

*Object-Oriented Systems
Development:
Using the Unified Modeling
Language*

**Chapter 14:
System Usability and
Measuring User Satisfaction**



Goals

- **Usability testing.**
- **User satisfaction testing.**

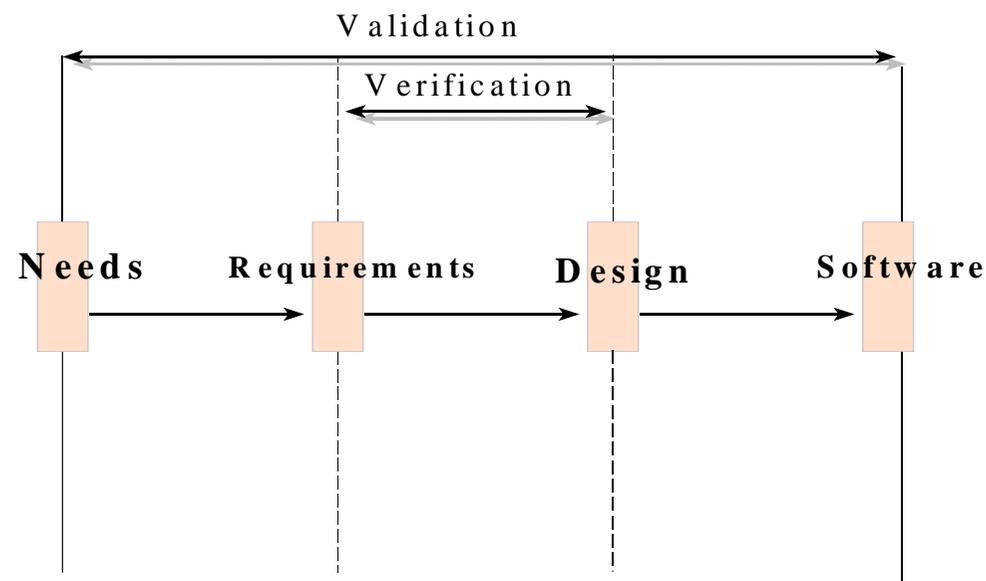
Ninety percent of product development efforts fail. About thirty percent fail to produce anything at all, but most of the failures don't have that problem. They do produce a product, but people don't like it. They do not use it at all, or if they do, they may grumble endlessly.

**Donald C. Gauge and
Gerald Weinberg**



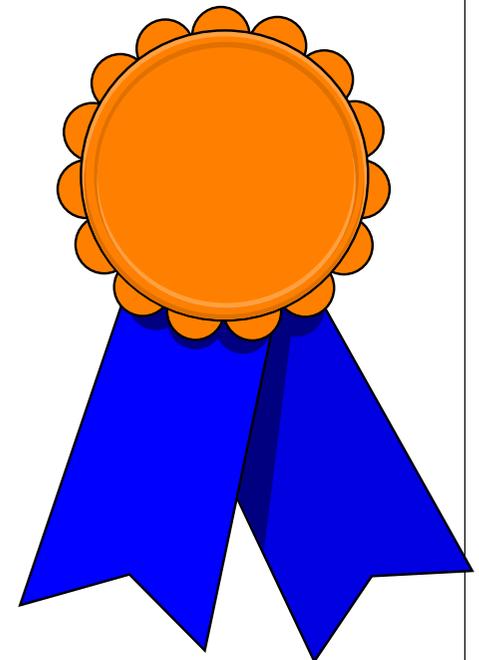
Quality Measures

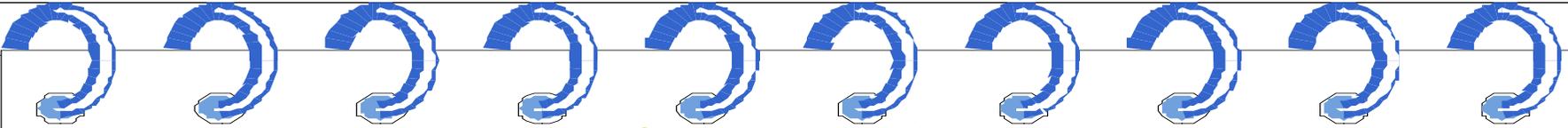
- *Verification* - "Am I building the product right?"
- *Validation* - "Am I building the right product?"



