LEVEL 00:
WARM UP

INFORMATION VISUALIZATION

SUCCESS STORY

DR. JOHN SNOW
1813 - 1858

CHOLERA OUTBREAK IN LONDON

INPUT DATA => VISUALIZATION

MAP OF THE SOHO QUARTER

Dots = deaths
Xs = water pumps

VISUALIZATION => QUESTION

WHAT IS
THE CENTER OF
THE CLUSTER?

QUESTION => HYPOTHESIS => KNOWLEDGE

BROAD STREET WATER PUMP REMOVED

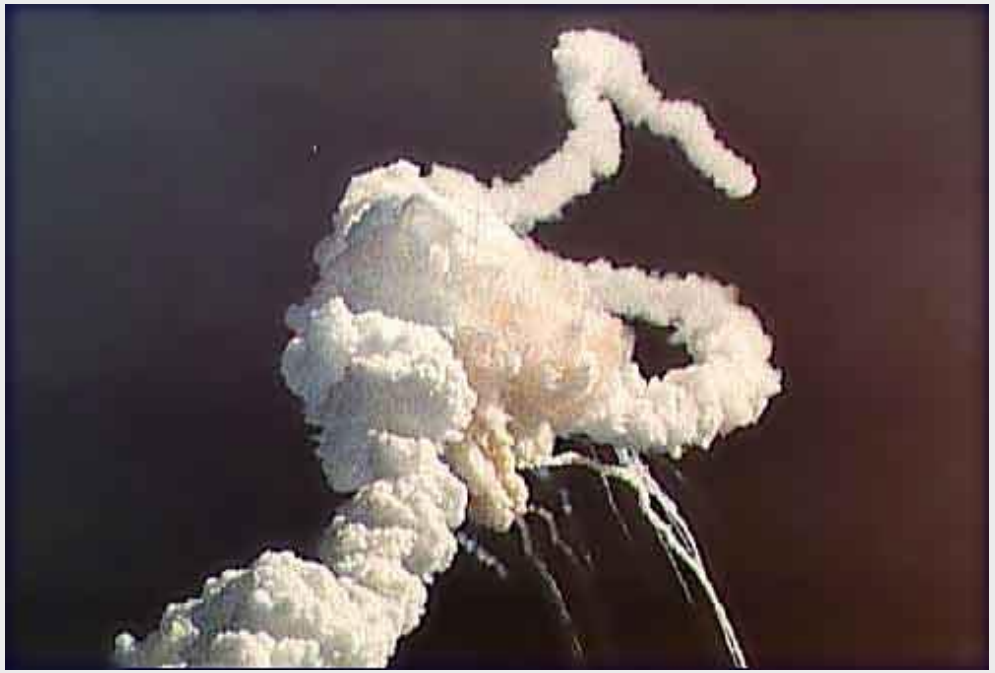
Plague spread stops

LONG-TERM BENEFITS

John Snow pub in Broad(wick) St.

NOT A SUCCESS STORY

CHALLENGER SPACE SHUTTLE
January 28, 1986



WAS IT INEVITABLE?

THE DATA WAS THERE

HISTORY OF O-RING DAMAGE ON SRM FIELD JOINTS

	SRM No.	Cross Sectional View: Erosion Depth (in.)	Cross Sectional View: Perimeter Affected (deg)	Cross Sectional View: Nominal Dia. (in.)	Top View: Length Of Max Erosion (in.)	Top View: Total Heat Affected Length (in.)	Clocking Location (deg)
61A LH Center Field**	22A	None	None	0.280	None	None	36°--66°
61A LH CENTER FIELD**	22A	NONE	NONE	0.280	NONE	NONE	338°-18°
51C LH Forward Field**	15A	0.010	154.0	0.280	4.25	5.25	163
51C RH Center Field (prim)***	15B	0.038	130.0	0.280	12.50	58.75	354
51C RH Center Field (sec)***	15B	None	45.0	0.280	None	29.50	354
41D RH Forward Field	13B	0.028	110.0	0.280	3.00	None	275
41C LH Aft Field*	11A	None	None	0.280	None	None	--
41B LH Forward Field	10A	0.040	217.0	0.280	3.00	14.50	351
		0.053	116.0	0.280	--	--	90

ndication of heat on O-ring, but no damage.

ffected secondary O-ring.

rt - 0 deg.

