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## fortiss Code of Conduct

### Preamble

Software has a central and growing role in commerce, industry, government, medicine, education, entertainment and society at large. fortissians are those who contribute by direct participation via research or by teaching to the analysis, specification, design, development, certification, maintenance and testing of software systems. Because of their roles in developing software systems, fortissians have significant opportunities to do good or to cause harm, to enable others to do good or to cause harm, or to influence others to do good or to cause harm. To ensure, as much as possible, that their efforts will be used for good, fortissians must commit themselves to making software engineering a beneficial and respected profession, striving for science-based solutions. In accordance with that commitment, fortissians shall adhere to the following Code of Conduct, based on the joint [ACM/IEEE-CS Software Engineering Code](#), published as Software engineering [Code of ethics](#)<sup>1</sup> (Gotterbarn, Miller, & Rogerson, 1997). Other approaches that have been incorporated into this Code of Conduct are Ethics in the [Software Development Process](#)<sup>2</sup> and the [principle of software craftsmanship](#)<sup>3</sup>.

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<sup>1</sup> [Software Engineering Code | ACM Ethics](#)

<sup>2</sup> [Ethics in the Software Development Process: from Codes of Conduct to Ethical Deliberation | SpringerLink](#)

<sup>3</sup> [Software craftsmanship - Wikipedia](#)

The Code contains eight Principles related to the behavior of and decisions made by fortissians, including practitioners, educators, managers and supervisors, as well as trainees and students at fortiss. The principles identify the ethically responsible relationships in which individuals, groups, and organizations participate and the primary obligations within these relationships. The clauses of each principle are illustrations of some of the obligations included in these relationships. These obligations are founded in the fortissian's humanity, in special care owed to people affected by the work of fortissians, and the unique elements of the practice of software engineering. The Code prescribes these as obligations of anyone claiming to be or aspiring to be a fortissian.

It is not intended that the individual parts of the Code be used in isolation to justify errors of omission or commission. The list of principles and clauses is not exhaustive. The clauses should not be read as separating the acceptable from the unacceptable in professional conduct in all practical situations. The Code is not a simple ethical algorithm that generates ethical decisions. In some situations, standards may be in tension with each other or with standards from other sources. These situations require the fortissian to use [ethical judgment](#) to act in a manner which is most consistent with the spirit of the Code of Ethics and Professional Practice, given the circumstances. We consider that [ethical judgment](#) is reflecting about the possible actions in a certain situation and judging which action is most ethical. A person making an ethical judgment uses reason to decide what the best solution or decision is from a moral point of view.

Ethical tensions can best be addressed by thoughtful consideration of fundamental principles, rather than blind reliance on detailed regulations. These Principles should influence fortissians to consider broadly who is affected by their work; to examine if they and their colleagues are treating other human beings with due respect; to consider how the public, if reasonably well informed, would view their decisions; to analyze how the least empowered will be affected by their decisions; and to consider whether their acts would be judged worthy of the ideal professional working as a fortissian. In all these judgments concern for the health, safety and welfare of the public is primary; that is, the "[Public Interest](#)"<sup>4</sup> is central to this Code. To make it easier to clear up in the event of a violation of this code, fortiss will in due course introduce a whistleblower system, which allows anonymous and sanction-free reports of violations of the law and statutes.

The dynamic and demanding context of software engineering requires a code that is adaptable and relevant to new situations as they occur. However, even in this generality, the Code provides support for fortissians and managers of fortissians who need to take positive action in a specific case by documenting the ethical stance of the profession. The Code provides an ethical foundation to which individuals within teams and the team, as a whole, can appeal. The Code helps to define those actions that are ethically improper to request of a fortissian or teams of fortissians – as well of representatives of partners, customers or suppliers.

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<sup>4</sup> Even though the concept of public interest is a core element of political philosophy and legal ethics, it is ambiguous in its content and scope and is difficult to define. See, for example, the considerations for law-making in Australia a few years ago:

[Meaning of public interest | ALRC](#)

According to this, the following core aspects fall under public interest: freedom of expression, including political communication; freedom of the media to investigate, and inform and comment on matters of public concern and importance; the proper administration of government; open justice; public health and safety; national security; the prevention and detection of crime and fraud; and the economic wellbeing of the country.

# Principles

## 1. Public

fortissians shall act consistently with the public interest. In particular, fortissians shall, as appropriate:

- 1.01 Accept full responsibility for their own work.
- 1.02 Moderate the interests of the fortissian, the employer, the client and the users with the public good.
- 1.03 Approve software only if they have a well-founded belief that it is safe, meets specifications, passes appropriate tests, and does not diminish quality of life, diminish privacy or harm the environment. The ultimate effect of the work should be to the public good.
- 1.04 Pay attention to sustainability in all their actions and commit to science-based solutions for all-important societal challenges (e.g., UN sustainable development goals<sup>5</sup>)
- 1.05 Disclose to appropriate persons or authorities any actual or potential danger to the user, the public, or the environment, that they reasonably believe to be associated with software or related documents.
- 1.06 Cooperate in efforts to address matters of grave public concern caused by software, its installation, maintenance, support or documentation.
- 1.07 Be fair and avoid deception in all statements, particularly public ones, concerning software or related documents, methods and tools.
- 1.08 Consider issues of physical disabilities, allocation of resources, economic disadvantage and other factors that can diminish access to the benefits of software.
- 1.09 Be encouraged to volunteer professional skills to good causes and contribute to public education concerning the discipline.