Quality Measures (Con't)

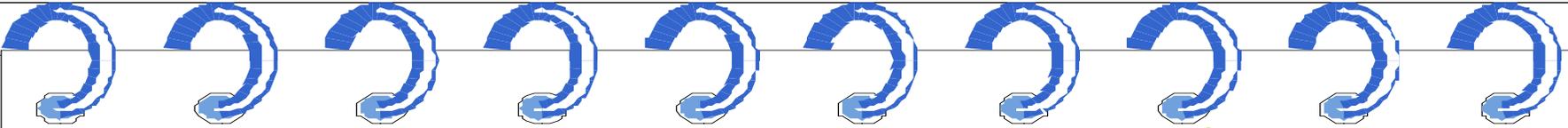
- Two main issues in software quality are *validation* or user satisfaction and *verification* or quality assurance.





Recall from Chapter 12

- **The process of designing view layer classes consists of the following steps:**
 1. **In the macro-level user interface (UI) design process, identify view layer objects.**
 2. **In the micro-level UI, apply design rules and GUI guidelines.**
 3. **Test usability and user satisfaction.**
 4. **Refine and iterate the design.**



Usability and User Satisfaction Testing

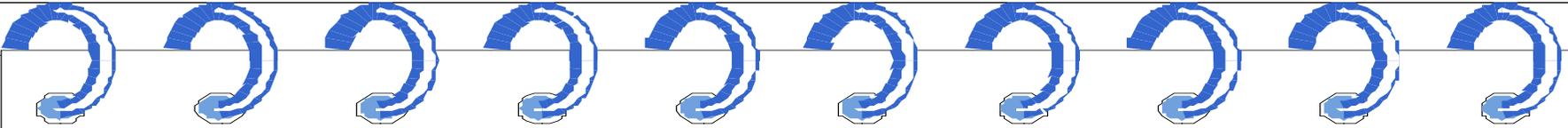
Two issues will be discussed:

- 1. *Usability Testing*, and how to develop a plan for usability testing.**
- 2. *User Satisfaction Test*, and guidelines for developing a plan for user satisfaction testing.**

Usability

- The International Organization for Standardization (ISO) defines *usability* as the *effectiveness*, *efficiency*, and *satisfaction* with which a specified set of users can achieve a specified set of tasks in particular environments.





Usability (Con't)

- *Defining tasks.* What are the tasks?
- *Defining users.* Who are the users?
- *A means for measuring effectiveness, efficiency, and satisfaction.*
- The phrase *two sides of the same coin* is helpful for describing the relationship between the *usability* and *functionality* of a system.

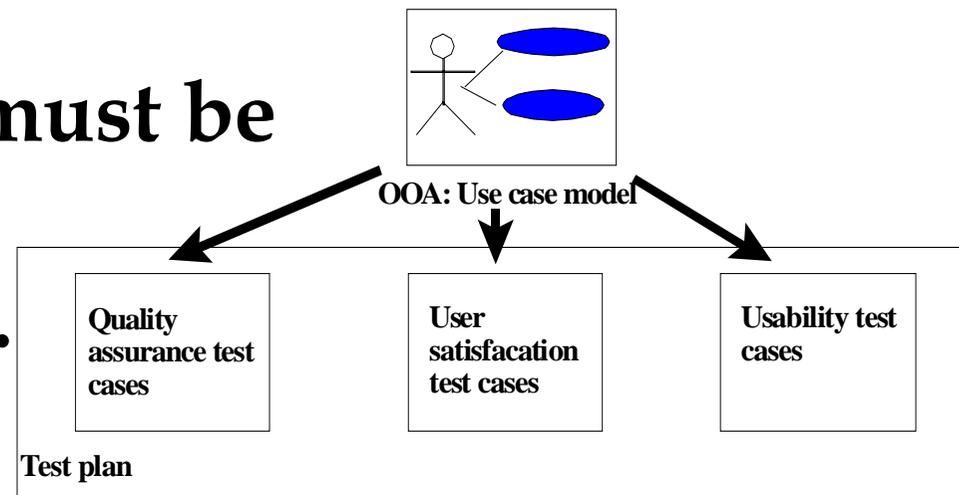
Usability Testing

- *Usability testing* measures the ease of use as well as the degree of comfort and satisfaction users have with the software.
- Usability testing must begin with defining the target audience and test goals.



