

Metaphors and Direct Manipulation

Metaphors

Direct manipulation

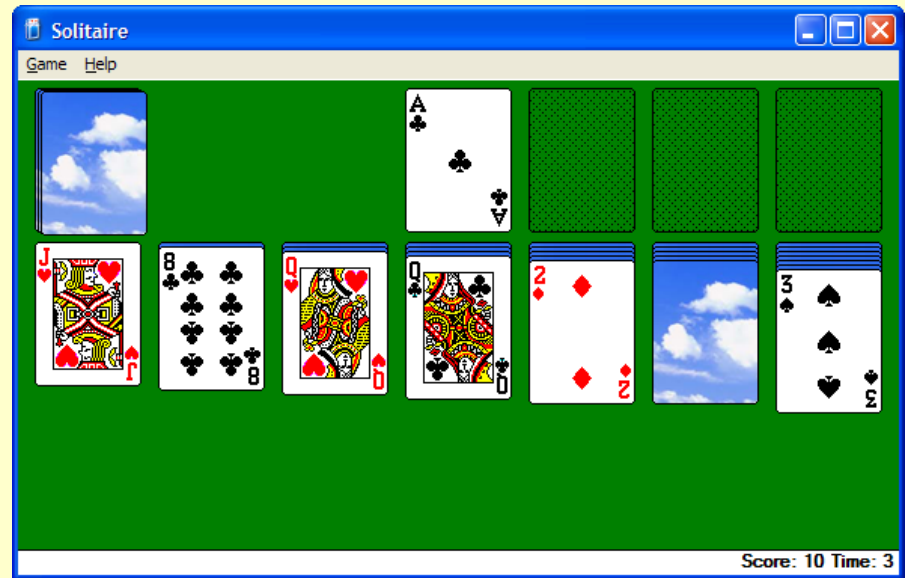
Dynamic queries

Metaphors

Pervade excellent interfaces

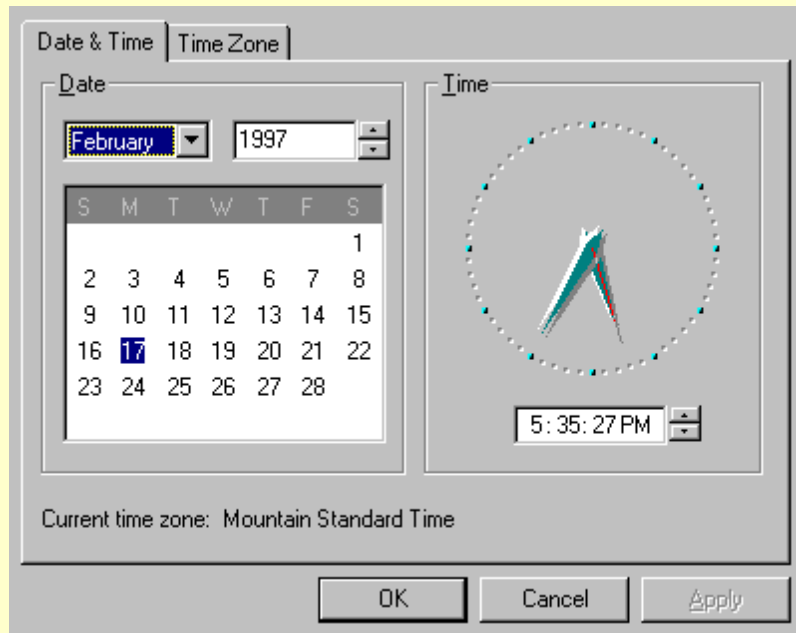
	A	B	C	D
1	Market value	Land	Improvement	Total assess
2	140.0	65,850.	73,120.	138,970.
3	147.0	77,780.	72,070.	149,850.
4	151.0	74,850.	88,740.	163,590.
5	152.0	80,110.	99,410.	179,520.
6	155.0	79,050.	109,130.	188,180.
7	170.0	94,750.	50,960.	145,710.
8	172.0	82,150.	106,250.	188,400.
9	178.0	78,560.	132,660.	211,220.
10	180.0	92,840.	105,670.	198,510.
11	180.0	80,090.	103,130.	183,220.
12	182.0	76,650.	115,210.	191,860.
13	185.0	75,590.	152,710.	228,300.
14	185.0	85,870.	105,330.	191,200.
15	185.0	80,060.	113,600.	193,660.
16	193.4	80,140.	131,340.	211,480.
17	194.5	73,400.	176,210.	249,610.
18	197.0	84,960.	129,800.	214,760.
19	203.0	91,600.	119,170.	210,770.
20	205.0	79,460.	137,250.	216,710.
21	213.0	87,060.	124,350.	211,410.
22	221.0	97,330.	167,500.	264,830.
23	225.0	87,160.	157,290.	244,450.
24	245.0	79,520.	144,840.	224,360.
25	248.0	89,470.	183,500.	272,970.
26	278.0	82,150.	168,720.	250,870.
27	302.5	118,500.	109,800.	228,300.
28	308.0	83,100.	141,730.	224,830.

spreadsheet (actuary sheet)



games (literal world)

