

TABLE I COMMUNICATION OUTCOMES FROM SOFTWARE ENGINEERING PROFESSIONALS

Software engineers should be able to:**Design communication**

Evaluate communication situations and design communication appropriately for different purposes and contexts.

Frame communication in terms of the knowledge & concerns of the audience. Communicate effectively to a variety of audiences, (e.g. managers, peers, across organizational boundaries, customers, & end users).

Recognize the different communication cultures and norms of different countries, organizations, areas within organizations, ethnic groups, and individuals, and adapt to those differences.

Prioritize communication tasks to use time wisely.

Discern when it is more appropriate/effective to keep silent rather than to speak and to ask questions rather than to assert an opinion.

Explain clearly

Present information in a way that goes beyond the specific details of a project to provide the big picture, a higher level of summary.

Explain code, methods, and design decisions by communicating the intent—what was meant to be achieved—and reasons—why key choices were made.

Achieve an appropriate balance between conciseness and explanation; go directly to the point.

Answer questions clearly by going beyond what the questioner has explicitly asked; anticipate what else the questioner might need to know.

Communicate effectively under stress.

Communicate convincingly.

Use consistent and appropriate terminology.

Discuss productively

Lead a productive group discussion.

Deal constructively with conflict: debate/discuss/negotiate/collaborate productively and respectfully.

Support the transition from debate to the formation of a decision; e.g. summarize issues, propose solutions, &/or back down, as needed.

Hear criticism as a constructive contribution to the outcome of a project (without getting defensive).

Give criticism constructively and respectfully.

Collaborate with others within an integrated project team or from different areas of the organization. Demonstrate an understanding of how software engineering decisions affect others by communicating across organizational boundaries to inform, solicit input, and identify win-win solutions.

Receive communication

Solicit help, advice, or information.

Listen actively; ask clarifying questions.

Read with comprehension and evaluate information to determine what is credible and relevant.

Adjust communication based on (non-verbal) reactions of the audience; solicit feedback about the effectiveness of the communication.

Learn & improve communication skills, especially interpersonal skills.

Communicate professionally

Give opinions with a balance of confidence & humility.

Avoid complaining, by proposing a solution, fixing the problem, or remaining silent.

Be nice to others, through words and tone.

Manage non-verbal communication to avoid sending inappropriate messages.

Make own accomplishments known without arrogance.

Communicate charismatically; be passionate/animated in order to influence people.

Mentor others and help them grow.

Communicate through transparency (make information openly available).

Develop the flexibility to communicate in different roles within an organization.

Inform managers and team members of potential problems before the problems become serious.

Participate in meetings.

Use common forms & tools

Demonstrate a mastery of the kinds of formal and informal communication most often used in the industry (e.g., email, bug reports, meetings, presentations to groups, one-on-one, teleconferences, IM, code comments, documentation, requirements, status reports).

Use digital tools that are beneficial for communication and teamwork (e.g., tools for document control, bitmap and vector illustrations, documentation, web pages, basic video/audio for presentations, intuitive GUI design, and project planning).

Give effective and engaging presentations.

Use email appropriately, demonstrating an understanding of what information should be included and what should not, of when to use “reply all,” and of the necessity to read carefully before sending.