Usability Testing (Con't)

- Usability testing should begin in the early stages of product development, when developing use cases.
- The findings from usability testing can be incorporated into the usability test plan and test cases.
- Usability testing must be a key part of the UI design process.



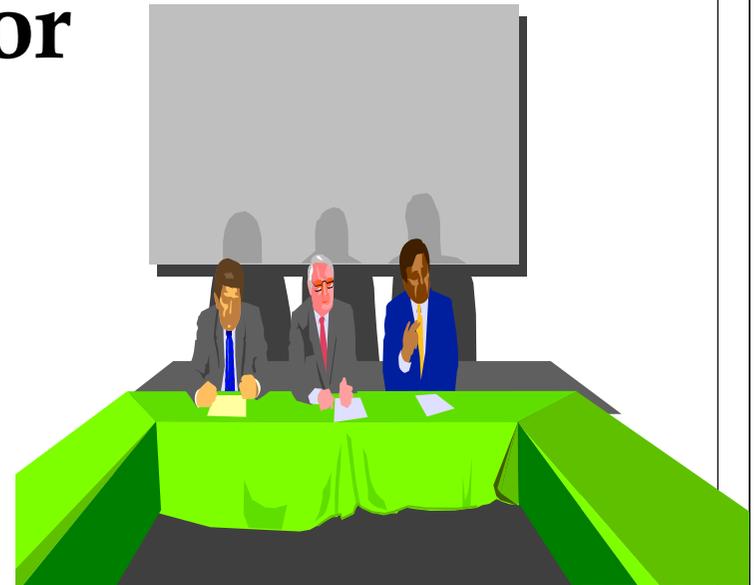
Usability Testing (Con't)

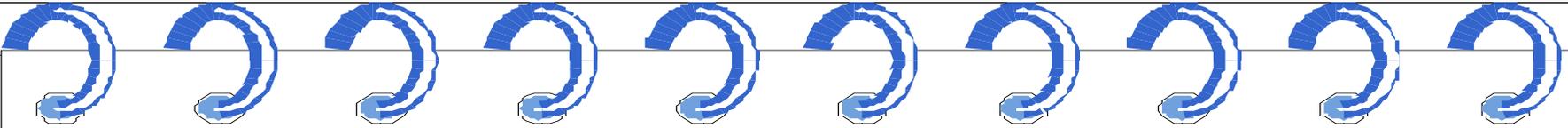
- Run a pilot test to work out the bugs of the tasks to be tested.
- Make certain the task scenarios, prototype, and test equipment work smoothly.



Guidelines For Developing Usability Testing

- **“Focus groups” are helpful for generating initial ideas or trying out new ideas.**
- **It requires a moderator who directs the discussion about aspects of a task or design.**





Guidelines For Developing Usability Testing (Con't)

- **Apply usability testing early and often.**
- **Include all of a software's components in the test.**
- **The testing doesn't need to be very expensive, a tape recorder, stopwatch, notepad and an office can produce excellent results.**

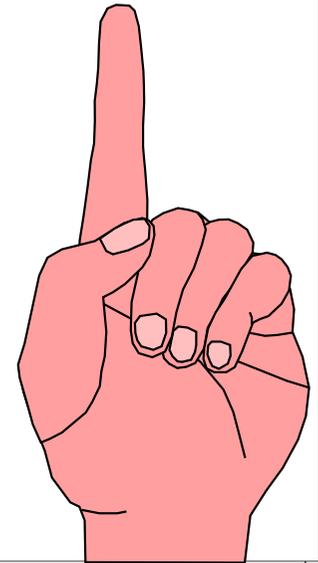
Guidelines For Developing Usability Testing (Con't)

- Tests need not involve many subjects.
- More typically, quick, iterative tests with a small, well-targeted sample of **6 to 10 participants** can identify **80–90 percent** of most design problems.



