



A FORTUITOUS CAREER IN DATA SCIENCE

Kirk Borne [@KirkDBorne]

*Principal Data Scientist and Executive Advisor
Booz Allen Hamilton*

PRESENTED FOR THE DATA INCUBATOR
AUGUST 29, 2017

http://101.datascience.community/2017/08/1/ A Data Science Career with ...

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A DATA SCIENCE CAREER WITH KIRK BORNE, FREE WEBINAR

© AUGUST 16, 2017 RYAN SWANSTROM 1 COMMENT

Once again, [The Data Incubator](#), is hosting another [Data Science in 30 minutes webinar](#). This one features the career of [Kirk Borne](#).

Renowned data scientist, Kirk Borne will take viewers on a journey through his career in science and technology explaining how the industry-and himself have evolved over the last 4 decades. Starting with skipping lunches in high school to a systematic twitter obsession, Kirk will shed light on his road to success in the data science industry.

Kirk is universally considered one of the most (if not the most) influential voices in data science. If you are interested in a career in data science, this is a webinar you will not want to miss.

Right now...
you are here!

ABOUT

ER'S PROGRAMS

Online Master's in Data Science online in 20 months at Top National University by US News. Bachelor's degree required. GRE waivers available for experienced applicants

DataScience@Syracuse: Online M.S. in Applied Data Science

Syracuse University's online Master's in Data Science can be completed in as few as 15 months. GRE waivers are available.

DataScience@Berkeley: Online M.S. in Data Science and Data Science

Earn your Master's in Data Science from Berkeley - #1 ranked public university.

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The 3 Stages of Data Science
7 Important Data Science Paper...
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RECENT POSTS

Deep Learning Coursera Specialization
A Data Science Career with Kirk Borne, Free Webinar

NBA Basketball Analytics Hackathon

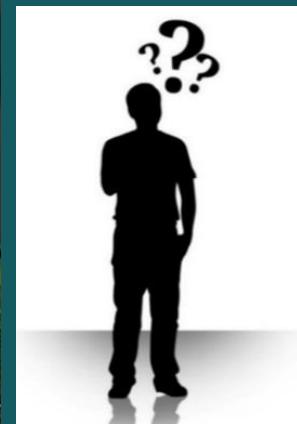
But...
what
is this?

EVER SINCE WE FIRST EXPLORED OUR WORLD...



<http://www.livescience.com/27663-seven-seas.html>

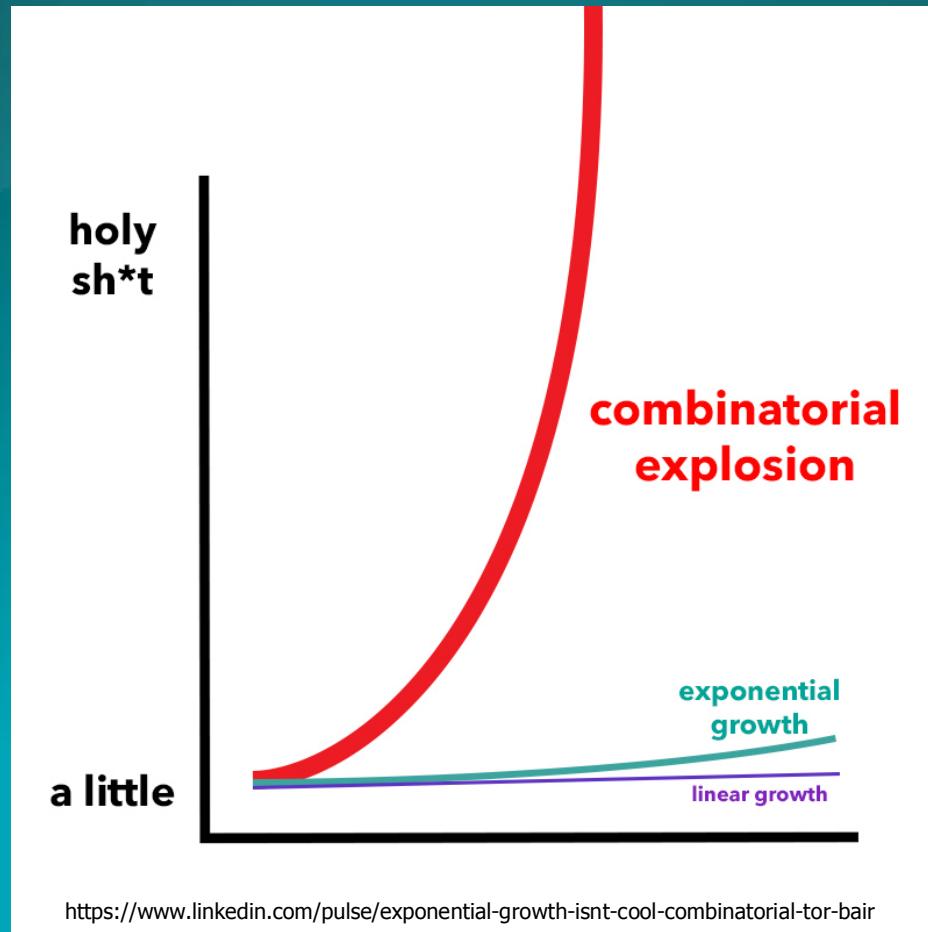
...WE HAVE ASKED QUESTIONS ABOUT THE WORLD...



<https://www.flickr.com/photos/nolderuiter/5925449989>

...AND THE CONSEQUENCE OF OUR CURIOSITY IS...

