

DESIGN OF ALTERNATIVE WIDGETS

VCMSR
98-2000

a special project by

Sameer Bhagwat ✓
98625802

Guide:
Prof: Anirudha Joshi

submitted in partial fulfillment of the requirements of
degree of
MASTER OF DESIGN
in Visual Communication.

Industrial Design Centre
Indian Institute of Technology
Bombay
march 2000.

OBJECTIVE OF THIS PROJECT

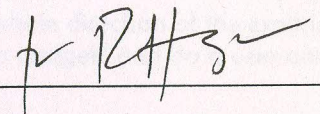
In the given environment, the widget will be designed to do such a job, i.e., when the widget is added, new widget will get added, the widget will get added. The widget will be designed to do such a job, i.e., when the widget is added, new widget will get added, the widget will get added. The widget will be designed to do such a job, i.e., when the widget is added, new widget will get added, the widget will get added.

APPROVAL SHEET:

The special project entitled
"DESIGN OF ALTERNATIVE
WIDGET"

by Sameer Bhagwat
is approved for the partial fulfillment of the
requirements of the postgraduate degree in
Visual communication.

Guide: _____



Chairperson: _____

Internal Examiner: _____

External Examiner: _____

OBJECTIVE OF THIS PROJECT:

In the given environment of windows platform or any such platform, newer versions will always keep on getting added, new features will get added, new widgets will get added. This project aims at understanding the ways in which the user uses the interface and to try and draw some guidelines for micro level interface design.

PROBLEM IDENTIFICATION:

Many widgets exist of different forms and functions. A survey, a brain storming session to understand some existing problems in the widgets, or otherwise to develop a new widget for an application opened a gamut of exploration.

.....The whole direction of the experiment is to come up with a gadget/ and do a user analysis of the gadget.

Issues like Navigation, wizards, branch history, range specifier were discussed, after which we got down to range specifier option.

DATA COLLECTION:

> Various different types of range specifiers were studied.

> Some of these range specifiers others though completely different, look like range specification devices.

E.g. scroll bar.

- Scroll bar- though originally/ conceptually a value specifier, works like and looks like a range specifier.

- Tab identification on writing/ word processing softwares.

- Dialogue box- in various applications wherein from and to fields need to be specified.

- Selection of data by choosing the start and end point manually e.g. file selection [windows tree structure].

- Selection of area manually, by type tool in graphic packages non-linear selection tools.

- Paint tools: magic wand, specify the feathering (focussing).

- On the web. flash sites

- Velocity, accelrator etc.

AREAS OF APPLICATION

Metaphors/ real life range specifiers/ specification devices from which clues could be taken.

- Fan regulators: Circular movement.

- Manual weighing scales: linear.

- Graphpaper (area finding method) two dimensional

- Clips for bunching (grouping)

- Tags default: start nd end is specific

- High lighters

- Remote control: channel selection

- Specifying range in long distance guns.
Howit??????/

- Dumpy level

- Zoom and aperture control to specify range of terms.

DIFFERENT CATEGORISATION

DATA ANALYSIS

Q: How else can one specify a linear range?

Q: Can two or more different methods be employed?

Conclusion: Start point and end point need to be emphasized and made visible

Desirables: Indication of the range selected
A continuous feedback of the selection

AREAS OF APPLICATION

(where such a device could be useful.)

- Supermarket: specifying two/ three variables and asking for the object.
- Specifying age: education for acceptance of forms (analogous values).
- Printing: copying from range 2 to 200 (discrete value).
- Telephone directory: selection of numbers.
- Radar detection/ speed range/ distance range: identify and track objects within this range.

DIFFERENT CATEGORISATIONS:

Linear (one dimensional)

- measuring tape
- Linear volume contrast knobs
- Vehicle odometer
- Rheostat

Linear control in Z direction

- Accelerator pedal
- Circular controls (tone, brightness, knobs)
- Linear temperature regulations
- Tuner of a vehicle (screw in types)

DATA ANALYSIS

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Q: Can two or more different methods be employed?

