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FROM: Michael Davis, CSEP

DATE: August 17, 1996

SUBJECT: Code Drafting (cont.)

I guess I misunderstood your memo of July 10. I didn't realize
you intended to do the final draft. I thought I would get the
suggestions and incorporate them. I think this would be better
for two reasons: 1) to keep a single style (a minor matter); and
2) to take into account suggestions Bernstein and Weil have made-
-and with which I agree (a more significant matter). I also had
left some loose ends I wanted to clean up. I guess I should have
put all this on e-mail--like everyone else--but I didn't. So,
I'm now doing this fax to give you some idea of thinking here.

Attached you'll find my latest draft, which takes into account
both the changes you included in yours and the changes suggested
here. What follows below is a commentary on the two drafts so
that you can see the differences. But, before getting into the
details, I should add that--except for the change of "its" to
"the" in the last line of the introduction and addition of
"endeavor" at end of Rule 7--all changes are confined to the
subsidiary clauses and even these changes leave more than 90% of
the text untouched. In other words, we are definitely in the
polishing stages. (Numbers with M preceding refer to your draft;
numbers with D preceding, to mine.)

D1.01. New. Bernstein's suggestion.
D1.02. New. Bernstein's suggestion.
D1.03. Same as M1.02, except for addition of "by education
       and experience". Bernstein's suggestion. [Change of
       order is attempt to catch order of relevance better.]
D1.04. Same as M1.03.
D1.05. Same as M1.04, except that "including..." has been
       moved to D1.06.
D1.06. Same as M1.05, except that reference to control of
       quality and risk. Bernstein thought that quality
       control belonged here and that risk control was an
       equally important consideration.
D1.07. Same as M1.06.
D1.08. Same as M.108, except that "adequate" has replaced
       "proper" (not enough to be proper), and documentation
       has been partially defined by "including a log".
D1.09. Same as M1.07, except for addition of "and related
       documents". Bernstein worries that supporting

documents don't get the attention they deserve.
D1.10. Same as M1.09, except for addition of "and related documents".
D1.11. Same as M1.10.
D1.12. Same as M1.11.
D1.13. Basically the same as M1.12, but a bit shorter.

D2.01. Basically the same as M2.02, except for "and related documents". Moved to improve order.
D2.02. Same as M2.01, except for "and related documents" and "well-documented" before "belief". (Bernstein did not think merely believing to be good enough.)
D2.03. Same as M2.03.
D2.04. Same as M2.06 (except for addition of "and related documents").
--M2.04 deleted because seemed to be equivalent to M2.07 (or, at least, to D2.05).
--M2.05 moved to employer section (D4.06).
D2.05. Same as M2.07, except for substitution of "fair" for "objective" (and addition of "and related documents"). Not clear what "objective" means if it means something different from "fair".
D2.06. Same as M2.08, except for addition of "or customer".
D2.07. Same as M2.09.

D3.01. Same as M3.01 (except for "and related documents").
D3.02. Same as M3.03. (M3.02 moved to end because it seems like a catch-all.)
D3.03. Same as M3.04.
D3.04. Same as M3.05
D3.05-3.06. Attempt to cover "self-dealing" worry in ? you deleted. Happy to delete if no one is really worried about these issues.
D3.07. Revised M3.02. A bit shorter. Emphasis shifted from avoiding to disclosing.

D4.01-D4.05. Same as M4.01-M4.05.
D4.06. Basically the same as M2.05.
D4.07. Same as M4.06.
D4.08-D4.09. Same as M4.07-M4.08.
--M4.09. Assuring accuracy of data seems to belong under Rule 1. Assuring authorization for use of data [?] seems belong under Rule 3. Not clear what "legitimate" adds. What does this rule add? Recommend drop or move.

D5.01-D.5.04. Same as M5.01-5.04.
D5.05. M5.05 substitutes "properly constituted" for "appropriate". Two words instead of one. Seems to all for bodies that, though properly constituted, are not

appropriate. What is point of change? To rule out
bodies which, though improperly constituted, are
appropriate? Odd.

D5.06. Incorporates new idea in M5.06, but with fewer words.
D5.07. Same as M5.07. (Accepts change from "appropriate" to
"commensurate".)
D5.08-D5.09. Same as M5.08-5.09.
D5.10. Accepts suggestion in M5.10, but extends it a bit
further for the sake of clarity.
D5.11. Same as M5.11.
D5.12. Follows M5.12.
D5.13. Same as M5.13, except for addition of "knowledge".
D5.14. Same as M5.14.