WE HAVE COLLECTED EVIDENCE (DATA) TO ANSWER OUR QUESTIONS, WHICH LEADS TO MORE QUESTIONS, WHICH LEADS TO MORE DATA COLLECTION, WHICH LEADS TO MORE QUESTIONS, WHICH LEADS TO **BIG DATA!**



3+1 V's of Big Data:

Volume = most annoying V

Velocity = most challenging V

Variety = most rich V for discovery

Value = the most important V

$$y \sim x! \approx x^x$$

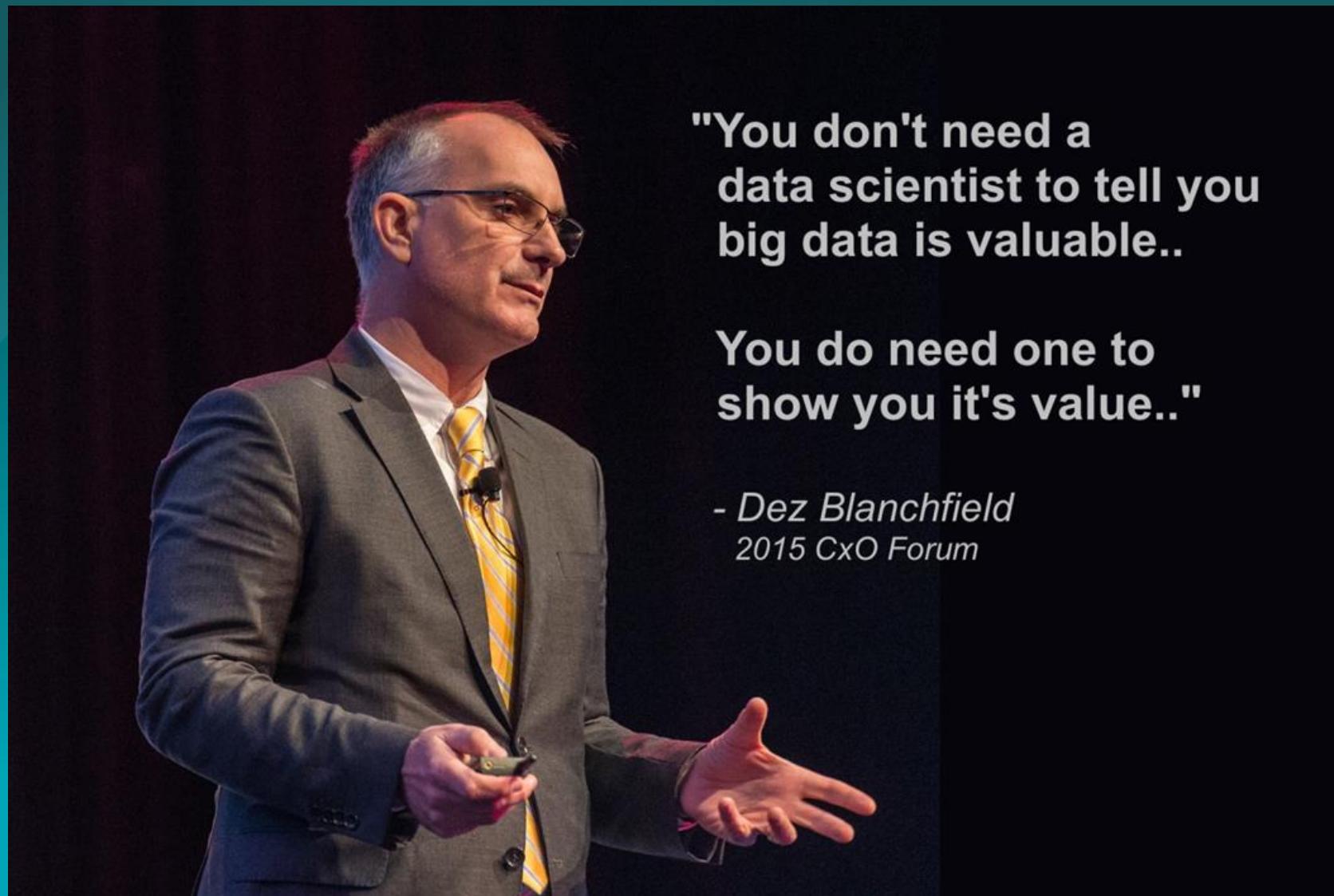
→ Combinatorial Growth!

(all possible interconnections, linkages, and interactions: high variety for discovery!)

$$y \sim 2^x \text{ (exponential growth)}$$

$$y \sim 2 * x \text{ (linear growth)}$$

THE MOST IMPORTANT “V” OF BIG DATA = VALUE!



**"You don't need a
data scientist to tell you
big data is valuable..**

**You do need one to
show you it's value.."**

*- Dez Blanchfield
2015 CxO Forum*

https://twitter.com/dez_blanchfield/status/645139875440668672

CREATING VALUE FROM BIG DATA : the 3 D2D'S

- Knowledge Discovery
 - *Data-to-Discovery (D2D)*
- Data-driven Decision Support
 - *Data-to-Decisions (D2D)*
- Big ROI (Return On Innovation)
 - *Data-to-Dollars (D2D) or Data-to-Dividends*
 - *Innovative Applications of sense-making from sensors and sentinels everywhere*

From Sensors to Sentinels to Sense-making (Cents-making) :
DATA to Machine Learning algorithms to Insights & Intelligence

TODAY'S PRESENTATION: THE JOURNEY OF THIS DATA SCIENTIST – – HOW DID I GET TO THIS PLACE RIGHT NOW?