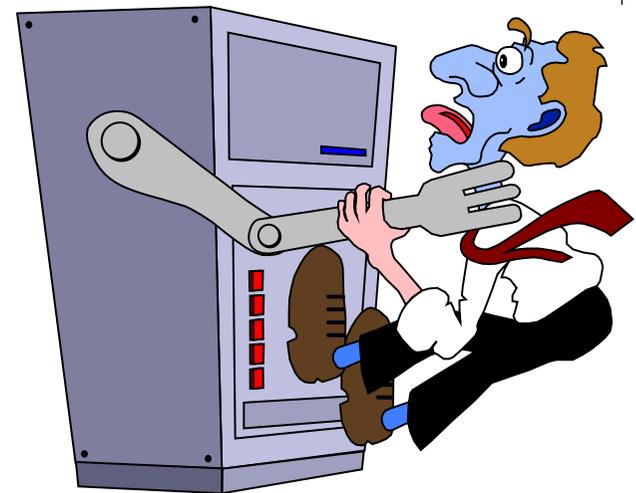
Guidelines For Developing Usability Testing (Con't)

- **Focus on tasks, not features.**
- **Remember that your customers will use features within the context of particular tasks.**



Recording the Usability Test

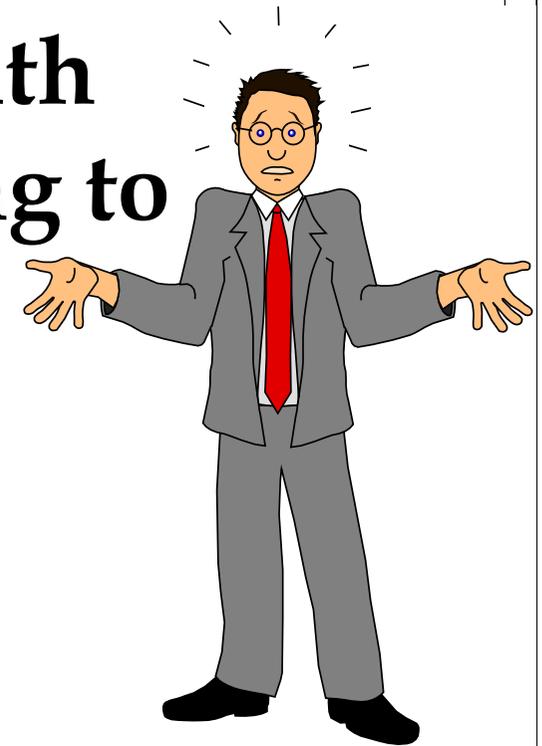
- **Make participants feel comfortable by explaining the testing process.**
- **Emphasize that you are testing the software, not the participants.**
- **If they become confused or frustrated, it is not a reflection on them.**



Recording the Usability Test

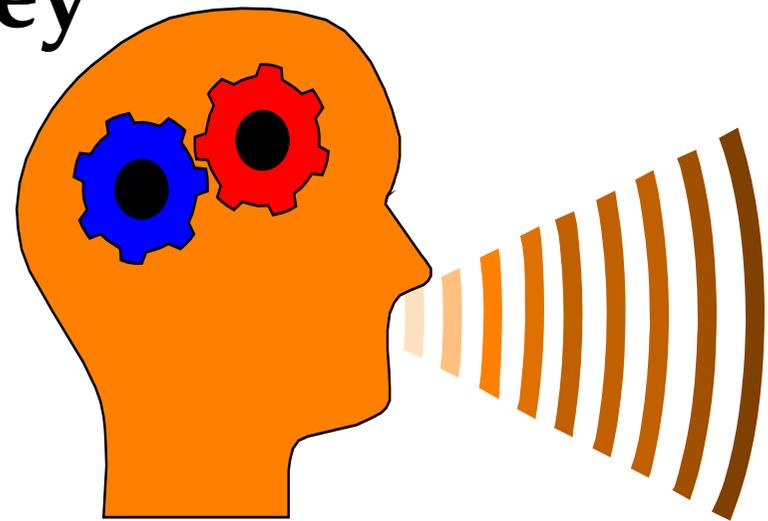
(Con't)

- **Do not interrupt participants during a test.**
- **If they need help, begin with general hints before moving to specific advice.**
- **Keep in mind that less intervention usually yields better results.**



