Global Software Development (GSD) Workshop
aka Workshop on Distributed Software Engineering (DSE)

Meeting minutes - Heather L. Oppenheimer
Minor edits: Elizabeth Hargreaves

When:

18-19 September 2004

Where:

SEGAL Lab (Software Engineering and Global interAction Laboratories)
University of Victoria, Department of Computer Science
Victoria, BC

Participants:

Dr. Daniela (Dana) Damian, University of Victoria (host)
Matthew (Matt) Bass, Siemens Corporate Research, Princeton & SEI, Pittsburgh
Dr. Daniel German, University of Victoria
Dr. Filippo Lanubile, Bari University, Italy
Heather Oppenheimer, Lucent Technologies, Cincinnati
Prof. Rafael Prikladnicki, Pontifícia Universidade Católica do Rio Grande do Sul, MuNDDoS, Brazil
Dr. Pierre Robillard, Ecole Polytechnique, Montreal, Canada
Jack Wong, McKesson Medical Imaging Group, Richmond, Canada
James Chisan, Andrew Swerdlow, Luis Izquierdo, Elizabeth Hargreaves - students, University of Victoria

Remote participants:

Saturday morning (evening at remote sites)

Germany – Prof. Bernd Bruegge, Naoufel Boulila, Allen Dutoit, Oliver Creighton, Volker Hafner – TUM, Andreas Braun (Accenture)
Brazil – Sabrina Marczak, Leandro Teixeira Lopes, Rodrigo Espindola and Leonardo Pilatti – PUCRS

Sunday afternoon (Monday morning at remote site) Dr. Ban Al-Ani, University of Technology, Sydney, Australia

Purpose of workshop:

Extend collaboration begun at ICSE GSD workshops and build a Community of Practice among researchers, industry, and students interested in the issues and solutions of Global Software Development (aka Distributed Software Engineering.)

Executive Summary:

Day 1: research presentations (most interesting topics listed here, more detail below):

- TUM - Germany is trying to use digital video to elicit and validate requirements.
- Siemens Corporate Research is trying to develop a set of communication interface metrics that can be used for predictive project management.
- MuNDDoS – Brazil. Trying to build an "Offshore & Insourcing Capability Model"

- Pierre Robillard – identifying the "ad hoc" activities not included in process definitions for a collocated group, trying to determine are they necessary, and if so how to serve the same purpose in a distributed session.
- Pierre Robillard – 3D graphics of activity data that can be used to see whether a project is progressing "coherently" and predict schedule & quality problems

Day 2: Workgroup goals, vision, planning, next steps

- Workgroup name change: From Global Software Development to Distributed Software Engineering. Intent is to reduce assumption that we're only talking about "off-shoring" and "coding".
- Initial focus of workgroup will be
  - to define a taxonomy that can be used to help researchers and practitioners map results from one study to other studies or industry environments
  - build a team infrastructure to support the work
  - increase participation by researchers & practitioners in the field and related fields

Details

Logistics:

Majority of group participated in person, but we also tried to use the cameras and other facilities of SEGAL. Unfortunately, the sound and video delay were significant, so the advantages of "presence" for the remote participants were largely lost. We learned that we need to acquire more experience with video/telecom etiquette (introductions, interruptions, etc).

Second day was mainly face-to-face except for a phone presentation from Australia with slides projected locally. Australian presenter had difficulty hearing our questions/comments.

Detailed Workshop Programme:

DAY 1

Most groups had an opportunity to give a short overview of their current work/research. Unfortunately, not everyone had a chance, due to schedule and priority conflicts.

Heather Oppenheimer talked about typical distributed projects in Lucent, and discussed common organization structure adaptations, process adaptations, and tools that we use to enable us to work in a distributed environment. She proposed that no new software engineering processes are needed to support GSD, but that we do need to adapt the ones we use. There was some disagreement from Germany, but that could be due to different usage of the word "process" to refer to HOW something is done. There was some agreement that process could also refer to WHAT is done and that the HOW often needs to change.

