

Drowning in Data



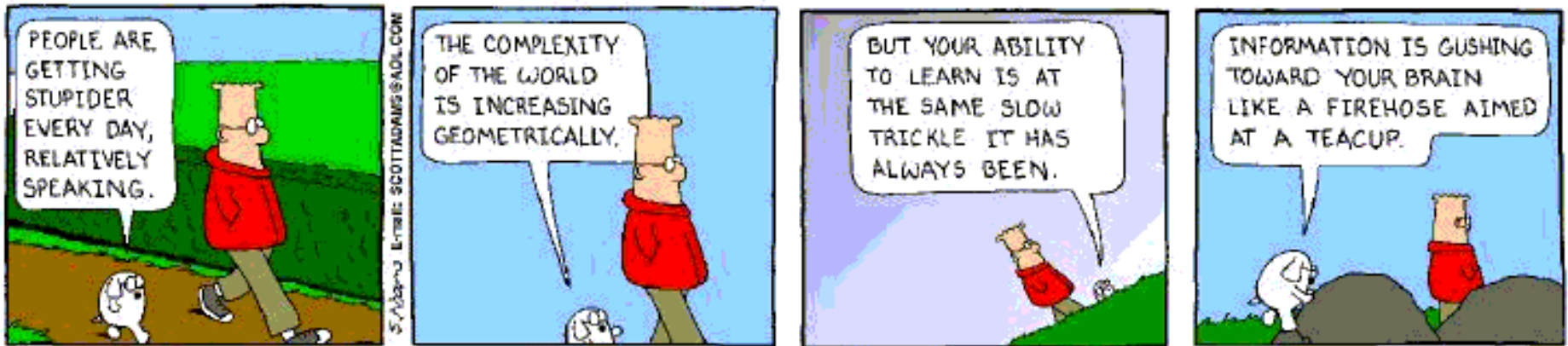
John Stasko

Information Interfaces Research Group

College of Computing / Gvu Center

Georgia Institute of Technology

Information Explosion



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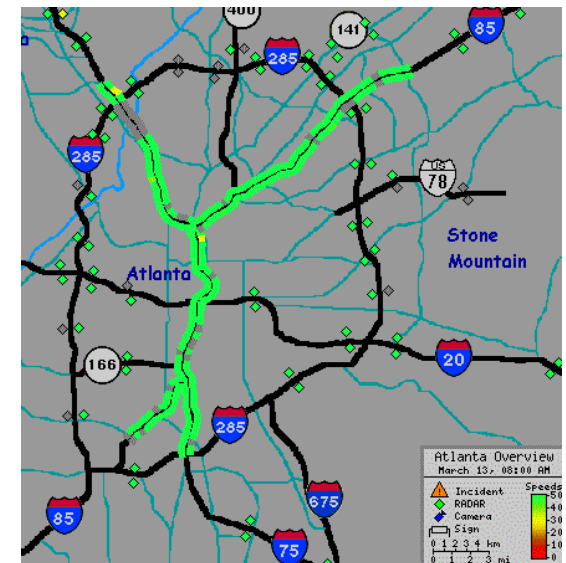
Situation



- ⌘ Increasing amount of data (helpful & not helpful) is becoming available
- ⌘ Internet and WWW have radically increased people's access to data

PGA TOUR

ROMER CLASSIC				
Updated 6:58 PM ET, 03/12/99				
Pos	Player	Today	Thru	Tot
1	BOOKER	-6	F	-13
T 2	PRIDE	-4	F	-9
T 2	HUGHES	-4	F	-9
T 2	DUNNKEY	-7	F	-9
T 5	TOLLES	-6	F	-8
T 5	WATTS	-4	F	-8
T 5	STANKWSKI	-5	F	-8
T 8	STEWART	-5	F	-7
T 8	SUTTON	1	F	-7
T10	PARRY	-3	F	-6
T10	MCCALLSTR	-2	F	-6
T10	MORGAN	-3	F	-6
T10	CHEESMAN	-3	F	-6
T10	GEIBERGER	-6	F	-6
T10	DALY	-5	F	-6



How much data?