<https://mapr.com/blog/growth-hackers-journey-right-place-right-time/>

1970's - 1985

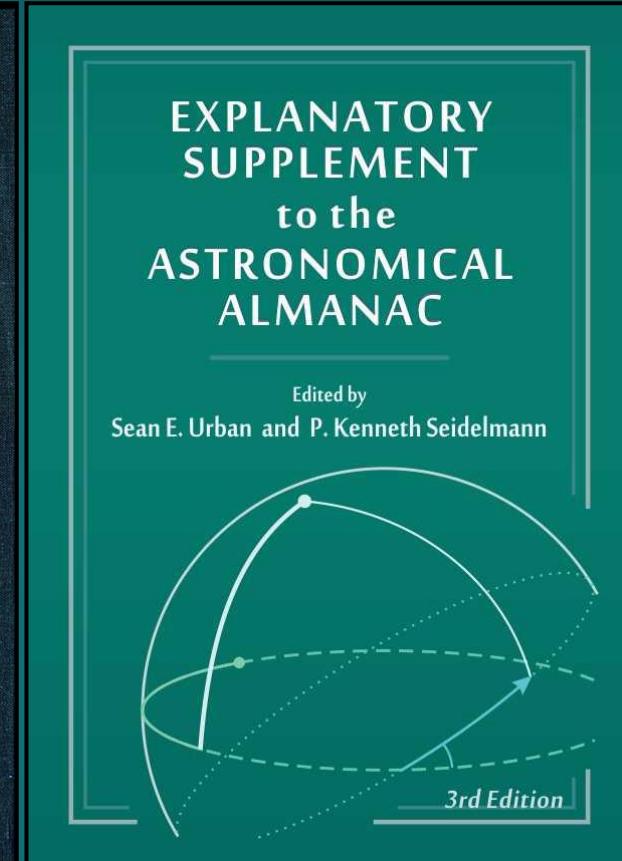
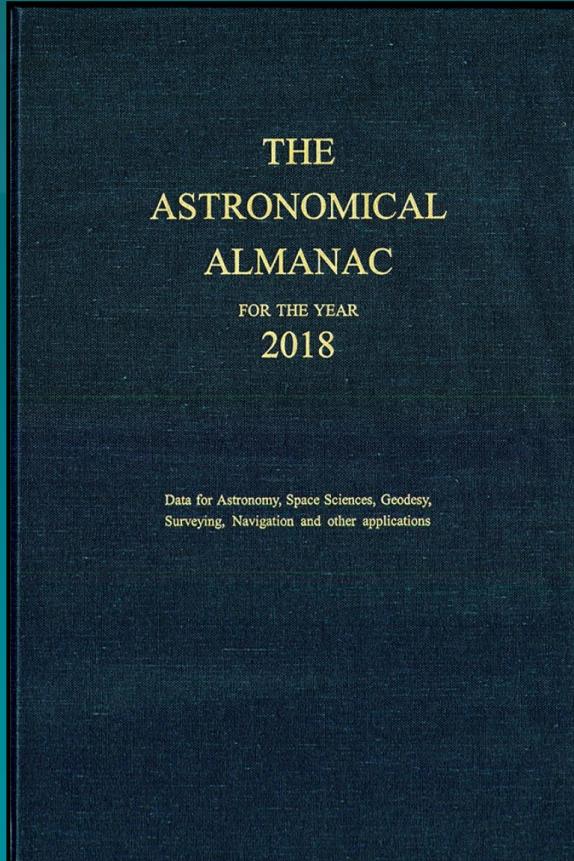
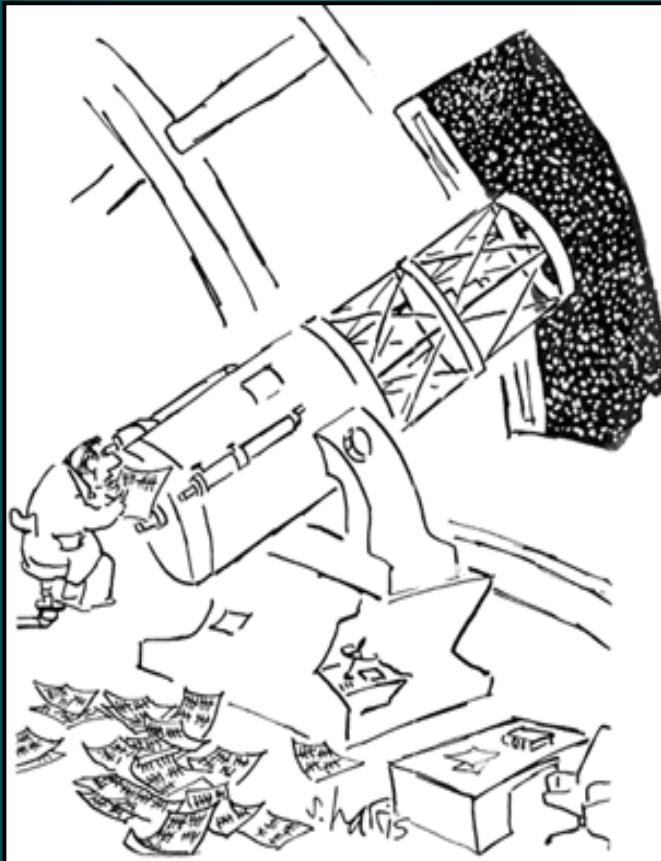


