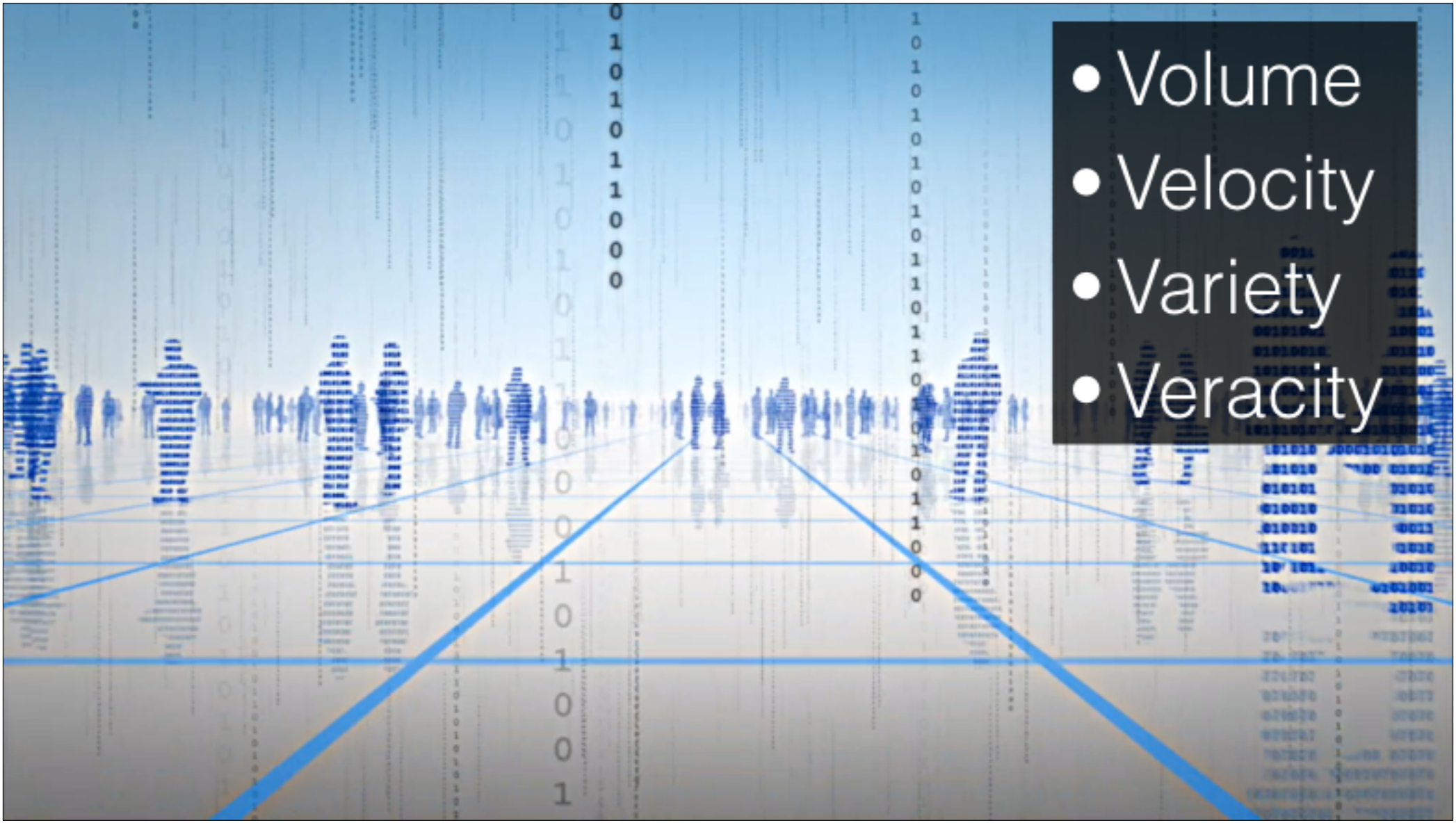
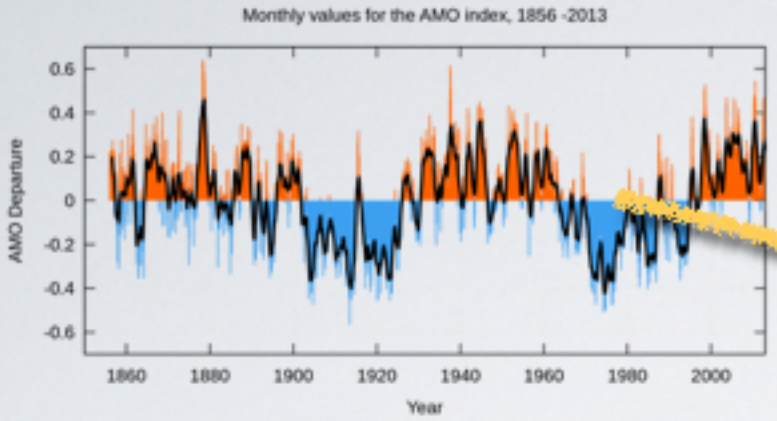
UNIVERSITAS TURICENSIS
MDCCC XXXIII
University of Zurich UZH
UNIVERSITÄT ZÜRICH ZENTRUM
Abraham Bernstein