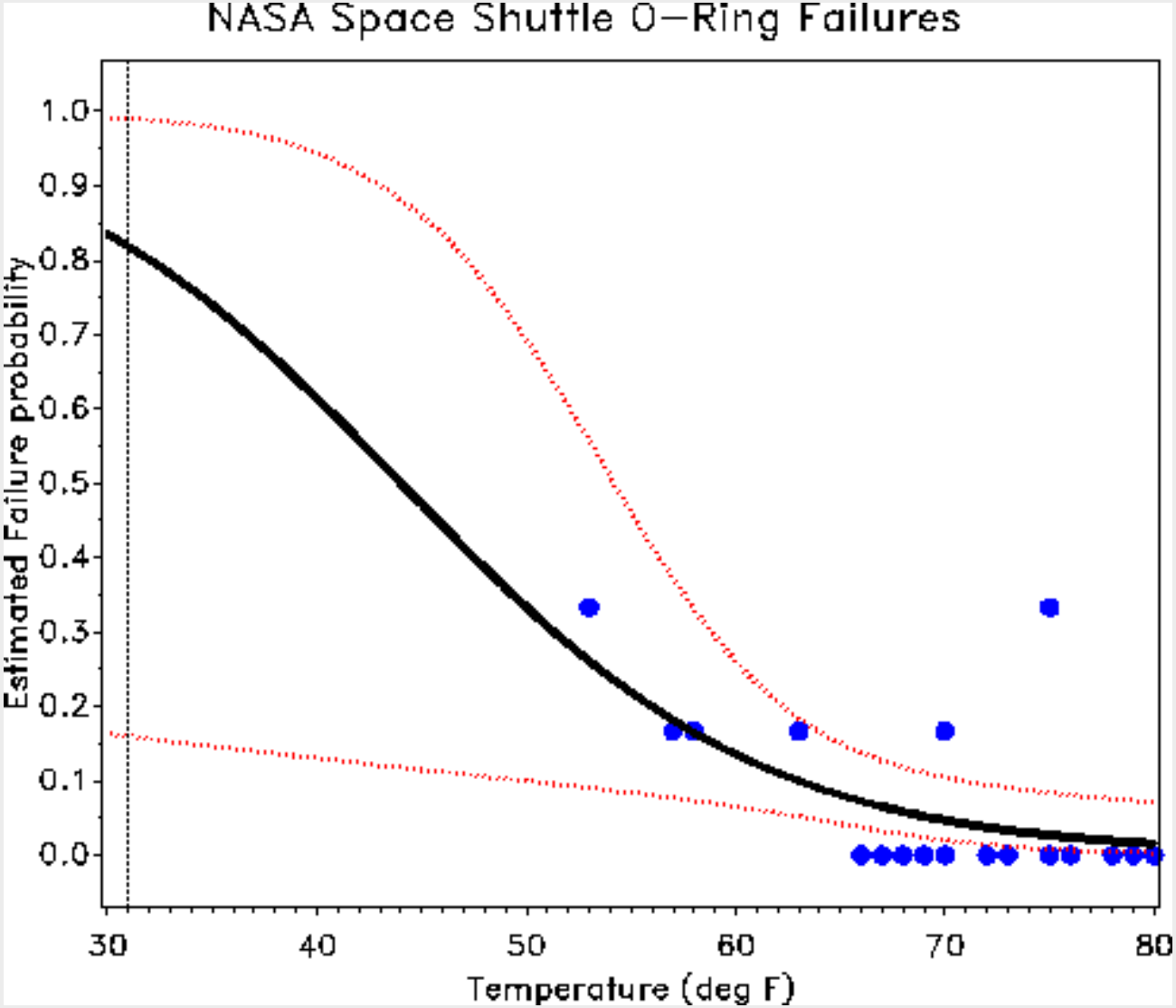
D NO BLOWHOLES IN PUTTY AND NO SOOT
-RING.

HAD PUTTY PATH TO PRIMARY O-RING, BUT NO O-RING EROSION
SRM-22 FIELD JOINTS HAD NO BLOWHOLES IN PUTTY.

HISTORY OF O-RING TEMPERATU
(DEGREES - F)

MOTOR	MBT	AMB	O-RING	WIN
DM-1	68	36	47	10 m
DM-2	76	45	52	10 mF
QM-3	72.5	40	48	10 mF
QM-4	76	48	51	10 m
SRM-15	52	64	53	10 m
SRM-22	77	78	75	10 m
SRM-25	55	26	29 27	10 m 25 m

PERHAPS WITH A BETTER VISUALIZATION?

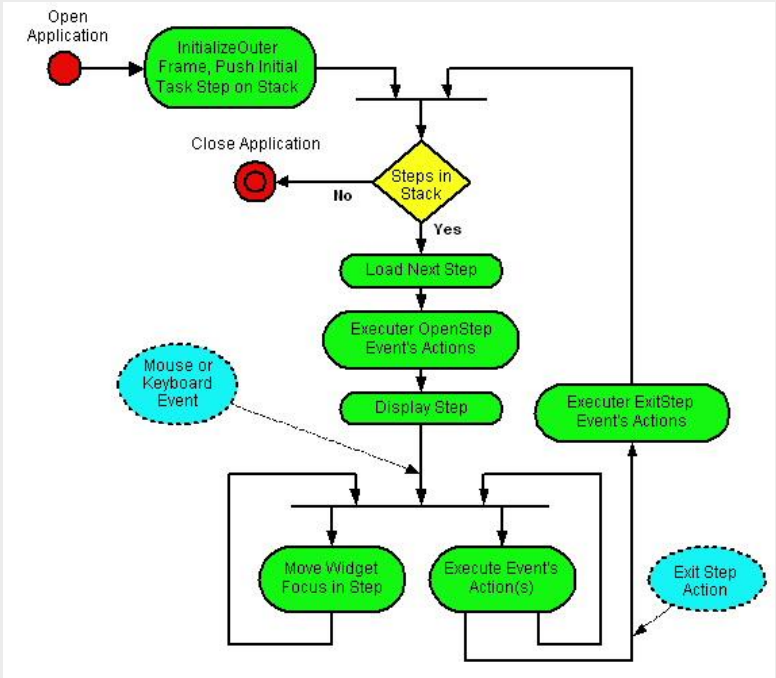


BTW:
Launch Temperature Was 32 F (0° C)

