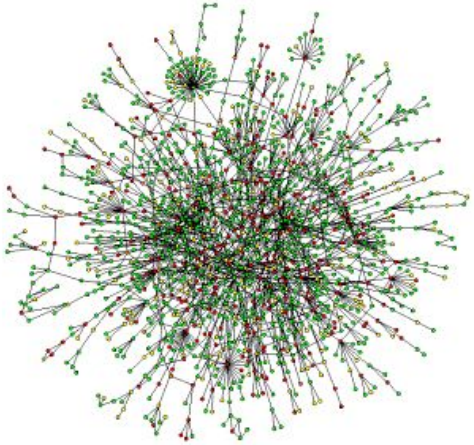
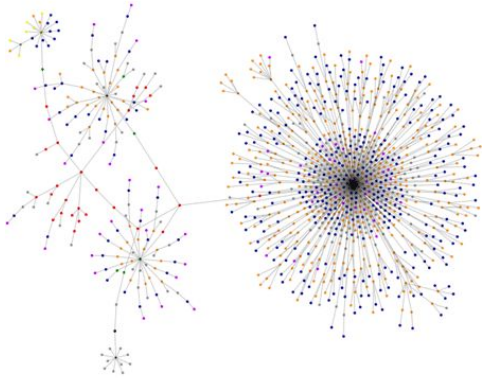
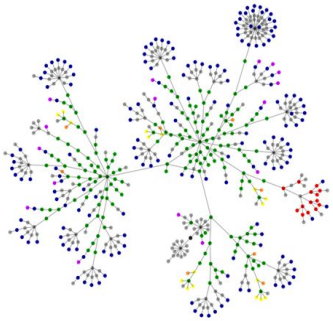
BEYOND ENTERPRISE ARCHITECTURE

Dr. Phil Tetlow







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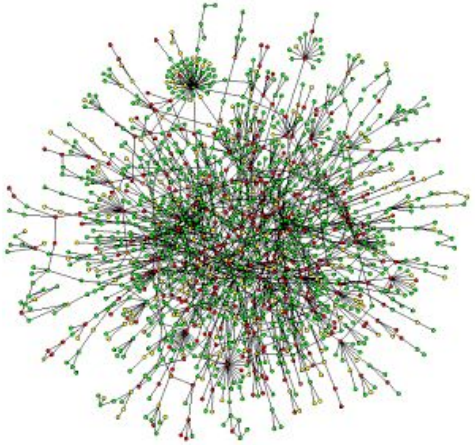
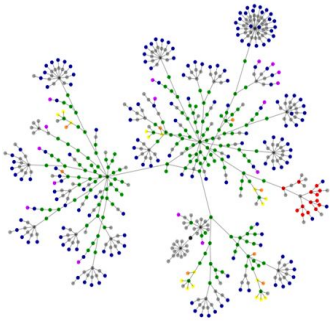
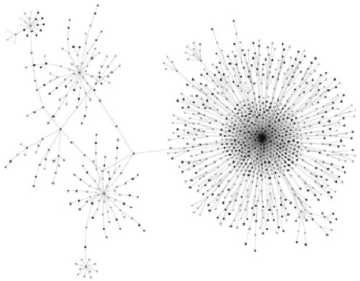
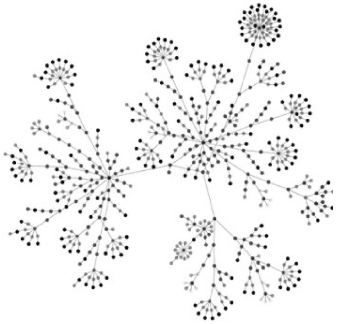