HIGH SCHOOL, COLLEGE, GRADUATE SCHOOL, POSTGRADUATE FELLOWSHIPS

(NEBRASKA, LSU, CALTECH, U. MICHIGAN,
CARNEGIE INSTITUTION OF WASHINGTON)

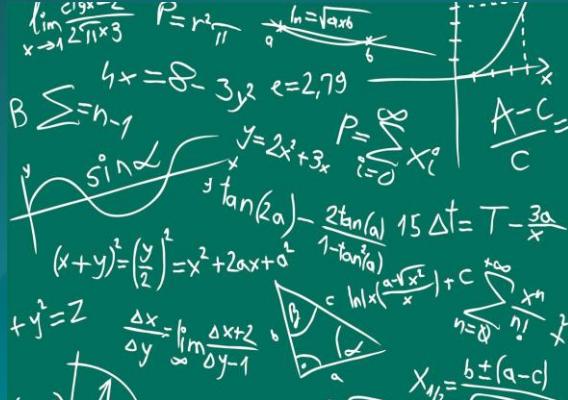


IT ALL STARTED HERE, AND HERE, AND HERE... (ASTRONOMY = WORLD'S OLDEST FORENSIC AND PREDICTIVE SCIENCE!)

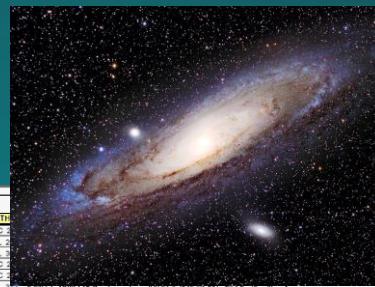


Observations => Compilations of data => Explanatory Models => Insights => Science!

A FUNNY THING HAPPENED ON MY WAY TO UNDERGRADUATE FRESHMEN ORIENTATION...

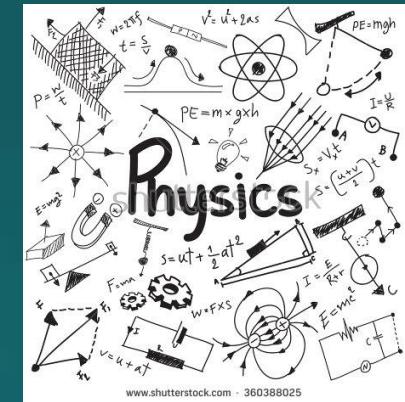


+



NAME	TYPE	RA	DEC	MAG	DIS	CLASS
M 31	NGC	00:39:51.2	+41:12:51	3.6	2.1 Mpc	Sc
NGC 7686	OC	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 772	OC	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
M 32	NGC	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
M 110	NGC	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 272	OC, L	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 7662	Pk	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 7663	OC	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 391	OC, L	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 404	Galaxy	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
IC 239	UGC 2086	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 812	UGC 1586	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 1275	UGC 3206	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
MCG 4-28-0	Galaxy	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
MCG 4-28-1	Galaxy	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
MCG 4-28-2	Galaxy	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 80	UGC 203	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 108	UGC 246	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 207	UGC 447	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 349	UGC 447	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
UGC 1233	UGC 1756	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 919	UGC 1875	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 97	UGC 216	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc
NGC 214	UGC 438	00:39:51.2	+41:12:51	11.5	~100 kpc	Sc

+



+

Fortuitous
circumstances

=

Being at the right place
at the right time
for the right career!

<https://mapr.com/blog/growth-hackers-journey-right-place-right-time/>



1985-1995

RESEARCH SCIENTIST, SCIENCE DATABASE GUY,
AND HUBBLE DATA ARCHIVE PROJECT SCIENTIST

HUBBLE SPACE TELESCOPE SCIENCE INSTITUTE
(BALTIMORE, MARYLAND)

<https://mapr.com/blog/growth-hackers-journey-right-place-right-time/>

It was the best of times, it was the worst of times...

- January 1986 – Shuttle Challenger disaster!!!
- August 1986 – Hubble Space Telescope (HST) was scheduled for launch, but postponed until April 1990.
- 1986-1990: Time of reflection, re-tooling, improvements, and ...
- ... a new look at Scientific Data Management

It was the best of times, it was the worst of times...

- 1986-1990: new look at Scientific Data Management!
 - In the pre-1986 era, NASA managers decided that HST didn't need a data archive, just a "Data Management Facility" (*e.g.*, that wooden crate holding the Ark of the Covenant at the end of Indiana Jones movie "Raiders of the Lost Ark")



- After some "lobbying" by HST science managers, the concept of a Hubble Science Data Archive was born! (and Borne! – who eventually became HST Data Archive Project Scientist!)

The New Data “Management”

Data Reuse for Discovery is the “new normal”

- The Hubble Data Archive became a widely used research tool for scientists, who conducted “secondary” investigations on the data that were initially collected for some other primary research program.
- Now, the number of refereed papers for HST science is larger for archival research than for primary observation programs.
- Big Science Data = focused on Discovery, not Management!

The New Data “Management”

Data Reuse for Discovery is the “new normal”

- Big Data, Big Science, Data Science = “Discovery Amplifier”
= focus on Discovery, not on Data Management!

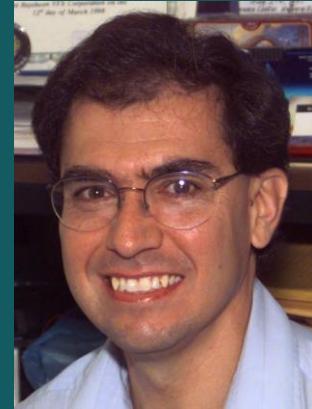
It is all about the data.