YOU'D HAVE TO SEE IT
TO BELIEVE IT

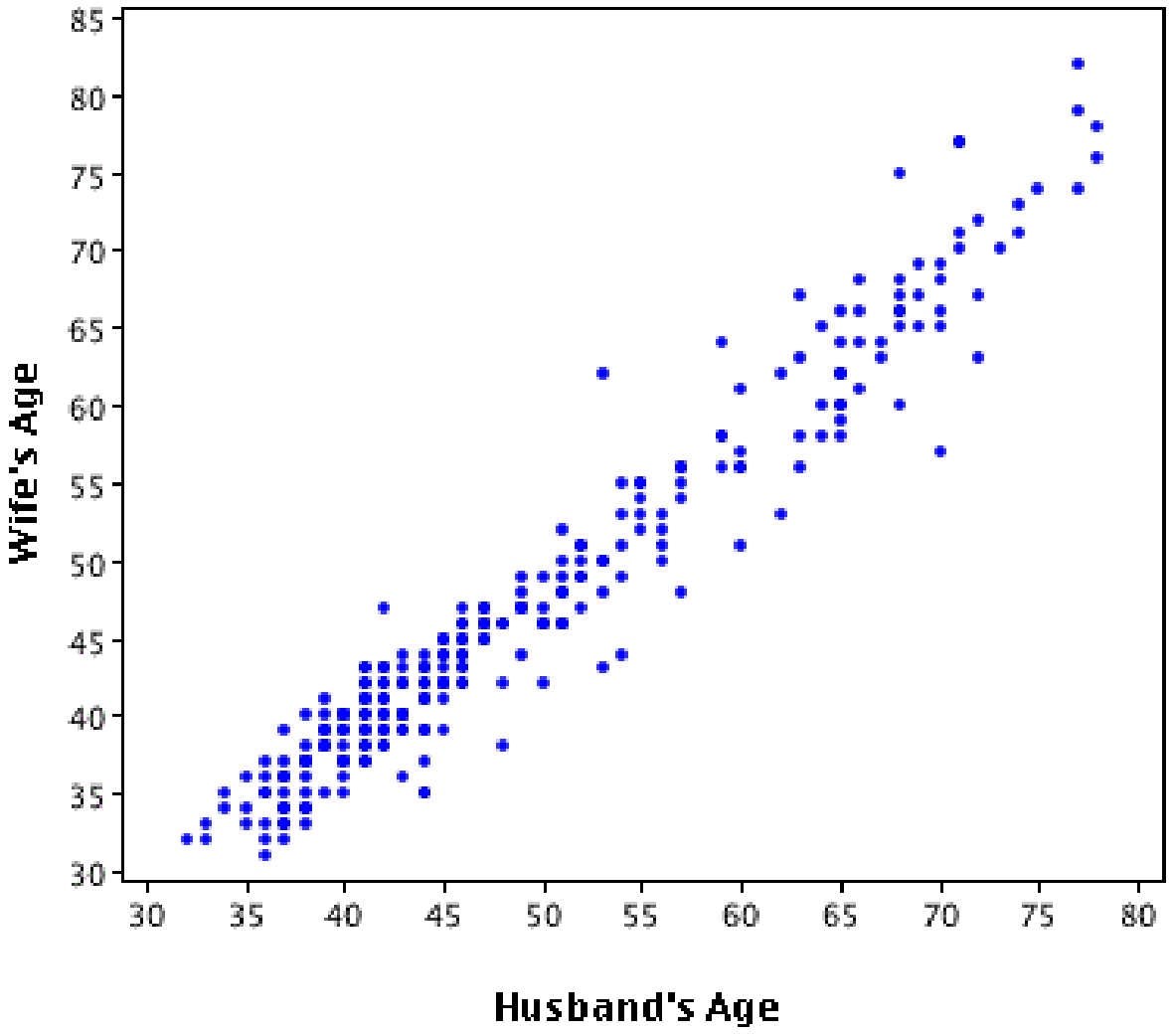
WHY VISUALIZATION?