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Desirables: indication of the range selected
A continuous feedback of the selection.

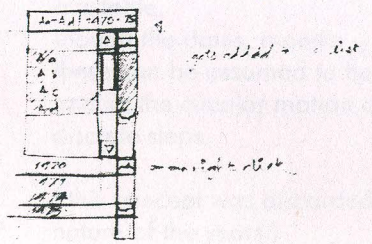
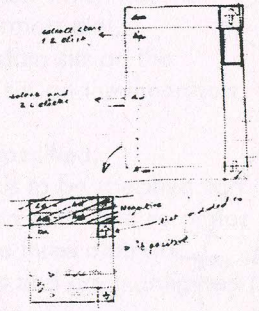
PROBLEM SPECIFICATION:

After the data collection and analysis, it became necessary before the concept generation to specify the task.

Task: To design a date, month, year, range specifier.

CONCEPTS:

Scroll bar concept:
In this concept the selector is moveable as the scroll bar, the length of the scroll bar is adjusted according to the selection area, the selected area changes colour when once selected, thus confirming the selection, this selection can then be replicated on right click to the relevant areas for replication, and thus the user can choose the same range elsewhere, the length of this additional scroll bar also is adjustable. this helps in multiple selection.

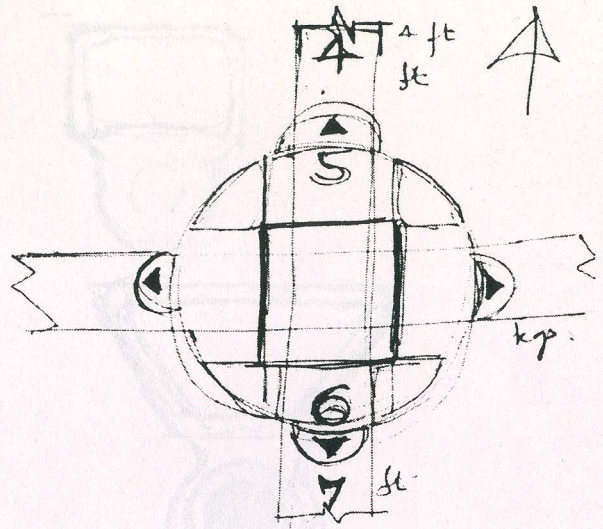


FINAL CONCEPT:

combining the circular dial concept and the radio tuner concept the final concept was developed. The device behaves as explained under design considerations. days behave circularly, months behave circularly, so these are placed on the circular dial, years behave linearly, so are placed on the linear scale over which the tool slides. the tool consists of the display window for displaying the selection, and the circular dials of all the three variables.

tool behavior:

This device is a preprogrammed device which will be available with the application. the user can only do the coarse tuning, the coarse tuning acts, of input choice. the user can only do the coarse tuning, the coarse tuning acts, of input choice. the user can only do the coarse tuning, the coarse tuning acts, of input choice.

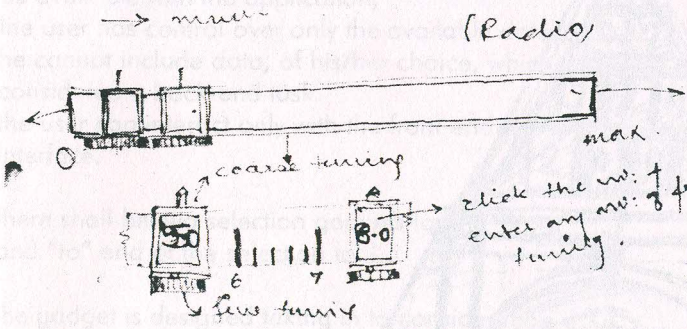


TWO DIMENSIONAL SELECTION TOOL:

This concept was developed to try out the possibility of two dimensional selection tools. it consists of two straps of data which are at right angle to each other and pass through the selection tool, the selection tool also acts as the display tool. the data from either of the straps can be selected by pulling the straps through the tool, to display the selected data, other issues like, the behavior of this tool for the other end of the range were not tackled comfortably, so this concept had to be discarded.