Really... it is ALL about the data!

...designing data systems and innovative data products to improve data search, discovery, and access, across massive data collections, to answer critical questions, in diverse use cases, on novel projects, with interesting algorithms, for valuable discoveries!



1995-2003



GROUP MANAGER (and later: PROGRAM MANAGER)

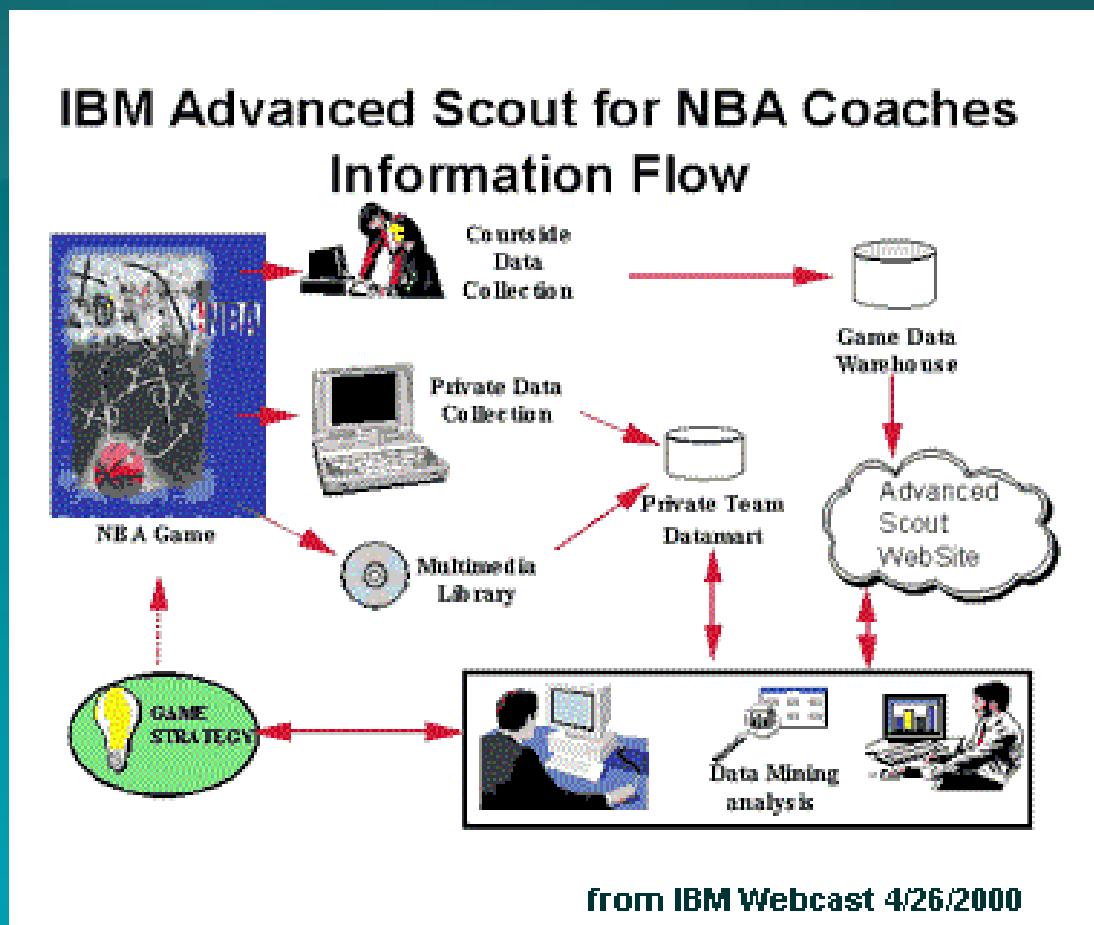
ASTRONOMY DATA CENTER –
ASTROPHYSICS DATA FACILITY –
SPACE SCIENCE DATA OPERATIONS OFFICE –
NASA'S GODDARD SPACE FLIGHT CENTER

(GREENBELT, MARYLAND)

<https://mapr.com/blog/growth-hackers-journey-right-place-right-time/>

My big “Aha!” moment...

(in 1997, at a Data Mining lunch talk at NASA)



<http://www.kdnuggets.com/2016/07/interview-inderpal-bhandari-ibm-chief-data-officer-cognitive-computing.html/2>

https://www.researchgate.net/publication/220451737_Advanced_Scout_Data_Mining_and_Knowledge_Discovery_in_NBA_Data

“To a child with a hammer, all the world is a nail”

Maslow's quote...



