Visual Analytics

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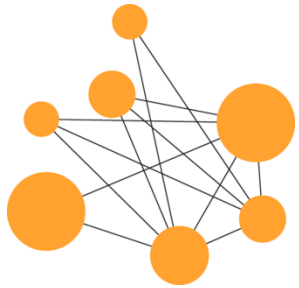
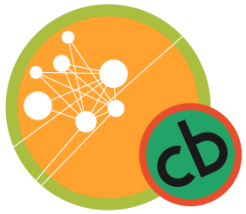
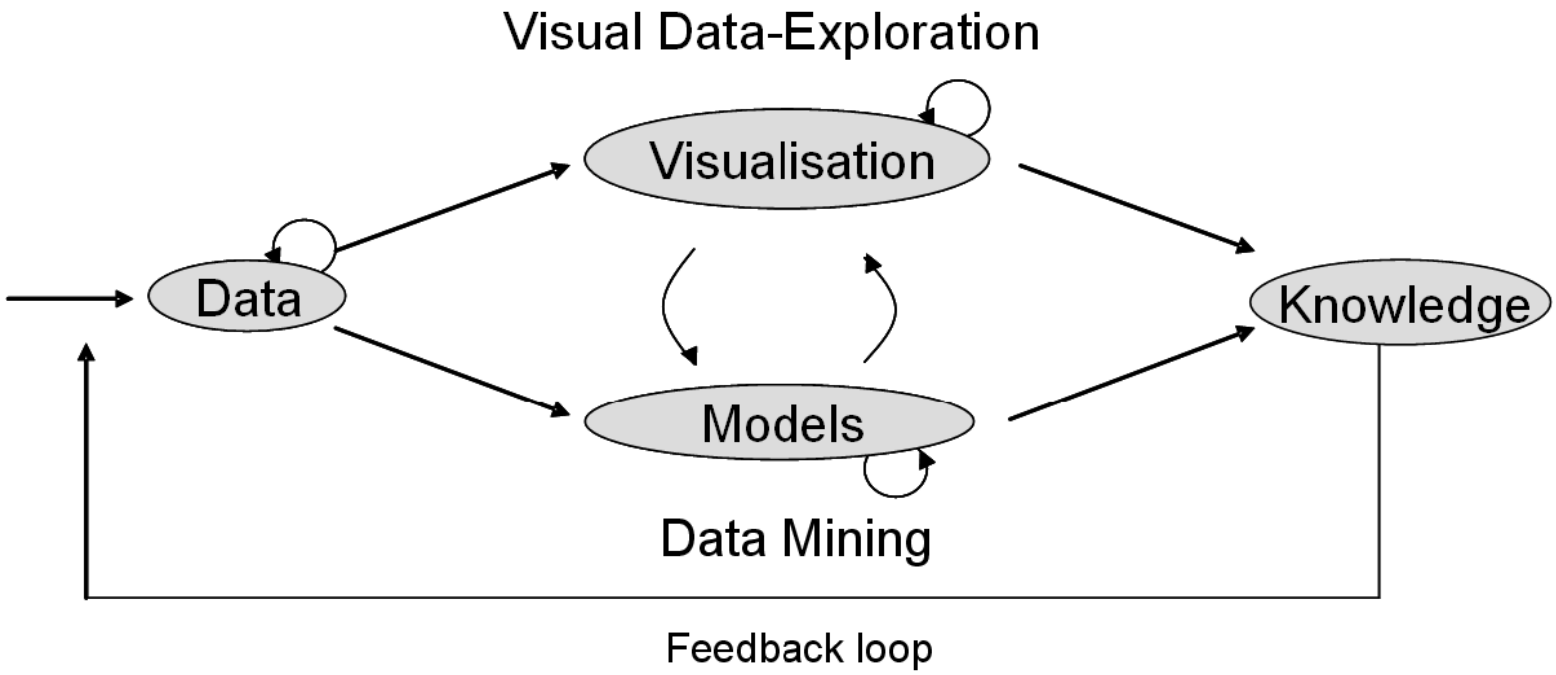
University of Colorado Denver

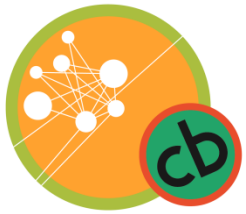




Visual Analytics

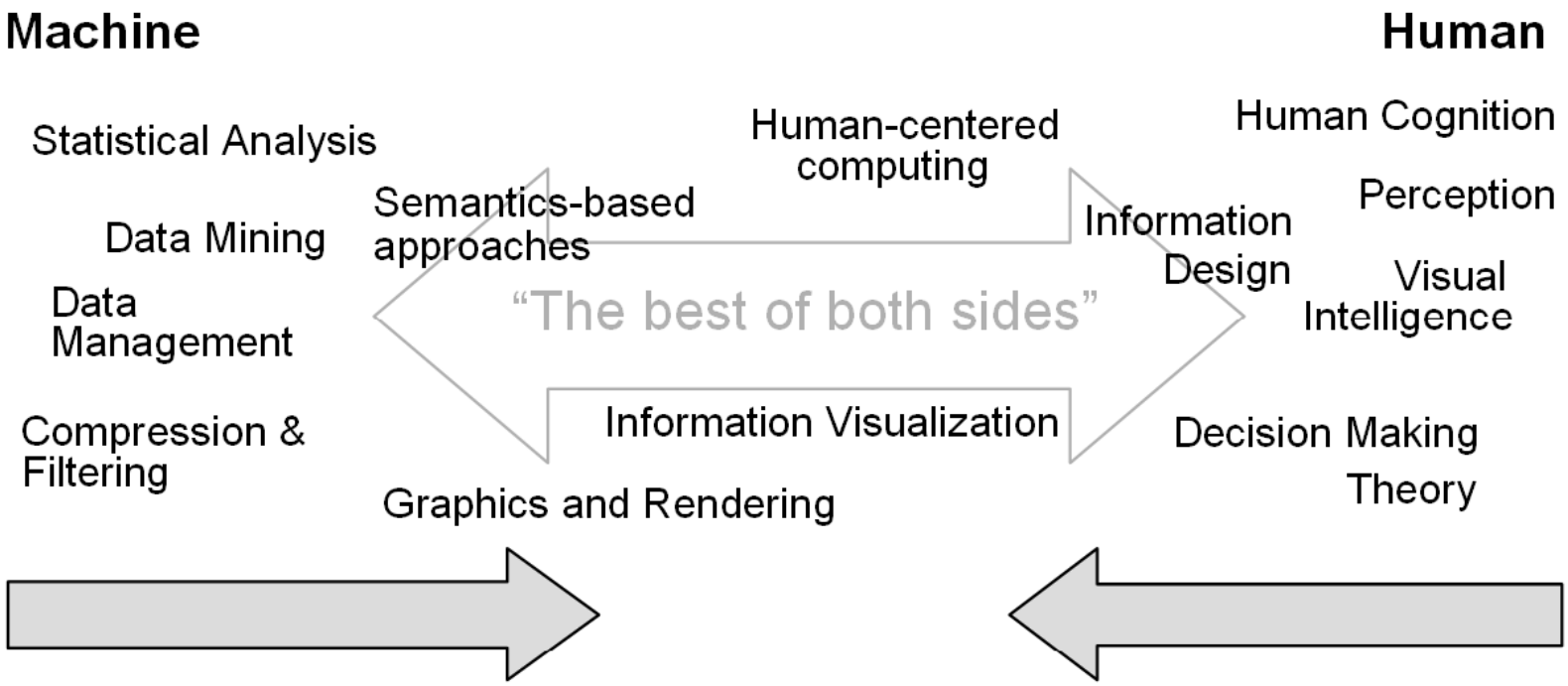
Tight integration of visual and automatic data analysis methods with database technology for a scalable interactive decision support.