BIG DATA:
CHALLENGE OR OPPORTUNITY FOR THE FINTECH INDUSTRY?
Abraham Bernstein

HARVARD COMPUTERS (1890)

https://en.wikipedia.org/wiki/Harvard_Computers

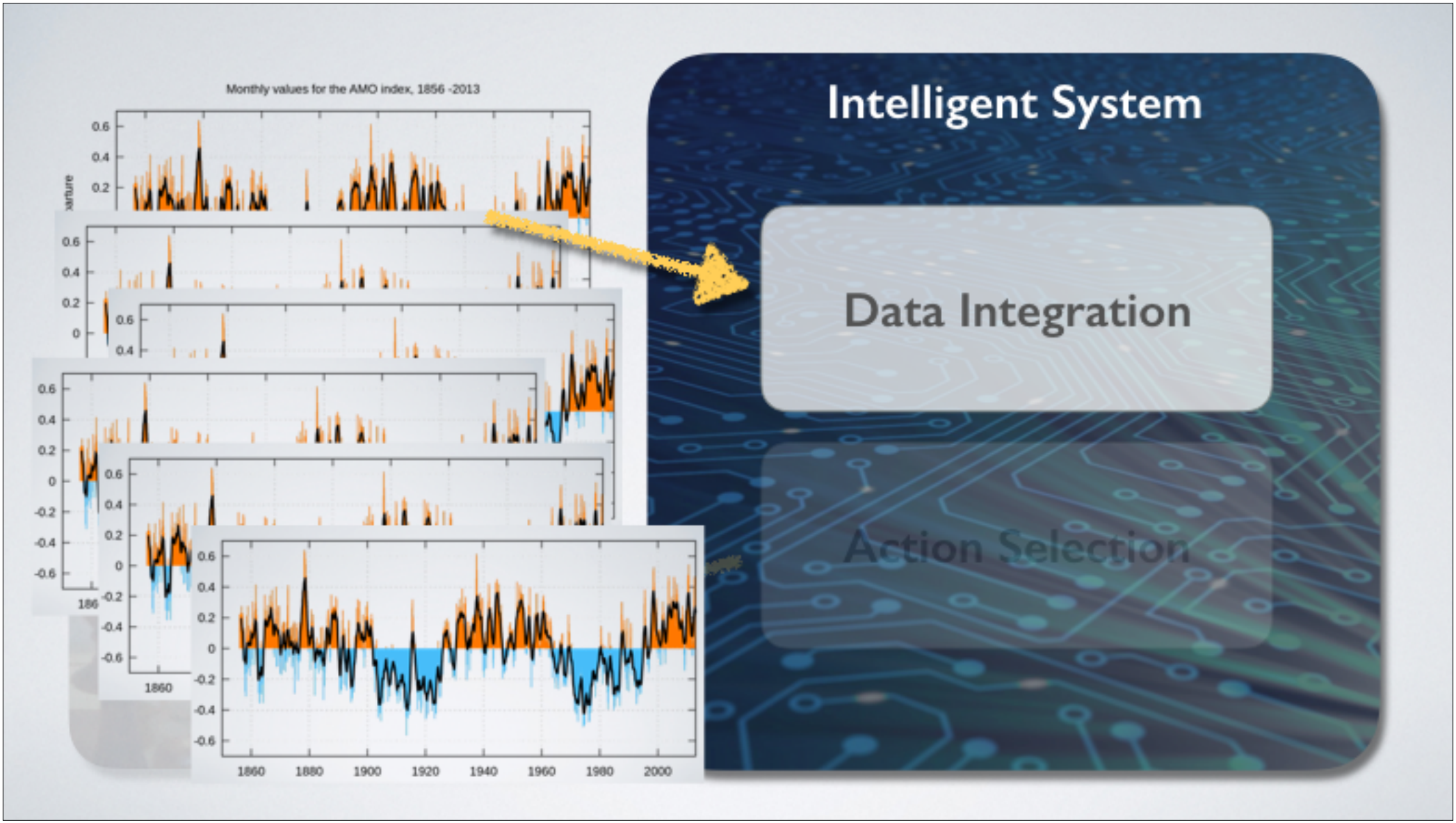

• Volume
• Velocity
• Variety
• Veracity



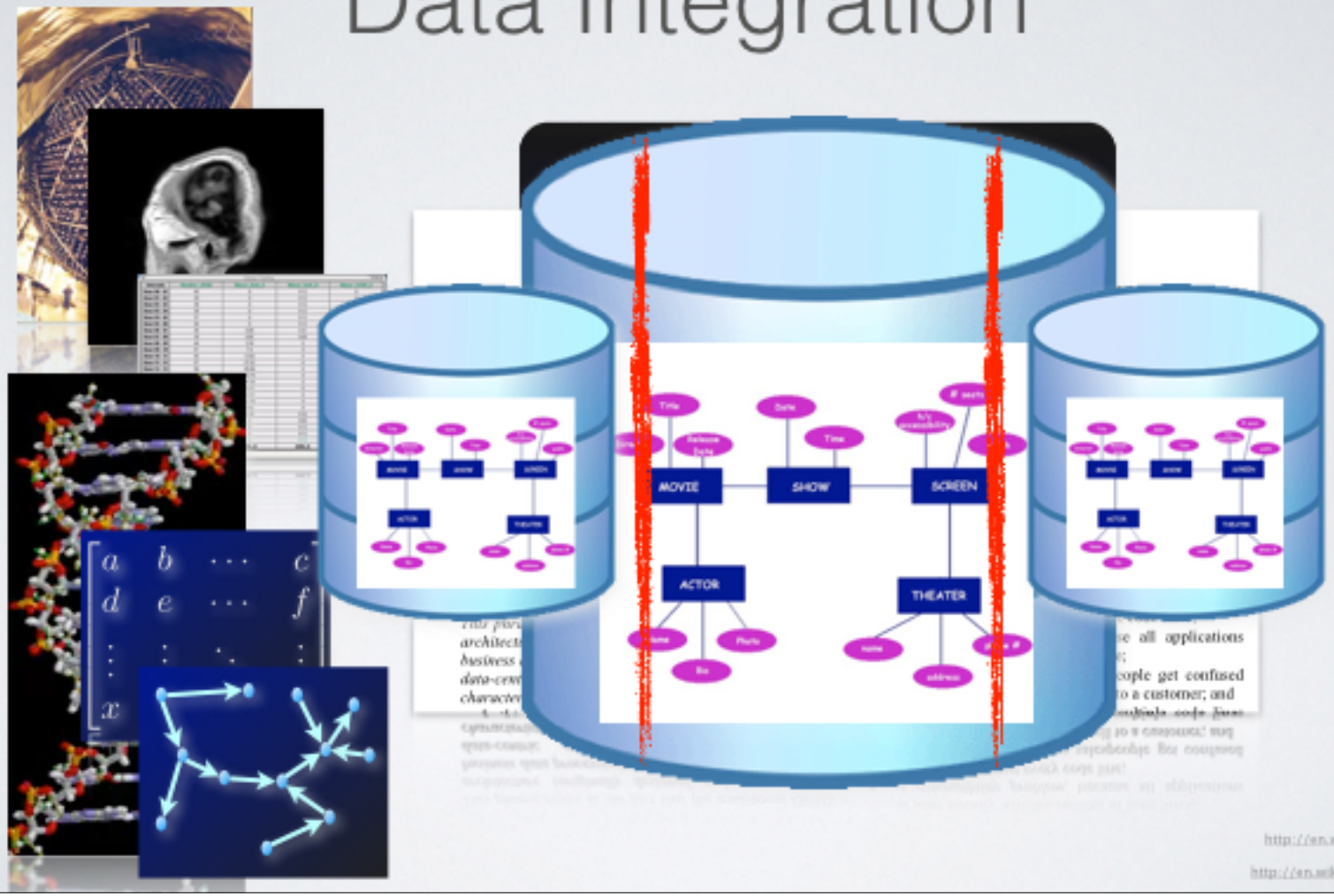
Intelligent System

Data Integration

Action Selection


Monthly values for the AMO index, 1856 -2013
Intelligent System
Data Integration
Action Selection
1860
1880
1900
1920
1940
1960
1980
2000