RADIO TUNER CONCEPT:

Clues were drawn from the metaphor of a Radio tuner, where in the user coarsely selects a range of the station which he wants to listen and then fine tunes the selection, in this concept, the whole data of days, months, years is on a continuous linear scale over which the two selection tools rest, one each for the "from" and "to" ends of the range. the linear 'year' scale can be seen on the screen with least count being visible, (depending on the data). the user selects the starting point of the range by moving the tool over the scale and fine tuning the data with a rotating knob available with the device to the required quantity. and so also for the other end of the range. the selection can be seen on the display window available with the device itself.



FINAL CONCEPT:

combining the circular dial concept and the radio tuner concept the final concept was developed, the device behaves as explained under:

design considerations:

days behave circularly,

months behave circularly,

so these are placed on the circular dial,

years behave linearly, so are placed on the linear scale over which the tool slides,

the tool consists of the display window for displaying the selection, and the circular dials of all the three variables,

tool behavior:

This device is a preprogrammed device which will be available with the application,

the user has control over only the available data,

he cannot include data, of his/her choice, which is considered a back-end task.

the user can interact only with the front-end interface.

there shall be two selection gadgets for the "from" and "to" end of the selection tool.

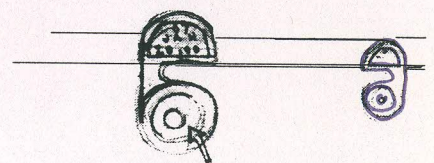
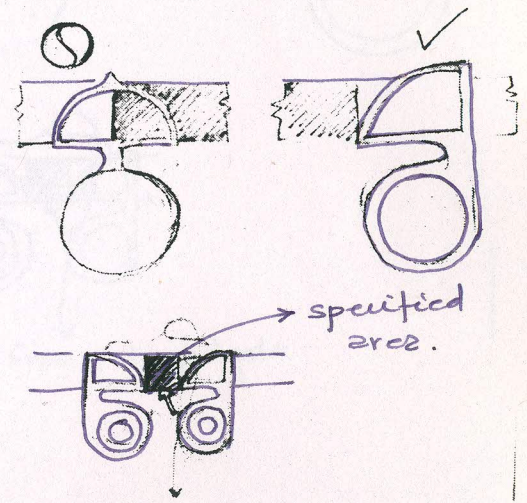
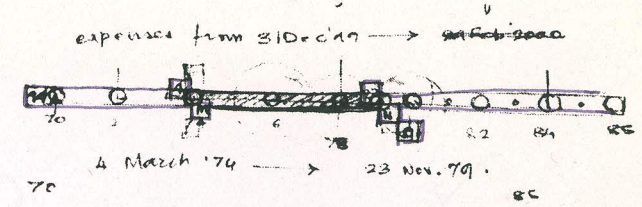
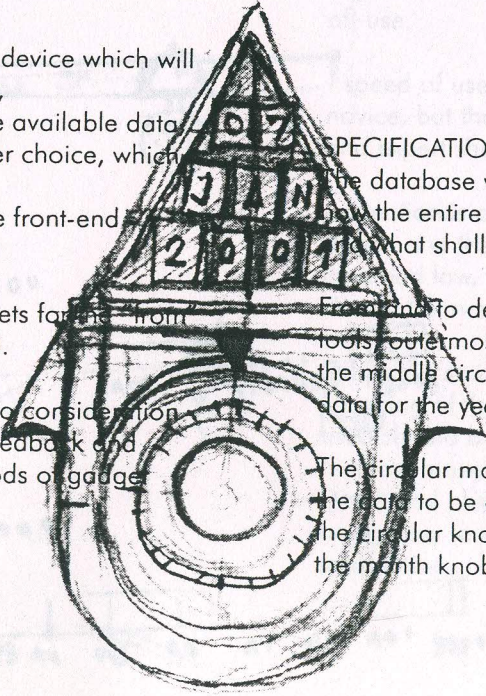
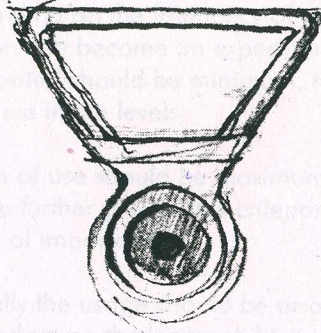
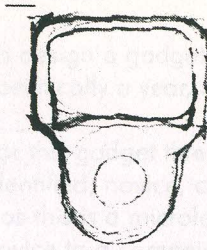
the gadget is designed taking in to consideration two basic issues, of continuous feedback and interactivity and alternative methods of gadget design for richer usability survey.