Visual Analytics

Visual analytics integrates scientific disciplines to improve the division of labor between the human and the machine.



know your user

know your user’s mental model

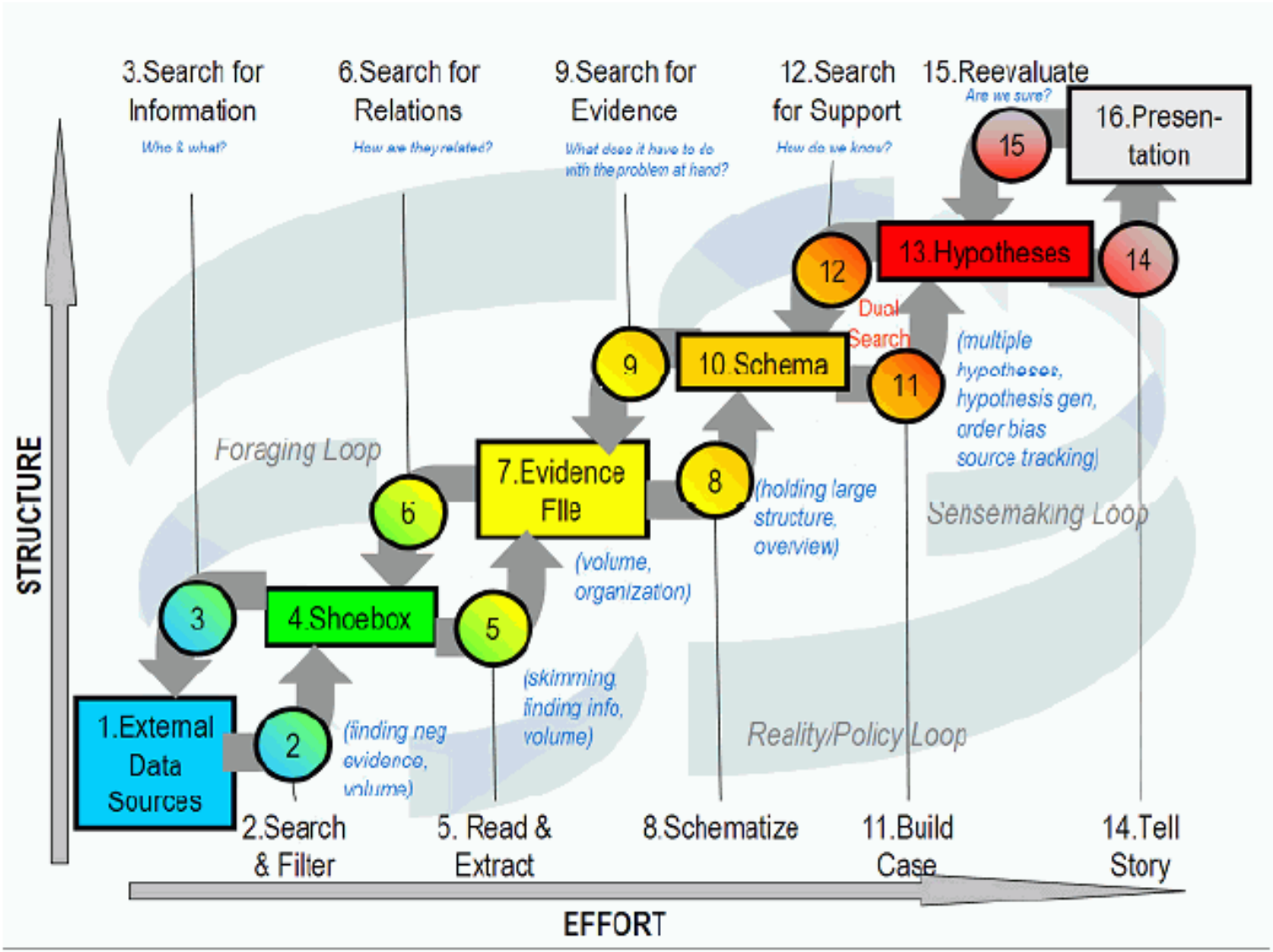
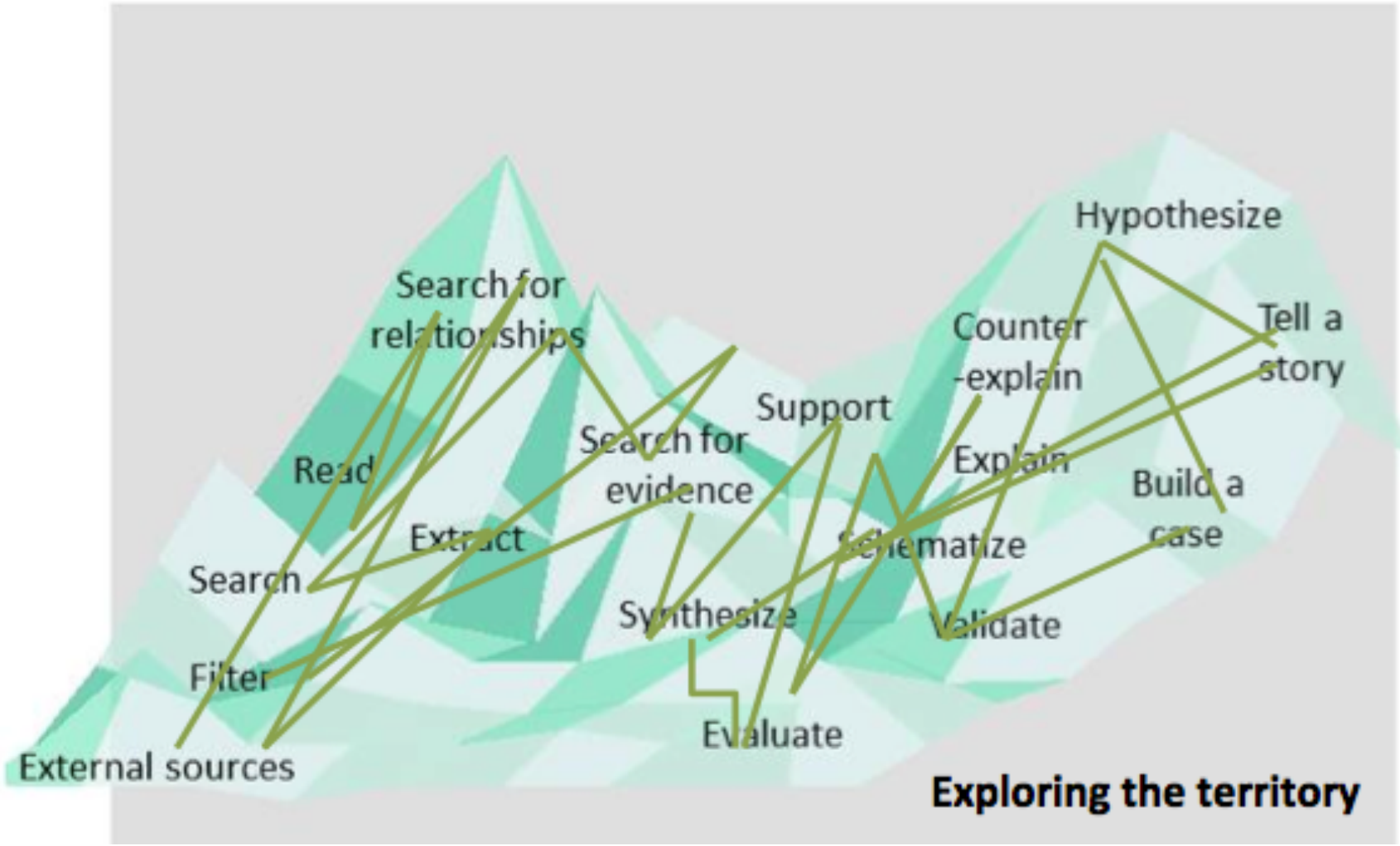


Figure 2.1. Notional model of sensemaking loop for intelligence analysis derived from CTA.