D6.01-D6.04. Same as M6.01-M6.04.
D6.05. Follows M6.07, moving it here because it fits in
better, and (hopefully) improving style a bit.
D6.06. Same as M6.05.
D6.07. Same as M6.06.
D6.08. Slightly shorter version of M6.09.
D6.09. Attempt to clarify meaning of M6.08.
D6.10-D6.14. Same as M6.10-M6.14.

D7.01. Basically the same as the new M7.04. Moved here to
leave "this code" as final word.
D7.02. Same as M7.02 (except for "and related documents").
Move seems appropriate given new D7.01.
D7.03. New. Parallels D7.02. Consistent with new emphasis
on supporting documents.
D7.04. Same as M7.01 (except for "and related documents").
D7.05. New. Bernstein's suggestion.
D7.06. Same as M7.03 (except for "and related documents").

CODE OF ETHICS FOR SOFTWARE ENGINEERS

INTRODUCTION

Computers now have a central and growing role in commerce, industry, government, medicine, entertainment, and ordinary life. Because the utility of computers depends in large part on the instructions written for them, those who design, develop, and test software have enormous opportunities both to do good and to cause harm. To assure, as much as possible, that this power will be used for good, software engineers commit themselves to making the design, development, and testing of software a distinct, beneficial, and respected profession. In accordance with that commitment, software engineers shall adhere to the following standards of conduct. The seven main paragraphs state general rules. Each subsidiary clause is a specific application of its general rule, one experience has shown needs express statement; but no set of subsidiary clauses exhausts the general rule.

Rule 1: PRODUCT. Software engineers shall, insofar as possible, assure that the software on which they work is useful to public, employer, customer, and user, completed on time and at reasonable cost, and free of significant error. In particular, software engineers shall, as appropriate:

> 1.01. Assure that specifications for software on which they work have been put in writing, satisfy the user's requirements, and have the customer's approval.
>
> 1.02. Assure that they understand fully the specifications for software on which they work.
>
> 1.03. Assure that they are qualified, by education and experience, for any project on which they work.
>
> 1.04. Assure proper goals and objectives for any project on which they work.
>
> 1.05. Assure proper development methodology on any project on which they work.
>
> 1.06. Assure proper management on any project on which they work, including proper procedures for control of quality and risk.
>
> 1.07. Assure proper estimates of cost, schedule, personnel, and outcome on any project on which they work.
>
> 1.08. Assure adequate documentation on any project on which they work, including a log of problems discovered and solutions adopted.
>
> 1.09. Assure proper testing, debugging, and review of software and related documents on which they work.
>
> 1.10. Assure that software and related documents on which they work respect the privacy of those who will be subject to the software.

1.11. Assure ethical, economic, cultural, legal,
and environmental issues are properly
identified, defined, and addressed.

1.12. Promote maximum productivity and minimum
cost to employer, customer, user, and public.

1.13. Avoid fads, departing from standard
practices only when justified.

Rule 2: PUBLIC. Software engineers shall, in their professional
role, act only in ways consistent with the public safety, health
and welfare. In particular, software engineers shall:

2.01. Disclose to appropriate persons any danger
that the software or related documents on
which they work may pose to the user, a third
party, or the environment.

2.02. Approve software only if they have a well-
documented belief that it is safe, meets
specifications, and has passed all
appropriate tests.

2.03. Affix their signature only to documents
prepared under their supervision and within
their areas of competence.

2.04. Cooperate in efforts to correct problems in
software or related documents.

2.05. Be fair and truthful in all public
statements concerning software or related
documents.

2.06. Not put self-interest, the interest of an
employer, or the interest of a client or
customer ahead of the public's interest.

2.07. Accept full responsibility for their own
work.

Rule 3: JUDGMENT. Software engineers shall, insofar as possible,
protect both the independence of their professional judgment and
their reputation for such judgment. In particular, software
engineers shall, as appropriate:

3.01. Maintain professional skepticism with
respect to any software or related documents
they are asked to evaluate.

3.02. Reject bribery.

3.03. Accept no payback, kickback, or other
payment from a third party to a contract,
except with the knowledge and consent of all
parties to the contract.

3.04. Accept payment from only one party for any
particular project, or for services related
to the same project, except when the

circumstances have been fully disclosed to
the parties concerned and they have given
their informed consent.

3.05. Neither solicit nor accept a contract from a
governmental body on which a principal or
officer of their employer serves as a member.