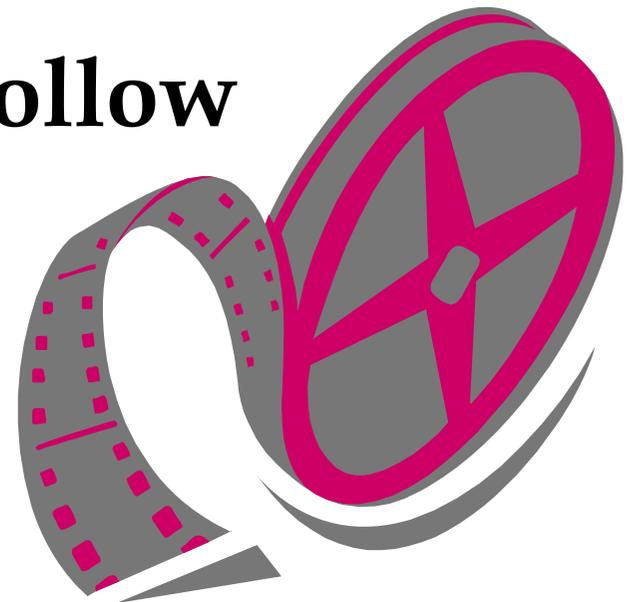
Recording the Usability Test (Con't)

- Ask subjects to think aloud, so you can hear what assumptions and inferences they are making.
- Record how long they take to perform a task as well as any problems they encounter.



Recording the Usability Test (Con't)

- Record the test results using a portable tape recorder, or better, a video camera.
- You may also want to follow up the session with the *user satisfaction* test.



User Satisfaction Test

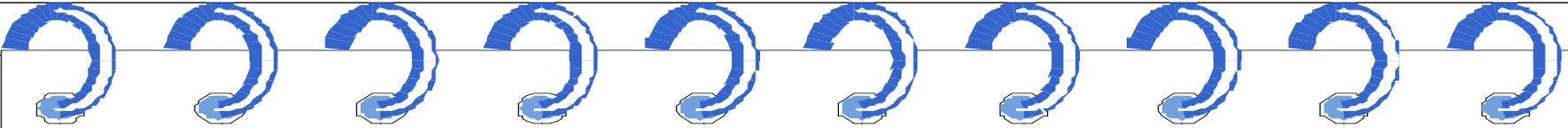
- **User satisfaction test is the process of quantifying the usability test with some measurable attributes of the test, such as functionality, cost, or ease of use.**



User Satisfaction Test (Con't)

- **The best measure of user satisfaction is the product itself, since you can observe how users are using it, or avoiding it.**



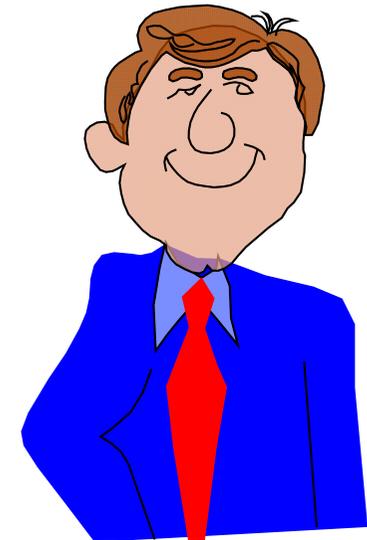


User Satisfaction Test (Con't)

- **As a communication vehicle between designers, as well as among users and designers.**
- **To detect and evaluate changes during the design process.**
- **To provide us with a periodic indication of divergence of opinion about the current design.**

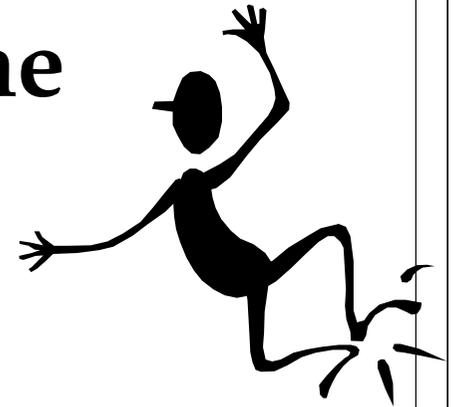
User Satisfaction Test (Con't)