<http://izquotes.com/quote/284715>

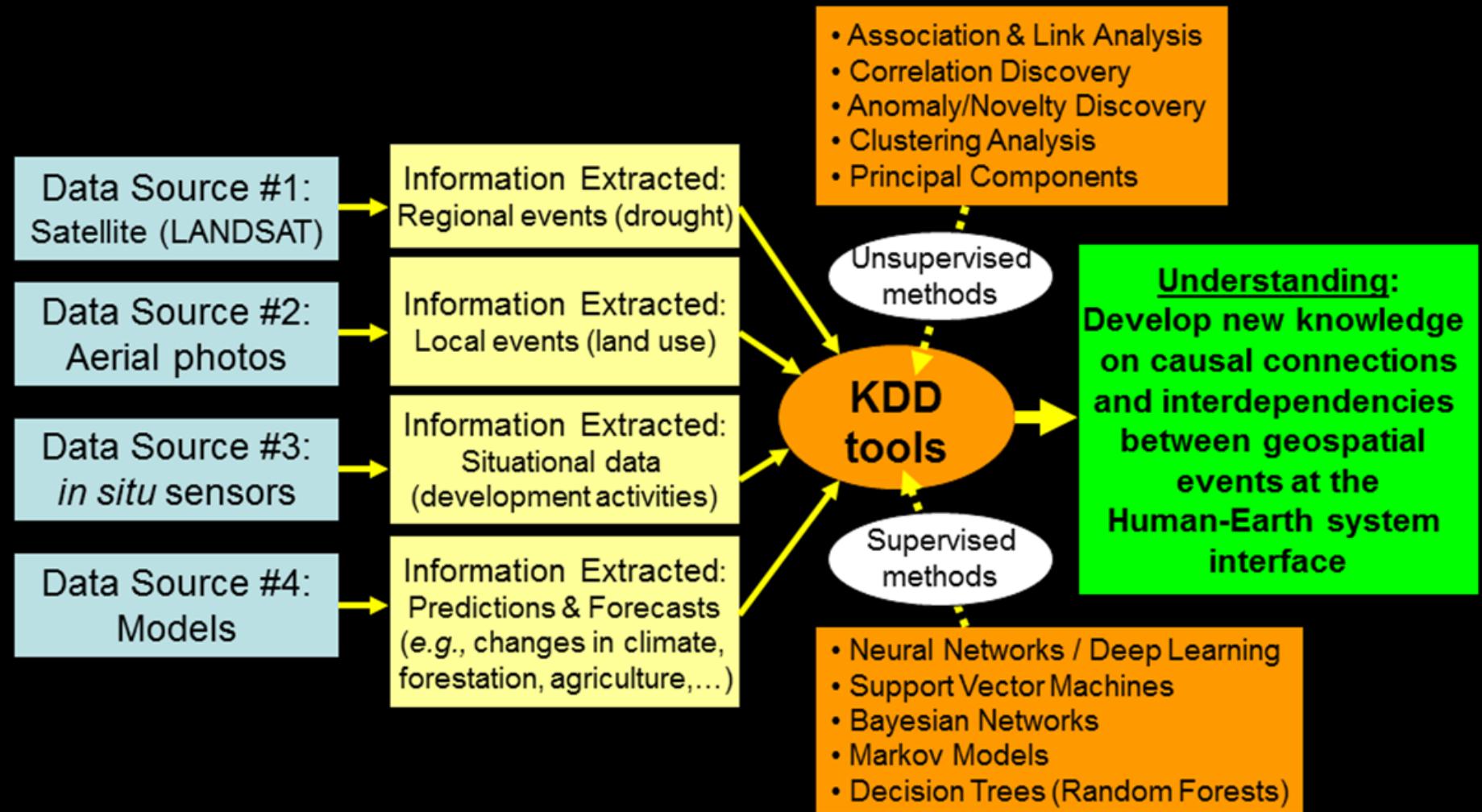
Me and my Data Mining
hammer... “*every problem
is a data science problem*”



<https://mapr.com/blog/operational-analytics-and-droning-about-big-data/>

BIG DATA USE CASE IN ENVIRONMENTAL SCIENCE:

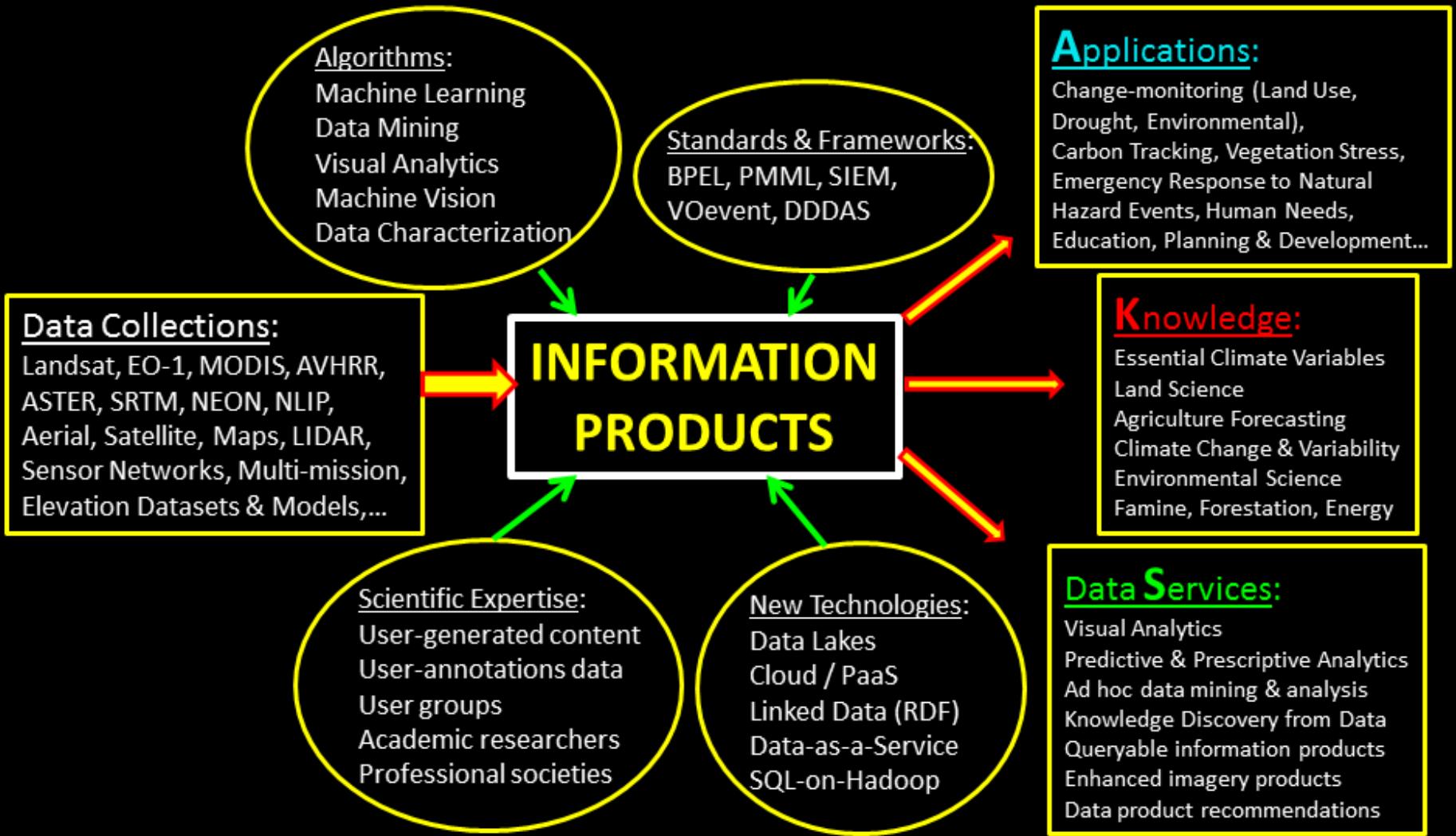
Early Warning and Monitoring Systems for Geospatial Event Discovery