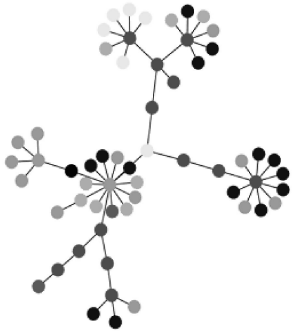
Let's Start with a Quick Test



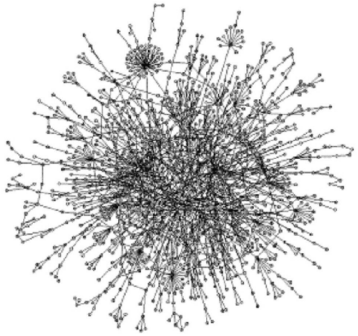
Boingboing.net



Wired.com



Google.com

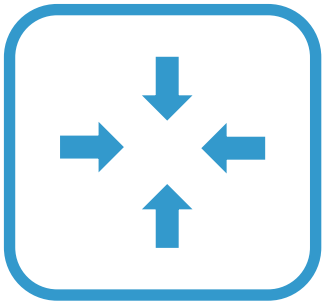


Part of the metabolic network of yeast!

WHAT'S CHANGING?

Old World

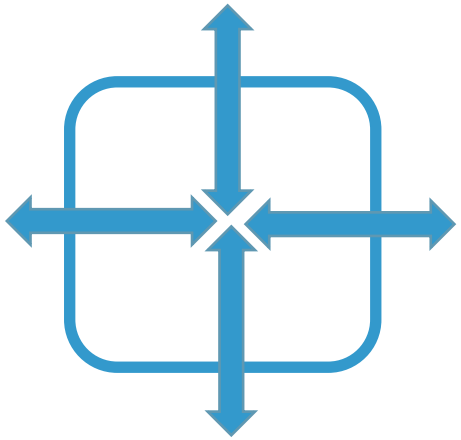
(Inward Facing Focus)



- Everything "inside the box"
- "Boundaries" are king
- Little or no data from external sources other than partners and suppliers

New World

(Focus In All Directions)



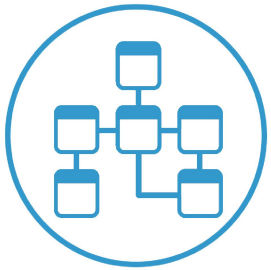
- The days of "the box" have long gone
- "Boundaries" are at the mercy of the individual's respect – organisations have little control
- The value of what's "inside the box" is depreciating rapidly
- The value of what's "outside the box" is increasing at an accelerating rate – this is driving the self promotional behaviour of the Web

Data

Other / Big

- More about **VARIETY** of data
- Can be high velocity or volume, but does not have to be
- Rarely high veracity of data
- Most often applied best as highly flexible “staging” or “sand box” platform to extend the coverage of data available to an organisation
- Takes feeds from both within and outside the enterprise
- Highly agile