A PICTURE IS WORTH A THOUSAND WORDS

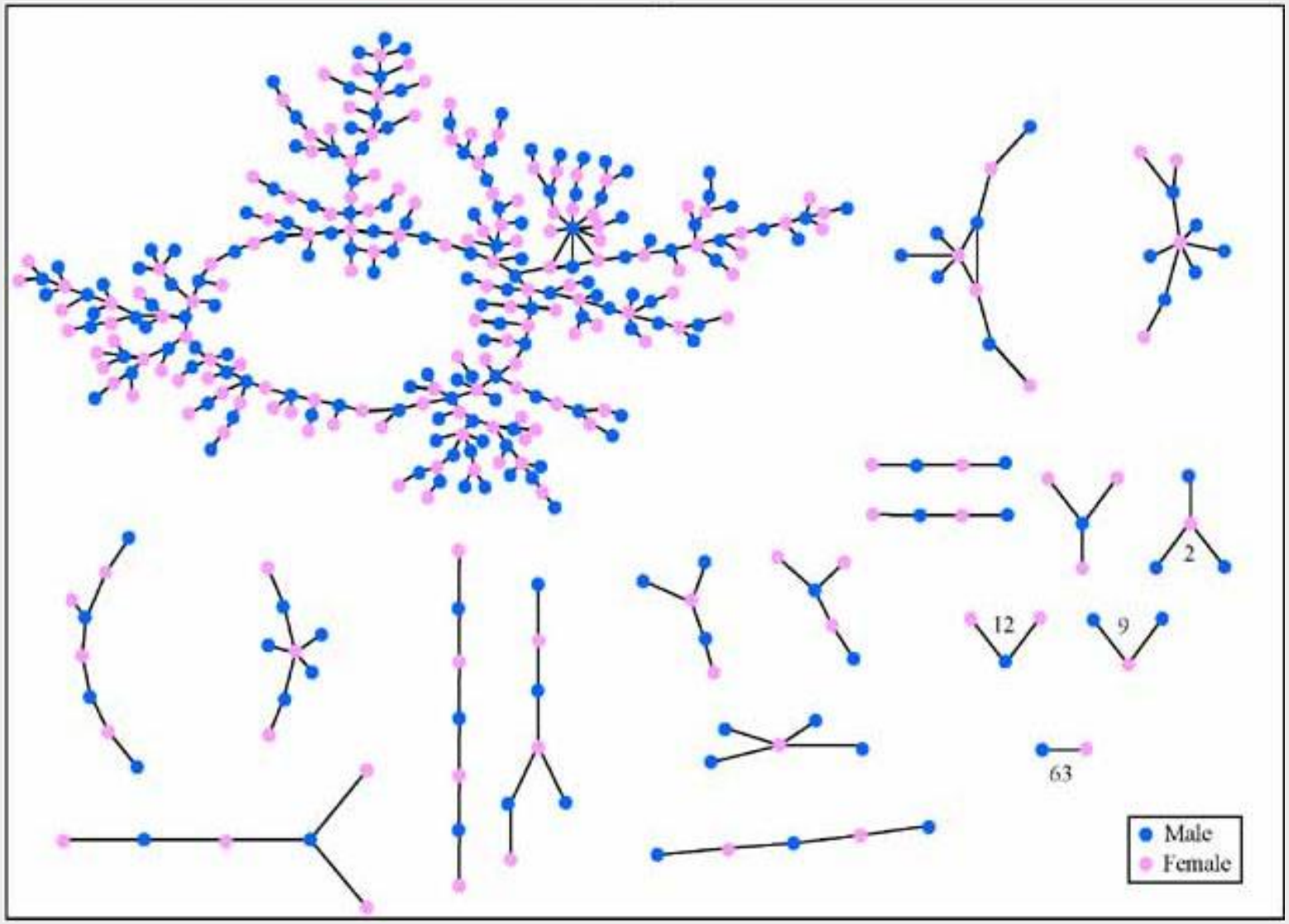


DETECT THE EXPECTED

AND GET ADDITIONAL INFORMATION



DISCOVER THE UNEXPECTED



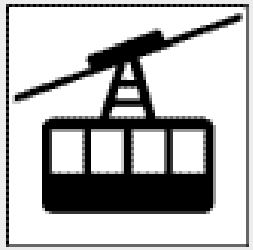
VISUALIZATION IN GENERAL

GOALS

Presentation
Confirmation
Exploration

BENEFITS

Fast perception
Language-independent
Displaying abstract data

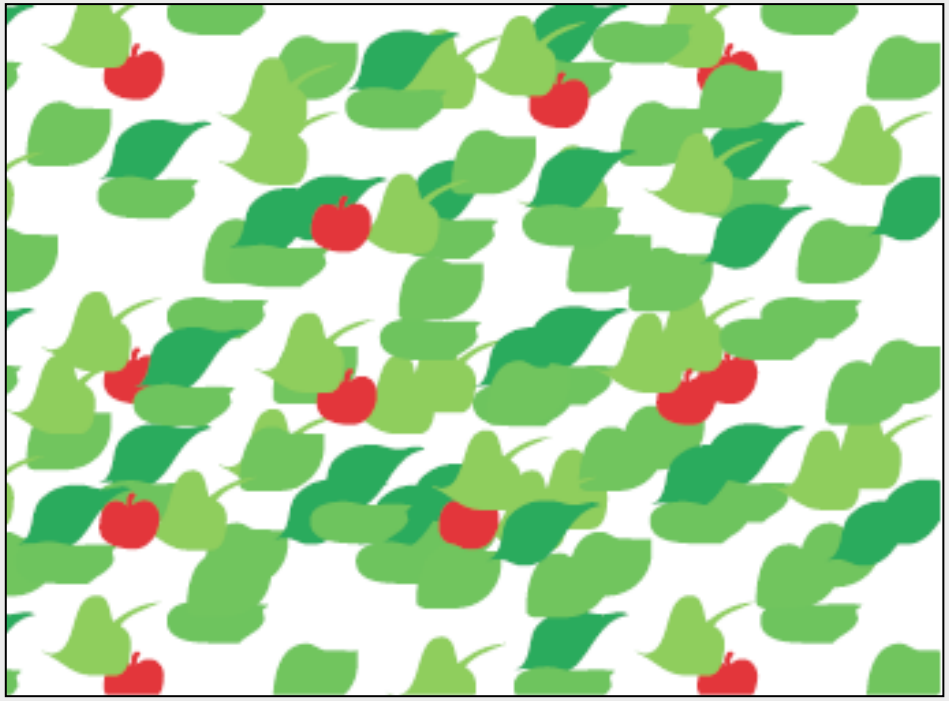


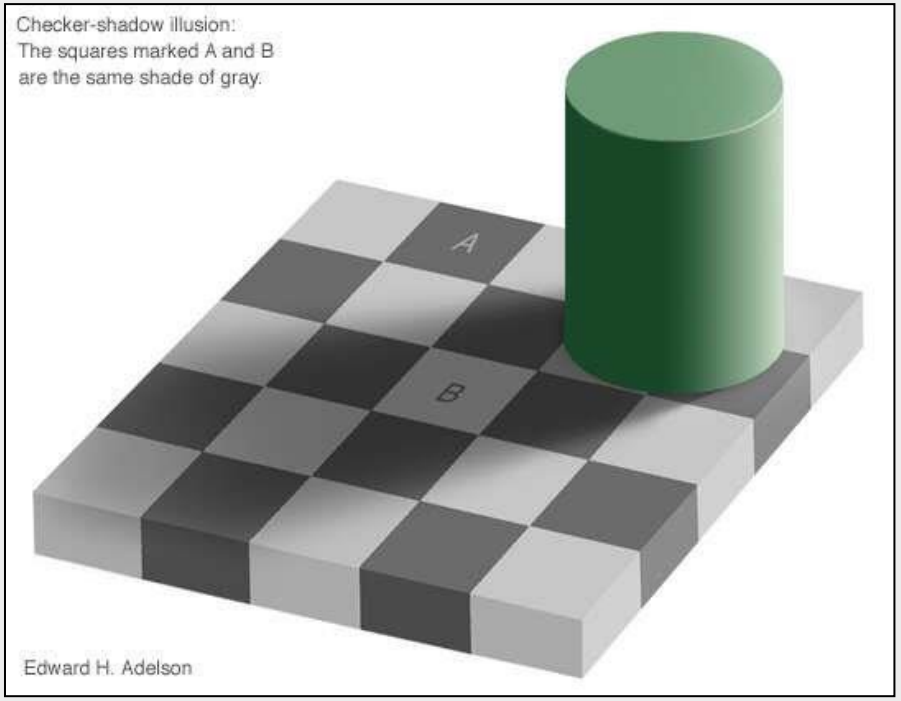
SHOULD I STAY
OR SHOULD I GO?