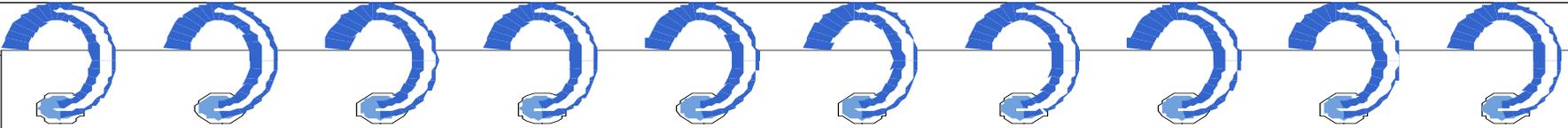
- **To enable pinpointing specific areas of dissatisfaction for remedy.**
- **To provide a clear understanding of just how the completed design is to be evaluated.**



User Satisfaction Test (Con't)

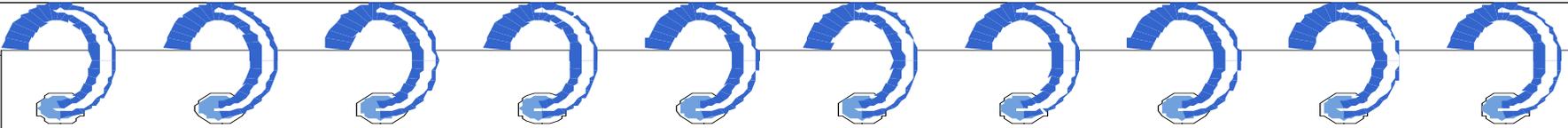
- **The test is inexpensive, easy to use and it is educational to those who administer it and those who fill it out.**
- **Even if the results may never be summarized, or filled out, the process of creating the test itself will provide us with useful information.**





Guidelines for Developing a User Satisfaction Test

- **The format of every user satisfaction test is basically the same, but its content is different for each project.**
- **Use cases and users can provide us with the attributes that should be included in the test.**



Guidelines for Developing a User Satisfaction Test (Con't)

- **Ask the users to select a limited number (5 to 10) of attributes by which the final product can be evaluated.**
- **Once these attributes have been identified, they can play a crucial role in the evaluation of the final product.**

Custom Form for User Satisfaction Test

How do you rate the customer tracking project at this time?

Easy of use:

	10	9	8	7	6	5	4	3	2	1	
Very easy to use	<input type="checkbox"/>	Very Hard to use									

Functionality:

	10	9	8	7	6	5	4	3	2	1	
Very Functional	<input type="checkbox"/>	Not Functional									

Cost:

	10	9	8	7	6	5	4	3	2	1	
Very Inexpensive	<input type="checkbox"/>	Very expensive									

Intuitive UI:

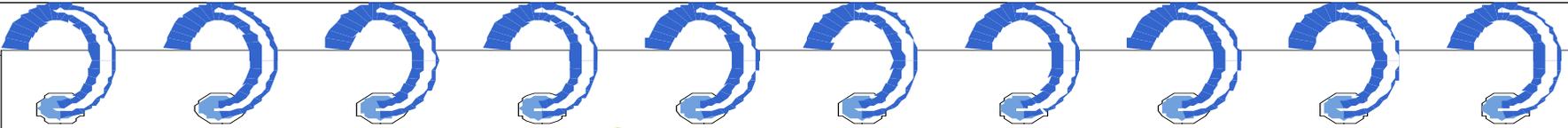
	10	9	8	7	6	5	4	3	2	1	
Very Intuitive	<input type="checkbox"/>	Very Hard to Follow									

Reliability:

	10	9	8	7	6	5	4	3	2	1	
Very Reliable	<input type="checkbox"/>	Not Reliable									

Comments:

I have more to say, I would like to see you.



Guidelines for Developing a User Satisfaction Test (Con't)

- **Gause and Weinberg raise the following important point in conducting user satisfaction test:**
- *"When the design of the test has been drafted, show it to the clients and ask, 'If you fill this out monthly (or whatever interval), will it enable you to express what you like and don't like?' if they answer negatively then find out what attributes would enable them to express themselves and revise the test."*

User Satisfaction Test (Con't)

- A shift in the user satisfaction rating indicates that something is happening.