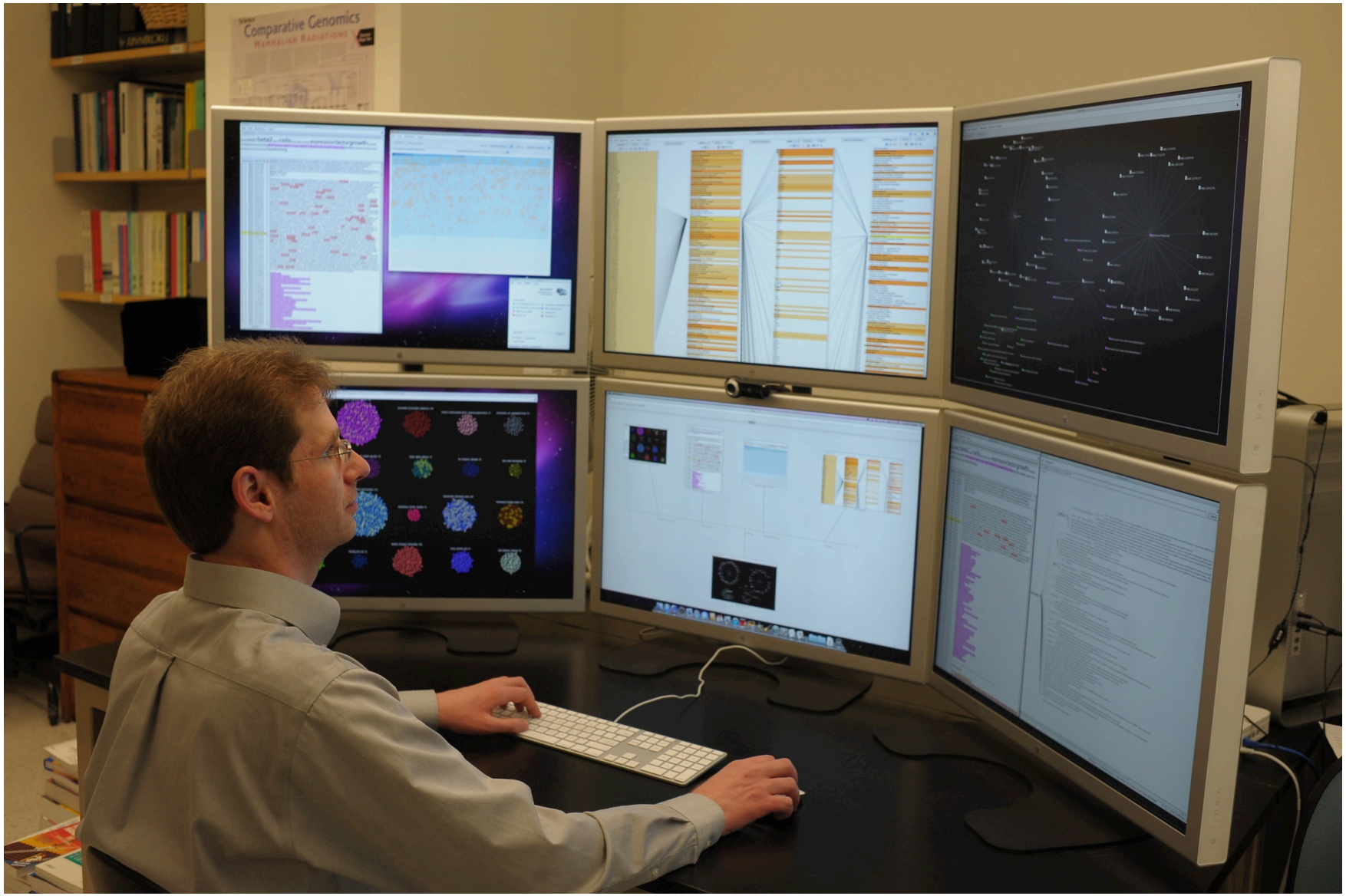
Pirolli & Card, ICIA '05



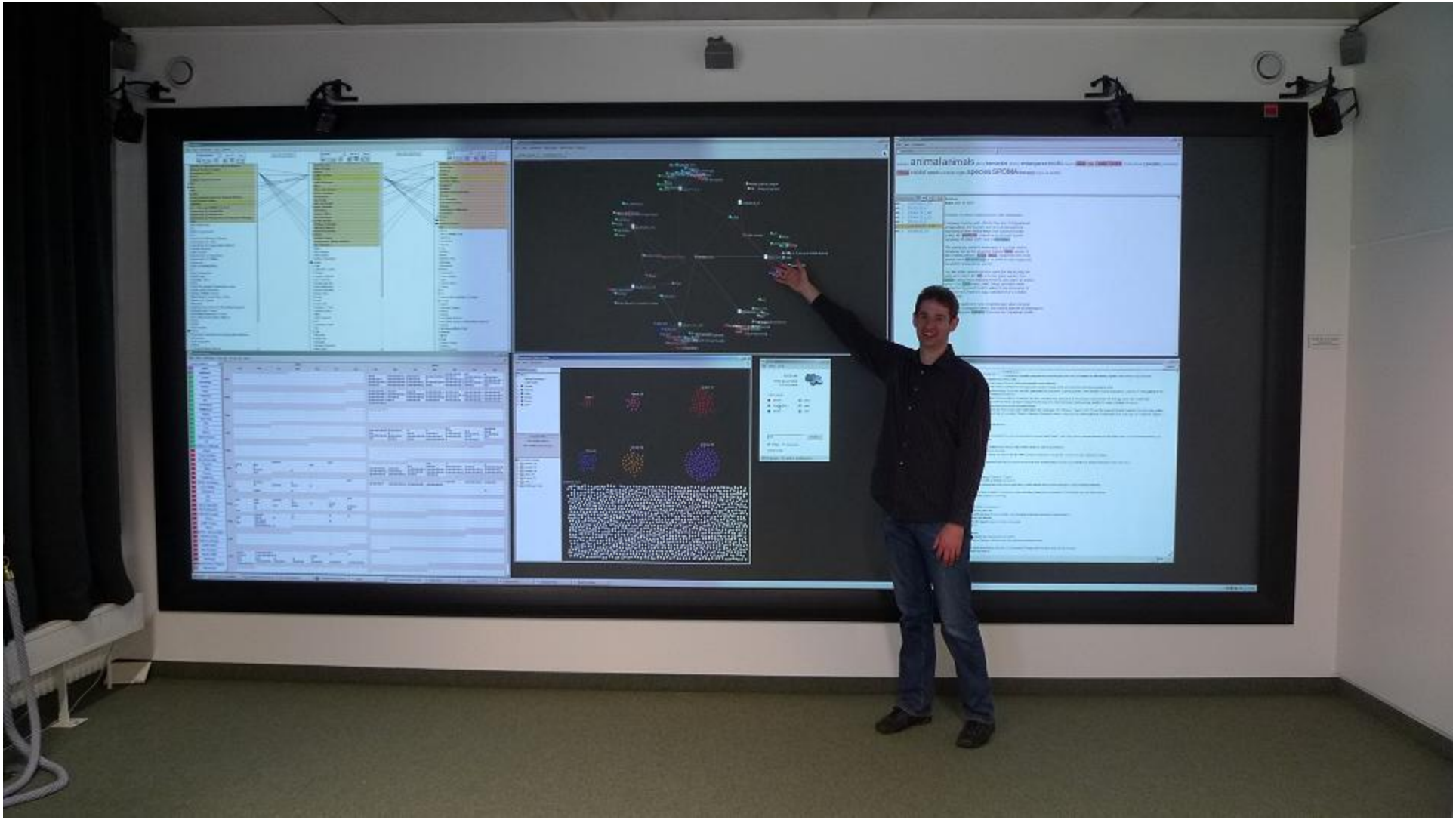
B. Mirel: Interaction design for complex problem solving: Developing useful and usable software (Elsevier, 2004).

