

# Information Visualization Highlights

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*UBC Research Day  
May 13 2015*

<http://www.cs.ubc.ca/~tmm/talks.html#ubcresearch15>



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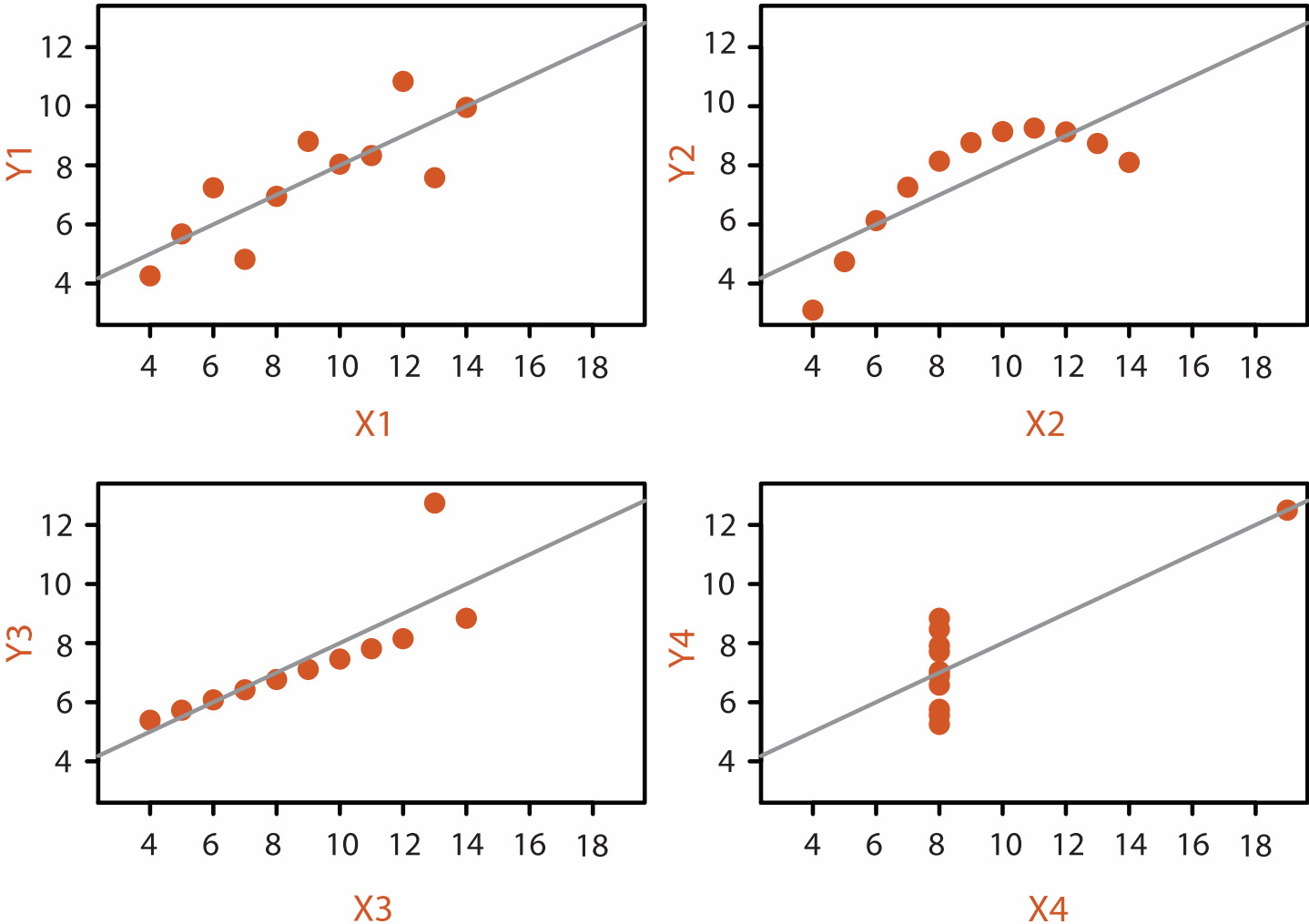
# Defining visualization (vis)

Computer-based visualization systems provide visual representations of datasets designed to help people carry out tasks more effectively.

Visualization is suitable when there is a need to augment human capabilities rather than replace people with computational decision-making methods.