COURSE
FAST FORWARD

FAST FORWARD

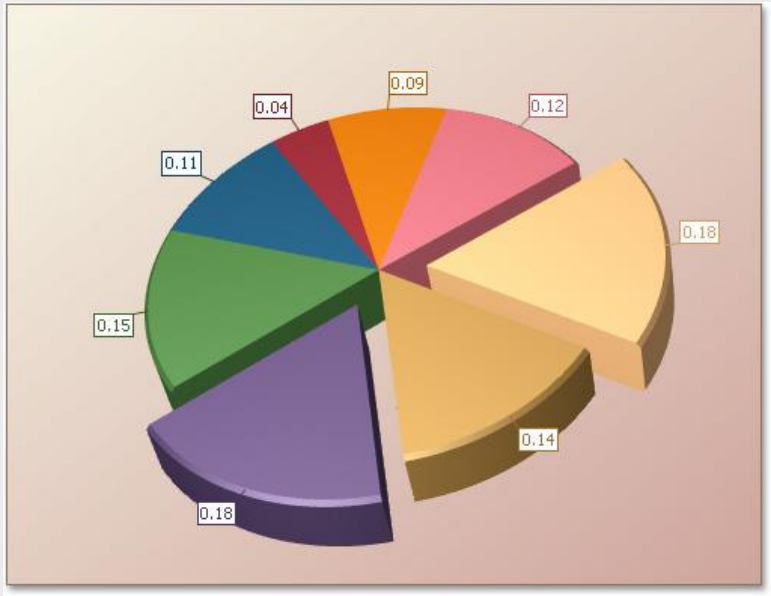
VISUAL PERCEPTION, HUMAN VISION, COGNITION

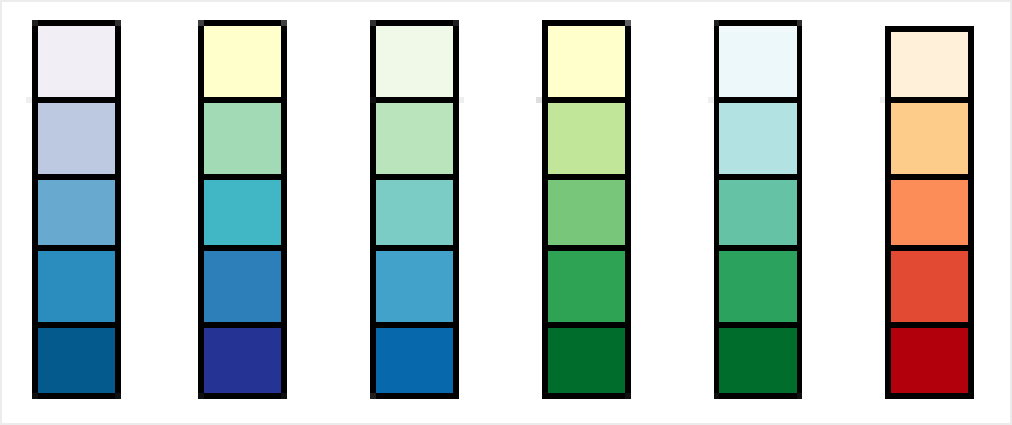




FAST FORWARD

SYMBOLS AND SEMANTICS, VISUAL CUES, DATA TYPES AND THEIR GRAPHICAL REPRESENTATION





FAST FORWARD

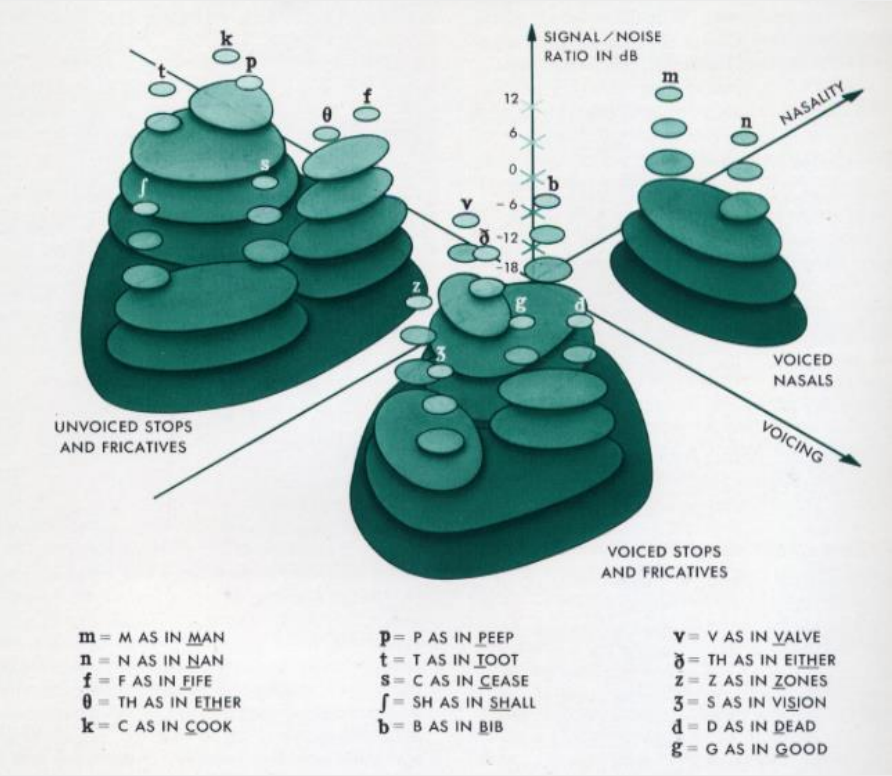
HUMAN-COMPUTER INTERACTION, USER INTERFACES

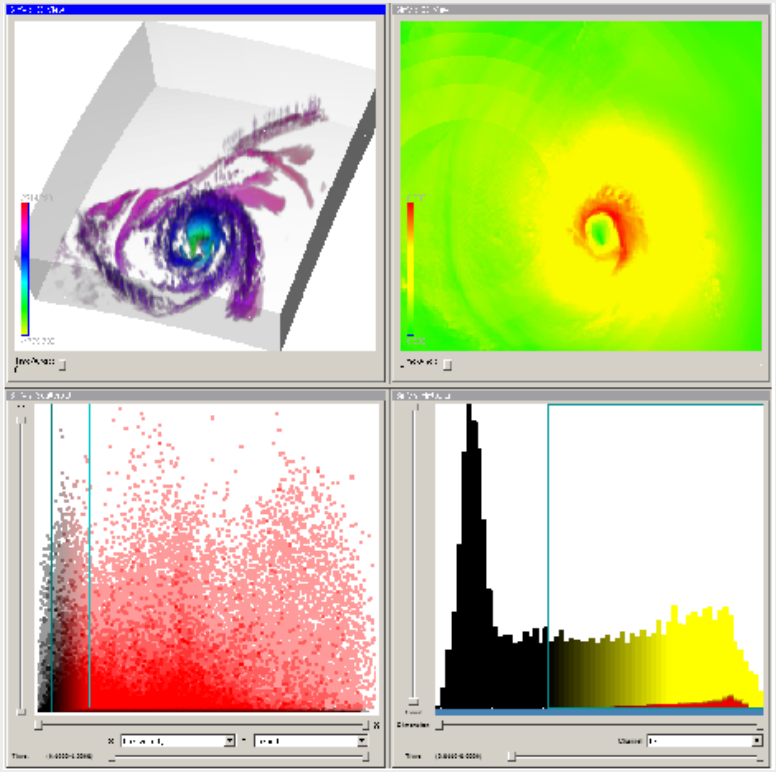
524,288 ways to say ”This is interesting!”