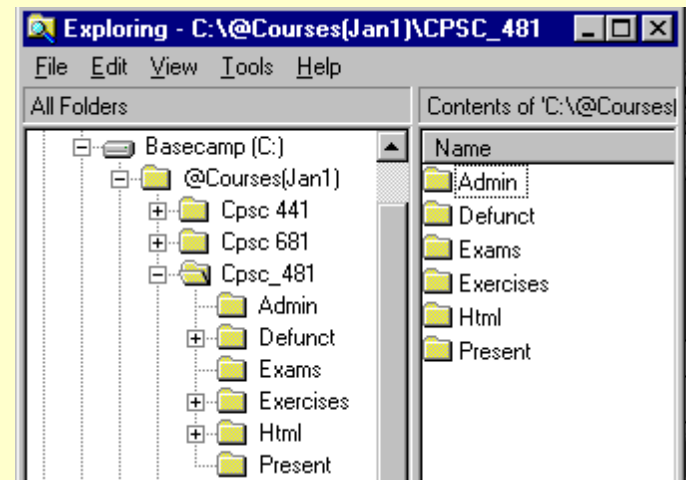
Metaphors



Control Panels with familiar controls

Name: _____
Address: _____
City: _____
Province: _____
Postal Code: _____

Forms



Hierarchical Folders

Metaphors in interfaces

Definition

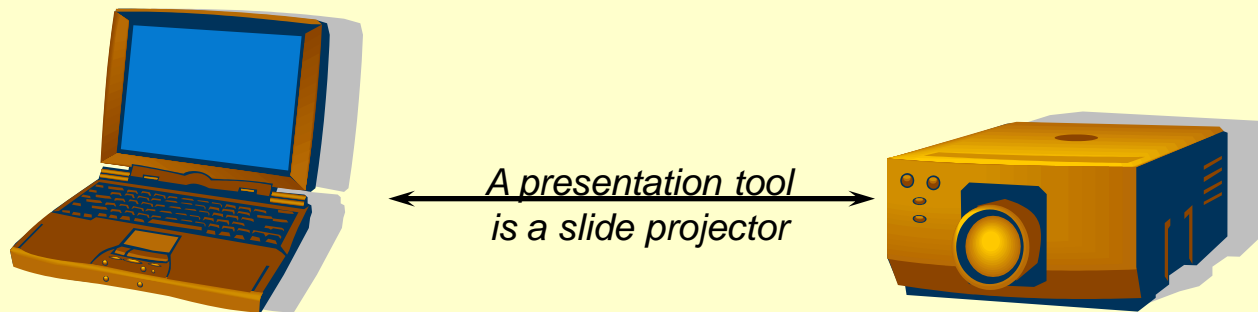
- represents a system object as if it were another type of object
 - disc / network file structure *represented as* file folders

Purpose

- leverages our knowledge of familiar, concrete objects to understand abstract computer and task concepts

Problem

- metaphor portrays inaccurate/naive conceptual model of the system



Metaphors in interfaces

Things to watch for

- Use metaphors that matches user's conceptual task
 - desktop metaphor for office workers
 - paintbrush metaphor for artists...
- Given a choice, choose the metaphor close to the way the system works
- Ensure emotional tone is appropriate to users
 - eg file deletion metaphors
 - trashcan
 - black hole
 - paper shredder
 - pit bull terrier
 - nuclear disposal unit...

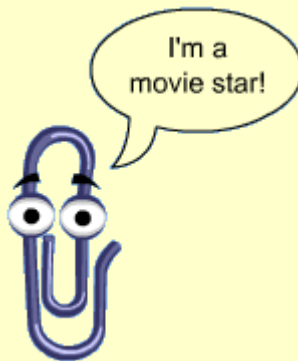
Metaphors in interfaces

Things to watch for

- will it restrict what people could actually do?
 - strict file/folder hierarchy

vs

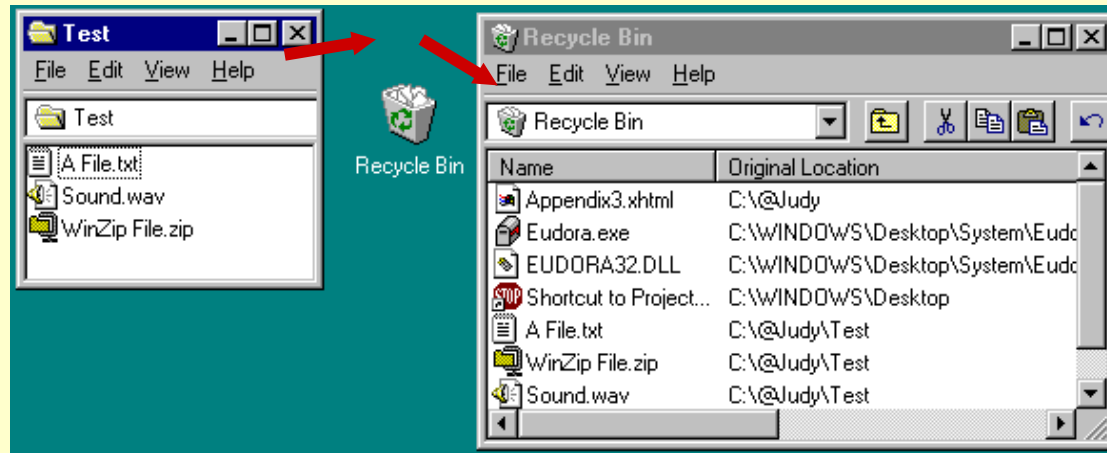
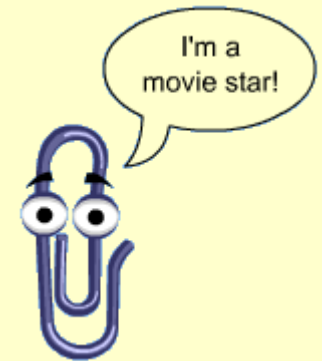
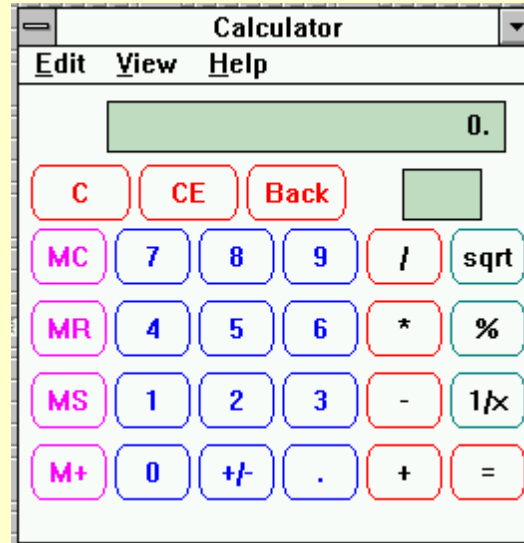
system allows links between directories
- will it set unrealistic expectations?
 - Clipit