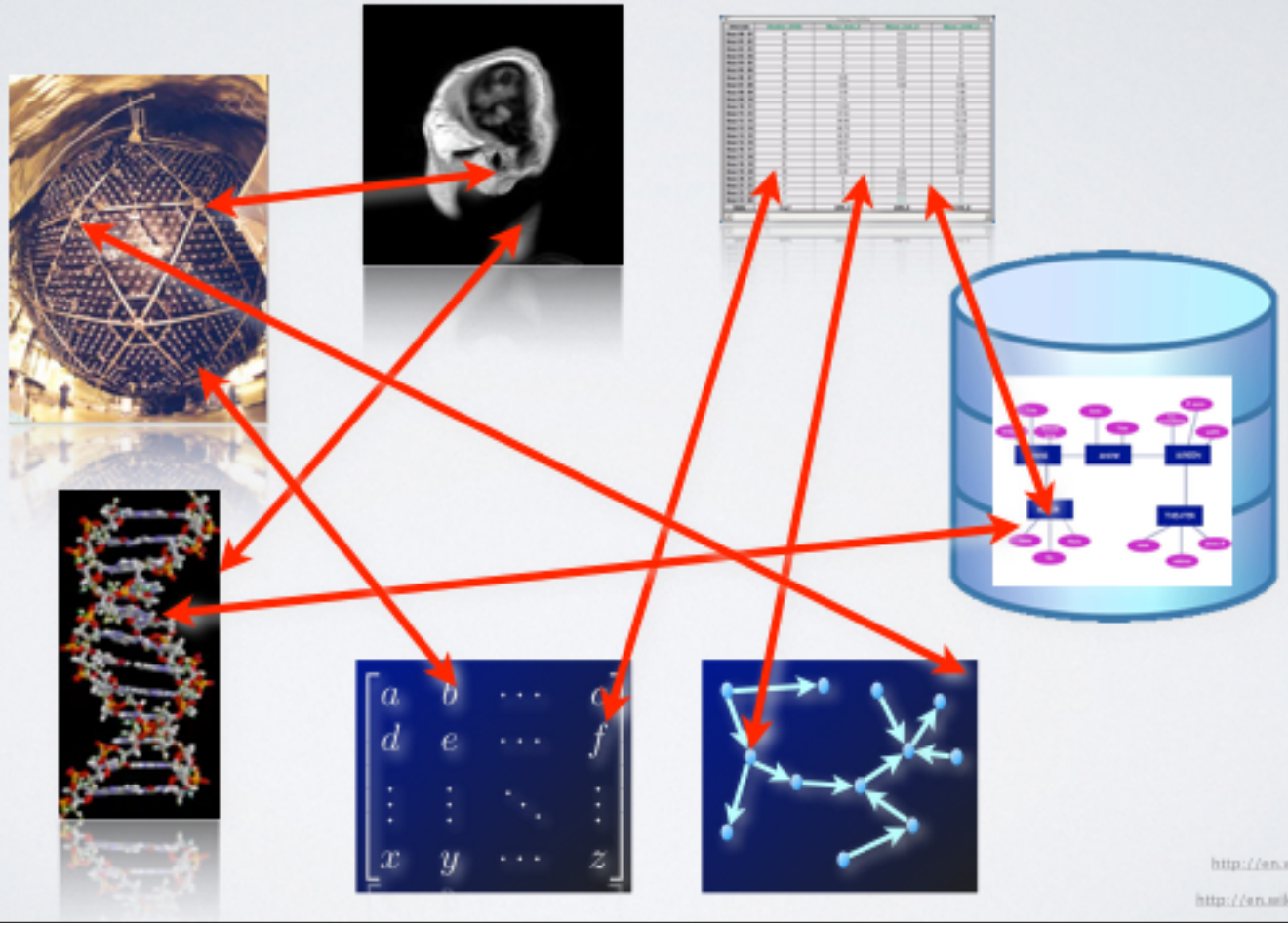
Data Integration



http://en.wikipedia.org/wiki/File:Sudbury_sno.jpg

http://en.wikipedia.org/wiki/File:ADN_animation.gif

Data Space



http://en.wikipedia.org/wiki/File:Sudbury_sno.jpg

http://en.wikipedia.org/wiki/File:ADN_animation.gif

Data Semantics

Quantity

Weight

Price in €

Weight in kg

Good	Price	Size
Apples	4.75	3
Oranges	4.25	4
...	...	...