SPECIFICATION DOCUMENT:

The database which is preprogrammed will decide how the entire scale of the year fits in the window, what shall be the visible least count.

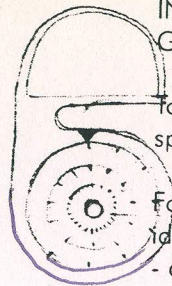
From and to devices each has circular specification tools, outermost for the uppermost data, the date, the middle circle for the month data, the lowermost data for the year data.

The circular motion of the control is utilised as per the data to be controlled, the circular knob for the date has 31 unitisations the month knob has 12 unitisations.



→ for ranges in the same years.

INTERFACE OBJECTIVE OF DESIGNING THE GADGET:



To design a gadget to select a time range, specifically a year, month, date selector.

For this gadget three user groups have been identified, novice, competent performer and expert.

- as this is a microlevel interface, the shift from a novice to a competent performer should be fast and depending on the frequency of usage of tool the person can become an expert; thus the learnability associated should be minimum, to allow the user to progress in the levels.

- ease of use should be maximum for the novice, for the further groups this criterion does not have so much of importance

- ideally the usage should be error free, but is dependant on the learnability associated and ease of use.

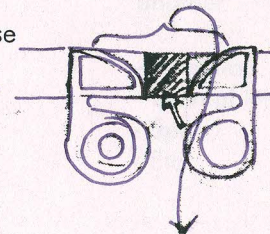
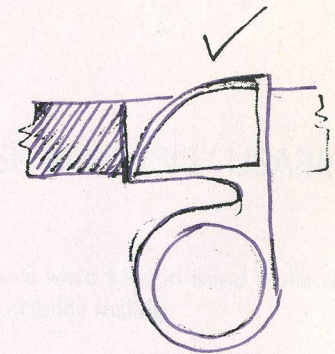
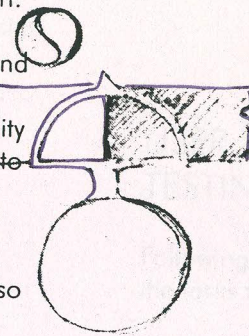
- speed of use is not of prime importance for the novice, but the time lost by a advanced performer and expert should be ideally nil.

- retention is associated with the visibility of the device and the frequency of use. if the frequency is assumed low, then the visibility and the association should be maximum.

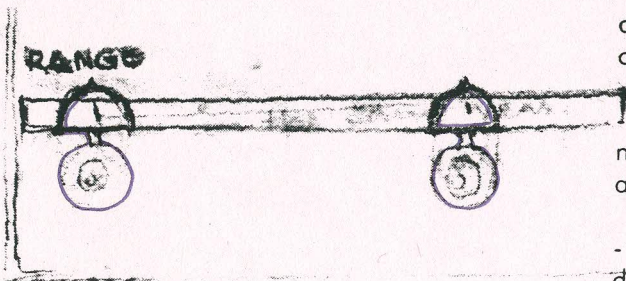
Subjective satisfaction:

Mapping of the device should be direct, clues being used should be already existing, to help the memory mapping.

