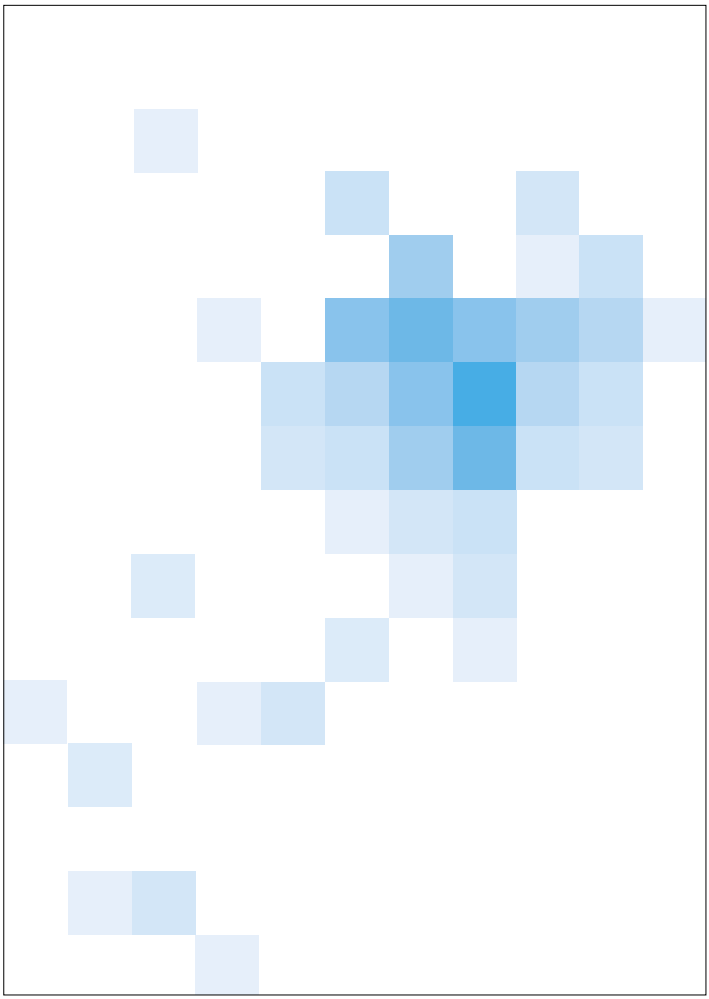
VDI

Fundamentals of Engineering Ethics



Preface

Natural sciences and engineering are important forces shaping our future. They exert both positive and negative influences upon our world. We all contribute to these changes. The engineering professions, however, have a particular responsibility in structuring these processes. Hence in 1950, the Association of Engineers VDI in Germany presented a document on the specific professional responsibilities of engineers.

Recently the VDI Executive Board passed the new document „Fundamentals of Engineering Ethics“. They are intended to offer to all engineers, as creators of technology, orientation and support as they face conflicting professional responsibilities.

These fundamentals have been proposed by the "VDI philosophers" together with representatives of other disciplines within the VDI Committee on People and Technology.

I hope that this document may strengthen awareness and commitment in dealing with ethical issues of the engineering professions.

Dusseldorf, March 2002

Prof. Dr.-Ing. Hubertus Christ, President of the VDI

0. Preamble

Engineers recognise natural sciences and engineering as important powers shaping society and human life today and tomorrow. Therefore engineers are aware of their specific responsibility. They orient their professional actions towards fundamentals and criteria of ethics and implement them into practice. The fundamentals suggested here offer such orientation and support for engineers as they are confronted with conflicting professional responsibilities.

The Association of Engineers in Germany (VDI)

- contributes to raising awareness about engineering ethics,
- offers consultancy and conflict resolution, and
- assists in all controversies related to issues of responsibility in engineering.

1. Responsibilities

1.1 Engineers are responsible for their professional actions and the resulting outcomes. According to professional standards, they fulfil their tasks as they correspond to their competencies and qualifications. Engineers perform these tasks and actions carrying both individual and shared responsibilities.

1.2 Engineers are responsible for their actions to the engineering community, to political and societal institutions as well as to their employers, customers, and technology users.

1.3 Engineers know the relevant laws and regulations of their countries. They honour them insofar as they do not contradict universal ethical principles. They are committed to applying them in their professional environment. Beyond such application they invest their professional and critical competencies into improving and developing further these laws and regulations.