⌘ Between 1 and 2 exabytes of unique info produced per year

☑ 100000000000000000000 (10¹⁸) bytes

☑ 250 meg for every man, woman and child

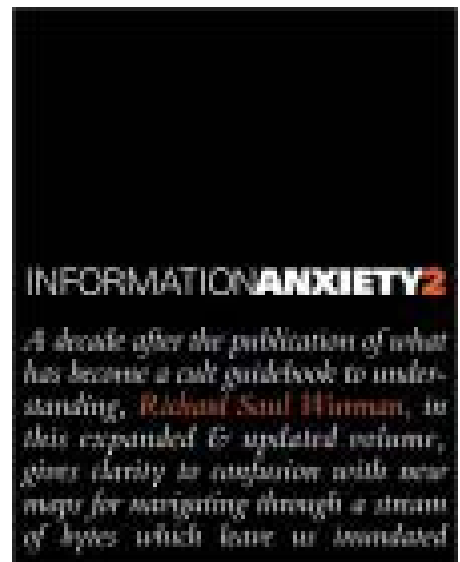
☑ Printed documents only .003% of total

Peter Lyman and Hal Varian, 2000
Cal-Berkeley, Info Mgmt & Systems
www.sims.berkeley.edu/how-much-info

Problem



- ⌘ More data should be helpful but... often becomes a negative instead
- ⌘ Makes it difficult to find what one really wants, complicates browsing
- ⌘ Sheer amount can intimidate, and can make people reluctant to “dive in”



Gas on the Fire



⌘ Pervasive/Ubiquitous computing

- ☑ Many potential benefits, but sensors and computers everywhere will just produce more data



You're running out of milk!

Big HCI Challenge



⌘ Difficult problems:

- ☑ Enabling access to the “right data”
- ☑ Empowering people to browse, filter, search, compare, contrast, summarize, ...
- ☑ Leveraging what people do best

Promising Direction

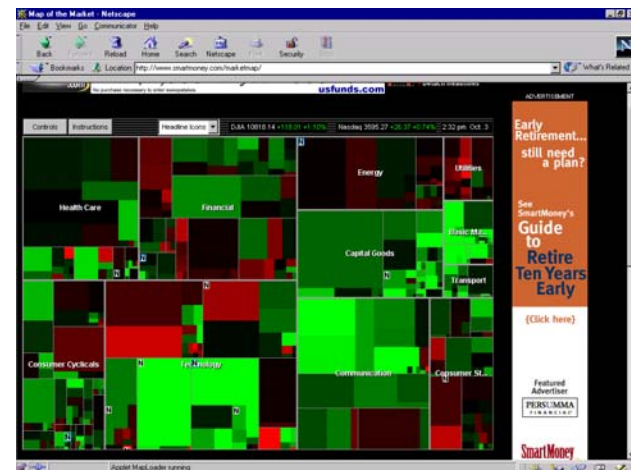


Information Visualization

- Providing techniques and tools for transforming *data* (raw text and numbers) into *information* (understanding, insight) thus making it useful to people



London subway - Harry Beck



www.smartmoney.com/marketmap

My Research Group



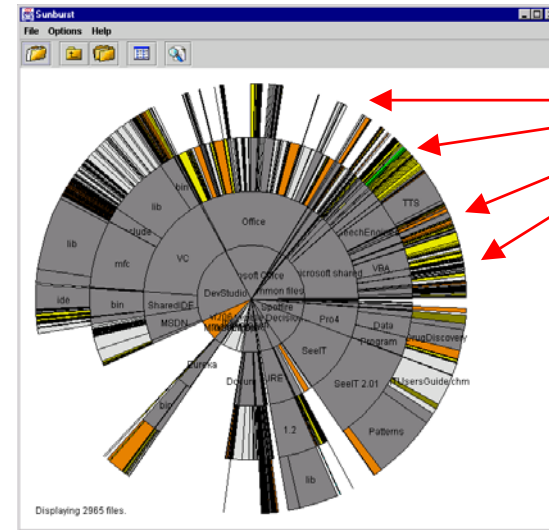
- ⌘ Information Interfaces
- ⌘ Helping people address the explosion of data through a variety of ways
- ⌘ Evaluation is a key component in all work
- ⌘ Some example projects...

SunBurst Negative



⌘ Small peripheral files difficult to examine and distinguish

⌘ Solution: Use animated zooming techniques to show focus + context (dynamic fisheye)



examples



Yahoo! Finance - ^IXIC - Netscape

File Edit View Go Communicator Help

Location: <http://quote.yahoo.com/q?s=^IXIC&d=1d>

Monday, March 26 2001 8:06am ET - U.S. Markets open in 1 hour a

NAS/NMS COMPSITE (NasdaqSC: ^IXIC) - More Info: [News](#) - T

Last Trade Mar 23 · 1928.68	Change 0.00 (0.00%)	Prev Cls 1928.68	Volume N/A
Day's Range 0.00 - 0.00	Bid N/A	Ask N/A	Open N/A
52-week Range 1794.21 - 5022.23	Earn/Shr N/A		

Netscape

File Edit View Go Communicator Help

Location: AMS=on&SPDS=on®ION=OVERVIEW

Yahoo! ...

