location management (bon WP 1)
- Recommendations & Outlining of organizing distributed R&D work
Four case partner companies

• ABB Automation Ltd
  • industrial systems software development

• Comptel Ltd
  • Network, teleoperator software technology and software

• Napa
  • Marine industry software development

• Nokia Networks Ltd
  • Mobile phone networks and software technology
University partners

Haaga-Helia University of Applied Sciences
• DTech, LicSc Pekka Kamaja, MSc Jari Hyrkäs

University of Helsinki, Computer sciences -
www.cs.helsinki.fi/home/
• Prof. Tomi Männistö, DTech Petri Kettunen

University of Tampere, CIRCMl
http://www.circmi.fi
• Prof. Mikko Ruohonen, MSc Marko Mäkipää and
  DEd Kati Tikkamäki
Research methods

Tools/methods

- Reverse engineering of current systems
- Interviews & observations
- Workshops
- Benchmarking
- Business process analyses
- Elicitation of requirements (for feasibility assessment purposes)
- Tests and piloting
- Concept build-up
- Literature reviews

Research packages 01 - 03
Co-creation through joint program

The elements refer to the methods exercised by universities in companies’ projects.

Focused research services on given topic(s)

Joint concept build-up and testing

Requirement analyses

Business process analyses

Customer interviews/analyses

Workshops

Benchmarking

expertise services

Work packages 01 - 03
Funding agency Tekes expects


- Tools for fast innovation and generation of ideas
- Support for strategy implementation - Theme 2/ Work practices
- Work processes - Theme 2/ Work practices
- Organisation of work and clarification of responsibilities - Theme 2/ Work practices
- Principles, processes and practices of management - Theme 2/ Work practices
- Rules and operating methods for acting in a network - Theme 3/Distributed ...
- Flexible individual work arrangements
- Utilisation of technology
- Customer oriented service chains surpassing organisational boundaries – Theme 3/Distributed ...& Customer perspective
- High quality services and deviation management – Theme 1/ Efficiency monitoring
- Customer oriented innovation and development
- New business concepts - Theme 3/ Distributed ...
Research questions - RQ 1

- **RQ1.** What are the appropriate factors and the related indicators explaining the success of distributed, multisourced R&D-process?
  - What are the necessary hard and, especially, soft factors for achieving and sustaining high performance?
  - How to align and measure the software development contribution to the total performance (productivity, effectiveness)?
  - How to measure the impacts of on-/near-/off-shoring?
  - What are the appropriate indicators for following up of company’s SD units/sites in diverse locations?
Research questions - RQ 2

- RQ2. How to support the collaborative value creation of dispersed multisite R&D?
  - What are the characteristics of distributed high-performance teams?
  - What are the management capabilities needed in order to manage networked development in the future?
  - What are the companies’ key assets (e.g., software platforms) and the enabling architectures (long-term)?
  - How to scale (organise) from/with high-performing software teams to high-performing software-intensive enterprises?
  - How to achieve (agile) scaling across team / technology boundaries?
Research questions - RQ 3

- RQ3. How to organize customer value driven global R&D-projects in international multisite settings?
  - What are the required skills of the high-performing units of organization (“right” people, competencies)?
  - What are the core/unique competencies of the multisite companies that manifest the operations/work to be held in “trusted hands” vs. to the out/off-shoring or distributing the work to the company’s low cost sites?
  - What are the means of quality assurance that ensure the customer loyalty and software design transparency to the customers in distributed settings?
  - How can the SD-organisations of a multi-site company be appraised, and what are the appropriate comparison dimensions of software engineering organisations?
Expected results (2014-2016)

- Performance measurement/assessment data
  - Both company-specific (traceable) and General (non-traceable)
- Framework knowhow, new concepts and evaluation approaches, novel metrics
- Organisational best practices and tools
- Model for decisions on on/near/offshoring SD work