Data Semantics

Quantity

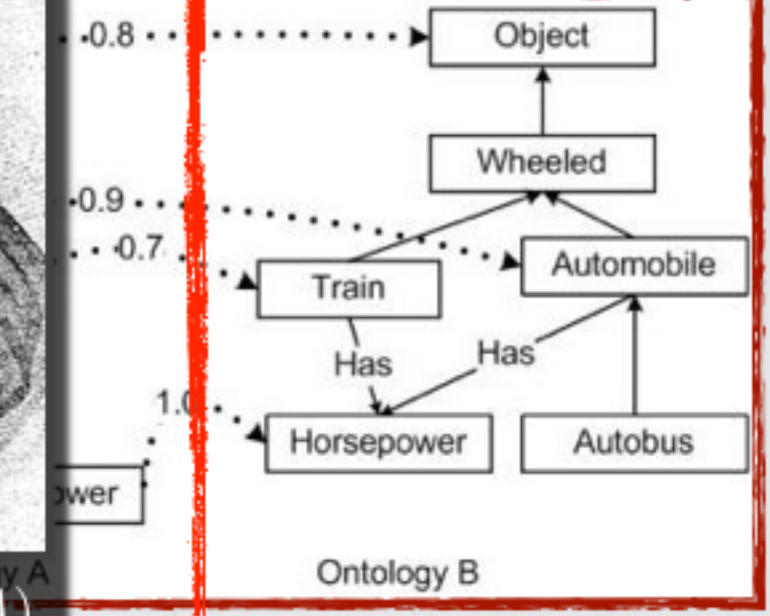
Data Semantics

Ontology A

$$P(A|E) = \frac{P(E|A)P(A)}{P(E)}$$

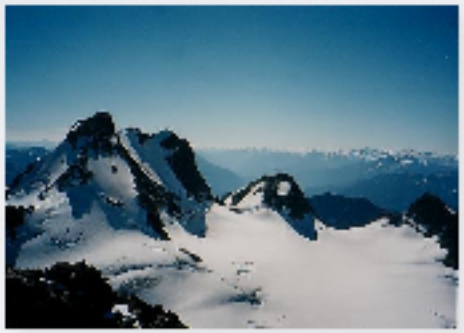
Quantity

Weight



Ontology B

Graphical Models
MRF - CRF - PSL

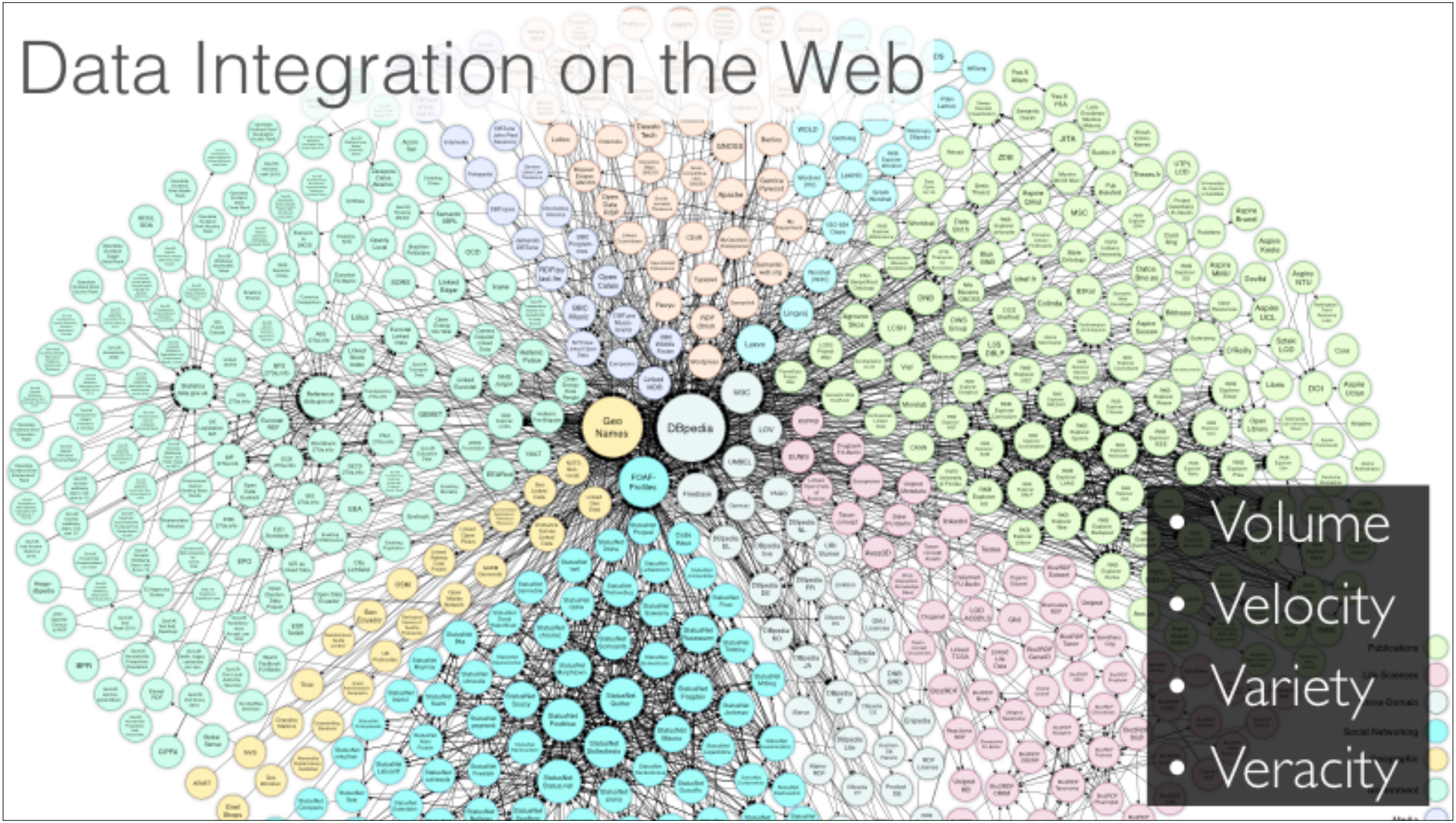


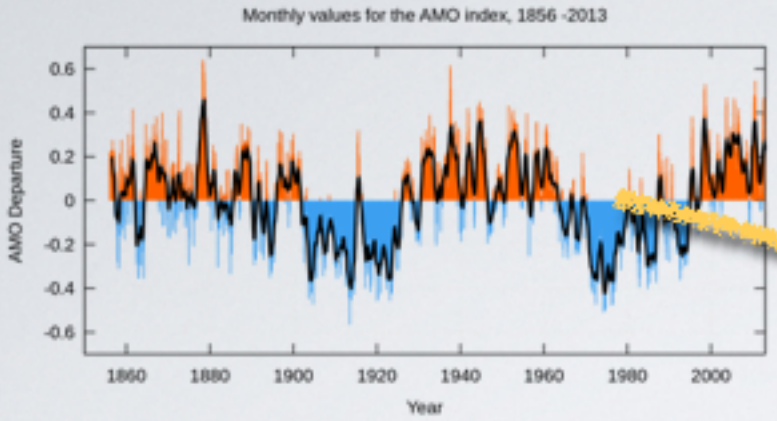
Brown and Lowe, 2007

Graphical Models
MRF - CRF - PSL