Login Message

Friends Y! Help

Message Chat Call

Friends for - Kiawah2

- doctoverne
- frauen1
- gt8167c (Idle)
- hrichter
- khai_truong

Yahoo! Help

Status: I'm Available

Connected



weather.com - Local Weather - Atlanta, GA (30309) - Netscape

File Edit View Go Communicator Help

Location: <http://www.weather.com/weather/local/30309>

34 °F

Wind: From the North at 12 mph gusting to 20 mph

UV Index 0 Minimal

Dew Point: 13 °F

Humidity: 42 %

Visibility: Unlimited

Barometer: 30.17 inches and rising

Fair

Feels Like 19 °F

Temperature Converter - Enter a number and click outside the box

F: C: reset

[Averages and Records](#) | [Detailed Local Forecast](#) | [Hour by Hour Details](#) | [Regional Audio Forecast](#)

1d | [5d](#) | [3m](#) | [1y](#) | [2y](#) | [5y](#) | [max](#)

Basic

Compare

Dem Post It 2000 light

To Do:

- Call Mother
- Write report
- Wash car
- Buy groceries
- Study
- Book flight
- Return movie

10 Day Forecast

Atlanta, GA (30309)

Monday, March 26, at 7:34 AM Eastern Standard Time

	Hi (°F)	Lo (°F)
Today	54 °F	30 °F
Mar 26	Partly Cloudy	UV Index: 8 High
Tue	55 °F	33 °F
Mar 27	Sunny	UV Index: 8 High
Wed	59 °F	44 °F
Mar 28	Partly Cloudy	UV Index: 7 High
Thu	60 °F	51 °F
Mar 29	Rain	UV Index: 4 Low
Fri	67 °F	50 °F
Mar 30	Showers	UV Index: 5 Moderate
Sat	72 °F	52 °F
Mar 31	Mostly Cloudy	UV Index: 7 High
Sun	73 °F	55 °F
	Mnstrly Cloudy	

Explore Related Sites

Allergies? [Click here to learn about relief for your nasal allergies](#)

Allstate. [Get Rewarded! In most states safe drivers can save up to 20%](#)

NotCard | [As low as 2.99% Intro APR-Rewards Points-Apply Now!](#)

ClassMates [Your 24 hr/7 day a week High School Class Reunion on the Net](#)

Go Shopping

Maps

Doppler Radar 600 Mile

Precipitation Intensity

Light Heavy

Show map in motion Click to enlarge

How to read this map Go to maps index

Doppler Radar 600 Mile

to propose rate hike

ccess

ay, three-state tour

l week preview, 10 a.m. EST

N's News Site, 10:30 a.m. EST

ovie reviewer Paul Clinton, 11:30 a.m. EST

Paul Vercammen: [The Academy Awards](#)

ETBALL

Illinois

ite holds off Temple

n takes initiative just in time

business world

computing

Information Art



Conveying
peripheral
awareness
information
through
personalized
ambient
artistic
visualizations