3.06. Participate in no decision of a governmental
or professional body, as a member or advisor,
concerned with software, or related
documents, in which they, their employer, or
their client have a financial interest.

3.07. Disclose to all concerned parties those
conflicts of interest that cannot reasonably
be avoided or escaped.

Rule 4: CLIENT AND EMPLOYER. Software engineers shall,
consistent with the public health, safety, and welfare, always
act in professional matters as faithful agents and trustees of
their client or employer. In particular, software engineers
shall:

4.01. Provide service only in areas of competence.

4.02. Assure that any document upon which they
rely has been approved by someone qualified
to approve it.

4.03. Use the property of a client or employer
only in ways properly authorized.

4.04. Not knowingly use pirated software on
equipment of a client or employer or in work
performed for a client or employer.

4.05. Keep as confidential information gained in
their professional work that is not properly
in the public domain.

4.06. Identify, document, properly report to
employer or client any problem in the
software or related documents on which they
work.

4.07. Inform client or employer promptly if, in
their opinion, a project is likely to fail,
to prove too expensive, to violate copyright
laws, or otherwise to turn out badly.

4.08. Accept no outside work detrimental to the
work they perform for their primary employer.

4.09. Represent no interest adverse to their
employer's without the employer's consent.

Rule 5: PROFESSION. Software engineers shall, in all professional

matters, advance both the integrity and reputation of their
profession. In particular, software engineers shall, insofar as
possible:

> 5.01. Associate only with reputable businesses.
> 5.02. Assure that clients, employers, and
>   supervisors know of this code of ethics.
> 5.03. Support software engineers who do as this
>   code requires.
> 5.04. Help develop an organizational environment
>   favorable to acting ethically.
> 5.05. Report violations of this code to
>   appropriate authorities.
> 5.06. Take responsibility for detecting,
>   correcting, and reporting errors in software
>   and associated documents on which they work.
> 5.07. Only accept a salary commensurate with
>   professional qualifications.
> 5.08. Be accurate in stating the characteristics
>   of software on which they work, avoiding not
>   only false claims but claims that might
>   reasonably be supposed to be deceptive,
>   misleading, or doubtful.
> 5.09. Not promote their own interest at the
>   expense of the profession.
> 5.10. Obey all laws governing their work, insofar
>   as such obedience is consistent with the
>   public health, safety, and welfare.
> 5.11. Serve in civic affairs constructively.
> 5.12. Improve public knowledge of software engineering.
> 5.13. Share useful software-related knowledge,
>   inventions, or discoveries with the
>   profession by reading papers at professional
>   meetings, by publishing articles in the
>   technical press, and by serving on the
>   profession's standard-setting bodies.
> 5.14. Make no political contribution, gift, or
>   commission for award of a contract.

Rule 6: COLLEAGUES. Software engineers shall treat all those
with whom they work fairly. In particular, software engineers
shall, as appropriate:

> 6.01. Assist co-workers in professional development.
> 6.02. Review the work of other professionals only
>   with their knowledge.
> 6.03. Credit fully the work of others.
> 6.04. Criticize the work of others in an
>   objective, candid, and properly-documented
>   way.

6.05. Give a fair hearing to the opinion, concern, or complaint of a colleague.
6.06. Assure that employees are informed of standards before being held to them.
6.07. Assure co-workers know the employer's policies and procedures for protecting passwords, files, and other confidential information.
6.08. Assign work only upon considerations of professional qualifications.
6.09. Provide for due process in hearing charges of violation of an employer's policy or of this code.
6.10. Develop a fair agreement concerning ownership of any invention an employee makes.
6.11. Not supplant another software engineer after steps have been taken for employment.
6.12. Attract employees only by full and accurate description of the conditions of employment.
6.13. Offer only fair and just compensation.
6.14. Not prevent a subordinate from taking a better job for which the subordinate is qualified.

Rule 7: SELF. Software engineers shall, throughout their career, try to enhance their own ability to practice their profession as it should be practiced. In particular, software engineers shall continually endeavor to:

7.01. Improve their knowledge of recent developments in the design, development, and testing of software and related documents.
7.02. Improve their ability to create safe, reliable, and useful software at reasonable cost and within a reasonable time.
7.03. Improve their ability to write accurate, informative, and literate documents in support of software on which they work.
7.04. Improve their understanding of the software and related documents on which they work and of the environment in which they will be used.
7.05. Improve their knowledge of the law governing the software and related documents on which they work.
7.06. Improve their knowledge of this code, its interpretation, and its application to their work.