pixels are precious

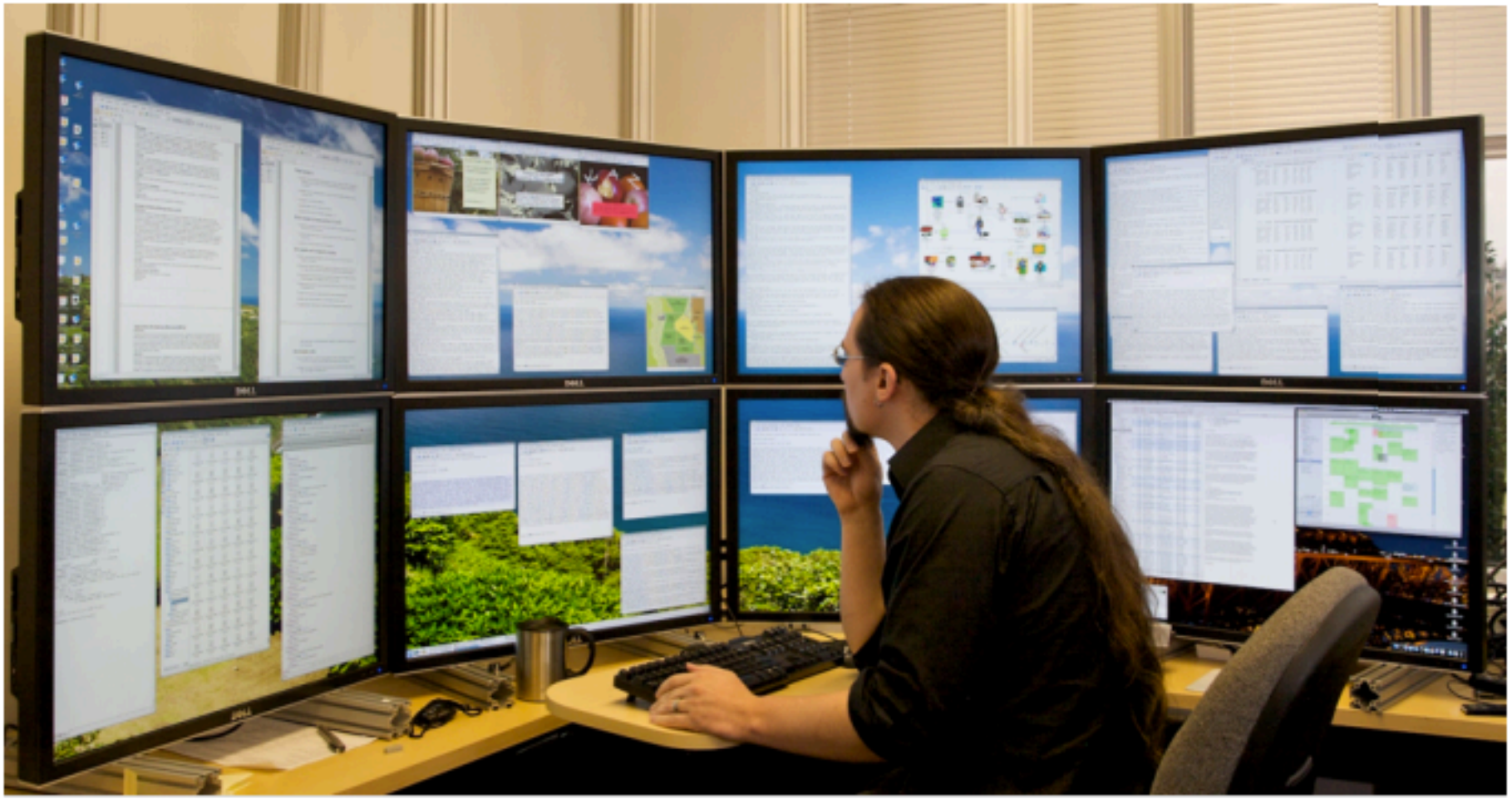
“Six Pack”