## Anscombe's Quartet

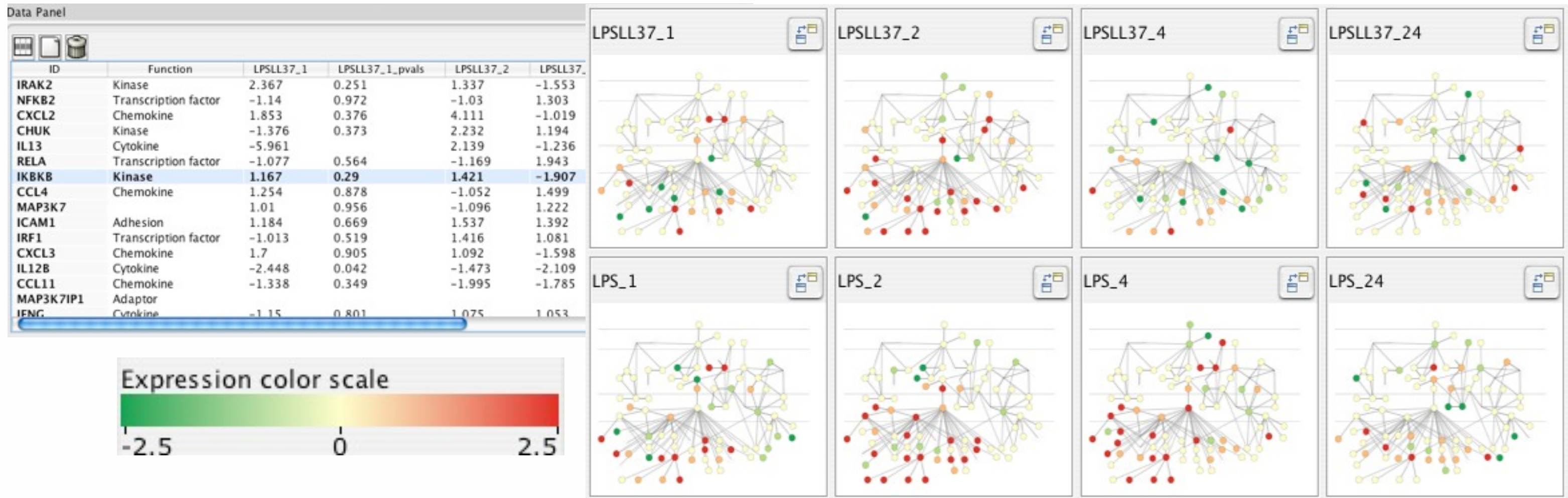
Identical statistics	
x mean	9
x variance	10
y mean	8
y variance	4
x/y correlation	1



# Why use an external representation?

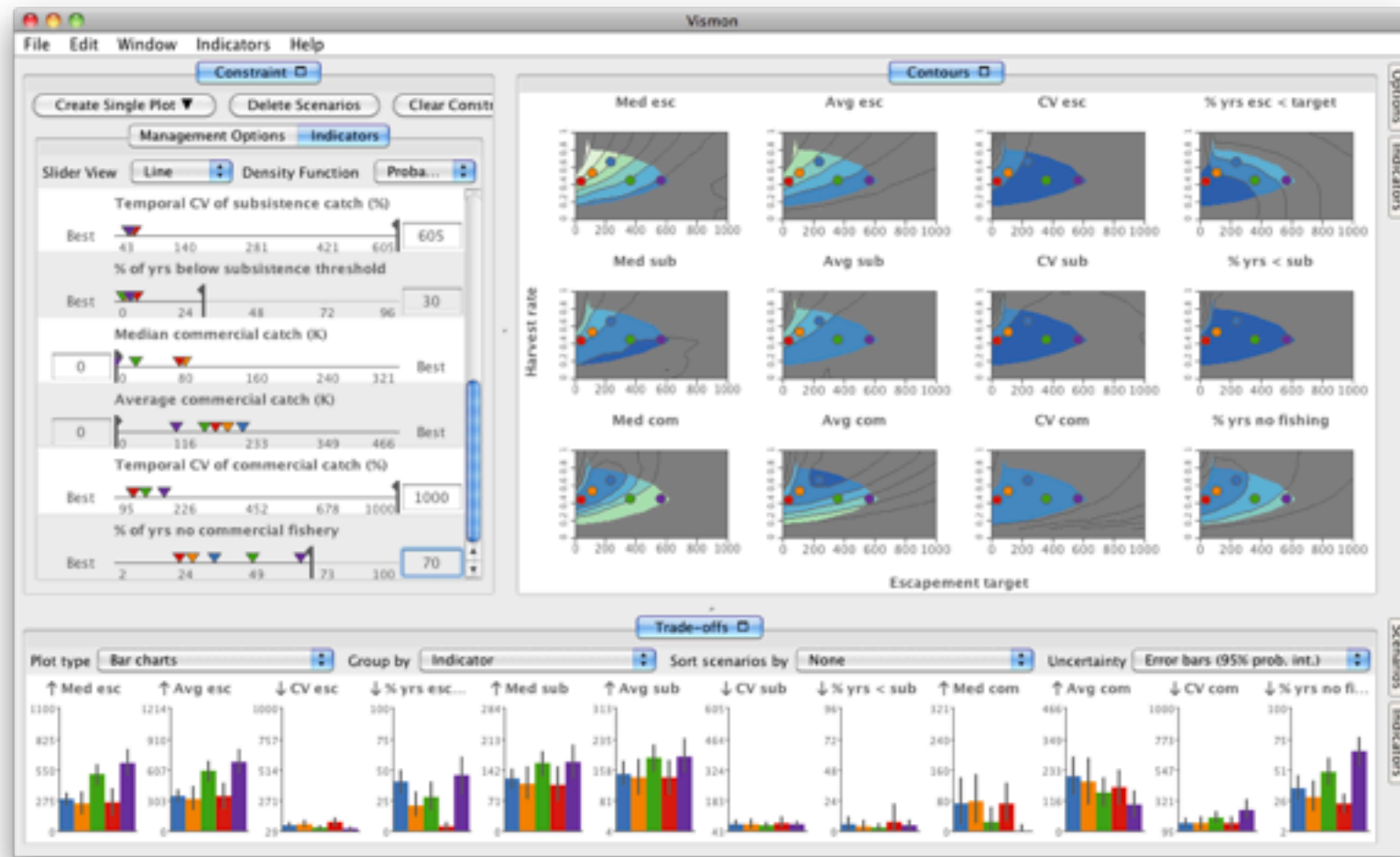
Computer-based visualization systems provide visual representations of datasets designed to help people carry out tasks more effectively.

