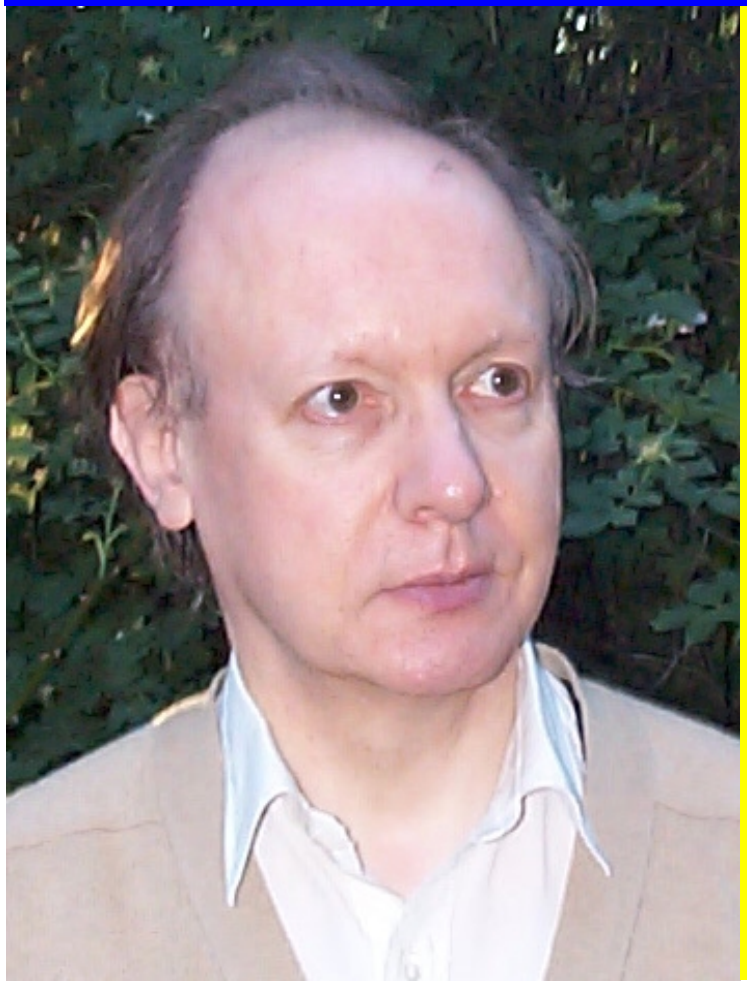
Software Design and User Control



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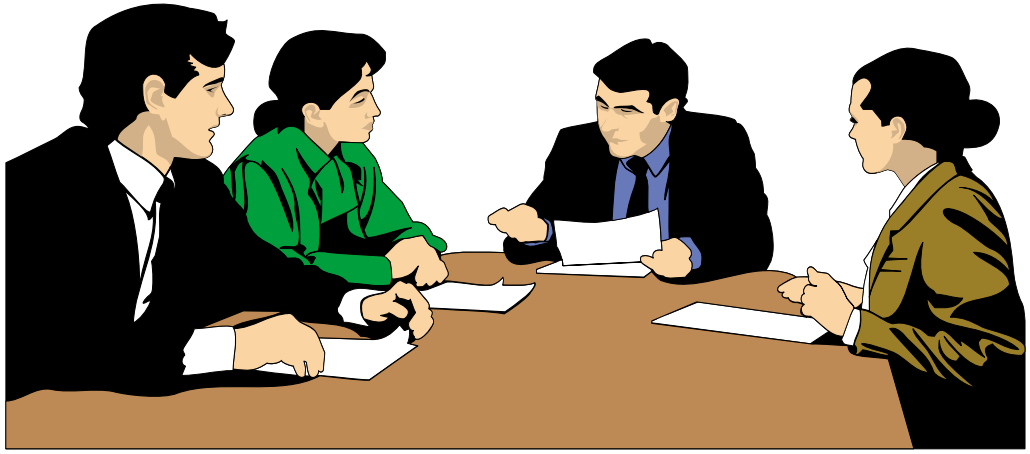


Why User Participation in Software Design is Important

User participation in software design is important because:

Software designers know too much about the software to understand how it appears to ordinary users.

Software designers tend to listen more to advanced users, who speak the same language as the designers, than to ordinary users.