Direct and continuous feedback helps in the device being easy to use and add to subjective satisfaction.



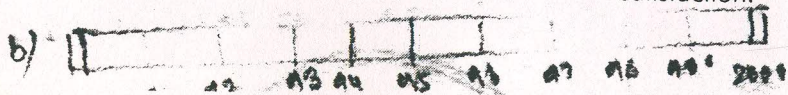
From 4 to gadgets.



1900 - 2000



1990 - 2000



IMPLIMENTATION ISSUES:

The design which was finalised, for a good disguise should have been done in Visual Basic.

But in the available tools of Visual Basic, the design could not be realised.

The prototype model has been done on Flash 4.

The model follows the principle explained in the design brief.

USER TASK ANALYSIS/ USABILITY TESTING

Following points were kept in mind while designing the tasks for usability testing.

Transition time from one type user group to another.

- Retention
- Learnability
- Speed
- Etc.

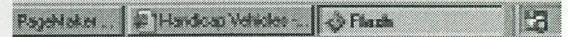
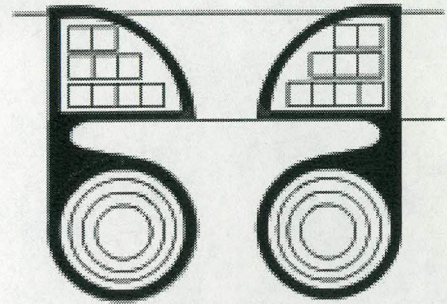
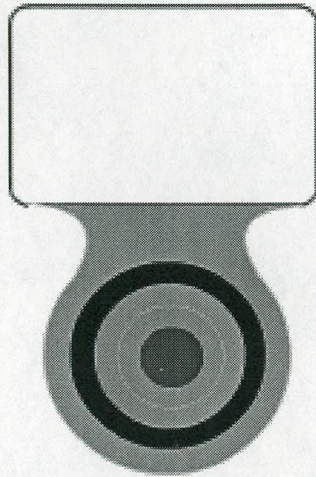
USER TASK ANALYSIS AND DESIGN IMPLEMENTATION:

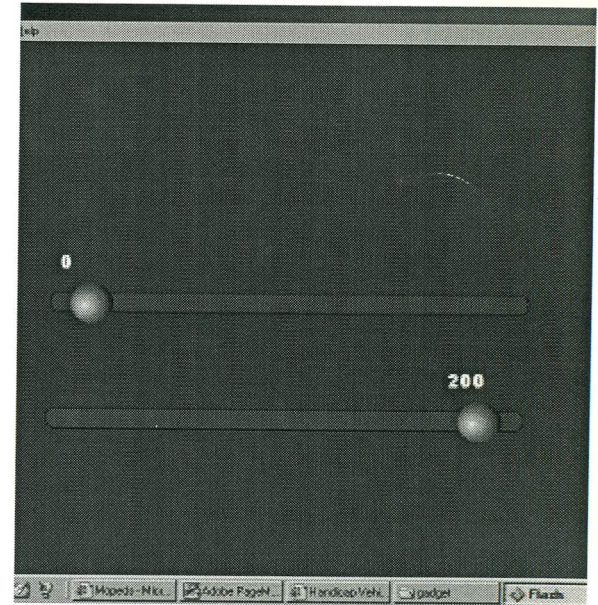
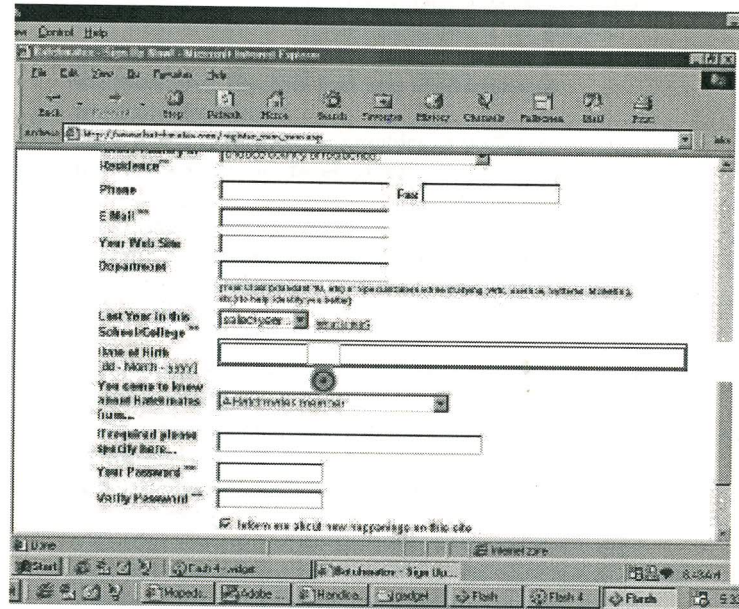
a fully working prototype was expected to be done to get the user feedback which was one of the aims of the project.

