Artistically Conveying Peripheral Information with the InfoCanvas

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Information Overload

- Large amounts of data available
  - Public information
    - News
    - Weather
    - Traffic
    - Sports scores
  - Personal information
    - Financial information
    - E-mails
    - Family photos
Peripheral Awareness Information

- Desire to maintain a level of awareness
- Will vary from person to person
- Difficult to maintain awareness
  - Have to remember
  - Requires explicit action
Informal Study

- 25 participants
- 80% check news or finance sites
- Most check at least once or twice a day
- Most had habitual browsing
- Great diversity in actual sites
- Many used “start pages” like MyYahoo!
Dealing with Overload

- Personalized Portals
  + Quick to configure
  - Limited information & representation
  - Requires explicit interaction

- Windows Active Desktop
  + Allows for any web page
  - Difficult to configure
  - Explicitly have to minimize all windows
Dealing with Overload

- Second Monitor
  + Highly customizable
  - Still subject to information overload

- Ambient Displays
  + Abstract and integrated into environment
  - Limited bandwidth
Design Principles

- Available – Minimal user interaction
- Consolidated – Integrated view of data
- Peripheral – Calm and undemanding
- Personalized – Highly customizable
- Secure – Obscure personal data
The InfoCanvas

- Information Artwork
- An ambient LCD display
  - Like picture on desk or hung on wall
- Presents an eye-pleasing picture
- Elements of picture represent data and subtly change
- Allow the user to define both the information and its representation
A Quick Tour

- Early prototype of InfoCanvas
  - Restricts data and visualization
  - Written as Java Servlets
  - Completely accessible over the web
InfoCanvas Manager

Your canvas currently looks like:

![Canvas Image]

Here are links to view your canvas with:
640x480  800x600  1024x768  1280x768

You can add any of this information to your InfoCanvas:

Stock - Stock quote from Yahoo!

Add to Canvas

You can edit or remove any of this information from your InfoCanvas:
Edit  Delete

You can change the background of your InfoCanvas

Done
Adding Information Part 1

Let's add Microsoft stock to the canvas. Further defines information of interest. Selects from a list of representations.

Please provide the specifics on what you'd like to add to the canvas:

Enter the ticker symbol to show the current price of MSFT.

Please choose the way you'd like this to be represented on the canvas:

- Change icon based upon the daily percent change of the stock
- Vary the size of an icon based upon the daily percent change
- Show an icon when the stock price rises above a certain threshold
- Show an icon when the stock price falls below a certain threshold

Add to Canvas
Adding Information Part 2

Summarizes data to be shown
User refines the representation

InfoCanvas Manager

Information Details
You are adding "Stock price quote for MSFT" to your canvas. Here is the information you supplied about this data:

symbol: MSFT

Representation
Please choose from the images on the right that you want to associate with this representation:

- When the value of percent equals 0.0,
  show

- When the value of percent is greater than 0.0 and lesser than 5.0,
  show

- When the value of percent is greater than or equal to 5.0 and lesser than 10.0,
  show

- When the value of percent is greater than or equal to 10.0,
  show

- When the value of percent is greater than or equal to 0.0 and lesser than 5.0,
  show

- When the value of percent is greater than or equal to -5.0 and lesser than 0.0,
  show

- When the value of percent is greater than or equal to -5.0 and lesser than -10.0,
  show

- When the value of percent is lesser than or equal to -10.0,
The new canvas will look like this.

Click on the canvas to position the information representation. It will be moved to the position that you click on. When done positioning, click on the "Finished" button to return to the overview.
And the user's canvas is now updated.
Behind the Scenes

- General Architecture
  - Monitoring information
  - XML definitions of sources & user canvases

![Diagram showing web server, servlet engine, user canvas, info source, and information monitor connected by arrows via internet and canvas display.]
Advanced Users

- XML permits high degree of customization
- Both canvas and sources
- Bypass web interface by FTP’ing

```
<canvas name="AVI Canvas" password="12345">
  <background src="basic_background.gif"/>
  <source class="WebSource" def="stockquote.xml">
    <base x="0.8075" y="0.21"/>
    <scale percent="1.0"/>
    <param name="symbol" value="MSFT"/>
    <oparam name="price" value="0.0"/>
    <oparam name="percent" value="0.0"/>
    <rule class="ValueCompare">
      <param name="paramName" value="percent"/>
      <param name="et" value="0.0"/>
      <rep class="ShowImage">
        <param name="imageFilename" value="clear.gif"/>
        <param name="x" value="0.0"/>
        <param name="y" value="0.0"/>
      </rep>
    </rule>
  </source>
</canvas>
```
Satisfying the Design Principles

- Available – 2\textsuperscript{nd} display requires no interaction for user to use
- Consolidated – Allows a large amount of information to be portrayed in one space
- Peripheral – Subtly updates display
- Personalized – User defines data & display
- Secure – Abstractness protects privacy
InfoCanvas of the Future

- Any type of electronic information
- Information painting tool
  - Importing & drawing info representations
  - Point and click data capture
  - Still a need for pre-defined
    - Similar to PLAY’s InformativeArt
Conclusions & Future Work

- Peripheral information is important
- InfoCanvas provides a novel way of representing peripheral information
- Moving towards an “information painting” tool
For More Information

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