How many FPS is ”real time” in visualization?

MULTIDIMENSIONAL DATA VISUALIZATION

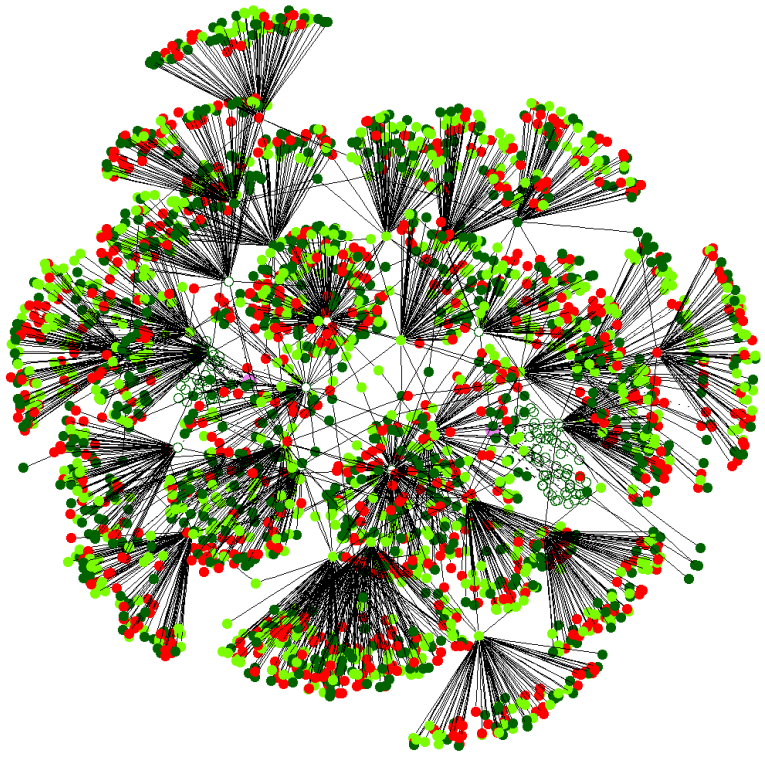
Traveling to the 4th dimension
… and to the 5th, 6th, …. 361st