TUM Germany

- Naoufel Boulila and graduate students from Bern TUM (group led by Prof. Bernd Bruegge) described the work they are doing gathering case studies, looking at processes, applications, and infrastructure requirements. They have been working

with Accenture, Daimler Chrysler & Siemens, and colleagues at Carnegie Mellon University. Some of these projects are not "GSD" per se if you are only considering "development" itself. They are global if you include the user, not just the developers.

- Allen Dutoit: Rationale Management – make rationale for requirements explicit in context of development tools
- Naoufel Boulila: Brainstorming in GSD– provide a framework for supporting global brainstorming and architectural software design
- Andreas Braun: IBistro - distributed blackboard for doing and capturing meetings/knowledge capture in offshore/distributed development
- Volker Hafner: Interactive Teaching– 400 people in one lecture hall, others in other university, lecture and interaction. Peer to peer communication during instruction. Digital video broadcasting for handhelds (satellite distribution Digital Video Broadcast standard, moving to DVBT –DVBterrestrial) students equipped with DVBH – handheld, or mobile cell phones. Also looking at UMTS G3 standard. First part is broadcast, communication back is point to point interactive questions back to professor, trying to make it peer to peer.
- Oliver Creighton: Software Cinema – using digital video to present and validate requirements, pre-UML. Reduce abstraction by making things that aren't real yet appear on screen with real actors.

Siemens Corporate Research

- Matt Bass– working on a SW engineering reference process using a student project – developing management station for a factory automation system. It's a distributed organization project – central co-located team owns architecture, requirements, and the main project management; they manage all communication. Distributed development teams with "supplier project manager" on site. The project team consists of a research team (Siemens and academia), and student teams (Siemens development distributed to several universities: e.g. team project or practicum or internship) Almost all cases 2 semesters, iteration of aggregation of teams is a year long. Teams: minimum 4 people 12 hrs a week, max 5 people 40+ hours a week. They are trying to reduce interfaces, reduce need for cross team communication. Focusing on integration – looking at what issues come up, where do they go to try to solve those problems, what are the early warning sides that issues are imminent. Afterwards, they will use the raw data to look at the patterns, identify some metrics that can be used as a project management tool to see when problems are going to happen, take corrective action. Recording all the emails and phone interactions (student team), participants complete questionnaires on a weekly basis, also doing monthly structured phone interviews. James Herbsleb (CMU, formerly Bell Labs) will be doing semi-structured interviews every 3 months. Asking development teams to keep email correspondence and turn them over when the project is done. The intent of collecting the data is to provide some scientific underpinnings to their assertions, and give them a business case.

Matt would like to instrument the Siemens Corporate Research team consulting engagements to transparently gather some of this data in real projects.

Brazil

- Rafael Prikladnicki: university research partnerships with Microsoft, HP, Dell, some Portuguese companies, etc. He started a group to improve research in GSD in Brazil and worldwide. Collaborate with UIChicago, UVic
- Leandro: Requirements engineering in GSD. Empirical studies identifying issues and difficulties in offshore organizations and software factories because there are a limited number of empirical studies in this area. They are looking to increase the quality of specification and simplify management tasks
- Leonardo Pilatti: looking at how GSD impacts maturity models, e.g. CMM. He's doing case study research to create OIMM = offshore & insourcing maturity model that ties together organizational needs, ISO, CMMI, SPICE, CMM, and ITIL He notes that "insourcing" is a different perspective than outsourcing model because the organization definition and processes are the same as the rest of the organization. I suggested that, rather than creating a new maturity model, he consider defining a set of GSD discipline amplifications for the CMMI model.
- Rodrigo Espindola: Research in identifying main difficulties for requirements engineers in maintenance projects. Maintenance projects typically have less information about the original requirements of the software because original developers and other stakeholders not available.