- replace cognition with perception



# Problem-driven vis: Many domains

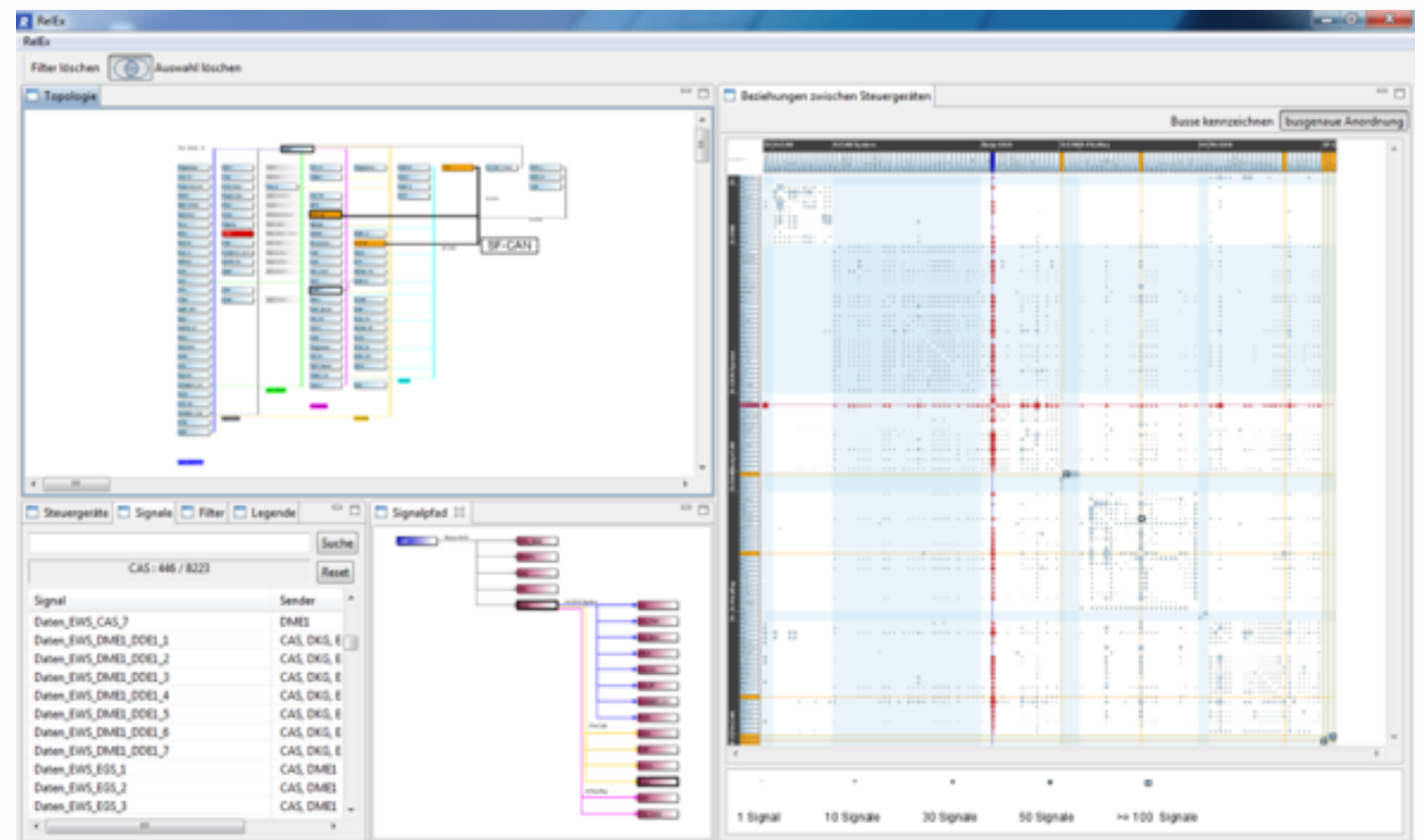
collaboration w/ SFU Fisheries



## Vismon: fisheries management

<http://youtu.be/h0kHoS4VYmk> excerpt: 0:00-2:53