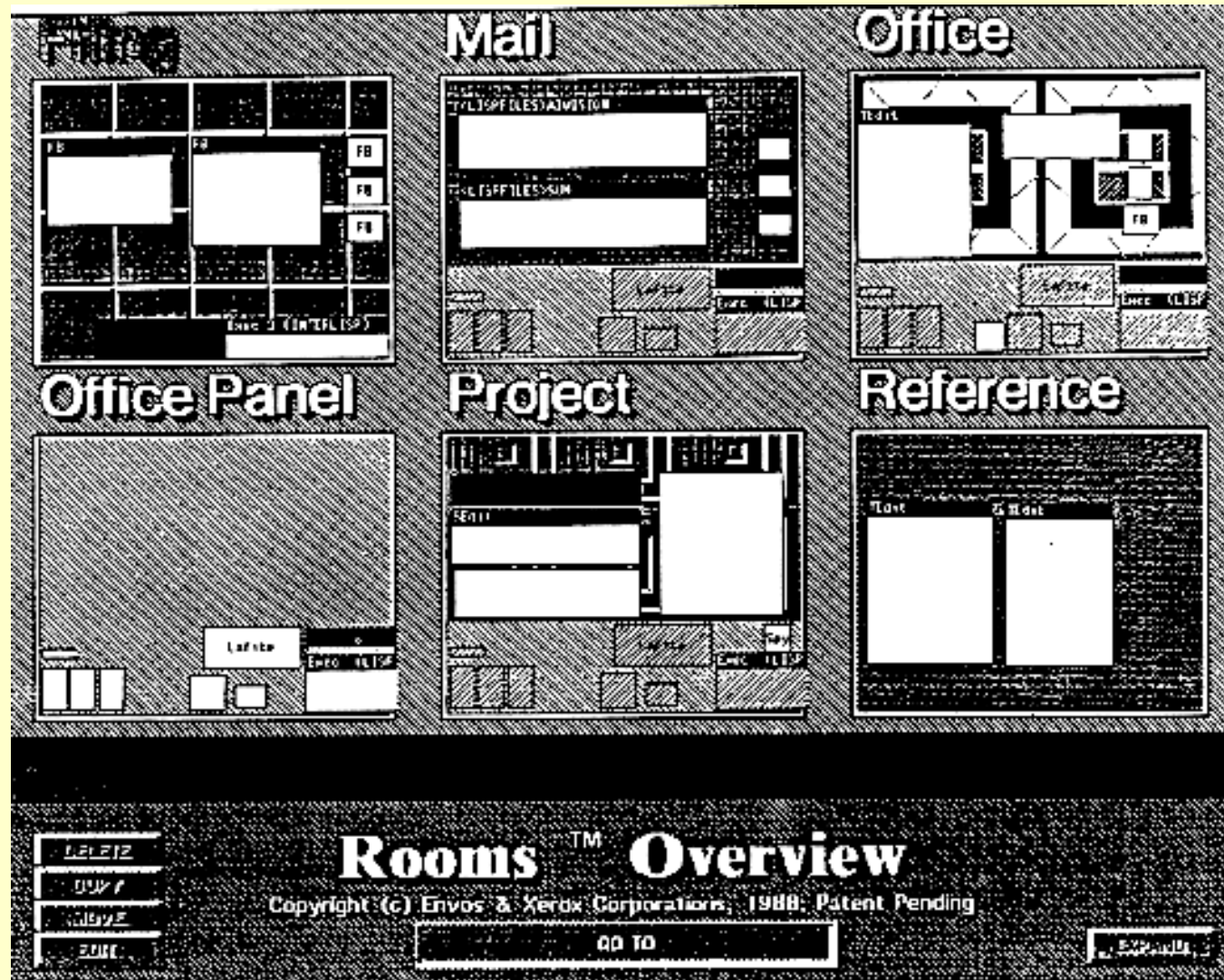
Metaphors in interfaces

Common pitfalls

- overly literal
 - unnecessary fidelity
 - excessive interactions
 - unnecessary restrictions
- overly cute
 - novelty quickly wears off
- mismatched
 - does not match user's task and/or thinking