Relational

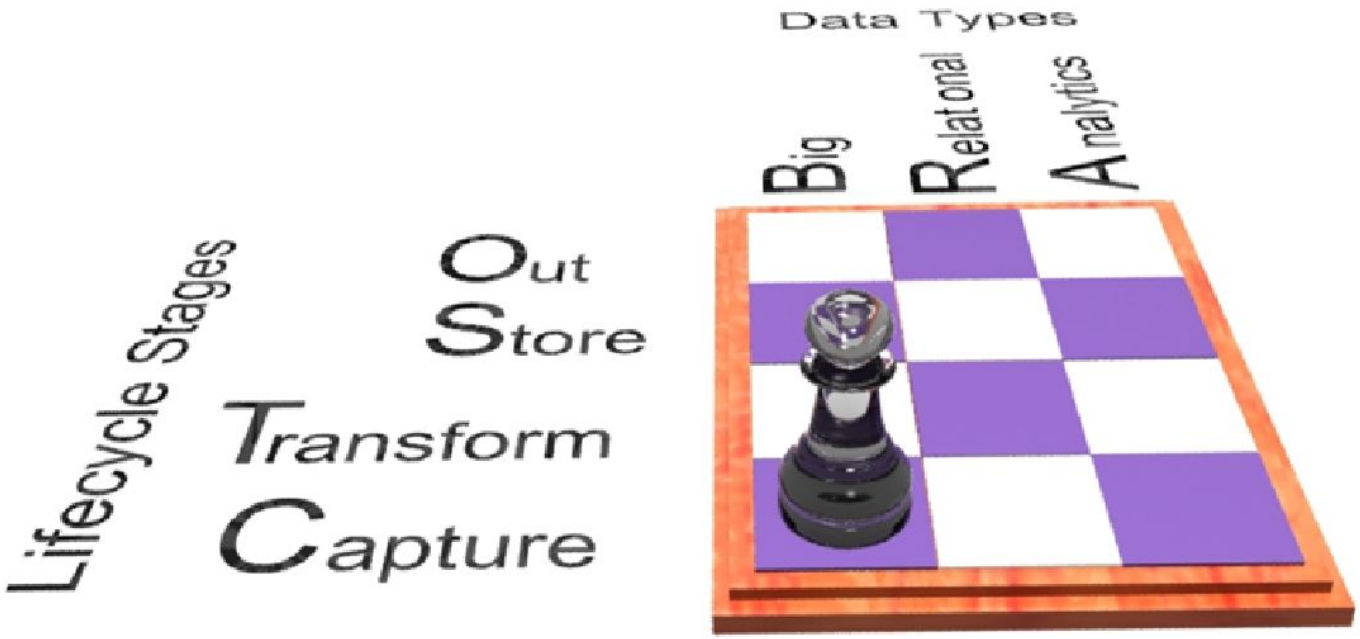


- Focus on **VELOCITY** (transactions) and **VERACITY** (security and quality) of Data
- The work horse of the enterprise
- Held in good “*old fashioned*” databases
- Emphasis on non-redundancy of data
- Used across all business cycles
    - Operational (0-6 months)
    - Tactical (6months – 2.5 years)
    - Strategic (2.5 – 5 years)
- Costly to maintain
- Often medium to low agility