collaboration w/ BMW



## RelEx: in-car overlay networks

<http://youtu.be/89lsQXc6Ao4>

excerpt: 0:00-2:00

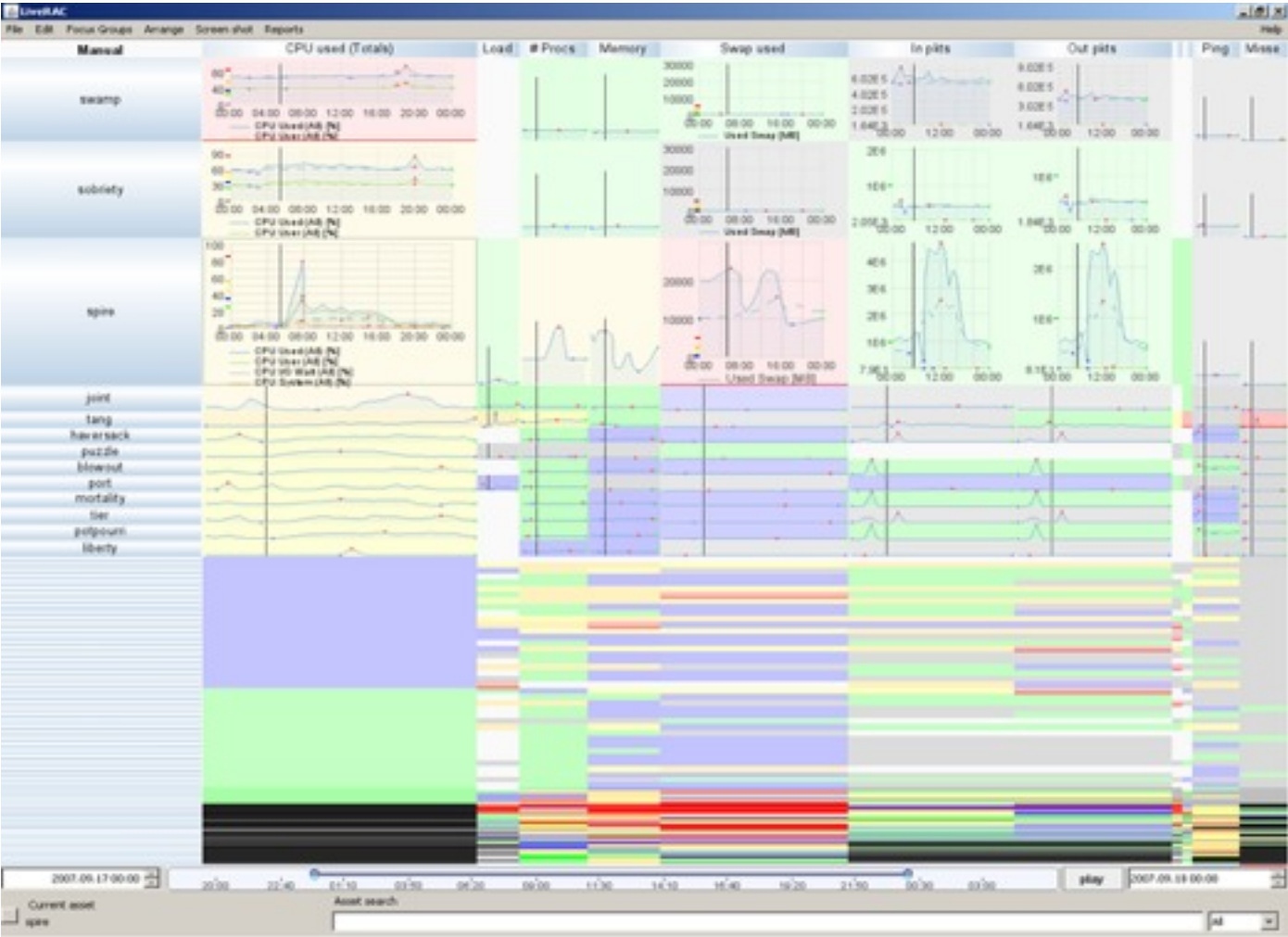


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# Problem-driven vis: Many domains