Montreal

- Pierre Robillard: Capturing field data on all team activities in a 3 month project (requirements from Germany, development in Montreal.) Have seen that 50% of time is spent in ad hoc activity which is not planned, not described, and quite important. They are trying to identify what those activities are and how to replace them if they are needed in a GSD environment. Example – in design reviews, people spend more than half of their time in "cognitive synchronization" – a useful activity. During the rest of the inspection, a lot of time is spent on "justification" – which is useless from a software quality viewpoint. Neither of these activities is in the process description. Also from the preliminary data they observe that professional human beings cannot work very long alone – maybe 30-45 minutes. After that point they will interrupt whoever they can/need to talk to?
- Pierre Robillard: Software Engineering Studio: Showed 3D graphs of where people spent their time over the project lifetime based on daily self-reported activity data "coherent progression" tends to start out heavier in "pure engineering" (reqts, arch, design), then add more V&V and coding. End up pretty much in the middle of the 3D map. 3 axes were "pure engineering (requirements/architecture/design), "coding", and "verification & validation". Successful projects tended to have work clustering in the middle – which means more or less equivalent time spent in each area. Successful projects also tended to show coherent progressions over time – at 20% of the interval, activities clustered around the pure engineering axis, and as the development interval progressed, more coding and V&V were added.

Italy

- Filippo Lanubile: Talked about distributed software design and code inspections and using Eclipse SW and P2P (his own tool)

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- Daniel German: Knowledge mining, looking at open source software "software trails" e.g. code, version history, defects, enhancement requests, explicit and implicit documentation (e.g. email) web sites to validate/verify what happened.
- Elizabeth Hargreaves: presented planned work in a GSD Taxonomy
- Dana Damian: did not have a chance to present her work in Distributed Requirements Negotiation

DAY 2

Only local participants in discussion.

Came to a consensus on the group name: *Workgroup for Distributed SW Engineering*
Rejected options

- Discussed Global – Filippo says implies outsourcing, Dana says includes culture issue and makes it clear we're not talking about distributed servers
- Discussed Geographically Distributed – too long
- Development rather than SE – too many people ignores reqts, test, etc

Identified Goals, Success Criteria, Short Term Vision, and Next Steps for team. (Facilitated by Heather – by the way, it is VERY difficult for academics and practitioners to come to consensus on goals, success criteria, short term actions, etc. In general, academics each have their own very narrow purview and want to – at most – collaborate in that area. They also like to discuss, discuss, discuss, and have no need to come to closure. Practitioners, on the other hand, want to get to the bottom line.)

From Flip Charts
DISTRIBUTED SOFTWARE ENGINEERING WORKING GROUP **GOALS**

1. Increase reputation in field and software engineering community
   - development/execution
   - research
2. Get/share knowledge in GSD from/with others
   a. improve our understanding of what is going on in the field (solutions & issues)
   b. share that knowledge: students, academia, industry
3. Increase synergy among practitioners/researchers, students
   a. ID overlap and gaps and interactions and fit
   b. collaborate on research topics (facilitate, scaled up degree)
   c. increased trust
4. Improve quality of research
   a. access to more data
   b. objective and supportive review, opportunity for improvement

    c. develop guidelines for research methods and evaluation
5. Improve quality of education
    a. materials
    b. opportunities for experience for students
    c. GSD education lessons learned and experiences
6. Improve the quality of the state of the practice
    a. methods for managing distributed projects
7. Have fun and do cool stuff

SUCCESS CRITERIA (for each goal)

1 Increase Reputation

- bigger working group, more people want to be a part of it
- amount of visibility, both individual and group
- invitations to speak, including panels, tutorials, etc.
- citations
- publications and books
- Google ranking
- Events and spinoffs
- # of collaborations and implementations of recommendations in industry
- # of other universities that incorporate recommendations
- funding, sponsorship by ACM, IEEE etc.
- # of GSD courses/programs in university
- people outside GSD know of our workgroup

2. Get/share Knowledge

- have a well populated website
- all members, projects descriptions, results
- outputs available to all
- publications & books, events, citings, Google ranking, events and spinoffs, invitations to speak
- bigger working group and attendance at meetings
- non-group references and reviews, non-GSD research