http://make3d.stanford.edu/images/view3D/7813

Data Integration on the Web



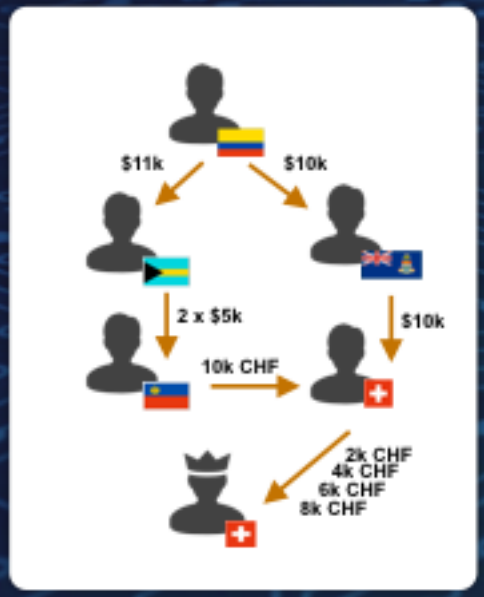


Intelligent System

Data Integration

Action Selection

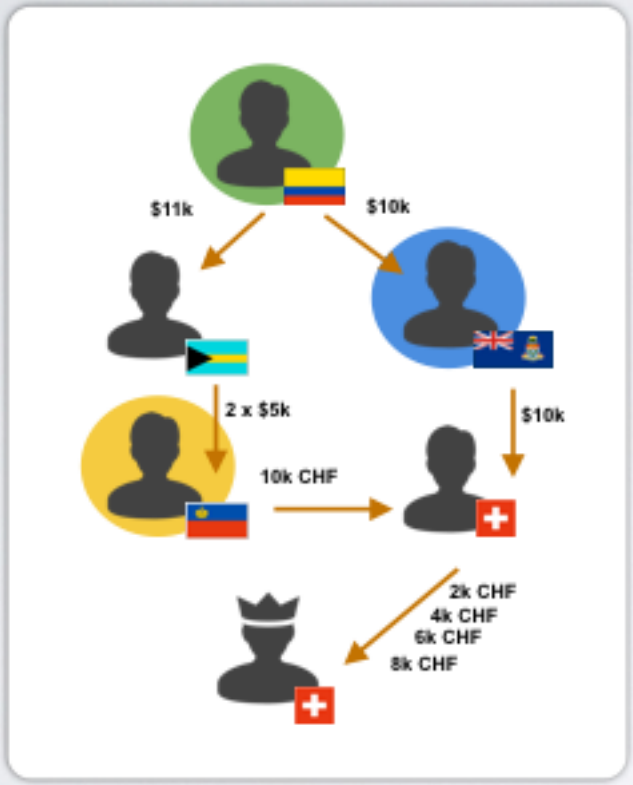
Intelligent System



Action Selection

$$P(A|E) = \frac{P(E|A)P(A)}{P(E)}$$

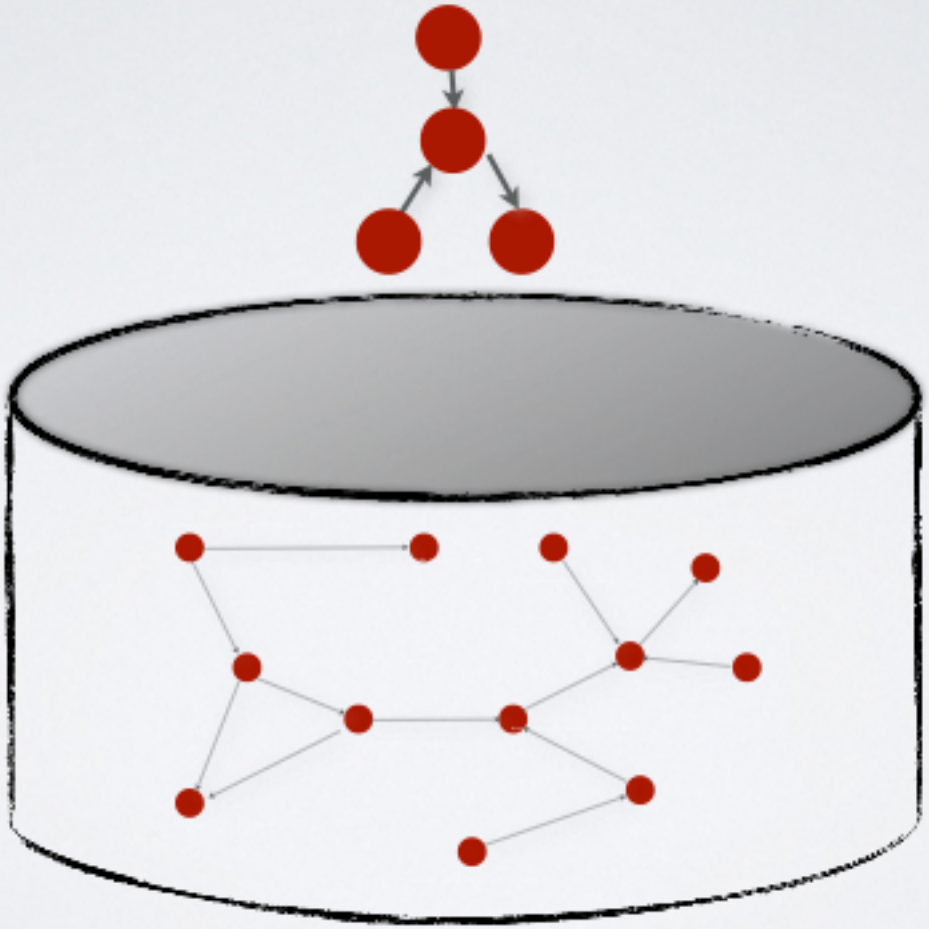
Decomposing Fraud Patterns



Participants can be labeled as:

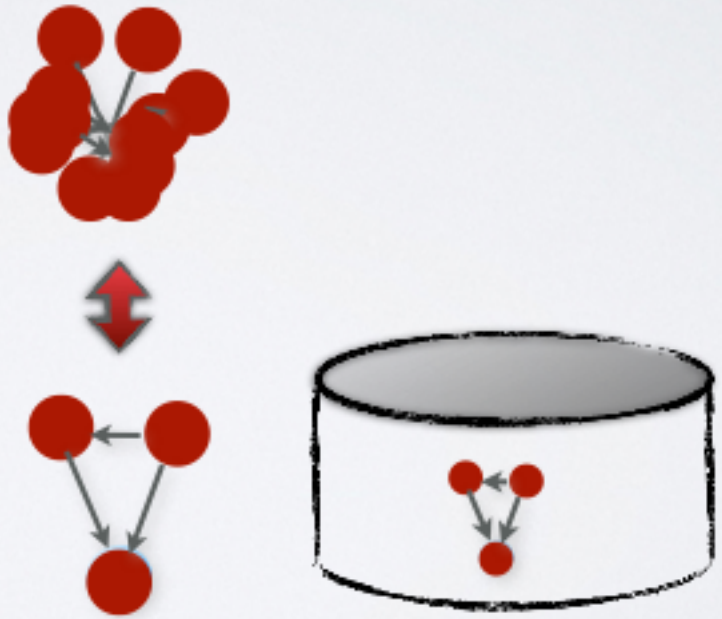
- Splitters
- Aggregators
- Forwarders

Traditional Processing

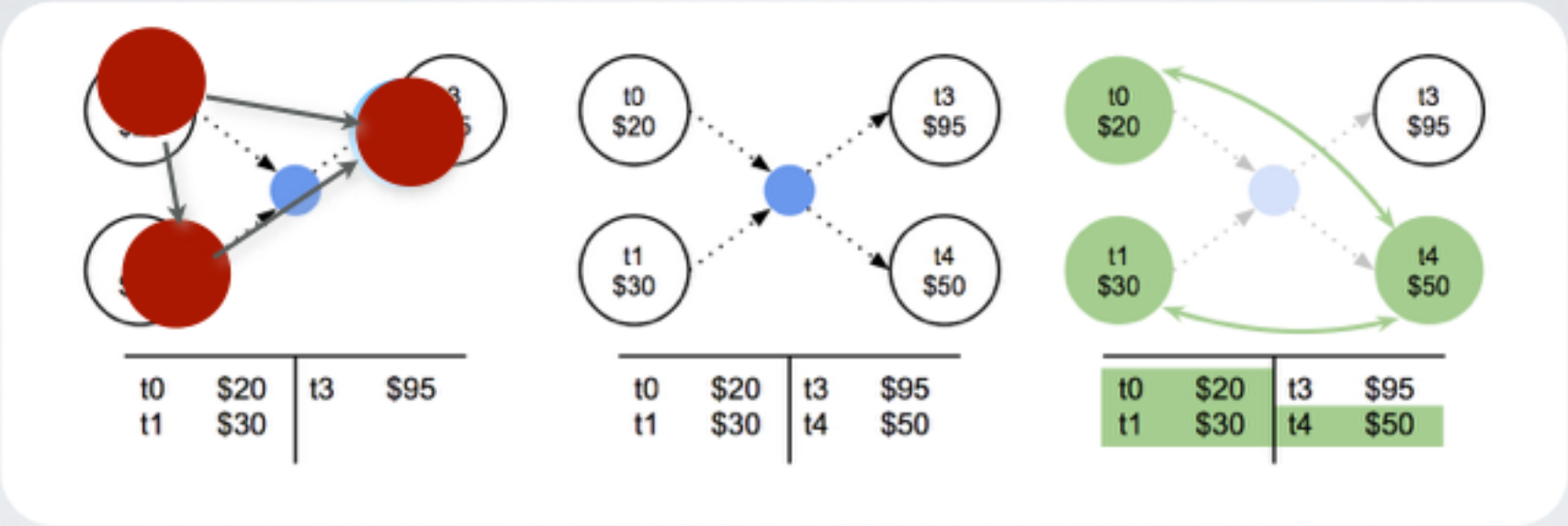


- Volume
- Velocity
- Variety
- Veracity

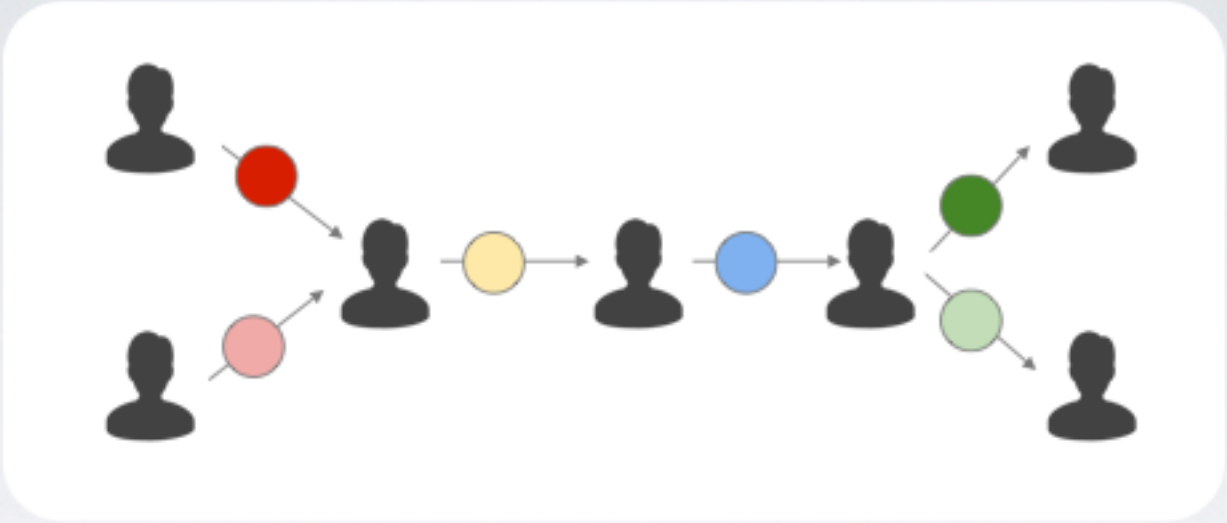
Flow Processing

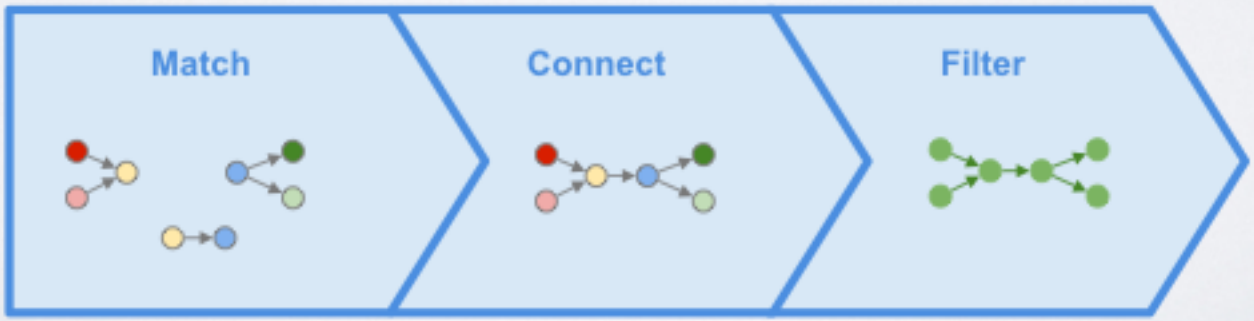