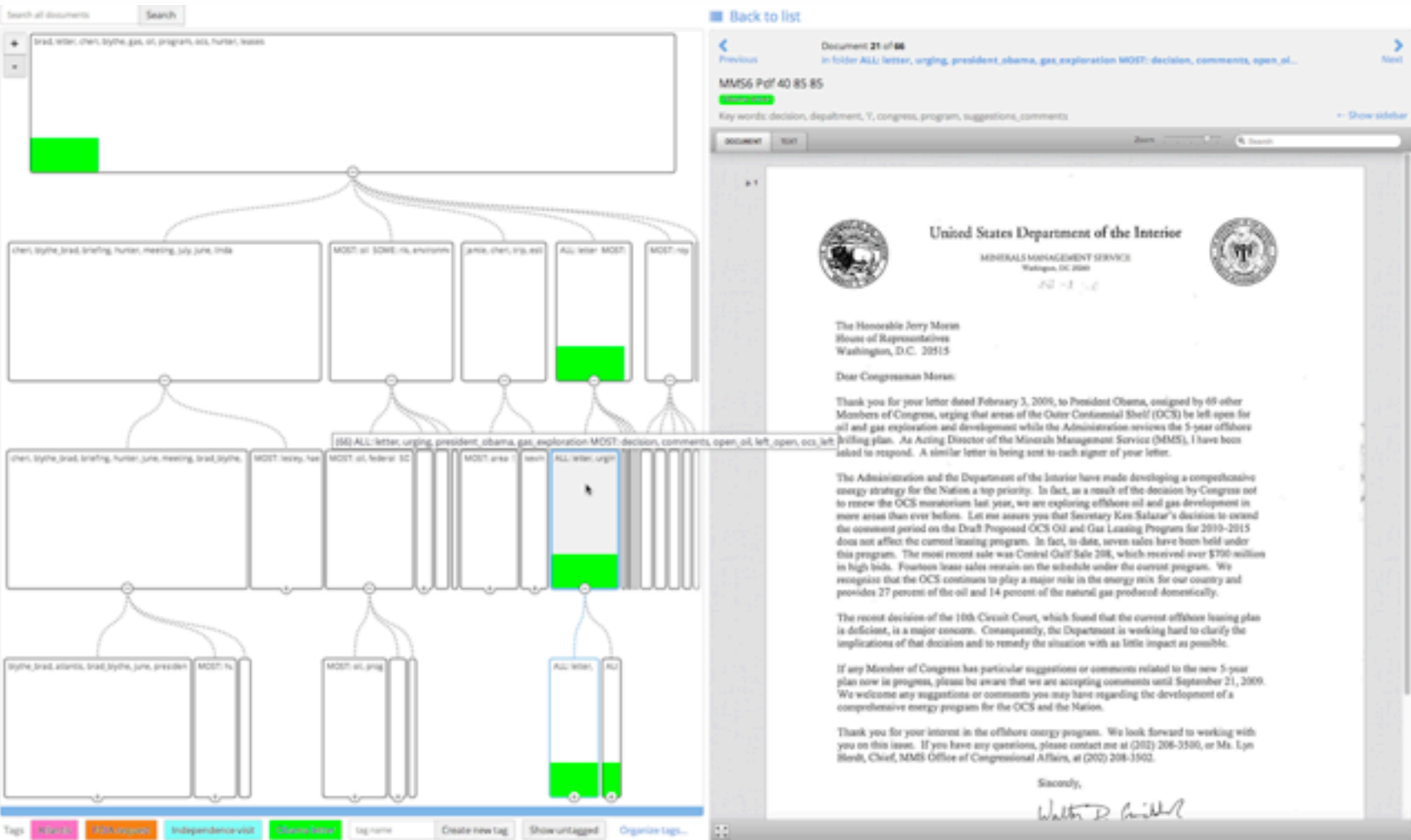
collaboration w/ AT&T (managed web hosting)