Powerwall at Konstanz University



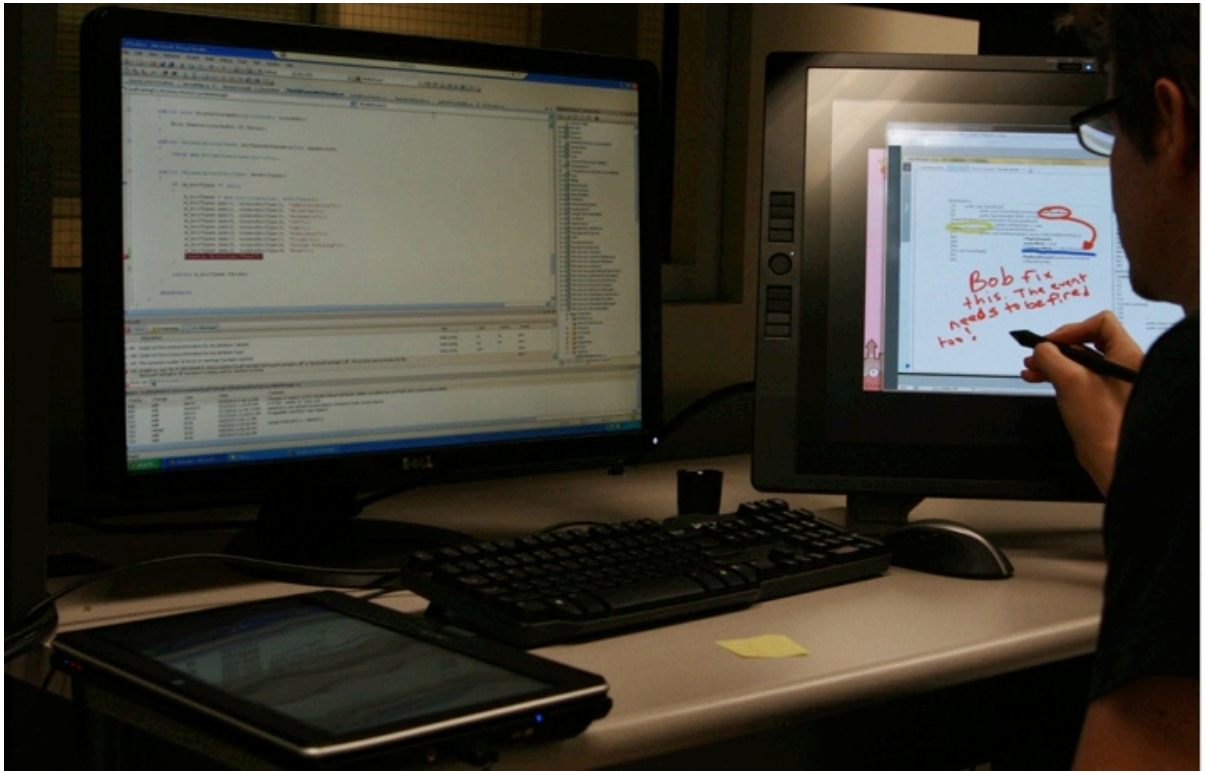
North lab, Virginia Tech

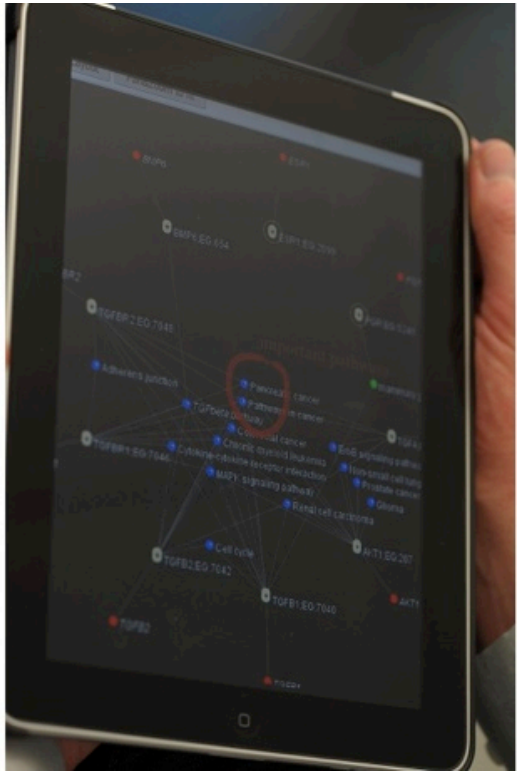


C. Andrews et al., “Space to think: large high-resolution displays for sensemaking” CHI ’10

(don’t) touch me

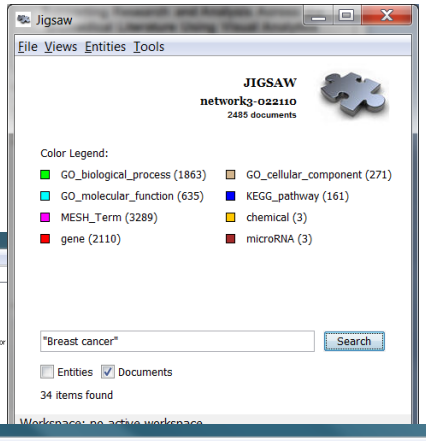
Cintiq (pen) and iPad (touch)

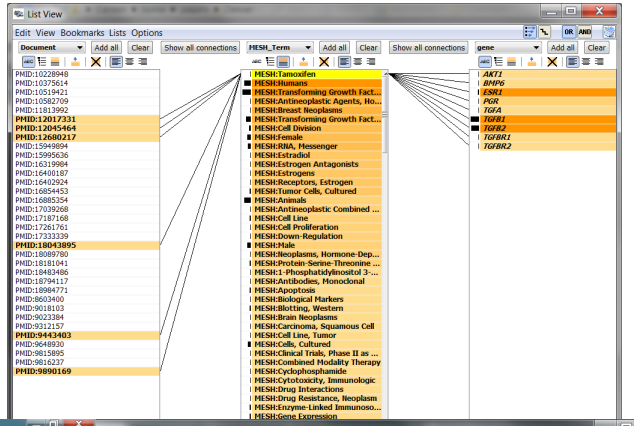


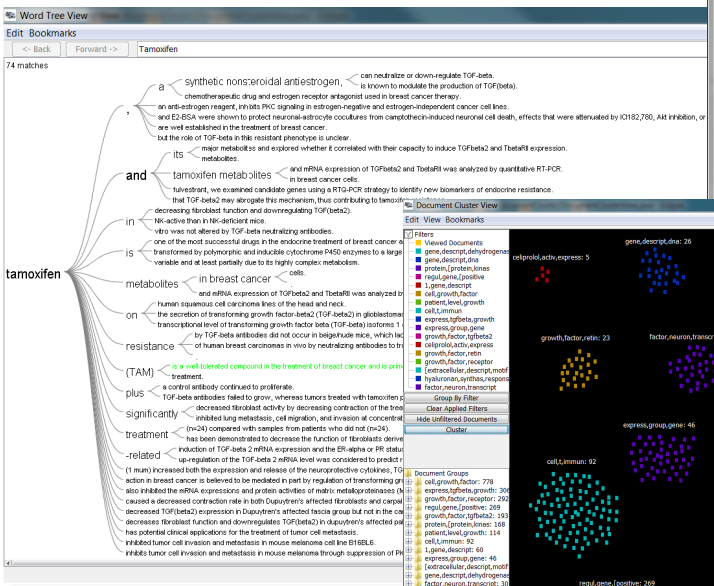


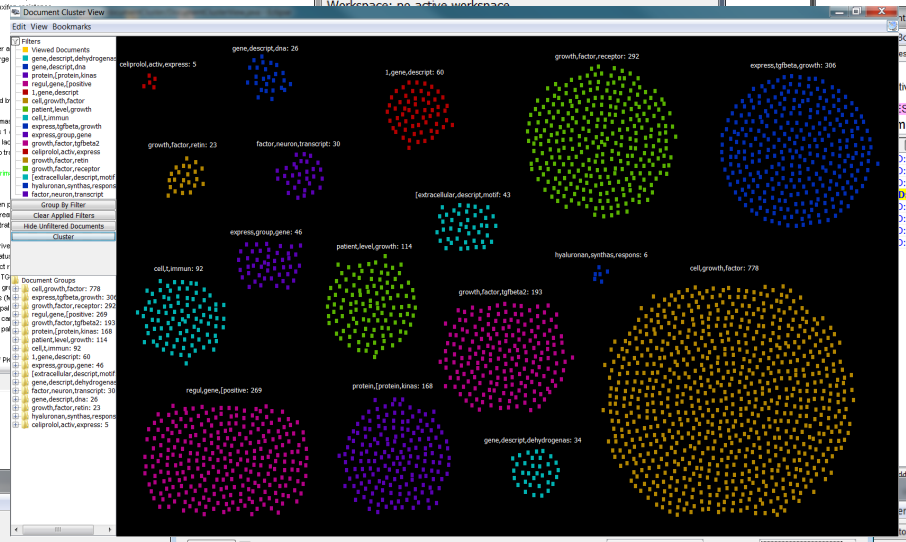
evaluation is important
(and difficult)