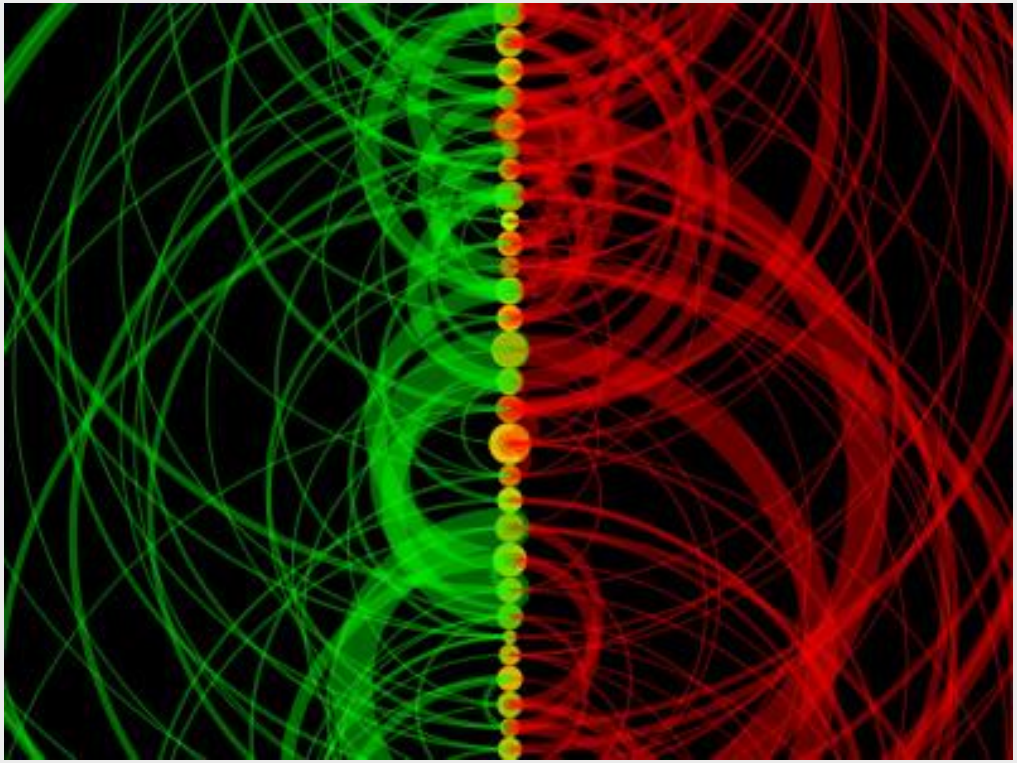




RELATIONS, NETWORKS AND HIERARCHIES

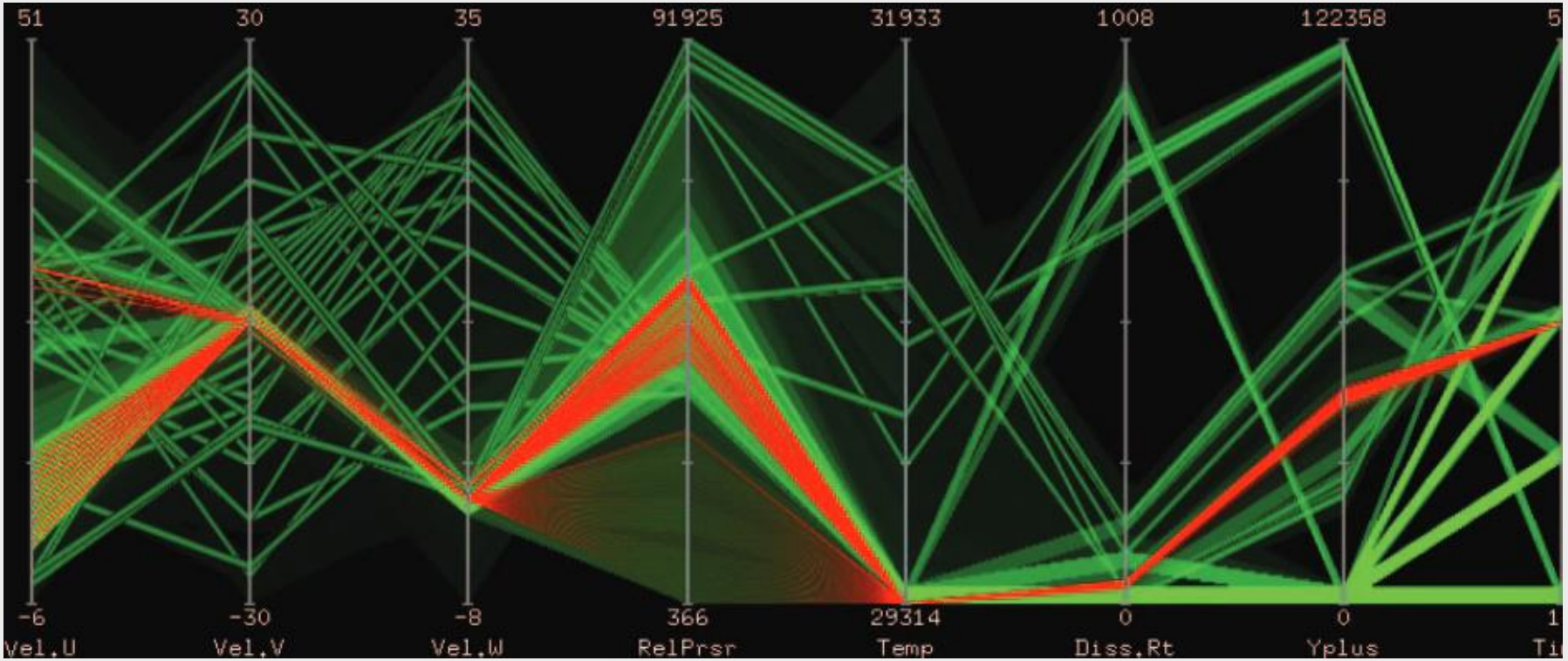
How many times does Bible contradict itself?





LARGE DATA VISUALIZATION

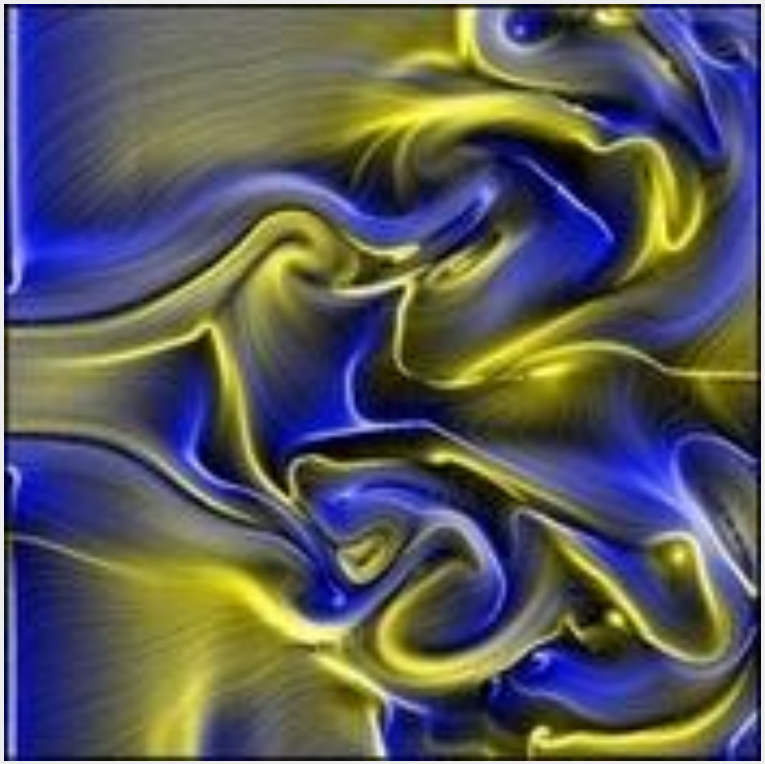
There are millions of friends waiting for you in the 361st dimension