**LiveRAC: system management time-series**

<http://youtu.be/ld0c3H0VSkw>

collaboration w/ Associated Press



**Overview: investigative journalism**

<http://vimeo.com/71483614>

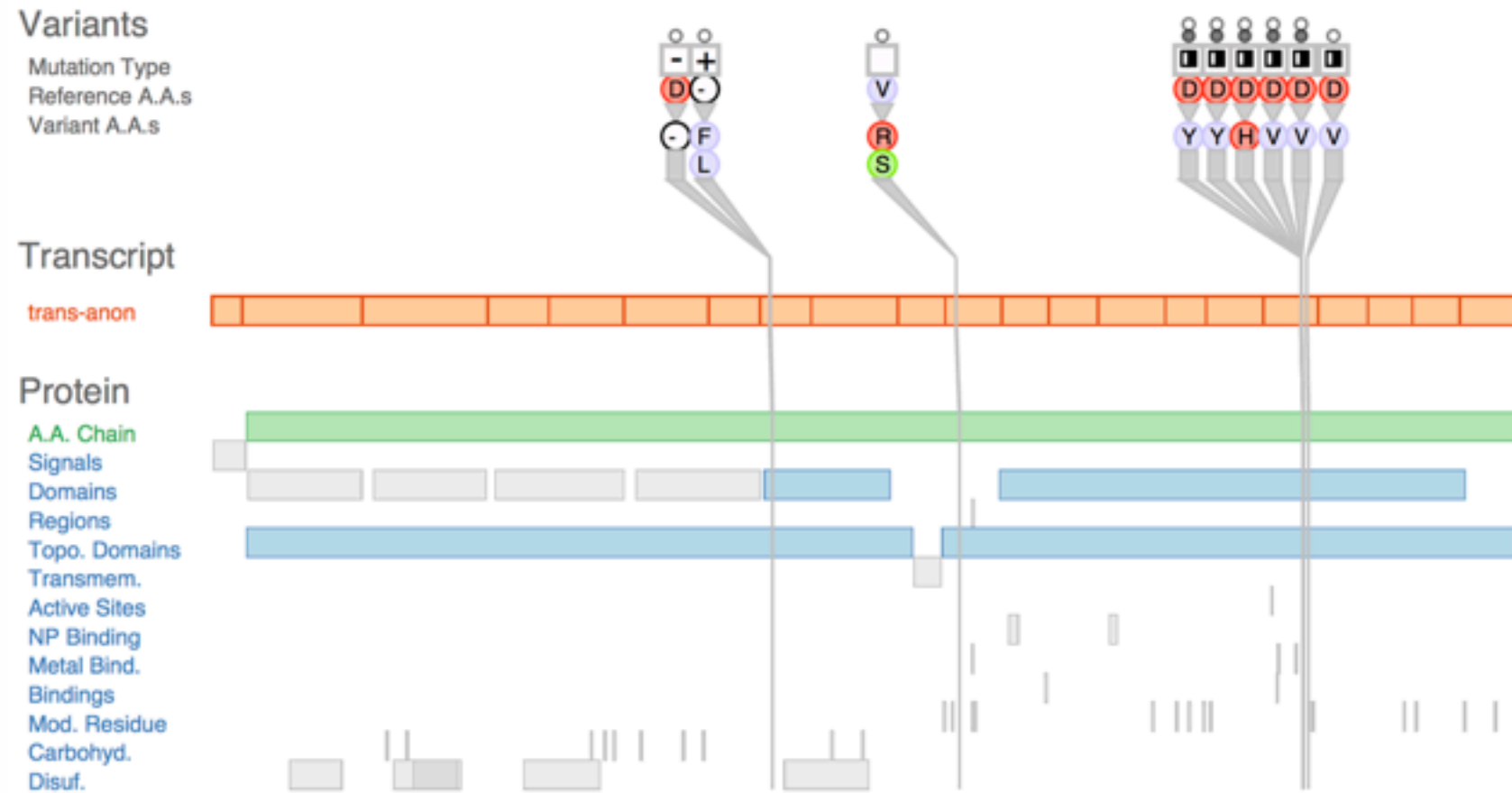


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# Problem-driven vis: Many domains