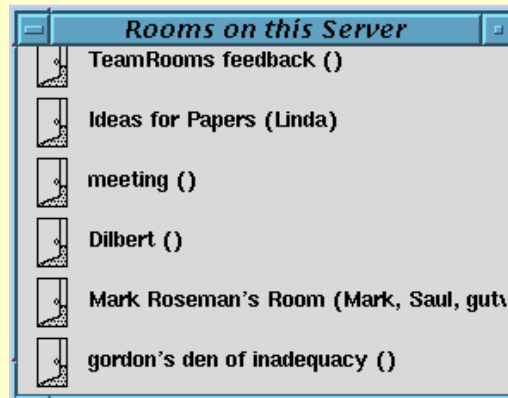


Rooms



TeamRooms

List of rooms

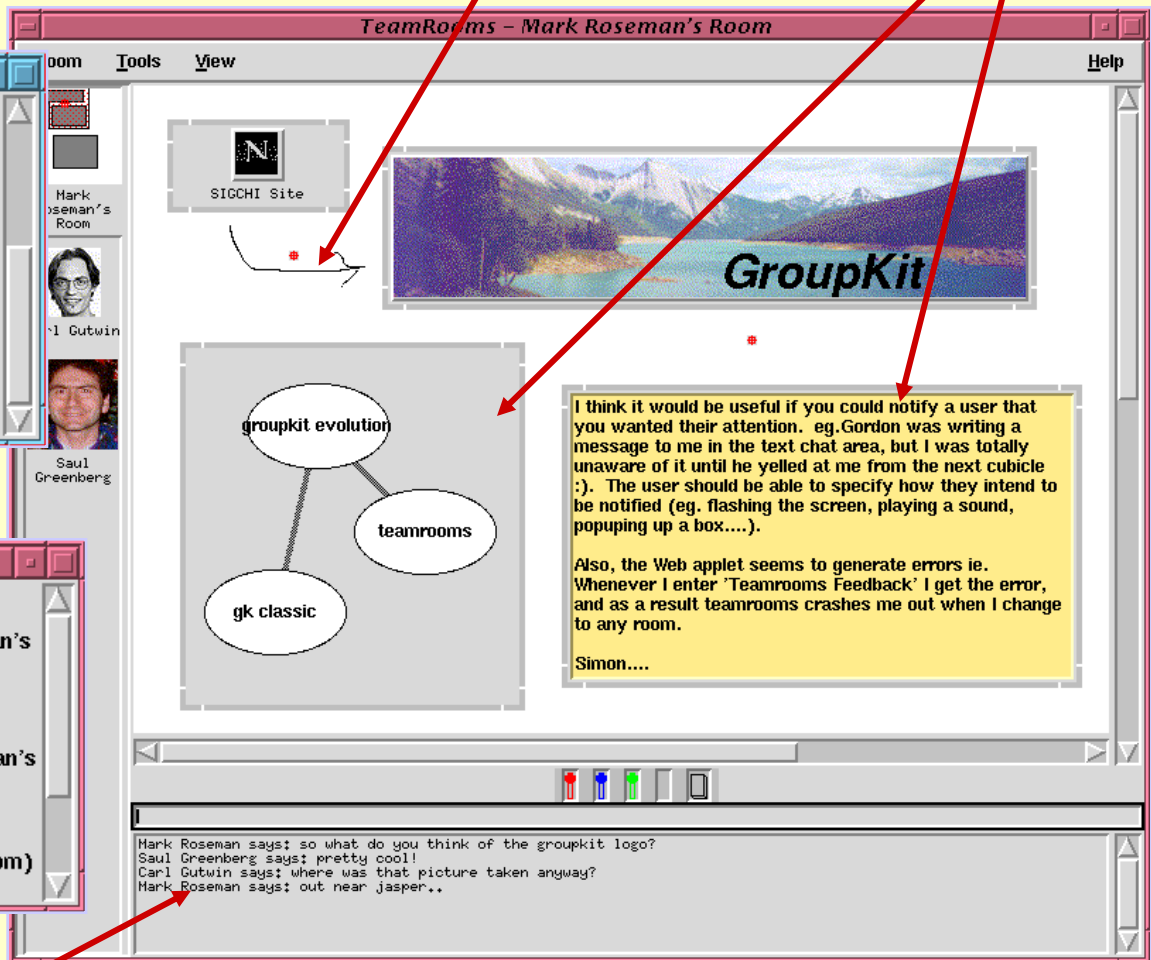


List of users



shared whiteboard

applets



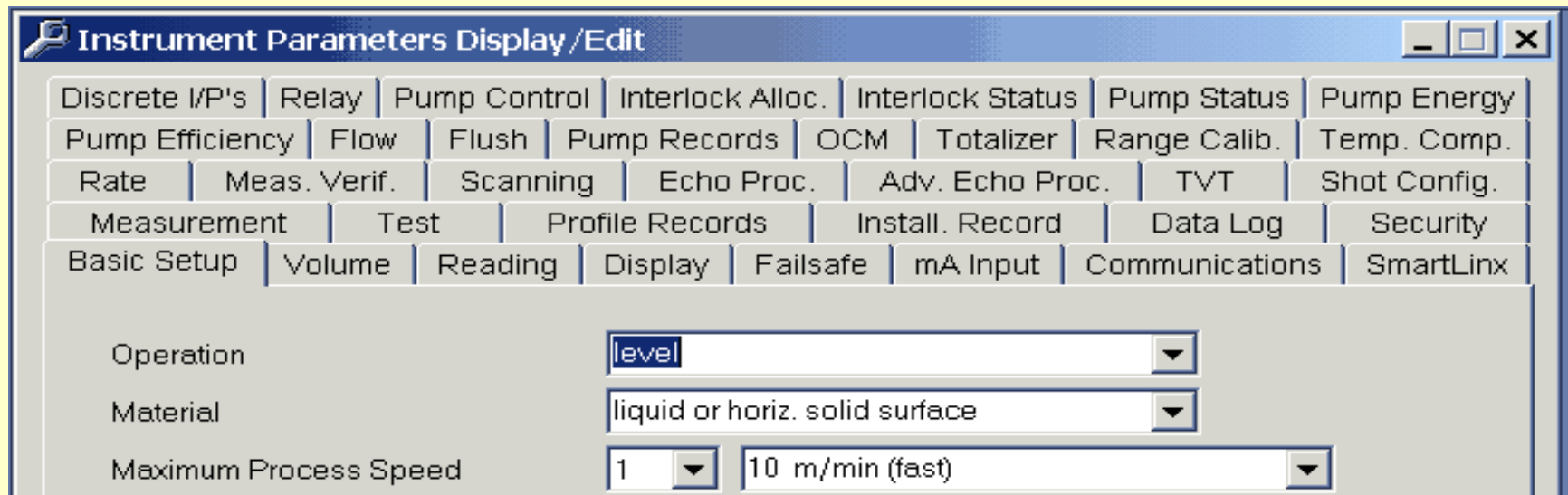
chat tool

TeamRooms

Room metaphor implies:

- persistent room artifacts
- both synchronous and asynchronous activity
- asynchronous communication by sticky notes attached to artifacts
- “for free” standard tools
- ability to bring in custom tools via (applets)
- same place/different place activity
- knowing who is around
- trivial groupware connectivity
- ...

Metaphor misuses



Direct Manipulation

Direct manipulation

- interface behaves as though the interaction was with a real-world object rather than with an abstract system
- the feeling of working *directly* on the task