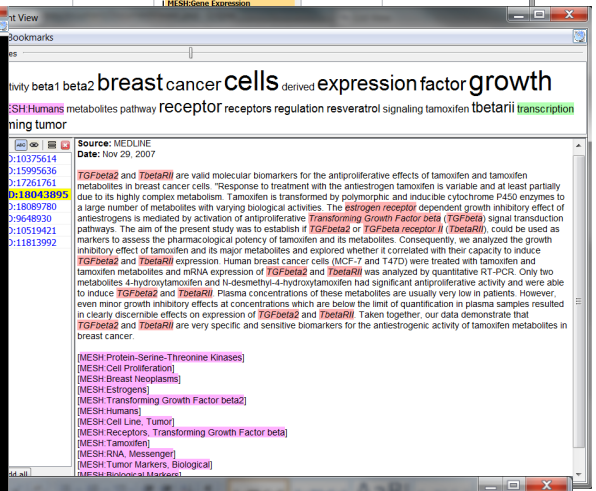
Jigsaw Views

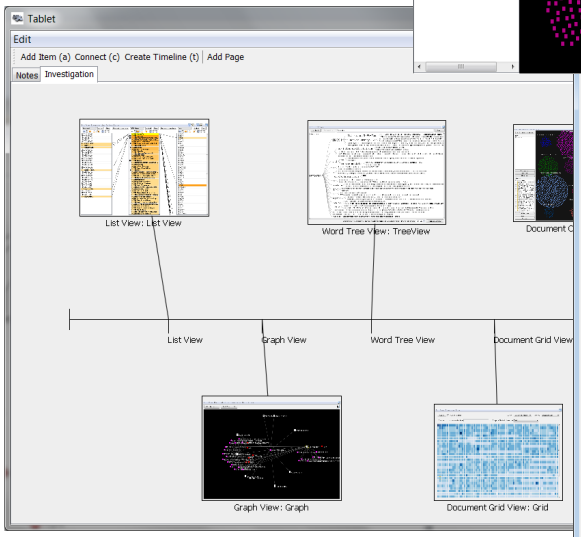


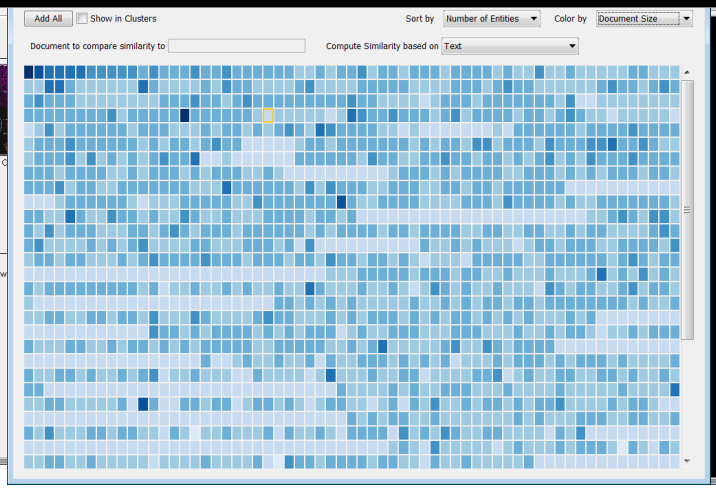


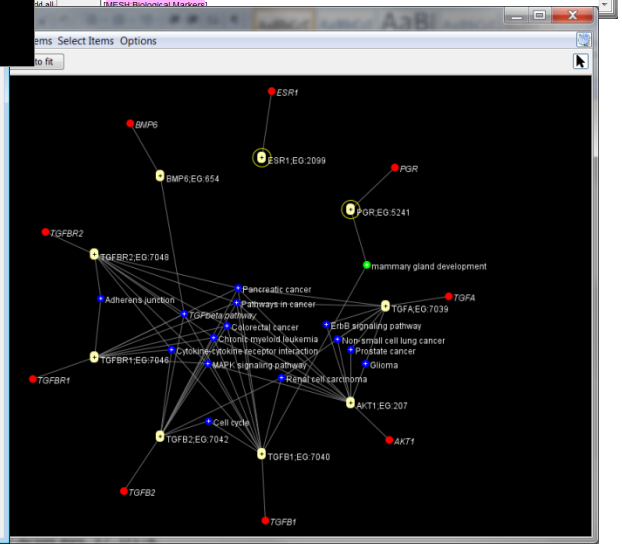


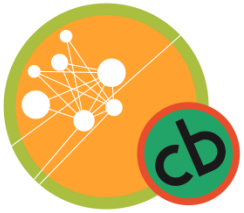






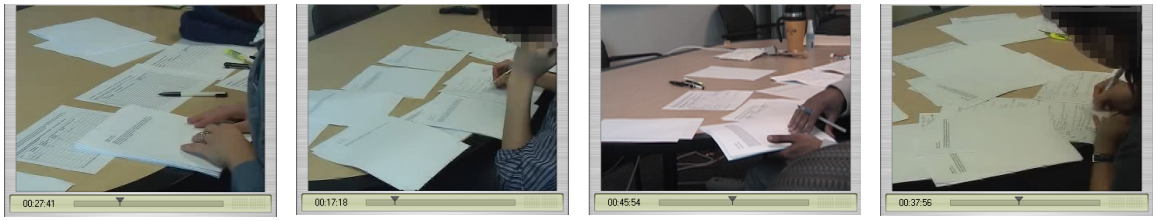




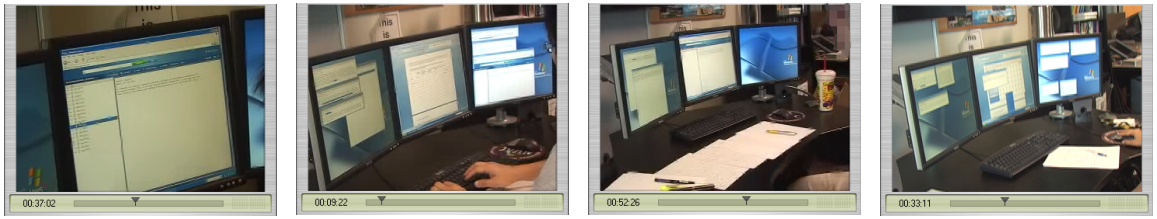


Controlled lab study with 4 settings

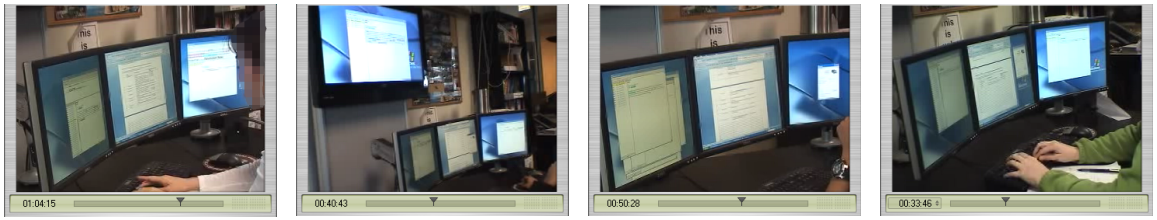
Paper



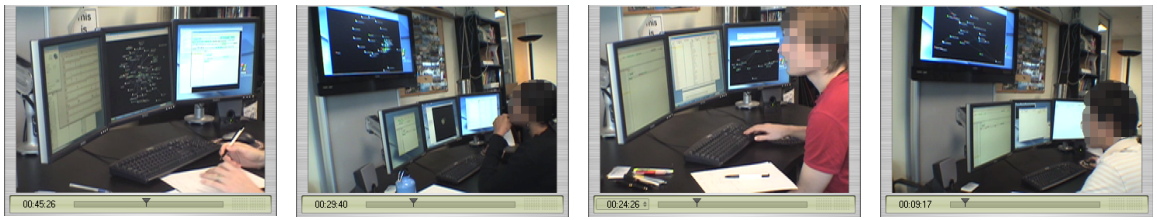
Desktop



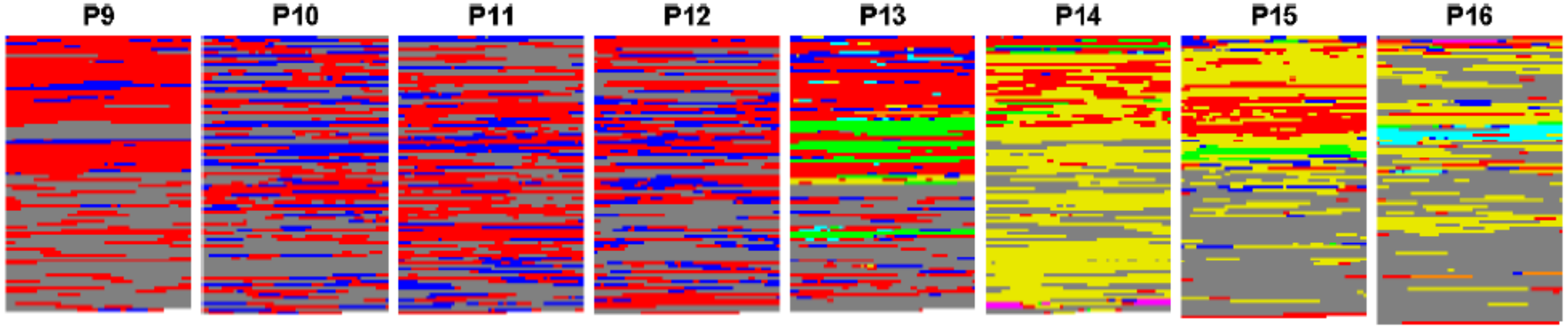