Anthropomorphic UIs



Need to better understand if and where such UIs can be helpful and useful

Very controversial

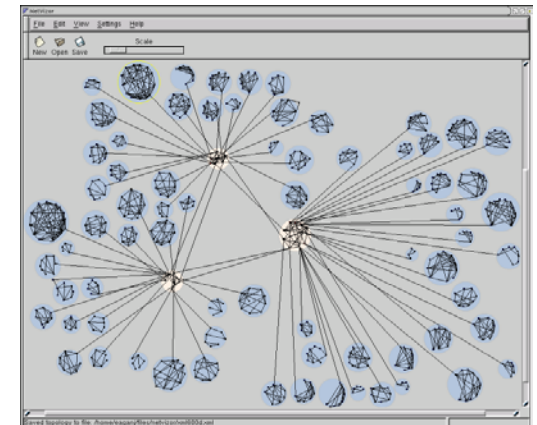
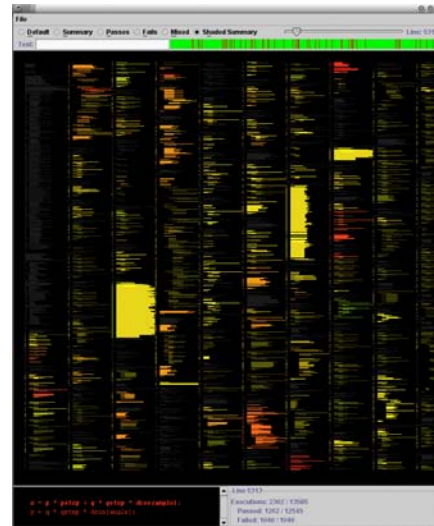
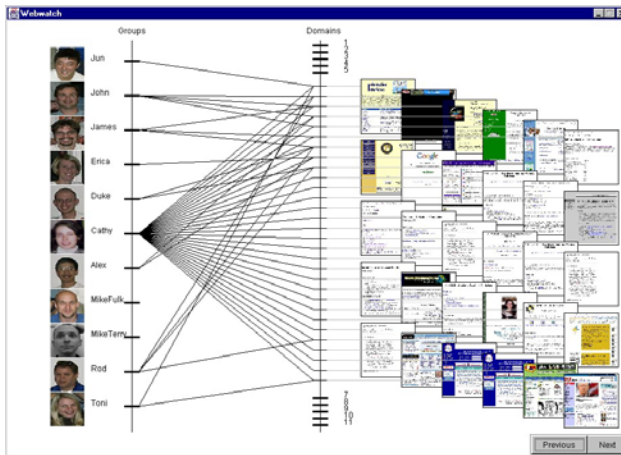
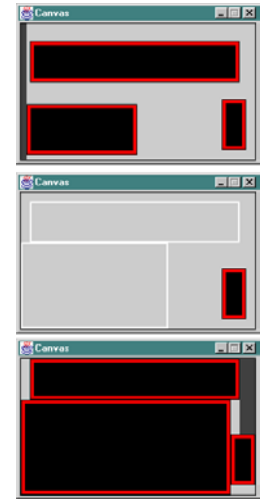
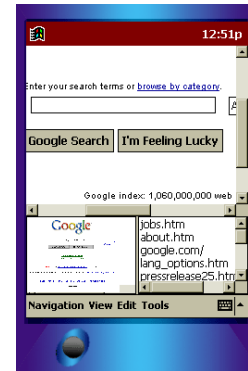
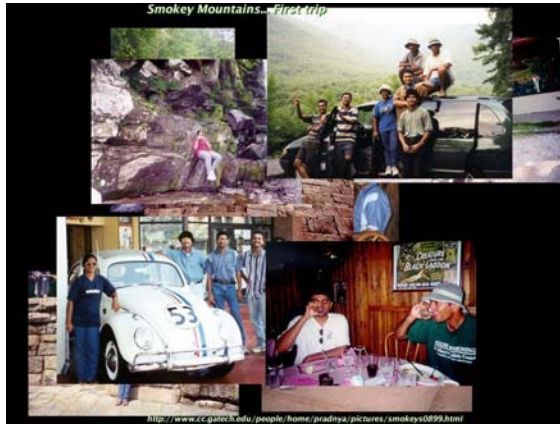
(Folks around here have some experience with these UIs)

Approach



- ⌘ Conducting series of Wizard of Oz empirical studies to gauge usefulness and people's impressions
- ⌘ Key factors/variables
 - ☑ Agent characteristics
 - ☑ User characteristics
 - ☑ Task

Other Projects



Conclusion



⌘ Proper focus:

H_CI, not H_ICI

⌘ Find ways to help people use information
not
Technology for technology's sake

For More Information...



www.cc.gatech.edu/gvu/ii

Information Interfaces

INFORMATION IS GUSHING TOWARD YOUR BRAIN LIKE A FIREHOSE AIMED AT A TEACUP.

With the advent of the Internet, the World Wide Web, portable computers, portable communication devices, and greater computing power in general, the amount of information that confronts us each day has grown astronomically. While one would hope that this information would assist people as they make decisions in their day-to-day lives, its sheer volume often serves to confuse and paralyze instead. Our research group develops ways to help people understand information via user interface design, information visualization, and software agency. We seek to utilize computing technologies to help people make sense, make better judgments, and learn from all the information available to them.

People	Current Projects
Faculty John Stasko	InfoCanvas: Information Art - Developing expressive, ambient visual displays that convey the state of important information to people.
Students James Eagan Mike Fulk Ivy Ho Duke Hutchings Todd Miller Toni Pashley Rodney Peters Cathy Eichholz Polk Erica Wingo Jun Xiao	NetVizor - Visualizing large-scale network topologies to assist network designers and analysts. Organize This! - Exploring information management to discover underlying goal-oriented user activities to build better visualization tools. Software Visualization - Numerous past and current projects involving algorithm animation, visual debugging, data structure display, program visualization, and empirical studies. Space Cadet - Designing new techniques in effectively managing the windows that