Matching Financial Transactions With the Subset Sum Algorithm

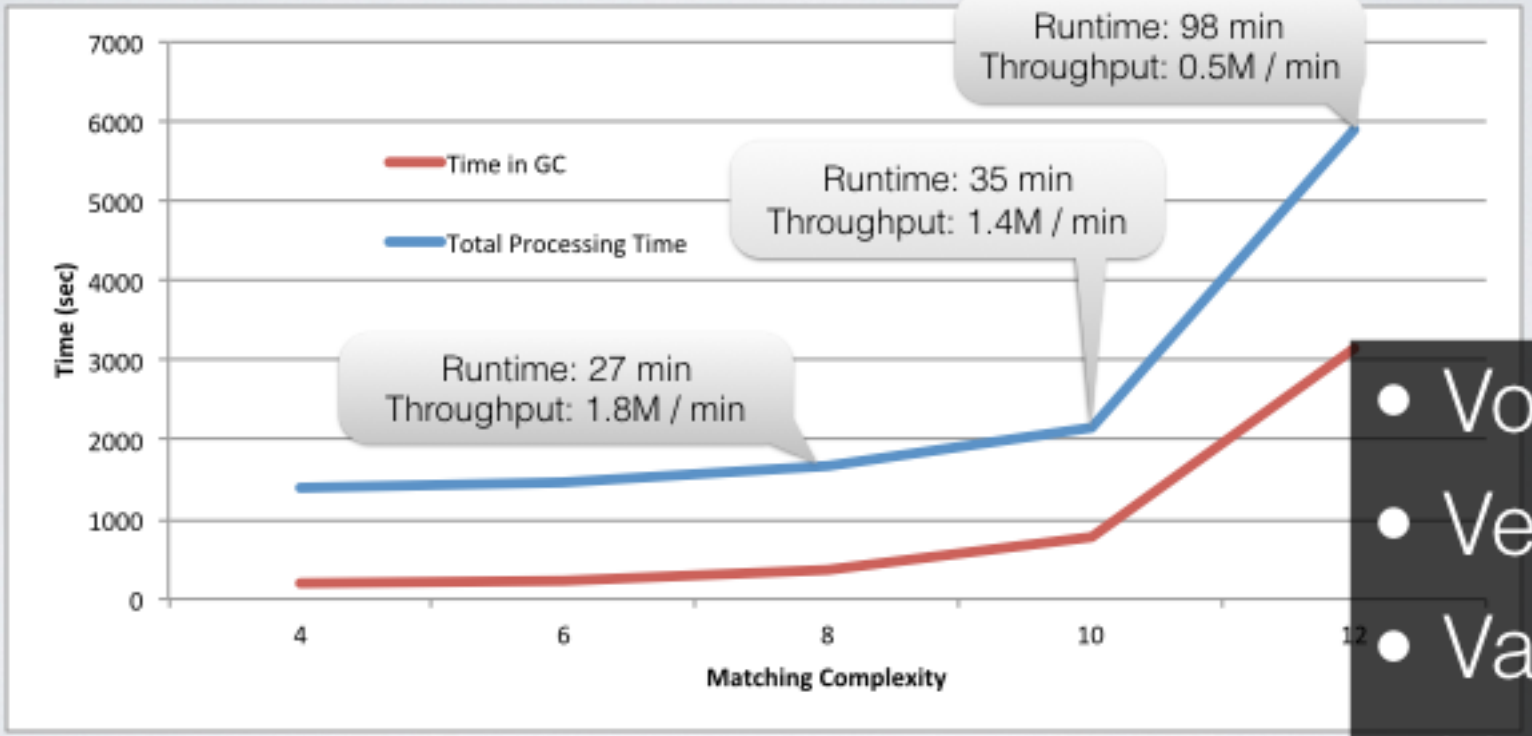


Elicitation Process





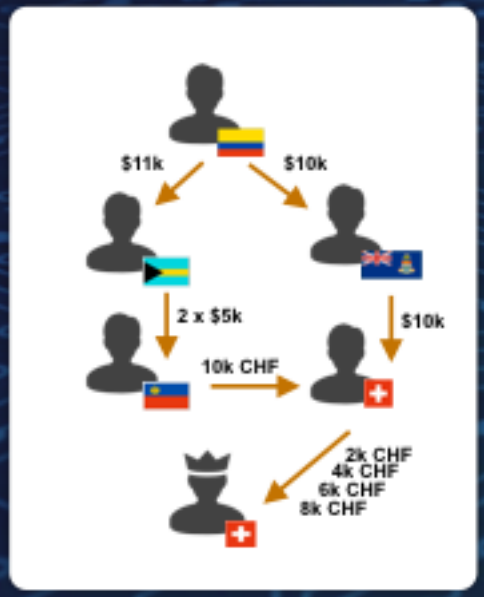
Action:
Fraud Patterns in Bitcoin Transactions



- Volume
- Velocity
- Variety
- Veracity

Dataset Size: 50M Transactions, Matching Duration: 1 week

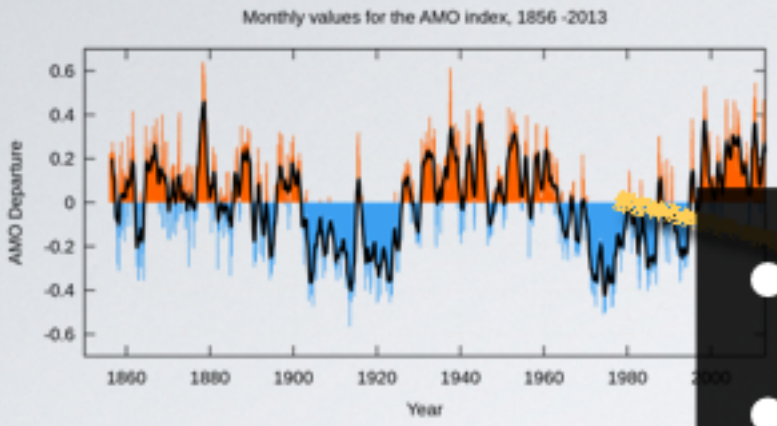
Intelligent System



Action Selection

$$P(A|E) = \frac{P(E|A)P(A)}{P(E)}$$

ROBOT FINANCE?
http://www.bbsrc.ac.uk/news/archive/2009/090402-pr-robot-scientist.aspx



- Volume
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Intelligent System

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