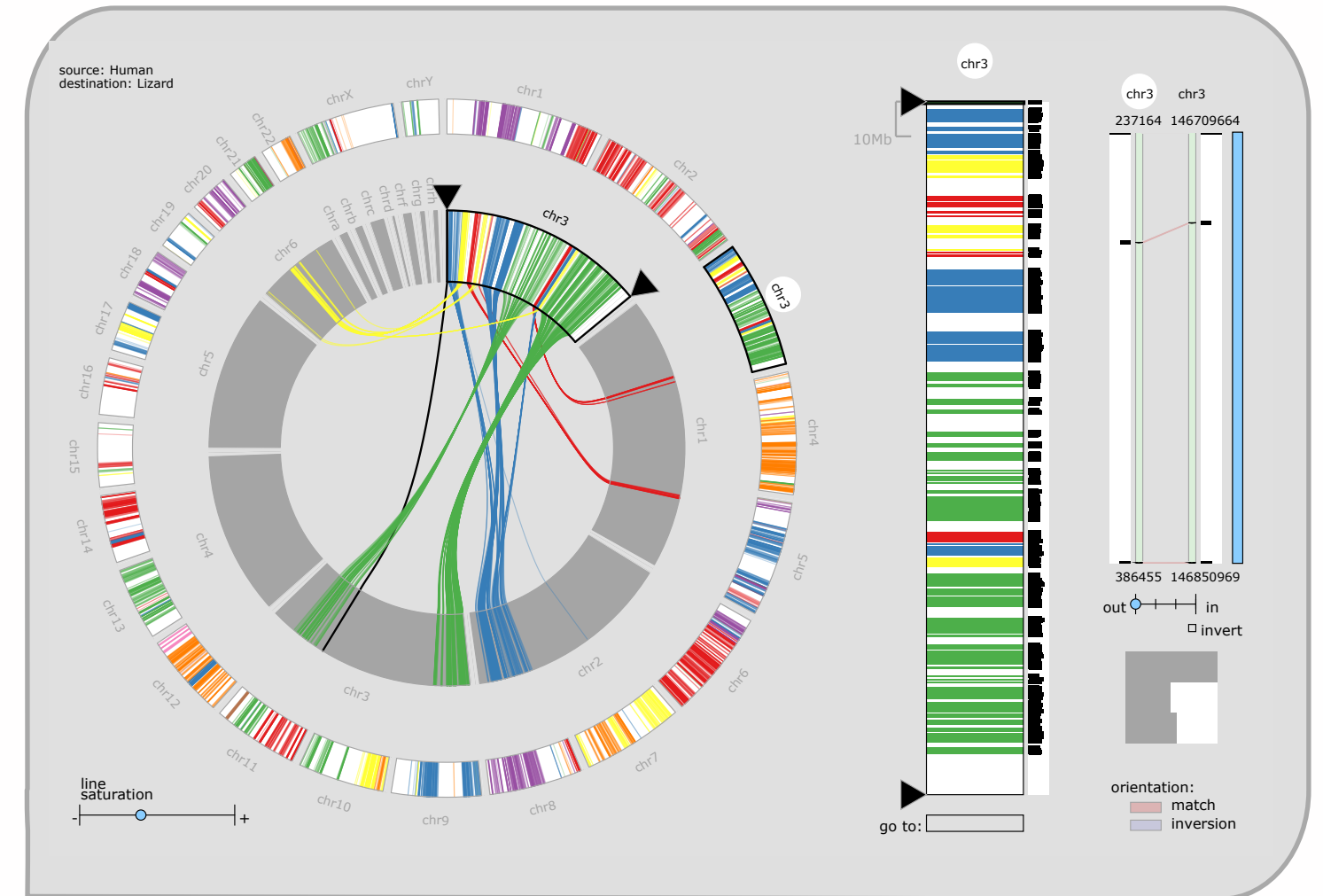
collaboration w/ BC Cancer



## Variant View: genomics

[http://youtu.be/AHDnv\\_qMXxQ](http://youtu.be/AHDnv_qMXxQ)

collaboration w/ Broad (Harvard Med, MIT)



## MizBee: genomics

<http://youtu.be/86p7brwuz2g>

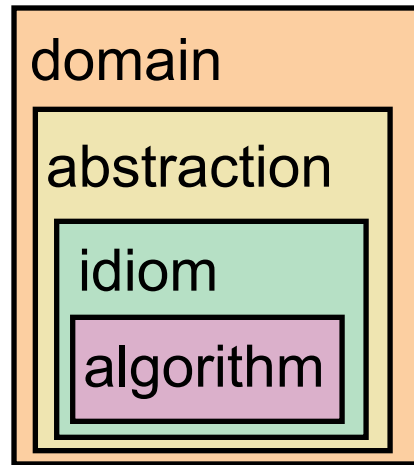
excerpt: 0:00-1:15



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# Four levels of design: Validation methods from different fields



anthropology/  
ethnography

design

computer  
science


cognitive  
psychology

anthropology/  
ethnography

 **Domain situation**  
Observe target users using existing tools

 **Data/task abstraction**

 **Visual encoding/interaction idiom**  
Justify design with respect to alternatives

 **Algorithm**  
Measure system time/memory  
Analyze computational complexity

Analyze results qualitatively

Measure human time with lab experiment (*lab study*)