Entity



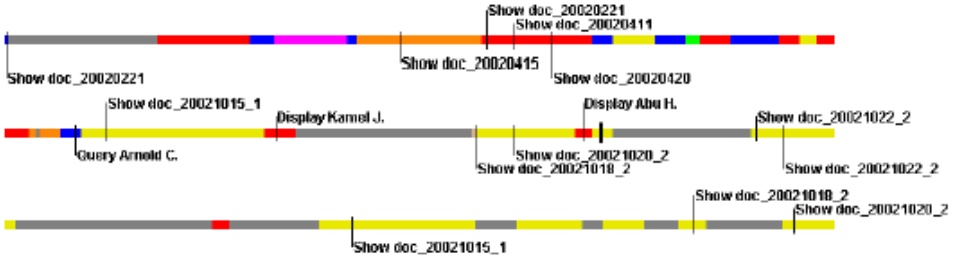
Jigsaw

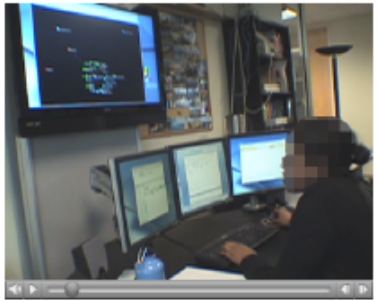


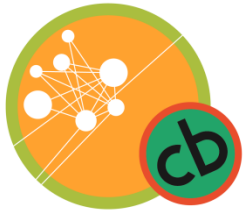
Using visualization for analyzing study results



Main View
Document View
List View
Graph View
Calendar View
Document Cluster View
Timeline View
Task Sheet



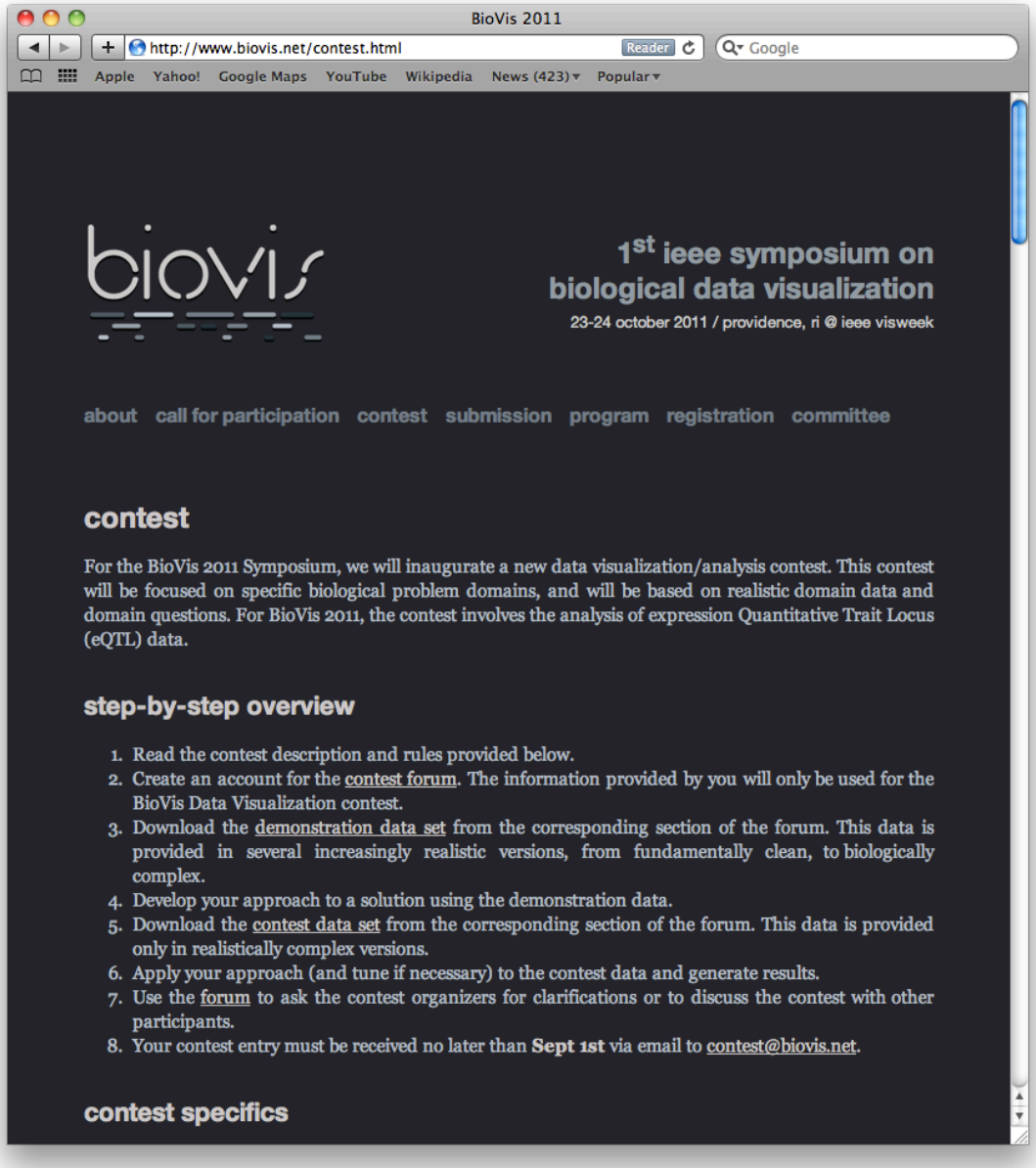




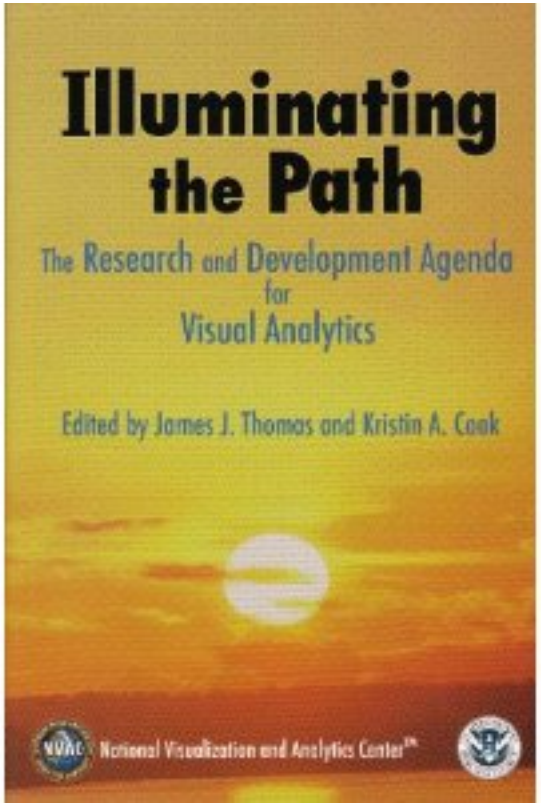
4 Strategies:
Overview, filter & detail
Build from detail
Hit the keyword
Find a clue, follow the trail