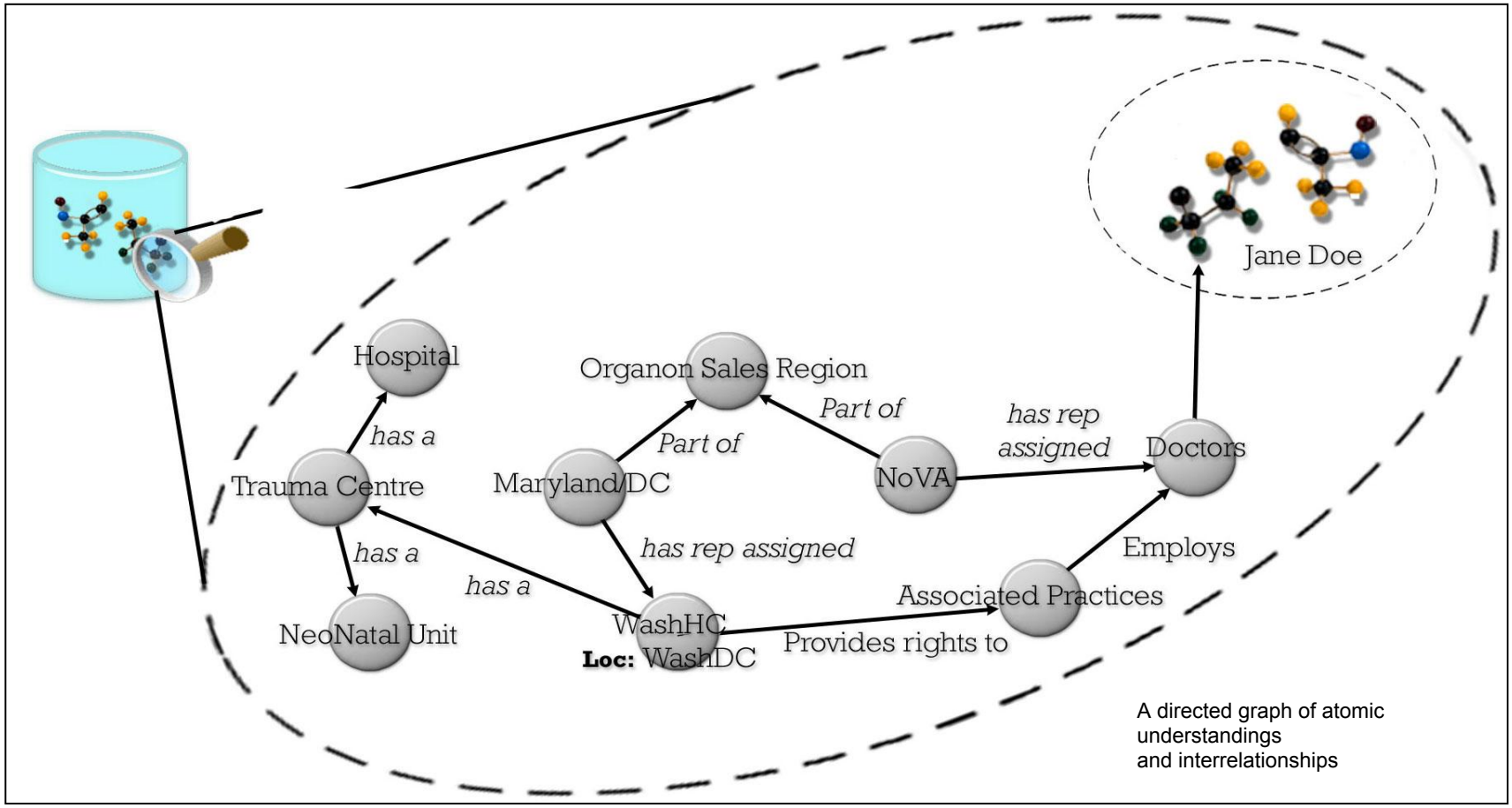
High Volume Aggregation Analytics

- Focus on **VOLUME** of data
- Used for heavyweight data crunching
- Very large volume data sets
- Typically used to provide high value strategic insight through advanced analytics