for this apart from the flash animations, which could not prototype the model fully, paper models also were used, after explaining the situations and the scenarios user was asked to perform the task as mentioned in the questionnaire, the tasks were divided according the hypothetical user groups, and the postulated results were matched with the factual information of the usability testing.

the gap between the designer model and the model perceived by the user is the issue of discussion, the problems faced by the user before such an interface is available and the disparities between the designers visualisation of the tool behavior and the users mental models forms the study base of this project.

the user task analysis and the results are mentioned in the appendix.





Final concept 2:

Though as mentioned earlier the slider and the gadget concept was accepted, when it came to implementation the execution of that idea seemed a unconcieveable. The problem was in the implementation tool that I was using.

Implementation issues:

First the concept was tried to be executed in Visual Basic 5.0 , but this environment does not support the creation of graphics which can be used as tools and one has to suffice with the tools that are offered in the package. Though a very flexible tool for typical applications, for graphic generation and control of behaviour it was not seen to be the ideal tool. The tool that was tried later was

Macromedia Flash 4.

Flash 4 is very flexible for graphics as wellas animation or in this case prototype development.

But a lot of scripting was involved in making the previous concept work, which was taking most of the time, and taking the experiment further away from its main aim of task analysis.

The concept had to be changed for some other reasons mentioned under:

> The dial concept included in the final gadget when tried on the users was found to be very miniscule, the working and handling of which was becoming extremely difficult.

> Another concept of the zooming of the tool was also tried but seemed out of context too, the conceptual model and the users model were not matching, in other words user could not understand the working of the tool.

So the final concept was concieved.

Working of the gadget:

In the final concept , the dials were changed to sliders which would at all times depict the value on the slider, a continous feedback was expected.

But still the main tool which would host the year vlaue was on the larger slider, this model faced scripting problems like,

if the slider would be made to work the other two sliders would not show the values, or if the values were shown then then main slider would not move.

To avoid any further problems this model was also changed to make the whole tool in to a group of three sliders, for the year, month, and date fields the values of which would be shown along with the slider and not away from it as in the previous models. This was apparently more simpler model than the previous models.

Primary tests were taken on users who did not know anything of the experiment. A scenario was built for this purpose. The scenario is of a alumni site such as Batchmates.com, in which a new gadget has been introduced for selection of the alumni by specifying a period in which they might have passed out.

Feedback:

After the preliminary model of the gadget was made it was necessary to conduct tests for the validity of the experiment and to learn from the feedback so that new tests could be devised to know more about how people learn new gadgets.