From Data to Information to Knowledge to Understanding

BIG DATA USE CASE IN ENVIRONMENTAL SCIENCE:

The **ASK** pipeline = **A**pplications, **S**ervices, **K**nowledge delivery from your data!



The science of X-informatics is born!

MY WEBSITE GOT MORE ATTENTION THAN I EXPECTED

The screenshot shows a web browser window with the title "NASA's Data Mining Resources for Space Science". The page content includes a "Table of Contents" with many links related to data mining in space science, followed by sections on "Introduction", "Disclaimer", and "What is Data Mining? What is Knowledge Discovery?". A red box highlights a definition of knowledge discovery that includes "basketball play-by-play histories".

NASA's Data Mining Resources for Space Science

Table of Contents:

- [Introduction](#)
- [What is Data Mining? What is Knowledge Discovery?](#)
- [User Requirements for Data Mining in Large Scientific Databases](#)
- [XML for distributed data mining](#)
- [Data Mining with the NVO and The GRID](#)
- [What is The GRID?](#)
- [Virtual Observatory \(VO\) Activities & Related Conferences](#)
- [Conference Papers on "Data Mining with the NVO"](#)
- [Conferences on Data Mining & Knowledge Discovery \(mainly 2002\)](#)
[SEE ALSO: [pre-2002 Data Mining Conferences](#)]
- [Data Mining Organizations](#)
- [Select Data Mining Publications](#)
- [Data Mining Methods](#)
- [Select Data Mining Software and Techniques \[UPDATED\]](#)
- [Information Retrieval](#)
- [Parallel and High-Speed Data Mining](#)
- ["MINING THE SKY" Conference Report](#)
- [Lessons Learned & Experiences in the Earth Sciences](#)
- [KDnuggets Interview with Usama Fayyad](#)
- [Very Large Astronomy Surveys and Telescopes](#)
- [Additional Scientific Data Mining Links](#)

Introduction

This collection of resources and information on Space Science Data Mining is not intended to be comprehensive, since whole books and numerous international conferences each year address this subject matter. The material presented here is primarily intended to be a representative subset of those items that we have found useful or applicable to data mining within the space sciences. In particular, the [summarization of the "Mining the Sky" conference](#) focuses on those aspects.

Disclaimer: Many web sites are referenced in this report. There is no endorsement suggested or implied for any product identified here. The information is provided solely as a convenience and reference for our readers.

[\[Return to Top of Page\]](#)

What is Data Mining? What is Knowledge Discovery?

Definition: "Data mining" is defined as an information extraction activity whose goal is to discover hidden facts contained in databases."

Definition: "Knowledge discovery" refers to finding out new knowledge about an application domain using data on the domain usually stored in a database.

(The application domain may be astrophysics, earth science, solar system science, credit card usage histories, telephone usage histories, basketball play-by-play histories,

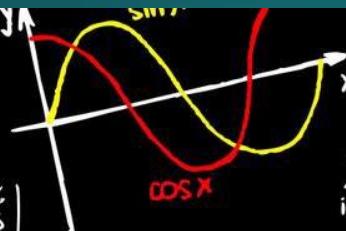
...including this reminder...