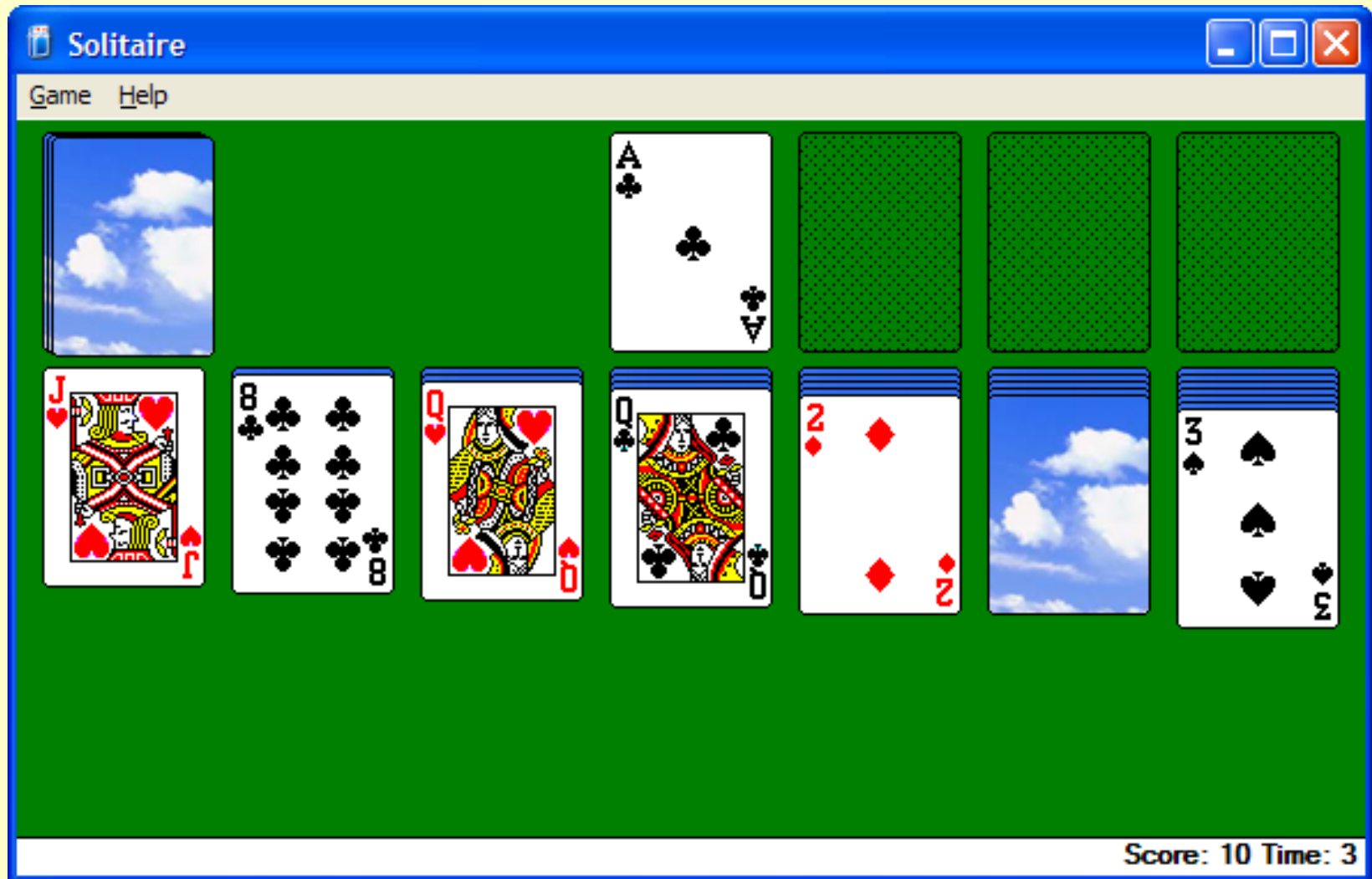
Central ideas

- visibility of the objects of interest
- rapid, reversible, incremental actions
- manipulation by pointing and moving
- immediate and continuous display of results

Almost always based on a metaphor

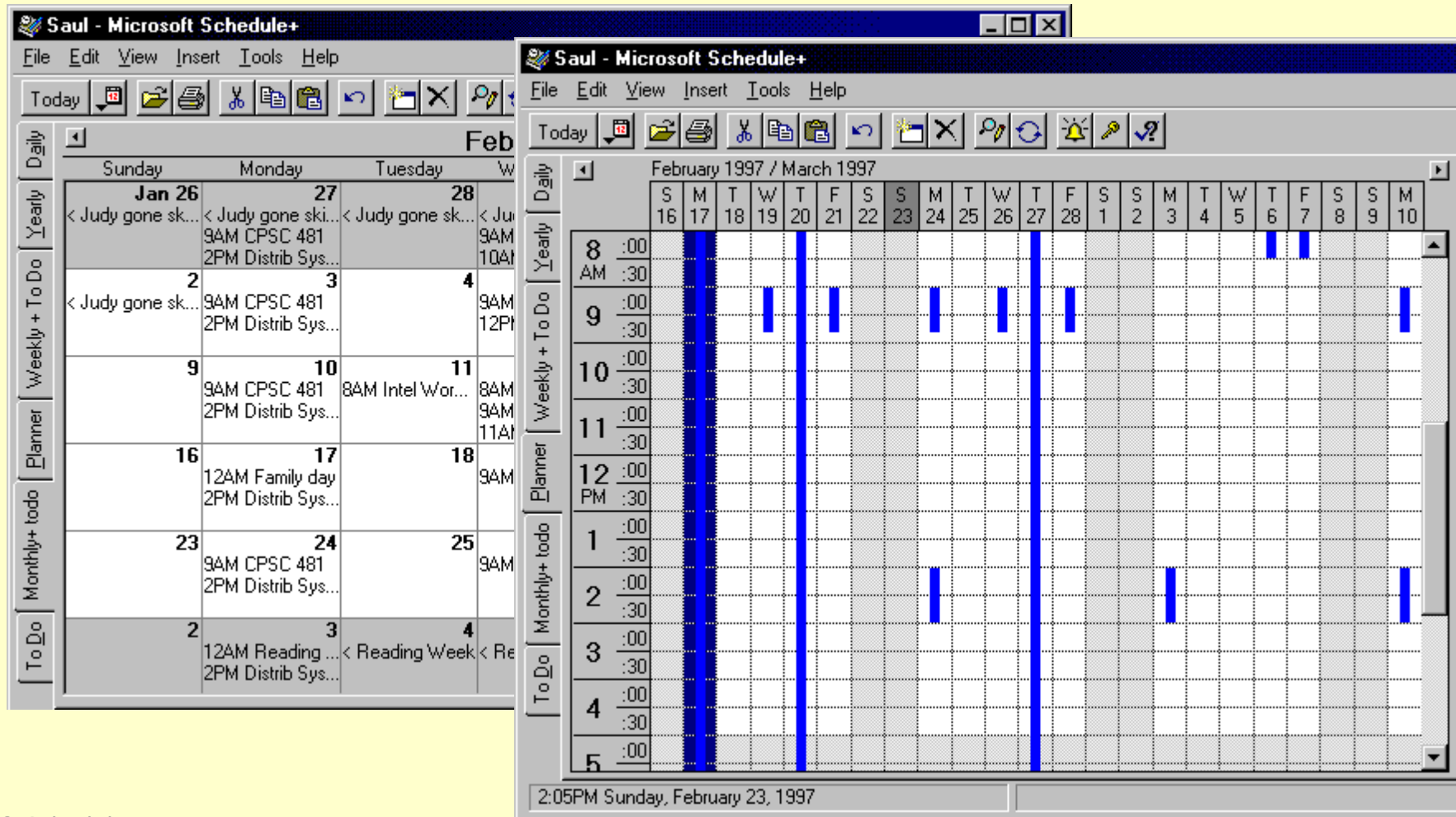
- mapped onto some facet of the real world task semantics

Direct Manipulation



Direct manipulation

Representation affects what can be directly manipulated



Contact lists

Find “Green”

>S. Greenberg

>Dept Computer Science

>University of Calgary

Command system
no direct manipulation



ICQ Global Directory - Contact List Wizard

Welcome to the ICQ Directory - Contact List Wizard
Search the ICQ Global Directory to see whether your desired contact is registered.

