Panel:
Computer-Supported Cooperative Work in Software Engineering

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Global Software Development
&
Software Reliability Engineering

Software Reliability Engineering (SRE)

- Teamwork, share of objectives
- Learning process, based on experience
- Record and analysis of a lot of information
- Capitalisation of knowledge
- Feedback to the development process
- Long-term investment
- Continuous communication and coordination

Centralised process

Global Software Development (GSD)

Distribution of the software production process

Remote development sites

Loss of spontaneous communication and coordination

Negative impact on software reliability?

Example from Alcatel:

Collocated teams: 50% more efficient

Small projects with scattered resources: less than half productivity

Cycle time impacted by a factor 2 to 3

Needs for specific actions on GSD

Models of GSD

Relationship between development companies

Legally independent

⇓

Contract should include minimally
required quality standards
(ISO 9001 / CMM)

Legally related

⇓

Develop a common
understanding of quality
issues

⇓

Quality management
program

Quality management program

Involve all sites as early as possible in the life cycle
- → From the requirement specification phase (system-level requirements)
- → Liaison from development sites

Software architecture ←→ work structure & organization
- Decomposition of the software into independent items, well-defined interfaces
- →Decouple the sites (teams) → reduce interactions & correlated modifications
- →Assign black boxes to development centres for complete development cycle

Do not impose a common development process but quality standards
- →Familiarity with the process = productivity

Define the needed measurements / data
- →Common vocabulary (and tools?)

Centralize collected data (common depository)
- →Early analysis, feedback, improvement

Training and knowledge transfer
- Continuous communication, clearly defined milestones
- →Formal and less formal

Globalization is a necessity

It can have a negative impact on reliability / quality

But if GSD is well managed

$\Rightarrow$ Improve development process