The Data Chess-Board



Triple-Based Knowledge Representation



association

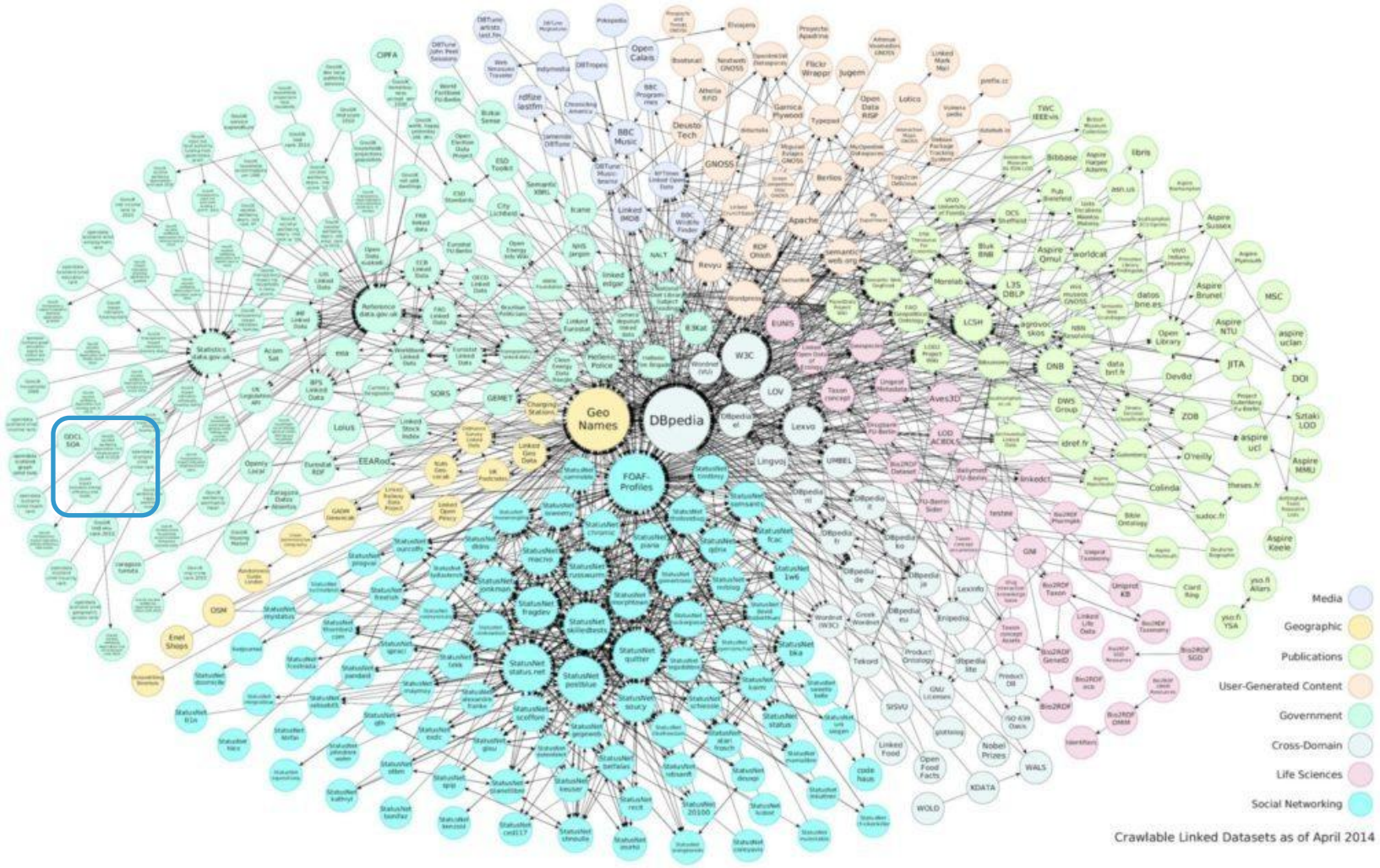
It's Simply a case of Graph Everywhere

A NEW WORLD VIEW

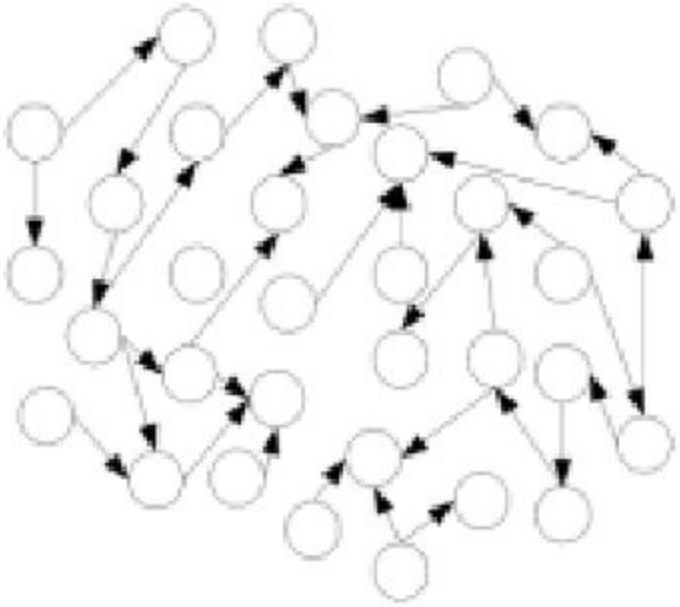
Some Side Effects

Standard assumptions	Re-think for Big Data
Clean and correct data	**Take advantage / tolerate uncertainty**
Transactional guarantees	Good enough
Normalized, structured data	Store date in elemental form
Explicit relationships kept	Relationships found at query
ACID properties	Relaxed constraints
Centrally managed storage	Loosely distributed data
Store-and-process	**Process in motion**
Reliable hardware	Built with full expectation of failures
Query, insert, delete with SQL	Query, operators analytics at point of data
Reference/context data on disk	**Reference and context data in memory**