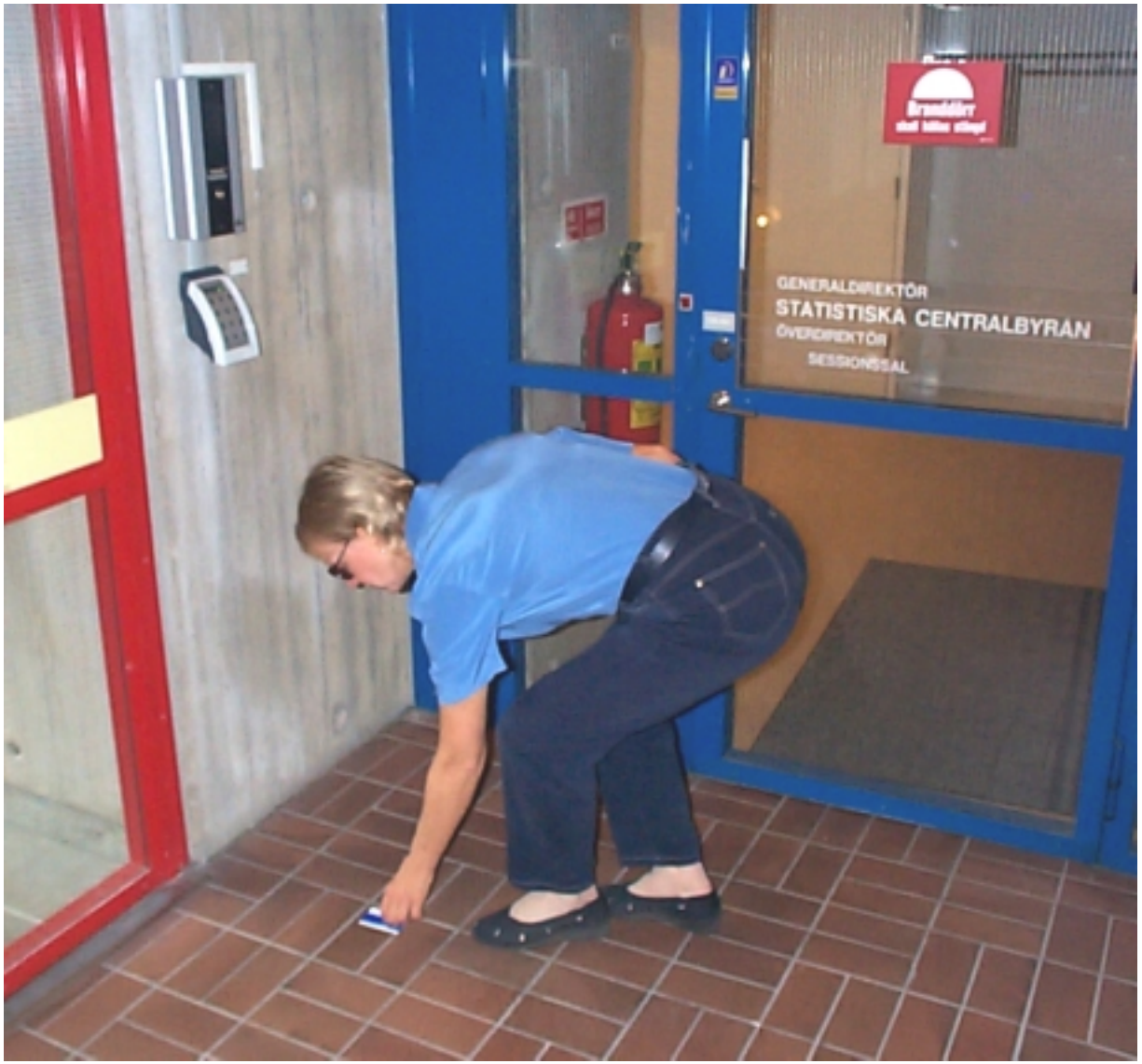
Software designers have an exagerated belief in the importance of their software, they do not understand that users want to solve user problems, not use software facilities. Software designed without user participation will then tend to make the software, rather than the task, dominate too much.

Users are much better than designers at finding problems with the software, because designers will unconsciously avoid doing things they know will not work well.

