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USING SCRUM IN GLOBAL SOFTWARE DEVELOPMENT

This briefing reports evidence on findings about challenges involved in using Scrum for global software development (GSD) projects and the strategies available to deal with them based on scientific evidence from a systematic review.

MAIN FINDINGS

Findings are grouped in terms of challenges and strategies. Each challenge has a list of strategies to deal with it, and each strategy has a brief description together with the research findings.

Synchronous communication

- Synchronized work hours: This practice is widely used by Scrum teams to ensure synchronous communication among distributed sites can be arranged. This is done by adjusting working from home, or working long hours.
- Local Scrum team: Due to the lack of overlap time, Scrum teams are formed locally and each site conducts their own scrum. The meeting practice Scrum of Scrums is attended by a key touch point member for each team to ensure inter-team communication.
- Modified practices: In some cases, Scrum team modifies or extends Scrum practices to address the communication challenges. For example, studies reported that having a local "miniscrum" in the morning after a distributed scrum meeting can be very effective to reinforce the value of the Scrum within a local team. Other researches reported that the Scrum teams also use strict communication policy (e.g. Email reply within 12 hours) to avoid delay due to the temporal distance of a distributed team.

Collaboration difficulties

- Team Gathering: To increase a project's domain knowledge and reduce the cultural distance, a Scrum team gathers and performs few initial sprints at one site before distributed development starts.
- Visit: To reduce the cultural distance and increase project vision, some teams reported that they exchanged visits, for example Product owners regularly visit offshore team throughout the development.
- Unofficial distributed meetings: For increased team collaboration, along with formal meetings, distributed Scrum team members may also use frequent informal meetings for clarifying various issues.
- Training: Studies shows that Scrum teams use some practices that can be categorized as "training", for example: initial Scrum training and technical Scrum to clarify new technology issues, reinforce the value of Scrum and improve team collaboration.
- Key documentation: Maintaining valuable documentation may also improve GSD team collaboration.
- Mandatory participation: To reduce "offshore silence" challenge, Scrum team can assign each site a thirtyminute mandatory demo presentation during retrospective sessions.
- Gradual team distribution: Scrum teams may move from a collocated project to a distributed project gradually through several stages (i.e., evaluation, inception, transition and steady state).

Communication Bandwidth:

- Researches show that to provide a rich communication environment and also to avoid slow, unreliable, and poor transmission, Scrum teams use the practice "multiple communication modes". The practice ensures that a Scrum team with distributed project stakeholders is supported with various options of communication tools such as phone, web camera, teleconference, video conference, web conference, net meeting, email, shared mailing list, Instant Message (IM), Short Message Service (SMS), and Internet Relay chat (IRC).

Tool support:

- Studies revealed that along with communication tools, Scrum teams also use a number of collaborative tools including: Wikis, Blogs, social bookmarking, expertise finders, whiteboards, electronic workspace, desktop and application sharing, photo charts, knowledge bases, experience databases, lesson learned repositories, while using Scrum practices.

Large Team:

- Isolated Scrum team: GSD project teams are geographically isolated; in most cases offshore teams are not crossfunctional and may not use Scrum processes.
- Distributed Scrum of Scrums team: In this team model, Scrum teams (or subteams) are formed based on local site and each team perform their site based own independent Scrum.
- Fully Integrated Scrum team: In this team model, Scrum teams are cross-functional with team members distributed across geographical locations. This type of Scrum team should consider the risks due to geographical, temporal and sociocultural distances.

Office Space:

- This practice ensures each Scrum team is allocated to a single room so that they can communicate with each other.
- Dedicated meeting room: This practice also ensures each site has a tools while attending a distributed meeting.

Multiple sites:

- Local Scrum team: GSD project managers build autonomous site-based local Scrum teams and allocate tasks with independent team.
- Restricted team distribution: In this practice, a fully integrated Scrum team is restricted within a limited number of sites distributions.

Keywords:

Global software development
Agile approaches
Scrum

Who is this briefing for?

Software engineers practitioners who want to make decisions about the use of Scrum on global software development projects based on scientific evidence.

Where the findings come from?

All findings of this briefing were extracted from the systematic review conducted by Hossain et al.

What is systematic reviews?

cin.ufpe.br/eseg/systematic-reviews

What is included in this briefing?

The main findings of the original systematic review.

Evidence characteristics through a brief description about the original systematic review and the studies it analized.

What is not included in this briefing?

Additional information not presented in the original systematic review.

Detailed descriptions about the studies analised in the original systematic review.

For additional information about this briefing:

cin.ufpe.br/eseg/briefings

ORIGINAL SYSTEMATIC REVIEW REFERENCE

Hossain, E.; Babar, M.A.; Hyeyoung Paik, "Using Scrum in Global Software Development: A Systematic Literature Review," in Global Software Engineering, 2009. ICGSE 2009. Fourth IEEE International Conference on , vol., no., pp.175184, 1316 July 2009 doi: 10.1109/ICGSE.2009.25.