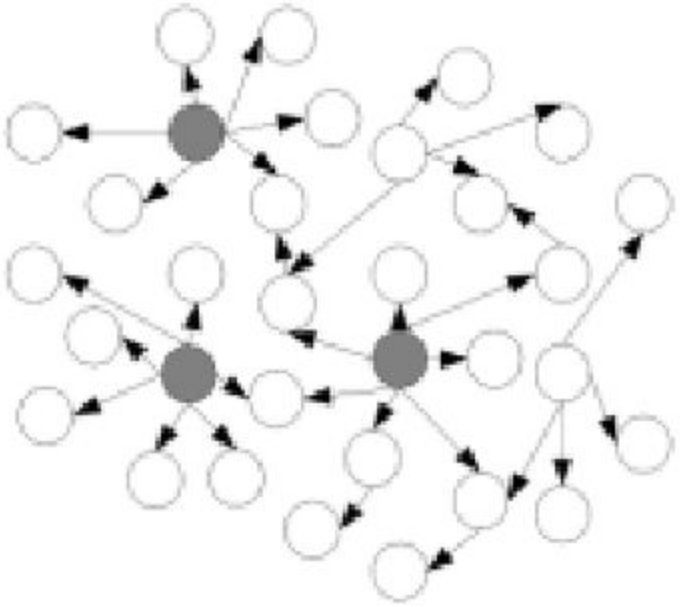
Out in the Ecosystems Everywhere



Special Types of Graph

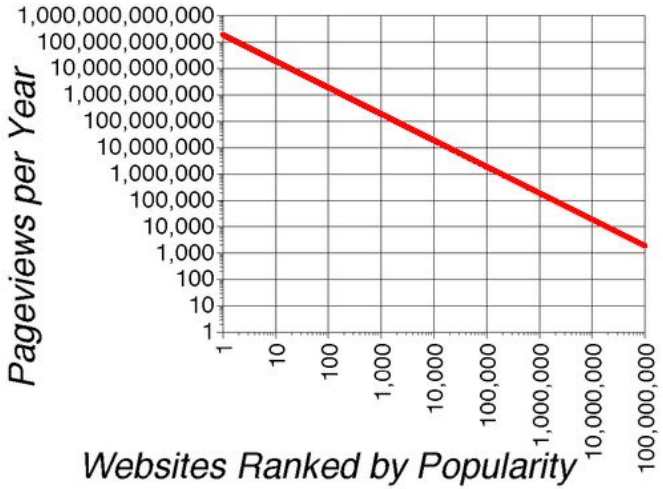


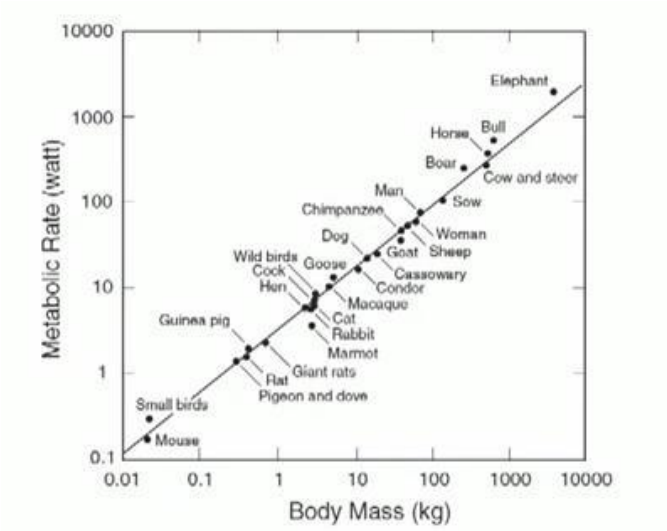
Random Network

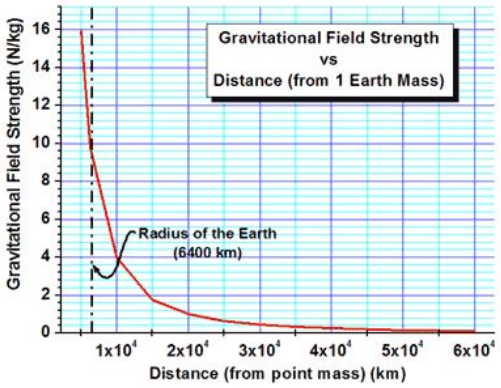


Scale-free network

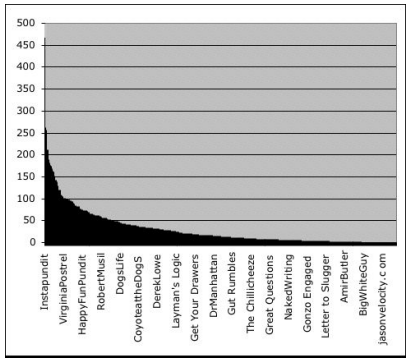
Why is this important? Evolution and Ecosystems







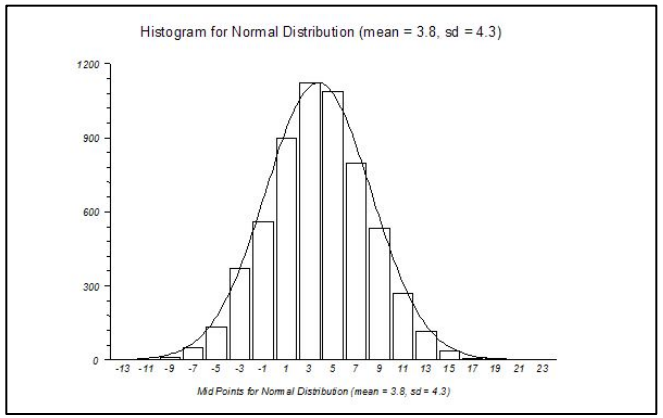
Gravitational field strength of the Earth with distance



weblogs arranged in rank order by number of inbound links

Major Change in Analytical Focus

Old World
(Normal Distributions)

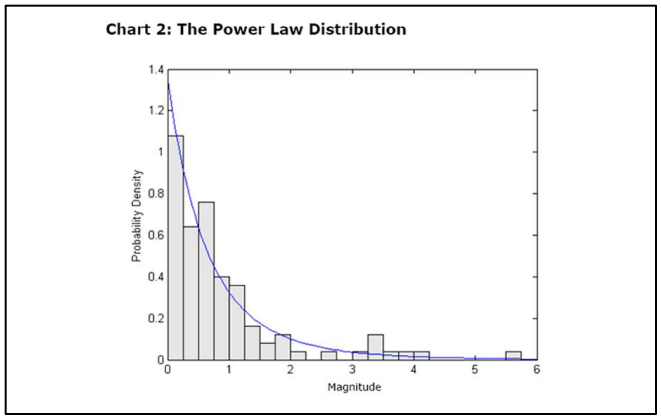


Built of the principle of random independent data points

Examples include:

- Height of people in any given city
- Number of substandard parts produced on an assembly line

New World
(Power Laws and Causal Interactions)



No randomness contained

All data points are related by some kind of “cause-effect” relationship

- Examples include:
  - Popularity of web sites and some products
  - Number of petrol stations within cities

- Power laws in inward facing data sets generally have little or no business value
- Power laws that cover an entire business ecosystem have huge business value
- You need Big Data to mine for power laws – that data has to come from both within and outside the enterprise

IN CONCLUSION

Ecosystems Architecture Metamodel

September 2018