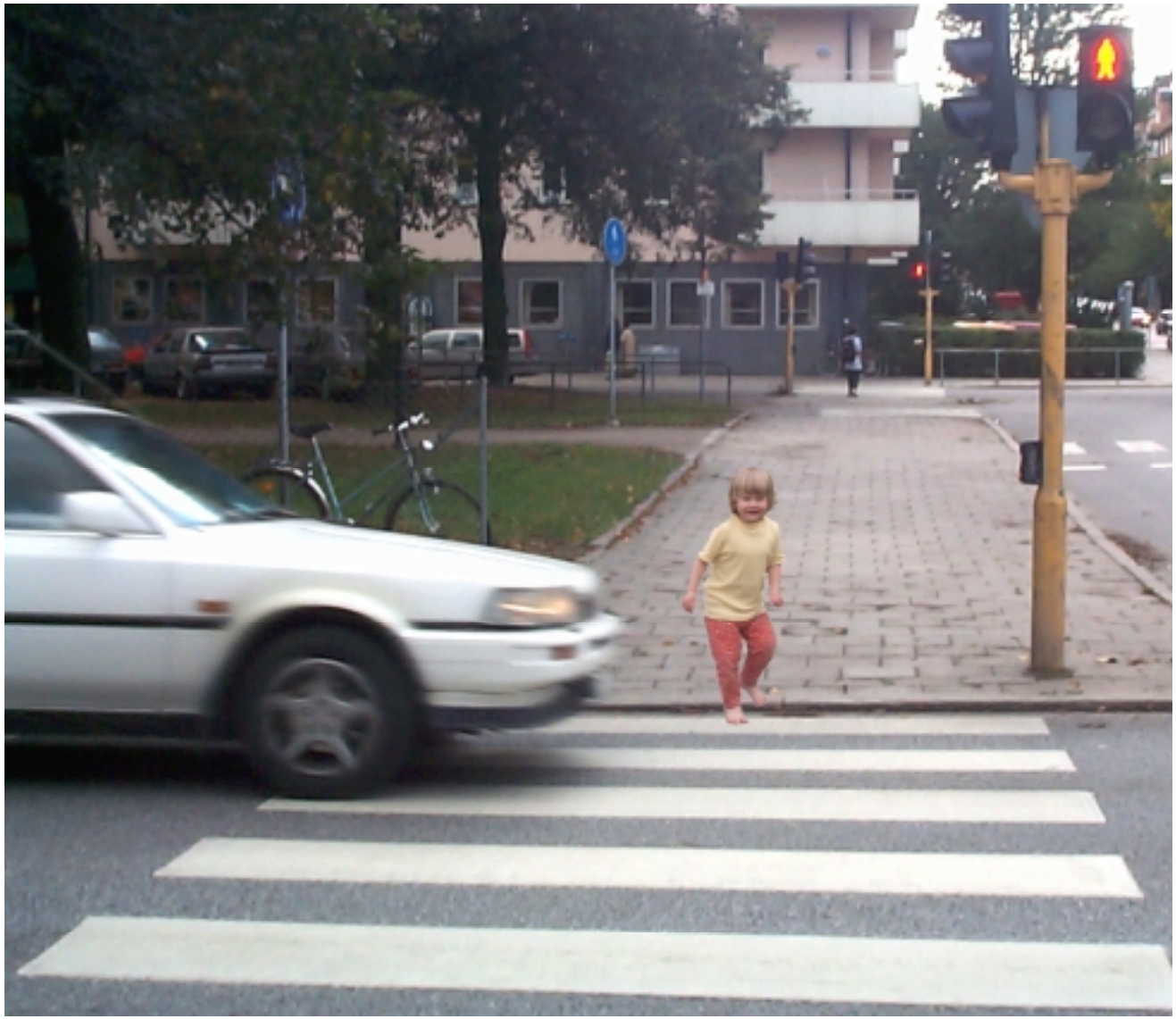
The software designers are limited by their understanding of the software, they do not see other ways of looking at the tasks.

But: Letting users participate by designating a group of people, who are to represent the users in the software design, may not solve these problems. It may even make the problems worse. Such groups of users will very soon learn too much, so that they adopt a software designer's view, not an ordinary user's view. And such groups of users will easily get caught in the feeling of power, and will want to design the software to enforce their view of “the right way” of doing things. But this “right way”, is often based on a simplistic model of reality, and will cause software to be constraining and not adaptible to the variants of real life.