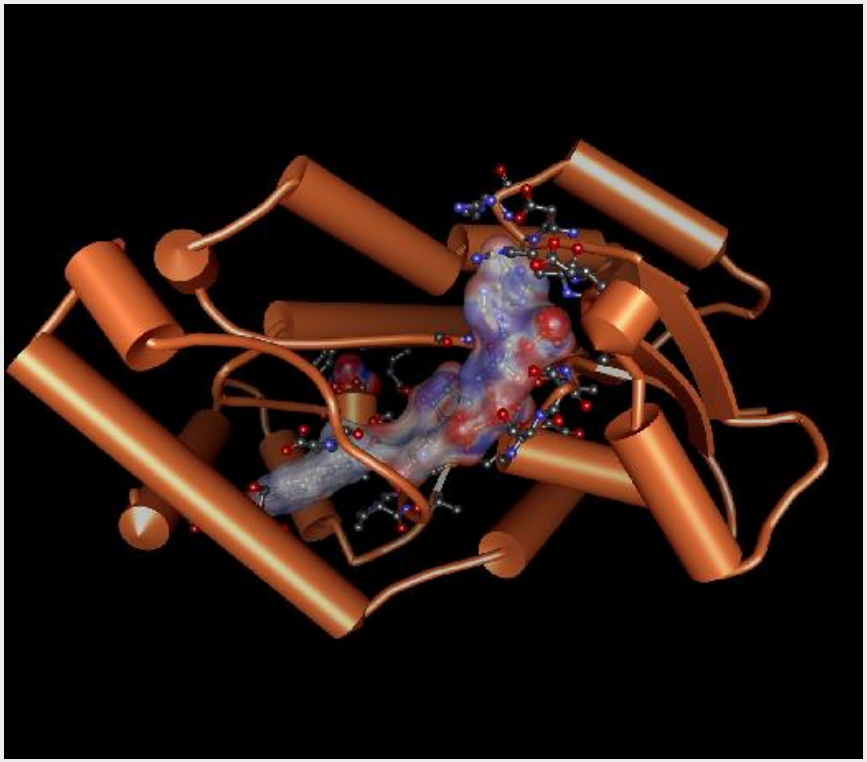


FAST FORWARD

SCIENTIFIC VISUALIZATION

Look inside the combustion engine
… during the combustion



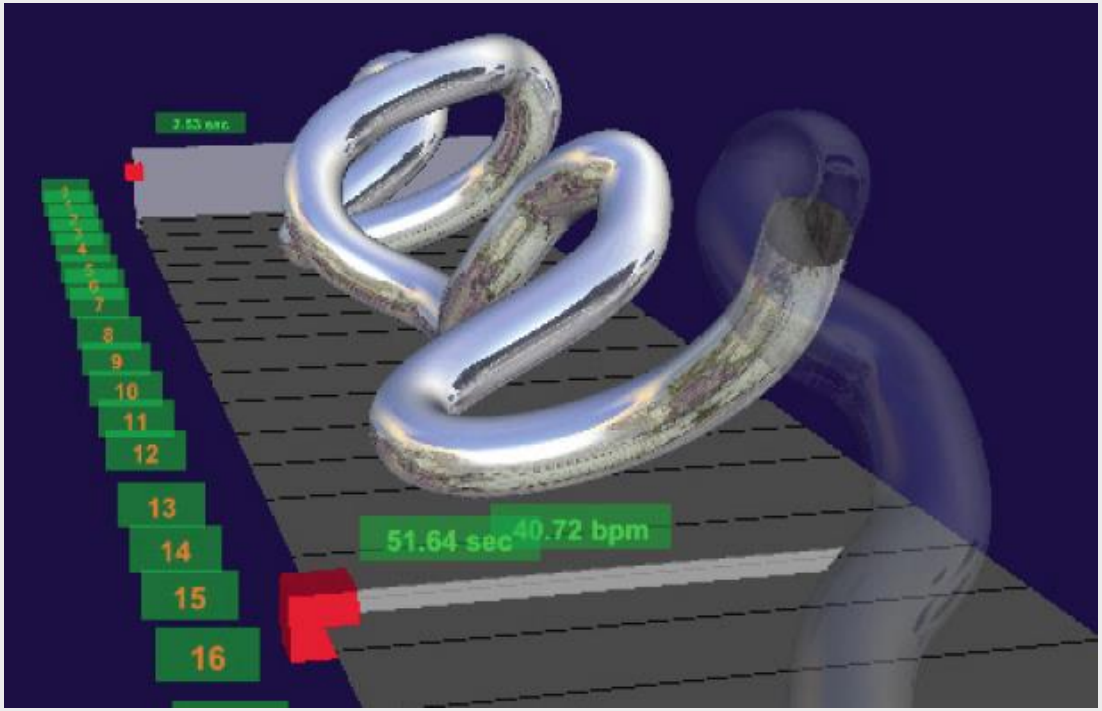


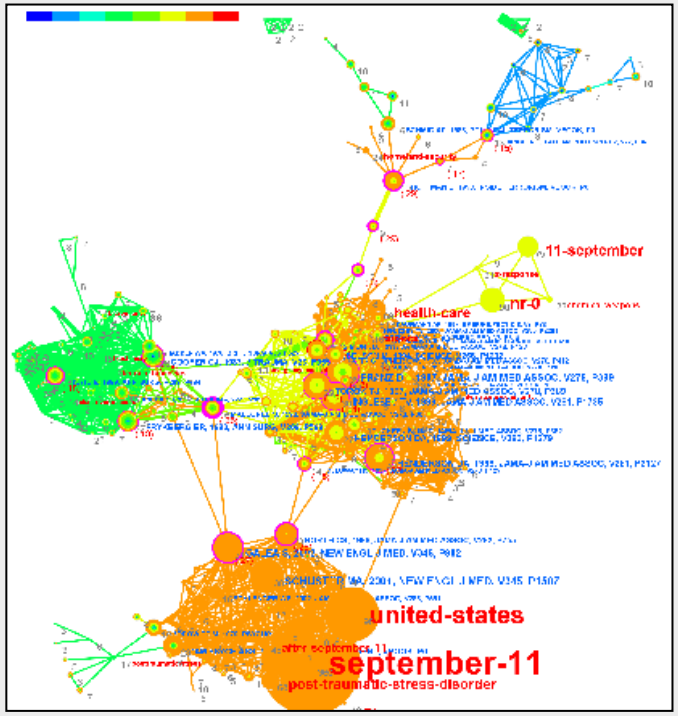
FAST FORWARD

TIME-DEPENDENT DATA, VISUAL ANALYTICS

What's the shape of music?

Do we need to fear the big brother?





IS IT WORTH THE EFFORT?

COURSE EVALUATION

COURSE EVALUATION

FINAL TEST
25 points

PROGRAM
50 points

REPORT
25 points

A	100 – 91
B	90 – 81
C	80 – 71
D	70 – 61
E	60 – 51
F	50 – 0

ADDITIONAL INFO

READINGS

Ware - Information visualization: Perception for design
Spence - Information Visualization
Tufte - The Visual Display of Quantitative Information
TVCG, IEEE VisWeek, IV conference
Visual complexity, Information is beautiful, eagereyes,

COURSE WEBSITE AND CONTACT

http://www.sccg.sk/~mnovotny/infovis
mnovotny@sccg.sk