Observe target users after deployment (*field study*)

Measure adoption

problem-driven  
work

technique-driven  
work



# More Information

- book

<http://www.cs.ubc.ca/~tmm/vadbook>

– 20% promo code for book+ebook combo:  
HVN17

– <http://www.crcpress.com/product/isbn/9781466508910>

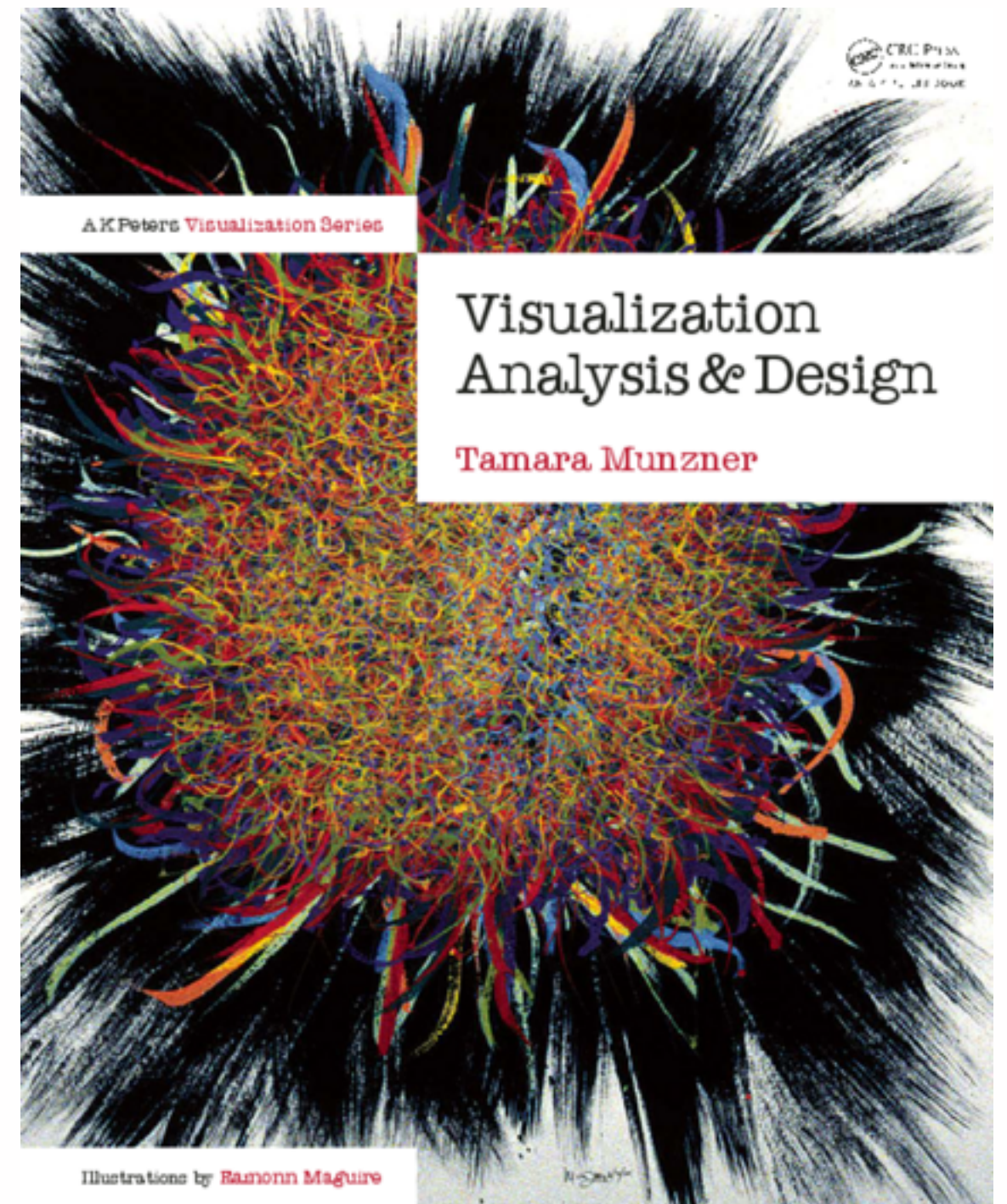
- papers, videos, software, talks, courses

<http://www.cs.ubc.ca/group/infovis>

<http://www.cs.ubc.ca/~tmm>

- this talk

<http://www.cs.ubc.ca/~tmm/talks.html#ubcresearch15>



Visualization Analysis and Design.  
Munzner. CRC Press, 2014.



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