Pull the Card and then Drop it on the Floor



A Child Runs in front of the Cars



Never have a Meeting with the Boss on Monday Mornings

Week 47	
21 Monday	**22** Tuesday
8	
9	
10	
11	
12	
13	
14	
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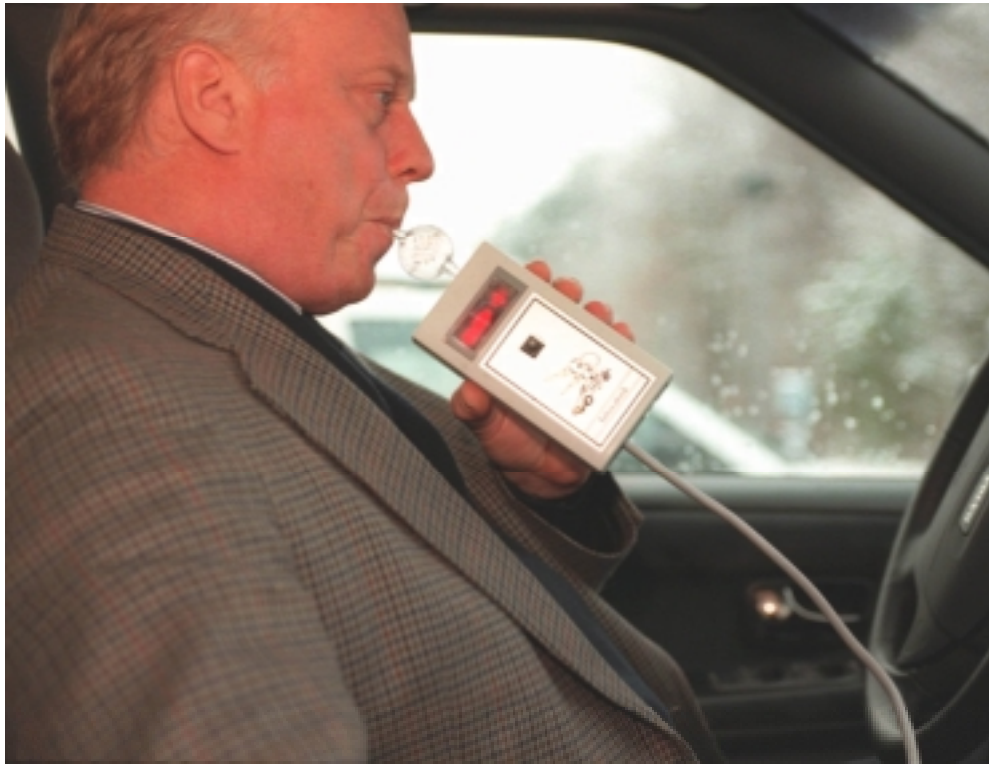
16	
17	

A Haircut or an Important Meeting?

Week 47	
21 Monday	22 Tuesday
8	
9	
10	
11	
12	
13 HAIR BOSS	
14	
15	
16	
17	

Electronic Shackle

Breathanalyzer Lock



Distortion of communication

NT used by several people. Lines corrupted when downloaded from the Internet:

The lines that were corrupted were of the form

```
#define one 1 /* foo menu */
#define two 2 /* bar baz */
```

What was transferred to this machine only was:

```
#define one 1 /* foo me  */
#  fine two 2 /* bar baz */
```

Too Long Wait Time for the Lifts

Technician:	Faster lifts will cost $$$.
Economist:	The saved time is not worth the cost.
Administrator:	Reorganize so that people do not have to move between floors.
Psychologist:	

Too Long Wait Time for the Lifts

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Economist:	The saved time is not worth the cost.
Administrator:	Reorganize so that people do not have to move between floors.
Psychologist:	Install mirrors in the Halls.

Laws, Rules and Regulations

A tool for control and power

A tool for communication

Rules are based on a model of the system they are used for

This model is always incomplete, because it is not possible for any activity to include all variations and special cases.

How People Handle this Problem

User representatives:	We know what is right and wrong. We will not let the computer allow what we know is wrong. **Result:** Users cannot adapt to the nuances of real life.
Technical developers:	Just insert a new software feature! **Result:** A complex system, with lots of features, like a christmas tree. Those who know the sacred books can get what they want. Those who do not know become helpless.

Summary

- The successes of human society is based on the flexibility of humans and their willingness to adapt their activities to different circumstances.
- Humans are most happy and productive if they can influence their living environment and contribute to solving problems together.
- Laws and regulation are a form of communication between humans. They are in reality only guidelines, people have to adapt to varying circumstances and interpret and apply the rules with understanding and human compassion. If everyone had to adhere 100 % to all laws and regulations, human societies would not work any more.
- This is usually no problem when the laws and regulations are written on paper. But if the laws and regulations are programmed into computers, so that the computers control what is allowed and not allowed, serious problems will often occur. In the best case,

people will only be unhappy and unproductive, in the worst case, major catastrophs can occur.

- Computer software must be designed to allow flexibility and human choice. Laws and regulations should be interpreted by humans, not by machines.
- Making the software more complex, to include in it more different special handling of special circumstances, will often only make it worse. Instead of complex software, software should be flexible and open-ended.
- There is a human tendency when designing software to want to include in it “proper procedure” and “experience how things should be done”. This tendency can easily produce unusable or unsuitable software.
- Possible exception: Certain security rules, where enforcement is needed to overcome human weaknesses.

This Subsegment of This Course

Tasks:

Read three documents. References to the documents can be found at http://www.dsv.su.se/jpalme/cmc-course/flex-and-user-influence.html

Discuss them during two weeks in an on-line conferencing system.

Examination:

Regular participation in the discussion during two weeks.

Write at least two well-thought-thrugh contributions. Your opinions need *not* be the same as those of the teachers. These are controversial issues!