1.4 Engineers are committed to developing sensible technology and technical solutions. They accept responsibility for quality, reliability, and safety of new technical products and processes. Their responsibilities include technical documentation as well as informing customers about both appropriate use and possible dangers of misuse of new technical solutions. They furthermore include:

- defining the technical characteristics of such products and processes,
- suggesting alternative technical solutions and approaches, and
- taking into consideration the possibilities of unwanted technological developments and deliberate misuse of products and processes.

2. Orientation

2.1 Engineers are aware of the embeddedness of technical systems into their societal, economic and ecological context. Therefore they design technology corresponding to the criteria and values implied: the societal, economic and ecological feasibility of technical systems; their usability and safety; their contribution to health, personal development and welfare of the citizens; their impact on the lives of future generations (as previously outlined in the VDI Document 3780).

2.2 The fundamental orientation in designing new technological solutions is to maintain today and for future generations, the options of acting in freedom and responsibility.

Engineers thus avoid actions which may compel them to accept given constraints (e.g. the arbitrary pressures of crises or the forces of short-term profitability). On the contrary, engineers consider the values of individual freedom and their corresponding societal, economic, and ecological conditions the main prerequisites to the welfare of all citizens within modern society – excluding extrinsic or dogmatic control.

2.3 Engineers orient their professional responsibility on the same fundamentals of ethics as everybody else within society. Therefore engineers should not create products which are obviously to be used in unethical ways (e.g. products banned by international agreement). Furthermore they may not accept far-reaching dangers or uncontrollable risks caused by their technical solutions.

2.4 In cases of conflicting values, engineers give priority:

- to the values of humanity over the dynamics of nature,
- to issues of human rights over technology implementation and exploitation,
- to public welfare over private interests, and
- to safety and security over functionality and profitability of their technical solutions.

Engineers, however, are careful not to adopt such criteria or indicators in any dogmatic manner. They seek public dialogue in order to find acceptable balance and consensus concerning these conflicting values.

3. Implementation

3.1 Engineers are committed to keeping up and continually developing further their professional skills and competencies.

3.2 In cases of conflicting values, they are expected to analyse and weigh controversial views through discussions that cross borders of disciplines and cultures. In this way they acquire and strengthen their ability to play an active part in such technology assessment.

3.3 In all countries, national laws and regulations exist which concern technology use, working conditions, and the natural environment. Engineers are aware of the relevance of engineering ethics for these laws and regulations.

Many of these laws today take up controversial issues related to open questions in engineering sciences and ethics. Engineers are challenged to invest their professional judgement into substantiating such questions.

Concerning national laws, the sequence of priorities is as follows: national laws have priority over professional regulations, such professional regulations have priority over individual contracts.

3.4 There may be cases when engineers are involved into professional conflicts which they cannot resolve co-operatively with their employers or customers. These engineers may apply to the appropriate professional institutions which are prepared to follow up such ethical conflicts. As a last resort, engineers may consider to directly inform the public about such conflicts or to refuse co-operation altogether. To prevent such escalating developments from taking place, engineers support the founding of these supporting professional institutions, in particular within the VDI.

3.5 Engineers are committed to educational activities in schools, universities, enterprises and professional institutions with the aims of promoting and structuring technology education, and enhancing ethical reflection on technology.

3.6 Engineers contribute to developing further and continually adapting these fundamentals of engineering ethics, and they participate in the discussions corresponding.

Fundamentals of Engineering Ethics:

Summary

- Engineers are responsible for their professional actions and tasks corresponding to their competencies and qualifications while carrying both individual and shared responsibilities
- Engineers are committed to developing sensible and sustainable technological systems
- Engineers are aware of the embeddedness of technical systems into their societal, economic and ecological context, and their impact on the lives of future generations
- Engineers avoid actions which may compel them to accept given constraints and thus lead to reducing their individual responsibility
- Engineers base their actions on the same ethical principles as everybody else within society. They honour national laws and regulations concerning technology use, working conditions, and the natural environment
- Engineers discuss controversial views and values across the borders of disciplines and cultures
- Engineers apply to their professional institutions in cases of conflicts concerning engineering ethics
- Engineers contribute to defining and developing further relevant laws and regulations as well as political concepts in their countries
- Engineers are committed to keeping up and continually developing further their professional skills and competencies
- Engineers are committed to enhancing critical reflection on technology within schools, universities, enterprises, and professional institutions

Dusseldorf, March 2002

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