## 2. Client and Employer

fortissians shall act in a manner that is in the best interests of their client and employer, consistent with the public interest. In particular, fortissians shall, as appropriate:

- 2.01 Provide service in their areas of competence, being honest and forthright about any limitations of their experience and education.
- 2.02 Not knowingly use software that is obtained or retained either illegally or unethically.

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<sup>5</sup> <https://sdgs.un.org/goals>

- 2.03 Use the property of a client or employer only in ways properly authorized, and with the client's or employer's knowledge and consent.
- 2.04 Ensure that any document upon which they rely has been approved, when required, by someone authorized to approve it.
- 2.05. Keep private any confidential information gained in their professional work, where such confidentiality is consistent with the public interest and consistent with the law.
- 2.06 Identify, document, collect evidence and report to the client or the employer promptly if, in their opinion, a project is likely to fail, to prove too expensive, to violate intellectual property law, or otherwise to be problematic.
- 2.07 Identify, document, and report significant issues of social concern, of which they are aware, in software or related documents, to the employer or the client.
- 2.08 Accept no outside work detrimental to the work they perform for their primary employer.
- 2.09 Promote no interest adverse to their employer or client, unless a higher ethical concern is being compromised; in that case, inform the employer or another appropriate authority of the ethical concern.

### 3. Product

fortissians shall ensure that their results and related modifications meet the highest professional standards possible. In particular, fortissians shall, as appropriate:

- 3.01 Strive for high quality, acceptable cost and a reasonable schedule, ensuring significant tradeoffs are clear to and accepted by the employer and the client, and are available for consideration by the user and the public.
- 3.02 Ensure proper and achievable goals and objectives for any project on which they work or propose.
- 3.03 Identify, define and address ethical, economic, cultural, legal and environmental issues related to work projects.
- 3.04 Ensure that they are qualified for any project on which they work or propose to work by an appropriate combination of education and training, and experience.
- 3.05 Ensure an appropriate method is used for any project on which they work or propose to work.
- 3.06 Work to follow professional standards, when available, that are most appropriate for the task at hand, departing from these only when ethically or technically justified.
- 3.07 Strive to fully understand the specifications for software on which they work.
- 3.08 Ensure that specifications for software on which they work have been well documented, satisfy the users' requirements and have the appropriate approvals.
- 3.09 Ensure realistic quantitative estimates of cost, scheduling, personnel, quality and outcomes on any project on which they work or propose to work and provide an uncertainty assessment of these estimates.

- 3.10 Ensure adequate testing, debugging, and review of software and related documents on which they work, which is otherwise also part of quality assurance measures.
- 3.11 Ensure adequate documentation, including significant problems discovered and solutions adopted, for any project on which they work.
- 3.12 Work to develop software and related documents that respect the privacy of those who will be affected by that software.
- 3.13 Be careful to use only accurate data derived by ethical and lawful means and use it only in ways properly authorized.
- 3.14 Maintain the integrity of data, being sensitive to outdated or flawed occurrences.
- 3.15 Treat all forms of software maintenance with the same professionalism as new development.

## 4. Judgment

fortissians shall maintain integrity and independence in their professional judgment. In particular, fortissians shall, as appropriate:

- 4.01 Temper all technical judgments by the need to support and maintain human values.
- 4.02 Only endorse documents either prepared under their supervision or within their areas of competence and with which they agree.
- 4.03 Maintain professional objectivity with respect to any software or related documents they are asked to evaluate.
- 4.04 Not engage in deceptive financial practices such as bribery, double billing, or other improper financial practices.
- 4.05 Disclose to all concerned parties those [conflicts of interest](#) that cannot reasonably be avoided or escaped. [Conflict of interest](#) is defined here as a conflict that arises from the clash of conflicting interests in a person or in an organization that have their origin in the different status or function of that person or organization. This also includes other parties, such as a vendor, a customer, a lender, a shareholder, or another party.
- 4.06 Refuse to participate, as members or advisors, in a private, governmental or professional body concerned with software related issues, in which they, their employers or their clients have undisclosed potential conflicts of interest.

## 5. Management

fortissian managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance. Those managing or leading fortissians shall, as appropriate:

- 5.01 Ensure good management for any project on which they work, including effective procedures for promotion of quality and reduction of risk.
- 5.02 Ensure that fortissians are informed of standards before being held to them.