☐ Search by E-Mail - the preferred search criteria:
E-Mail:

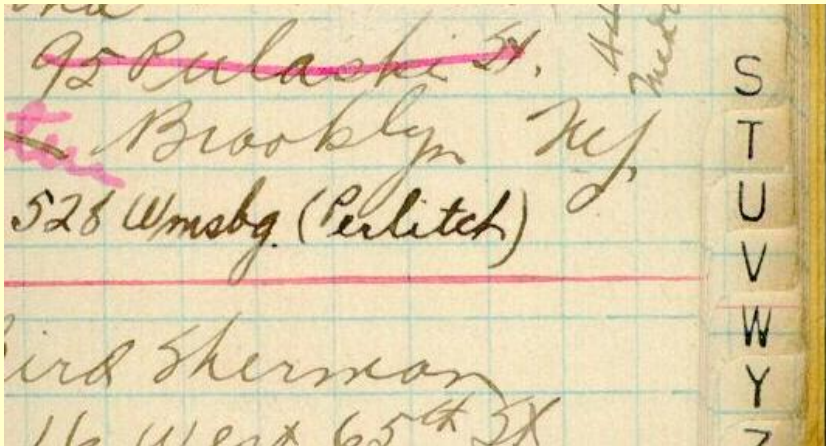
☐ Search by any of the following parameters:
Nickname:
First Name:
Last Name:

☒ Search by ICQ Number (JIN):
ICQ#:

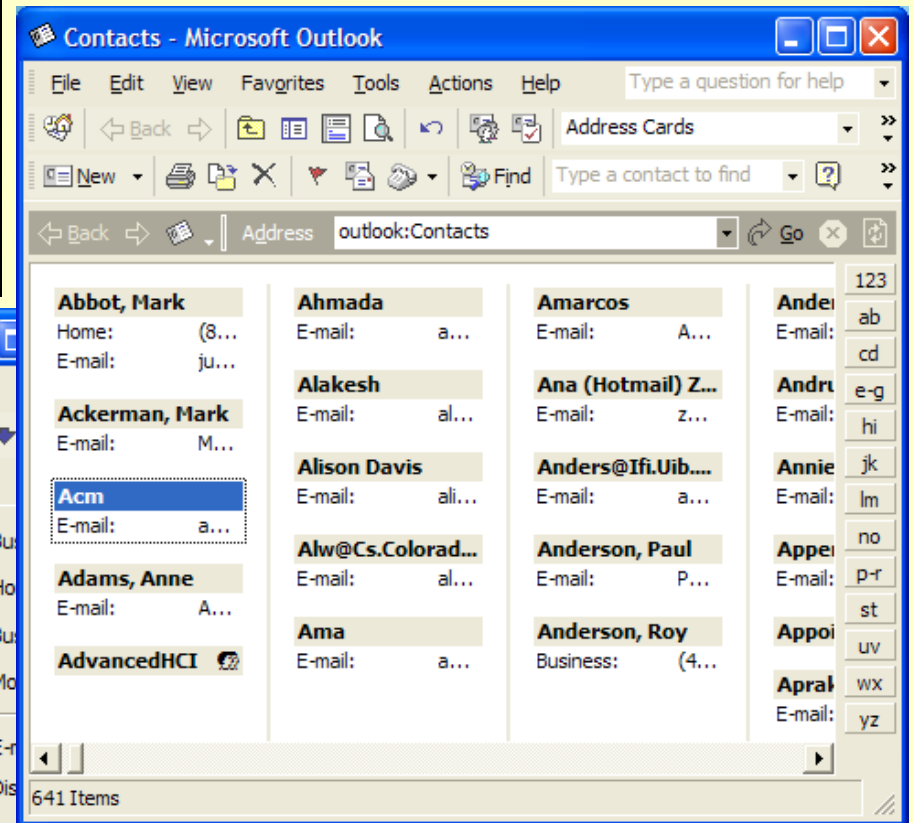
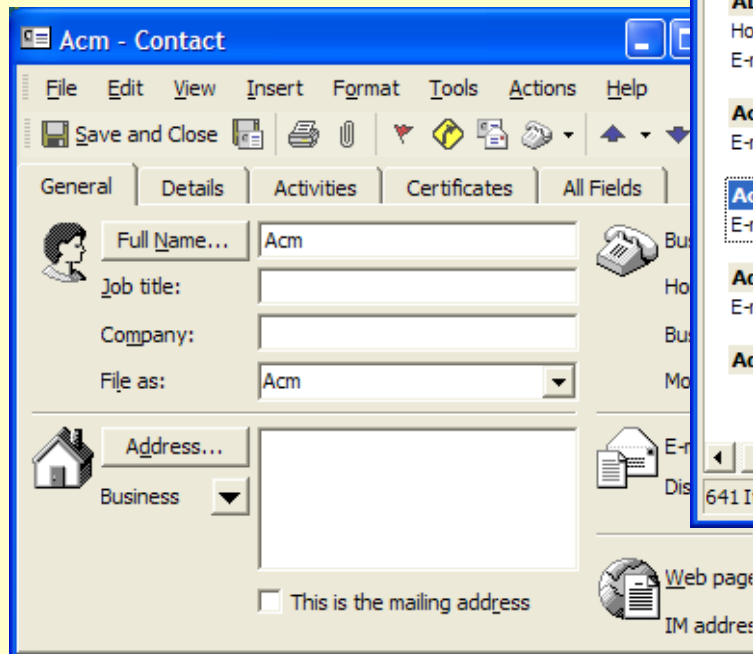
Classic Mode < Back Next > X Cancel