3. Increase Synergy

- # of communications between/among email/phone/etc. not related to scheduling
- # of cross disciplinary participating stakeholders/input/etc.
- # of opportunities for side collaboration
- # of collaborations
    - within group
    - with extended group
    - research <-> research
    - research<-> industry
    - research <-> students
    - industry <-> industry
    - industry <-> students
    - students <-> students

4. Improve Quality of Research
   - guidelines for different kinds of research methods and evaluation
   - list of "bad" "don't do this" research attributes?
   - # of peer reviews/quality of feedback
   - reviews/evaluations of citations
   - examples of good research, not only GSD
   - bibliography and reviews
   - baseline identified

5. Improve Quality of Education
   - all of above if research education
   - curriculum and methodologies/standards/set of materials
   - set of lessons learned
   - positive evaluation/assessment by research community, industry community
   - # of collaborations among universities
   - amount of globally distributed education
   - baseline identified

6. Improve The State Of The Practice
   - # of collaborations industry <-> research
   - # of people using recommendations and applying
   - experience reports indicating implementation success, change
   - baseline identified

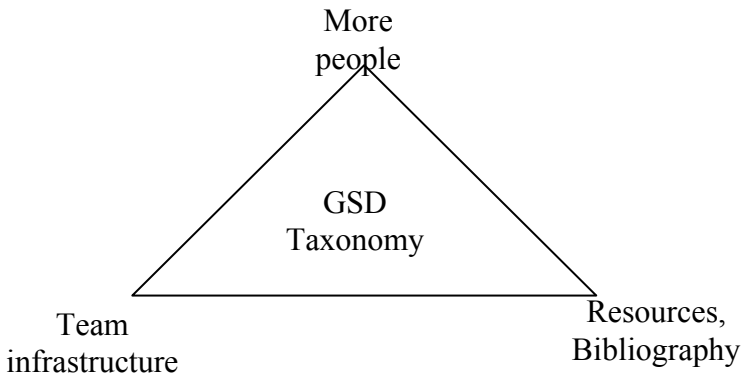
SHORT TERM VISION exercise

In September 2005, we can say "During the past year we…"

1. Came up with opportunities for collaboration within our own group
2. Got more key GSD people involved to grow the community
   - found more people we want to work with (not only in GSD) and
   - got them involved and participating in next F2F or remote meeting
   - did a multi-university collaboration
3. Identified a set of resources that attract other participants interested in GSD
4. Created a draft GSD taxonomy
5. Worked out our team infrastructure, planned and organized next meeting(s) and had another meeting to report results and plan next steps

One student said, "worked w/ industry on a project and identified better metrics for success"

RELATIONSHIP OF KEY VISION RESULTS (as shown in diagram below): GSD taxonomy and annotated bibliography of resources provide "What's In It For Me" incentive for more people to be involved. Team infrastructure facilitates the other results. More people – helps quality and content of taxonomy and bibliography…



NEXT STEPS: ACTIVITIES AND VOLUNTEERS.
This is a set of roles, not an action plan. Each column shows tasks that need attention in the next year. The column to the left lists the people involved, while the table shows level of interest of each participant by task. Re group in January to check progress.

	Presentation on own work (Remote 1 hr)	**Marketing** (Increase participation within/external to community)	**Draft GSD taxonomy**	**Annotated resources/ Bibliography** (Get people to share and use)	**Infrastructure** (Web, F2fF, remote meetings)
Liz	yes		Contribute	Contribute	
Andrew	Yes		Review contribute		Website, communications email list
Luis	Yes			Contribute	Help Andrew
Jack	yes	Come up with a plan/actions			
Rafael	yes	Get more people in Brazil	Contribute		
Daniel	yes		Contribute		
Filippo	Yes	Talk to people	Review	Share references, maybe annotate	Input & feedback wiki

Dana	Yes	Talk, write, coerce people	Contribute	Contribute	Lead effort
Matt	yes	Discuss how w/ rest of team			Help w planning for next year meeting
Heather	yes		Review	Maybe review	Give input
Germany team	TBD	Matt will contact			
Brazil team	TBD	Rafael will contact			