Measuring User Satisfaction

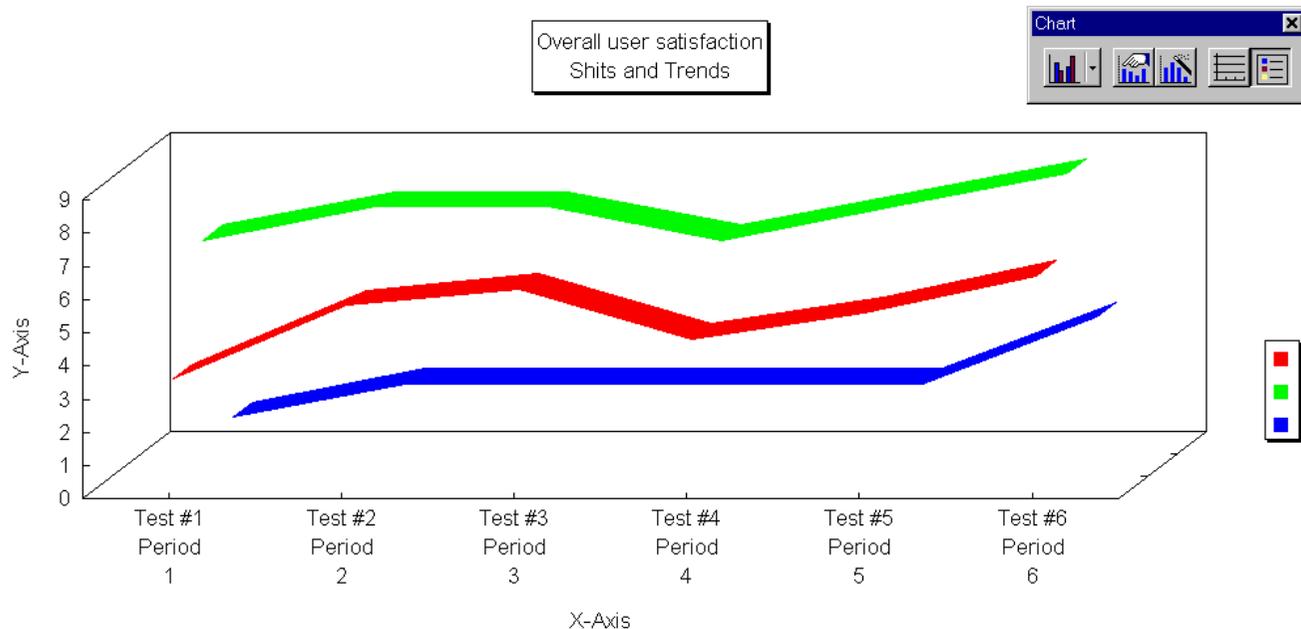
Project Name: Customer Tracking System

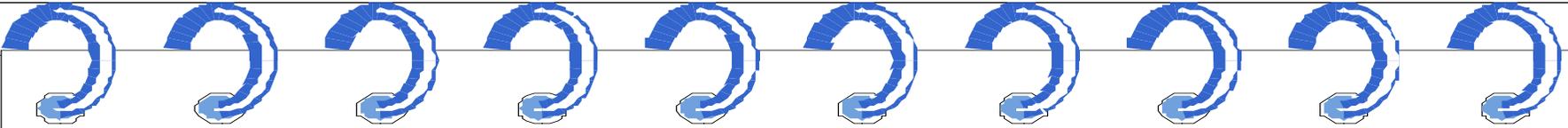
	Test #1 Period 1	Test #2 Period 2	Test #3 Period 3	Test #4 Period 4	Test #5 Period 5	Test #6 Period 6
Overall Average	4	6	6	5	6	7
Overall High	7	8	8	7	8	9
Overall Low	1	2	2	2	2	4

Changes	Improvement	Improvement	Problem	Improvement	Improvement

User Satisfaction Test (Con't)

- Plotting the high and low responses indicates where to go for maximum information.





User Satisfaction Cycle

- 1. Create a user satisfaction test with the users.**
- 2. Conduct the test regularly and frequently.**
- 3. Read comments very carefully, especially if they express strong feeling.**
- 4. Use the information.**

Summary

- **The main point here is that you must focus on the users' perception.**
- **Many systems that are adequate technically have failed because of poor user perception.**



Summary (Con't)

- **Performing the test regularly, helps us to keep user actively involved in the system development.**
- **It also helps us to stay focused on users' wishes.**