Form metaphor:
syntactic direct
manipulation

Contact lists



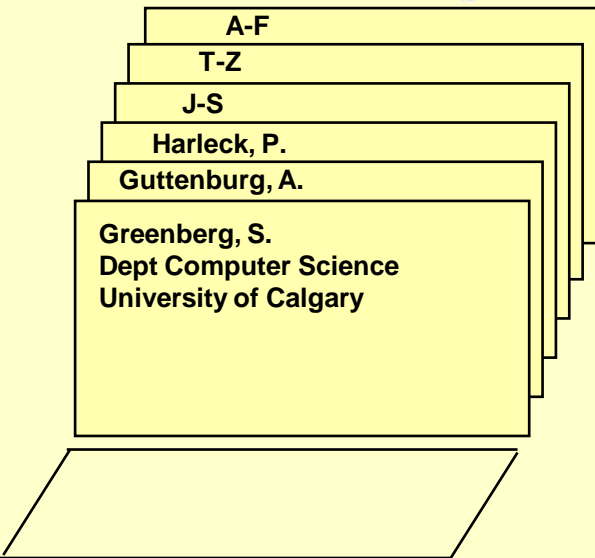
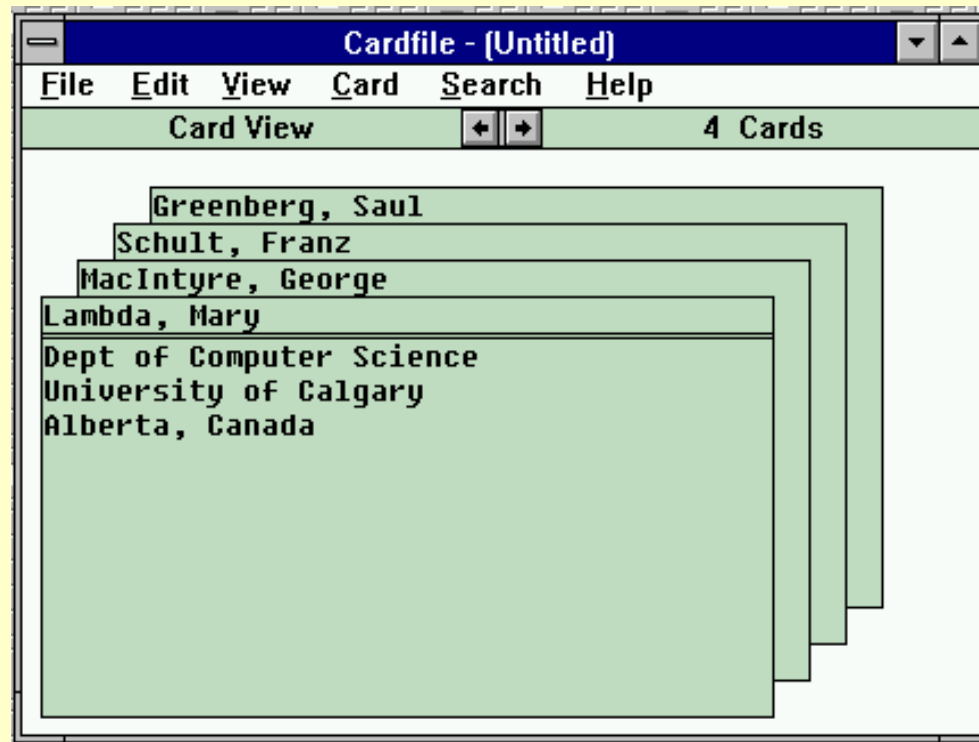
Phone book
a mix...