- 5.03 Ensure that fortissians know the employer's policies and procedures for protecting passwords, files and information that is confidential to the employer or confidential to others.
- 5.04 Assign work only after considering appropriate contributions of education and experience tempered with a desire to further that education and experience.
- 5.05 Ensure realistic quantitative estimates of cost, scheduling, personnel, quality and outcomes on any project on which they work or propose to work and provide an uncertainty assessment of these estimates.
- 5.06 Attract potential fortissians only by full and accurate description of the conditions of employment.
- 5.07 Offer fair and just remuneration.
- 5.08 Not unjustly prevent someone from taking a position for which that person is suitably qualified.
- 5.09 Ensure that there is a fair agreement concerning ownership of any software, processes, research, writing, or other intellectual property to which a fortissian has contributed.
- 5.10 Provide for due process in hearing charges of violation of an employer's policy or of this Code.
- 5.11 Not ask a fortissian to do anything inconsistent with this Code.
- 5.12 Not punish anyone for expressing ethical concerns about a project.

## 6. Profession

fortissians shall advance the integrity and reputation of the profession consistent with the public interest. In particular, fortissians shall, as appropriate:

- 6.01. Help develop an organizational environment favorable to acting ethically.
- 6.02 Promote public knowledge of software engineering.
- 6.03 Extend fortissian's knowledge by appropriate participation in professional organizations, meetings and wide-spread publications of high quality.
- 6.04 Support, as members of a profession, other fortissians striving to follow this Code.
- 6.05 Not promote their own interest at the expense of the profession, client or employer.
- 6.06 Obey all laws governing their work, unless, in exceptional circumstances, such compliance is inconsistent with the public interest.
- 6.07 Be accurate in stating the characteristics of software on which they work, avoiding not only false claims but also claims that might reasonably be supposed to be speculative, vacuous, deceptive, misleading, or doubtful.
- 6.08 Take responsibility for detecting, correcting, and reporting errors in software and associated documents on which they work.

- 6.09 Ensure that clients, employers, and supervisors know of the fortissian's commitment to this Code of ethics, and the subsequent ramifications of such commitment.
- 6.10 Avoid associations with businesses and organizations which conflict with this code.
- 6.11 Express concerns to the people involved when significant violations of this Code are detected unless this is impossible, counter-productive, or dangerous.
- 6.12 Report significant violations of this Code to appropriate authorities when consultation with people involved in these significant violations is impossible, counter-productive or dangerous.

## 7. Colleagues

fortissians shall be fair to and supportive of their colleagues. In particular, fortissians shall, as appropriate:

- 7.01. Encourage colleagues to adhere to this Code.
- 7.02 Assist colleagues in professional development.
- 7.03 Credit fully the work of others and refrain from taking undue credit.
- 7.04 Review the work of others in an objective, candid, and properly documented way.
- 7.05 Give a fair hearing to the opinions, concerns, or complaints of a colleague.
- 7.06 Assist colleagues in being fully aware of current standard work practices including policies and procedures for protecting passwords, files and other confidential information, and security measures in general.
- 7.07 Not unfairly intervene in the career of any colleague; however, concern for the employer, the client or public interest may compel fortissians, in good faith, to question the competence of a colleague.
- 7.08 In situations outside of their own areas of competence, call upon the opinions of other professionals who have competence in that area.

## 8. Self

fortissians shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession. In particular, fortissians shall continually endeavor to:

- 8.01 Further their knowledge of developments in the analysis, specification, design, development, maintenance and testing of software and related documents, together with the management of the development process.
- 8.02 Improve their ability to create safe, reliable, and useful quality software at reasonable cost and within a reasonable time.
- 8.03 Improve their ability to produce accurate, informative, and well-written documentation.

- 8.04 Improve their understanding of the software and related documents on which they work and of the environment in which they will be used.
- 8.05 Improve their knowledge of relevant standards and the law governing the software and related documents on which they work.
- 8.06 Comply with applicable national and European laws (e.g., rejecting bribery, not infringing property of others...)
- 8.07 Comply with the DFG's (Deutsche Forschungsgemeinschaft) Code of Conduct "Guidelines for Safeguarding Good Research Practice"<sup>6</sup>
- 8.08 Improve their knowledge of this Code, its interpretation, and its application to their work.
- 8.09 Be fair and supportive of their colleagues and peers; in particular, they promote equal opportunities and treatment, irrespective of outer appearance, nationality, ethnicity, political affiliation, social background, disabilities, gender, sexual identity and orientation, marital status, religious conviction, or age
- 8.10 Behave decently in that they refuse to tolerate any unacceptable treatment of individuals such as mental cruelty, sexual harassment or discrimination including gestures, language and physical contact, that is sexual, coercive, threatening, abusive or exploitative
- 8.11 Not influence others to undertake any action that involves a breach of this Code
- 8.12 Refrain from retaliation against those who report violations of this Code of Conduct
- 8.13 Recognize that personal violations of this Code are inconsistent with being a professional fortissian.

The Code is not simply for adjudicating the nature of questionable acts; it also has an important educational function. As this Code expresses the consensus of the profession on ethical issues, it is a means to educate both the public and aspiring professionals about the ethical obligations of all fortissians.

Approved by the Management Board, February 2022

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<sup>6</sup> [Guidelines for Safeguarding Good Research Practice. Code of Conduct | Zenodo](#)