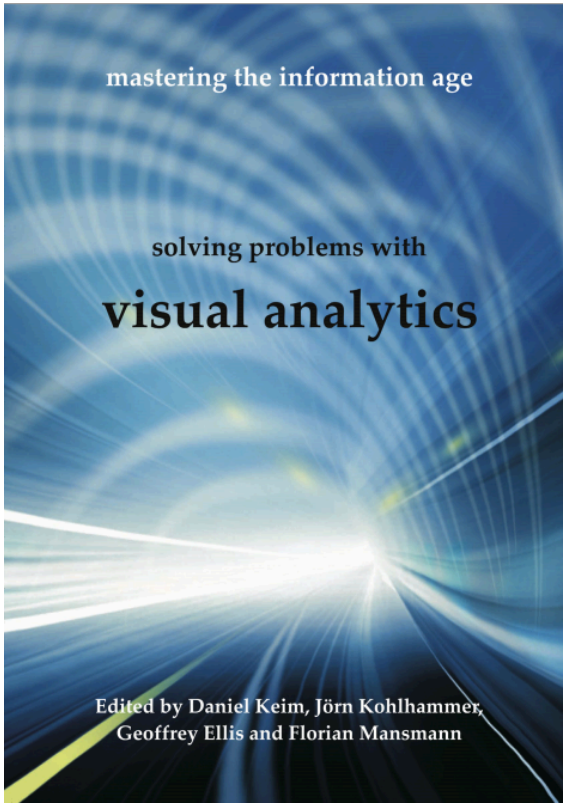
	Paper				Desktop				Entity				Jigsaw			
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16
Grading Task Sheet	-1.75	17	4	13	13	10.5	10.5	-3.5	5.5	-8.25	4	7.5	14.5	13.5	7	17
Grading Debriefing	2	2.5	1	5.5	3	4	1.5	3	3.5	2.5	1.5	6	6	2.5	5.5	5
Final Score	22.87	65.00	24.26	87.08	62.08	67.13	42.13	29.41	52.23	15.00	29.26	81.19	95.05	58.07	75.20	90.00
Performance	fair	very good	fair	excellent	very good	very good	good	fair	good	poor	fair	excellent	excellent	good	very good	excellent
Avg. Score/Setting			49.80			50.19					44.42				79.59	
Documents Viewed	50	50	50	50	50	50	50	50	49	31	45	50	31	50	46	23
Number of Queries					19	18	48	8	23	61	59	91	44	4	26	8
First Query					40:49	19:55	2:47	12:41	1:31	0:29	0:59	3:12	0:18	5:35	25:37	4:18
Amount of Notes	many	none	many	some	many	some	few	some	some	none	none	few	some	few	few	few
First Note Taking	0:07	–	0:05	0:16	1:53	19:57	2:47	8:20	2:37	–	–	3:14	0:48	0:32	5:15	78:48
First Task Sheet	43:20	32:53	70:13	3:25	61:35	20:26	7:33	64:11	28:09	0:52	2:55	7:20	48:26	41:48	43:00	5:33
Strategy Used	OFD	OFD	BFD	OFD	OFD	OFD	FCFT	BFD	BFD	HTK	HTK	FCFT	FCFT	HTK	OFD	FCFT

IEEE BioVis Contest

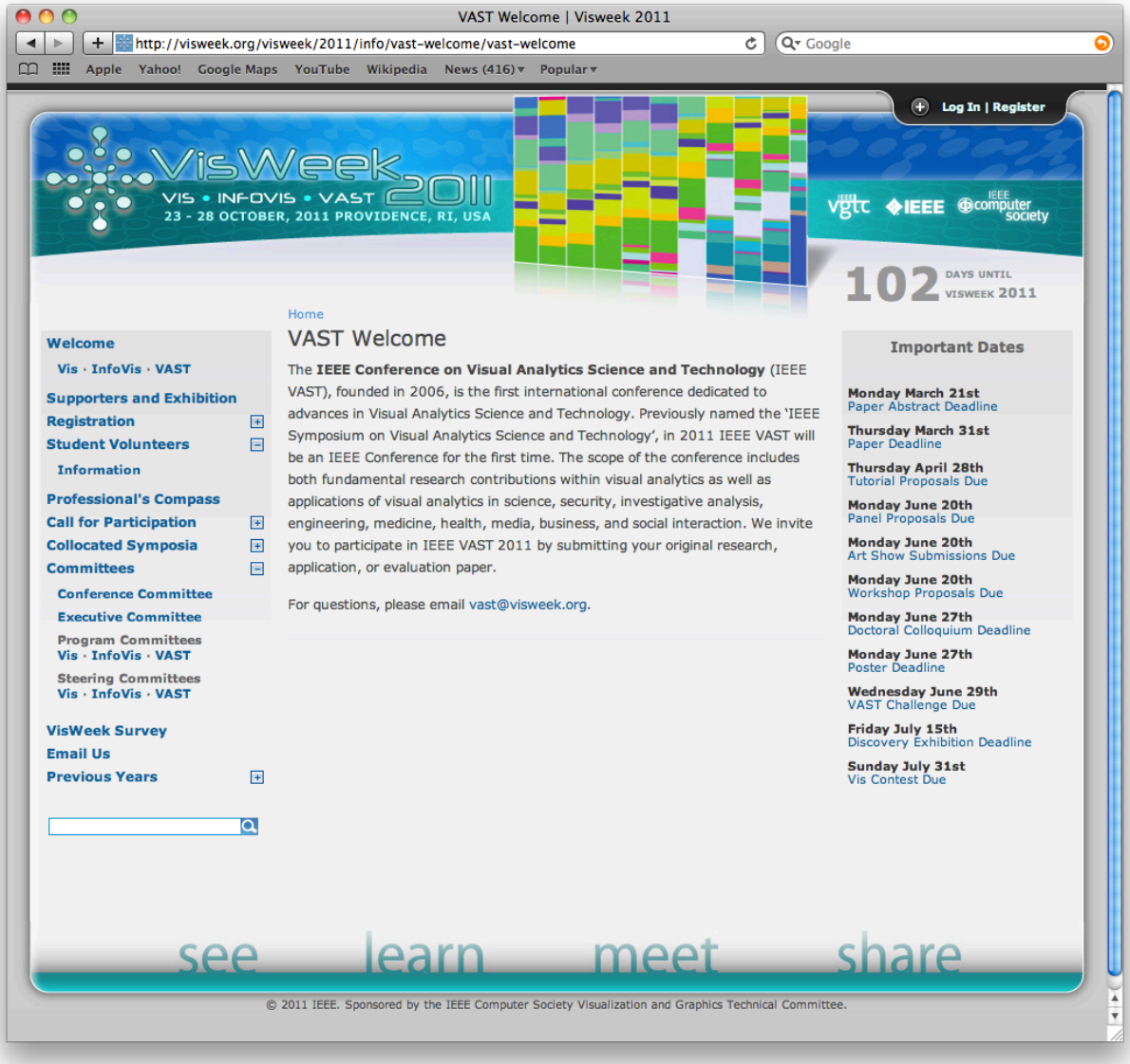


Visual Analytics





Visual Analytics



'06 – Baltimore, MD
'07 – Sacramento, CA
'08 – Columbus, OH
'09 – Atlantic City, NJ
'10 – Salt Lake City, UT
'11 – Providence, RI
'12 – Seattle, WA