Contact lists



Rolodex

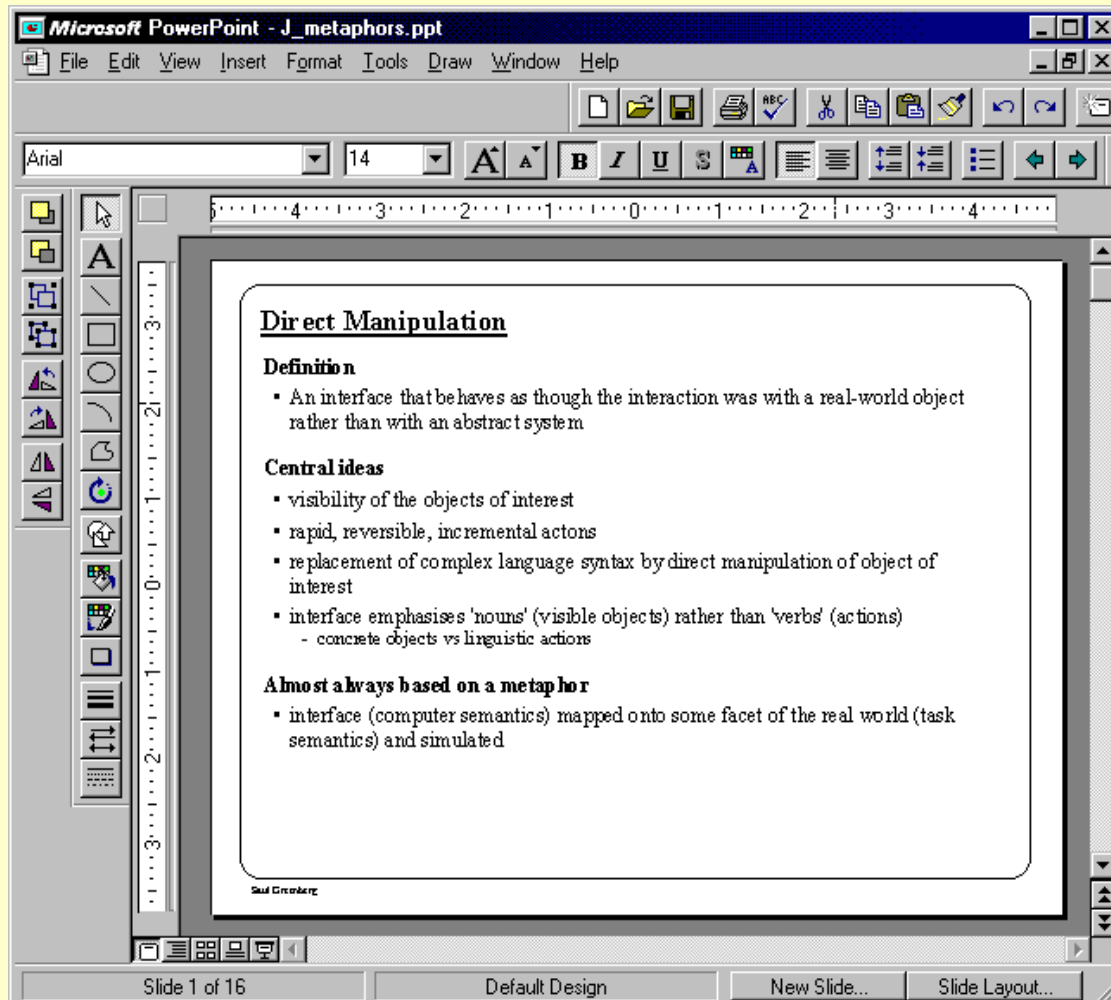


Contact lists



Direct and abstract manipulation

Most good applications mix the two for power



Dynamic queries

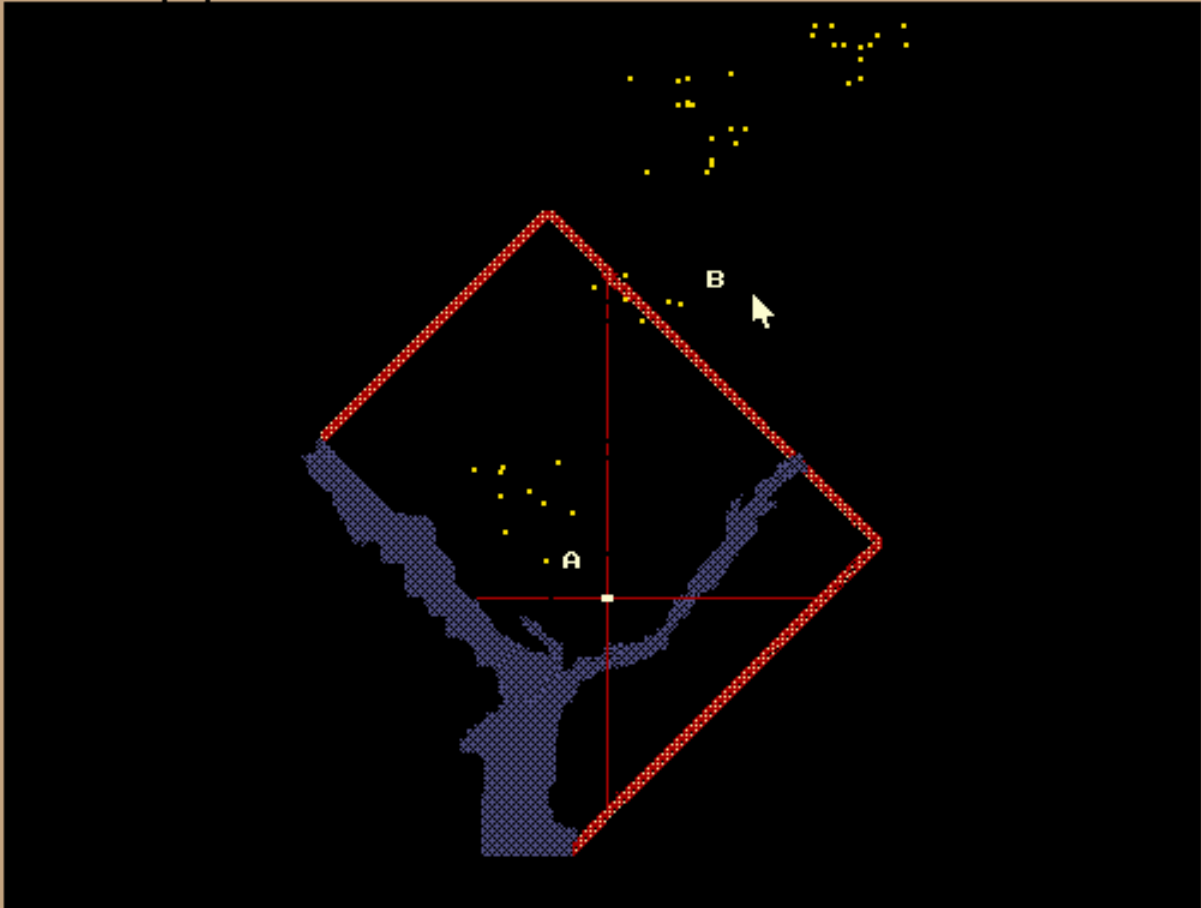
Searches and queries by

- adjust sliders, buttons, check boxes, and other control widgets
- display immediate updates *as* the control is adjusted

Why?

- rapid searching with imprecise queries
- people explore data interactions and limits

Home Finder



The yellow dots above are homes in the DC area for sale. You may get more information on a home by selecting it. You may drag the 'A' and 'B' distance markers to your office or any other location you want to live near. Select distances, bedrooms, and cost ranges by dragging the corresponding slider boxes on the right. Select specific home types and services by pressing the labeled buttons on the right.

Dynamic HomeFinder

Reset Quit

Save Print

Dist to A:
1 30
19

Dist to B:
1 30
6

Bedrooms:
1 7
2 4

Cost:
\$50k \$500k
16 38

Look at:
Hse TH Cnd

Features:
Grg Fp1
CAC New

HomeBay

Dynamic
Queries

Radar
Overview

Progressive
details on
demand

HomeBay

Search

Price Range: Min: \$0 Max: no limit

Square Footage: Min: 0 sqft Max: 5,177 sqft

Property Type: [Dropdown]

Area: [Dropdown]

Advanced

Number of Bedrooms: Min: 1 Max: 5

Number of Bathrooms: Min: 1 Max: 5

Age of Property: Min: 0 Max: no limit

Description Keywords: [Dropdown]

Search Results

#	Price	Area	Property Type
01	\$154,888	Marlborough Park	Bungalow
02	\$199,900	North Crowchild	Two-Story
03	\$199,900	Westgate	Bungalow
04	\$199,900	Coventry Hills	Two-Story
05	\$199,900	Brentwood	Bungalow
06	\$239,735	Inglewood	Condo
07	\$239,000	Tuscany	Mansion
08	\$249,900	Capitol Hill	Duplex
09	\$249,900	Arbour Lake	Townhouse
10	\$249,900	Banff Trail	Bungalow
11	\$288,000	Strathcona Park	Two-Story
12	\$288,900	Patterson	Townhouse
13	\$310,000	Arbour Lake	Two-Story

History [Button] Print [Button]

Favorites

Display Locations on Map

☐ Green Space ☐ Shopping Centres ☐ Playgrounds

☐ Parks ☐ Schools

mini map

Calgary

11 Ave Sw

17 Ave Sw

33 Ave Sw

90 Ave Sw

White Elk Starlight

Southland Dr Sw

Anderson Rd Sw

Night Wolf

Click for details

Price: \$199,900

Area: North Crowchild

Type: Two-Story

What you now know

Metaphors

- leverages our knowledge of the familiar and concrete

Direct manipulation

- visibility of the objects of interest
- rapid, reversible, incremental actions
- manipulation by pointing and moving
- immediate and continuous display of results (dynamic queries)