Questionnaire of the test:

> Without using the gadget, mentally map the working of the gadget and specify the task that is given. (this is to understand whether the user mental model and the designer model match)

> Specify your birth date

The person is asked to use one of the pair of gadgets to specify the birthdate, or in general any date which is known. This is to see the learnability associated with the gadget.

> Specify a hypothetical range and submit the form:

This task is designed to make the user use both the gadgets and make a complete use of the gadget, to see how the user reacts to the whole task.

> About the subjective satisfaction over the existing gadgets.

To understand the aesthetic and functional preference of the user if in future this gadget comes in use.

> Other feedback from the user.

Results of the user task analysis.

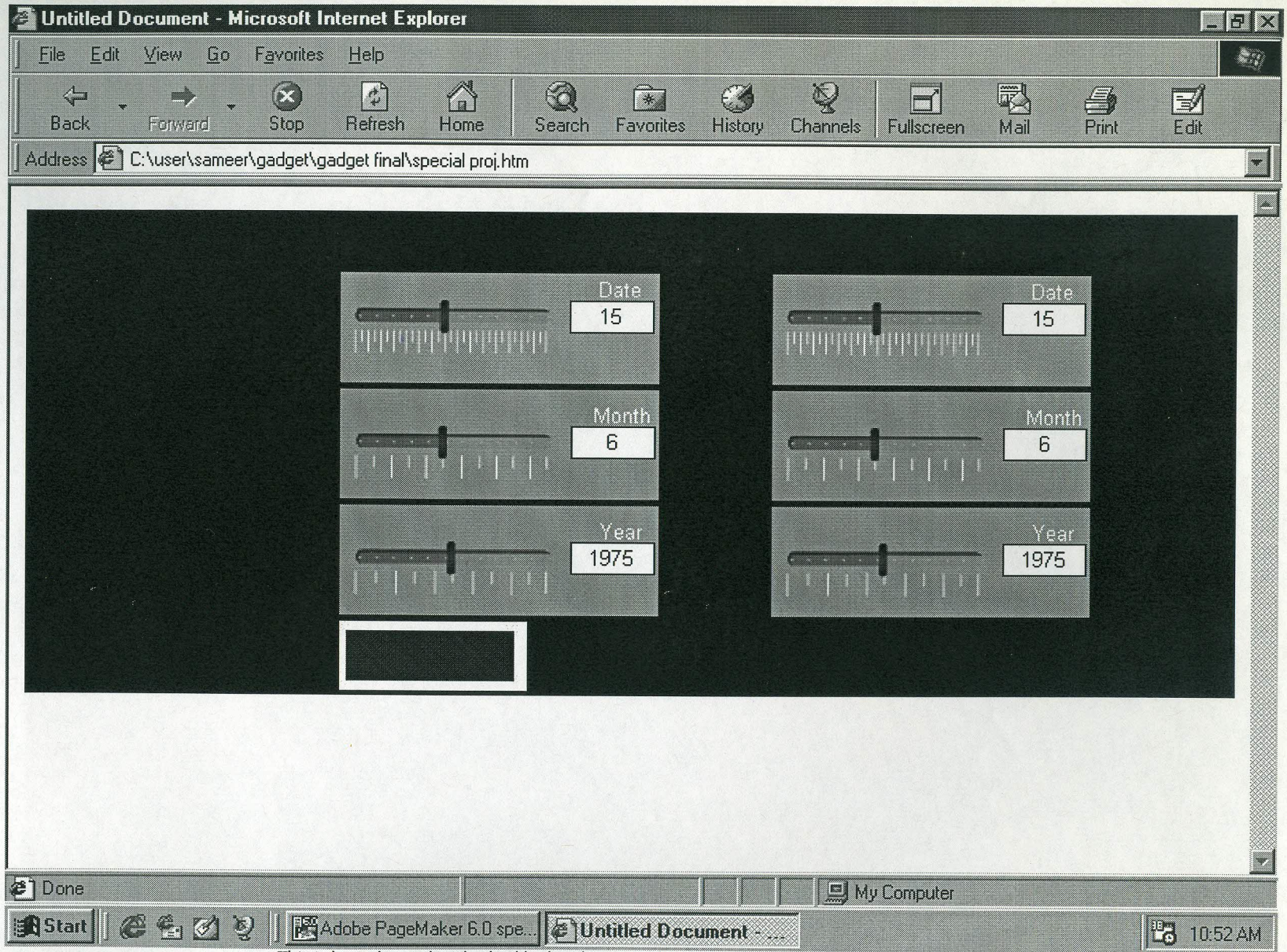
Scenario:

Alumni search,

A new search gadget has been introduced to facilitate the search. You shall find it in the advanced search

	User 1	User2	User3
Mental map	positive	Plain looks, Not good	Novice has problems for location
Specify your birthdate	Uses both	positive	positive
Specify the range and submit	Positive	positive	positive
Subjective satisfaction	Greater than the menu type typing is another option		Feedback for the button. Larger than needed Learneability is low.
Random date specifying	Problem with speed Scale should be larger.	Novelty Problem in specifying continous feedback necessary Try and type in the rectangular space	Tends to use directional pointers Learneability is increased over the previous tools. Should have different scale lengths.

On the basis of these suggestions, changes were made in the design of the gadget and the final design was made and tried with different users.



This is how the gadget looked before being embedded in the environment of Batchmates.com, later on the background colour was changed to the back ground colour of the batchmates.com site.

Member Login

Email

Password

LOGIN

[Why Login?](#)

MEMBERSHIP INFO

[Join Batchmates.com](#)

[Confirm Membership](#)

[Photo Gallery NEW!](#)

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[Schools & Colleges](#)

- List
- By category
- Search

[Advanced Search](#)

By Popular Demand ...



Best Friends Day Contest is on for another week. [Send](#) in your entries

NOW to win exciting prizes..

Avail of our **special friendship offer** for Batchmates.com t-shirts at Rs. 395/- (Original price - Rs. 475/-) for delivery within India only. Hurry ! Offer closes 15th June.

[Click here](#) to get yours today!.

Batchmates.com now has more than 245,700 members. [Join today](#) and win a cool **Batchmates.com t-shirt**.

Congratulations Batchmates

We bagged both the Judges Choice Award & Popular Choice Award at the recent **CHIP Dishnet DSL web Awards 2000!** [Click here](#) for a virtual visit to the Awards



Tuesday, June 13, 2000

Photo of the Week

[Srinivasan Ranganathan with family](#)



[Wanna be here?](#)

Search for a Friend

First Name

Last Name

SEARCH

Select the range from which you wish to view the Alumni list.

From

Date

Month

Year

To

Date

Month

Year

This is how the gadget looked when embedded in the batchmates.com site, tests were conducted on this prototype.

Member Login

Email

Password

LOGIN

[Why Login?](#)

MEMBERSHIP INFO

- Join Batchmates.com**
- Confirm Membership**
- Photo Gallery NEW!**
- Myreminderbook**
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 - List
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 - Search
- Advanced Search**

By Popular Demand ...

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Select the range from which you wish to view the Alumni list.

From

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Year

To

Date

Month

Year

This is how the gadget looked when embedded in the batchmates.com site, tests were conducted on this prototype.

This experiment cannot be considered completed because the aim of the experiment was to come up with design guidelines for the microlevel interface. Due to the complexity of the project this was not achieved but can be a starting point for further changes and further research in this area.

Bibliography.

Design of everyday things:
Donald Norman.

Apple Computer Inc.
Human interface guidelines: The Apple Desktop Interface,
Addison Wesley publishing company 1987.

www.virtual-fx.com....tutorials on flash programming for prototype development.

www.flash.com.... in it the support centre offers various flash programming fundaes.