BIG DATA / DATA SCIENCE = A NATIONAL IMPERATIVE

1. National Academies report: *Bits of Power: Issues in Global Access to Scientific Data*, (1997) http://www.nap.edu/catalog.php?record_id=5504
2. NSF (National Science Foundation) report: *Knowledge Lost in Information: Research Directions for Digital Libraries*, (2003) downloaded from <http://www.sis.pitt.edu/~dlwkshop/report.pdf>
3. NSF report: *Cyberinfrastructure for Environmental Research and Education*, (2003) downloaded from <http://www.ncar.ucar.edu/cyber/cyberreport.pdf>
4. NSB (National Science Board) report: *Long-lived Digital Data Collections: Enabling Research and Education in the 21st Century*, (2005) downloaded from http://www.nsf.gov/nsb/documents/2005/LLDDC_report.pdf
5. NSF report with the Computing Research Association: *Cyberinfrastructure for Education and Learning for the Future: A Vision and Research Agenda*, (2005) downloaded from <http://www.cra.org/reports/cyberinfrastructure.pdf>
6. NSF Atkins Report: *Revolutionizing Science & Engineering Through Cyberinfrastructure: Report of the NSF Blue-Ribbon Advisory Panel on Cyberinfrastructure*, (2005) downloaded from <http://www.nsf.gov/od/oci/reports/atkins.pdf>
7. NSF report: *The Role of Academic Libraries in the Digital Data Universe*, (2006) downloaded from <http://www.arl.org/bm~doc/digdatarpt.pdf>
8. National Research Council, National Academies Press report: *Learning to Think Spatially*, (2006) downloaded from http://www.nap.edu/catalog.php?record_id=11019
9. NSF report: *Cyberinfrastructure Vision for 21st Century Discovery*, (2007) downloaded from http://www.nsf.gov/od/oci/ci_v5.pdf
10. JISC/NSF Workshop report on Data-Driven Science & Repositories, (2007) downloaded from <http://www.sis.pitt.edu/~repwkshop/NSF-JISC-report.pdf>
11. DOE report: *Visualization and Knowledge Discovery: Report from the DOE/ASCR Workshop on Visual Analysis and Data Exploration at Extreme Scale*, (2007) downloaded from <http://www.sc.doe.gov/ascr/ProgramDocuments/Docs/DOE-Visualization-Report-2007.pdf>
12. **DOE report: *Mathematics for Analysis of Petascale Data Workshop Report*, (2008)** downloaded from <http://www.sc.doe.gov/ascr/ProgramDocuments/Docs/PetascaleDataWorkshopReport.pdf>
13. NSTC Interagency Working Group on Digital Data report: *Harnessing the Power of Digital Data for Science and Society*, (2009) downloaded from http://www.nitrd.gov/about/Harnessing_Power_Web.pdf
14. National Academies report: *Ensuring the Integrity, Accessibility, and Stewardship of Research Data in the Digital Age*, (2009) downloaded from http://www.nap.edu/catalog.php?record_id=12615
15. **NSF report: *Data-Enabled Science in the Mathematical and Physical Sciences*, (2010)** downloaded from http://www.cra.org/ccc/docs/reports/DES-report_final.pdf
16. National Big Data Research and Development Initiative, (2012) downloaded from http://www.whitehouse.gov/sites/default/files/microsites/ostp/big_data_press_release_final_2.pdf
17. National Academies report: *Frontiers in Massive Data Analysis*, (2013) downloaded from http://www.nap.edu/catalog.php?record_id=18374

DATA LITERACY MATTERS!



$$Y_{i+1} = Y_i + b \cdot k_2$$

$$B = \begin{pmatrix} 2 & 1 & -1 & 0 \\ 3 & 0 & 1 & 2 \end{pmatrix}$$

$$\alpha^2 = b^2 + c^2 - 2bc \cos \lambda$$

$$\operatorname{tg} \frac{x}{2} = \frac{1 - \cos x}{\sin x} = \frac{\sin x}{1 + \cos x}$$

$$x_2 = \begin{pmatrix} -\lambda \\ \beta \\ -\rho \\ -\sigma \end{pmatrix}$$

$$\sum_{i=0}^n (\rho_i(x_i) - y_i)^2$$

$$\operatorname{tg} 2x = \frac{2 \operatorname{tg} x}{1 - \operatorname{tg}^2 x}$$

$$\operatorname{tg} x = \frac{\sin x}{\cos x}$$

$$\lambda x - y + z = 1$$

$$x + \lambda y + z = \lambda^2$$

$$x + y + \lambda z = \lambda^2$$

$$F_2 = 2 \times y^2 - 1 = 1$$

$$\int \int \int_M z dx dy dz = \int_0^{2\pi} \left(\int_{\frac{1}{2}r}^2 \left(\int_{-\sqrt{r^2 - x^2}}^1 r dr d\sigma \right) dx \right) dy$$

$$\lim_{n \rightarrow \infty} \frac{1}{3} \sqrt{3n^2 + 2n - 1}$$

$$\frac{\alpha}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$$

$$y = x^3$$

$$y = x^2$$

$$y = x^4$$

$$y = 1$$

$$2 \arctg x - x = 0, I = (1, 10)$$

$$\int_{-\pi/2}^{\pi/2} \sin^4 x \cdot \cos^3 x dx$$

$$2 \operatorname{sin} x$$

$$\operatorname{sin} 2x$$

$$\operatorname{cos} 2x = \operatorname{cos}^2 x - \operatorname{sin}^2 x$$

$$\operatorname{tg} x$$

$$\operatorname{cot} \operatorname{tg} x$$

$$x_1 = \begin{pmatrix} 2\rho \\ -\rho \\ 0 \end{pmatrix}$$

$$(1+e^x) yy' = e^x$$

$$y(1) = 1$$

$$\operatorname{tg} x = \frac{a+y \beta + z \gamma}{a+x \beta + z \gamma}$$

$$\operatorname{sin}^2 x + \operatorname{cos}^2 x = 1$$

$$A+B+C=8$$

$$-3A-7B+2C=-10,3$$

$$-18A+6B-3C=15$$

$$\frac{\partial z}{\partial x} = 2, \frac{\partial z}{\partial y} = 0$$

$$\vec{n} = (F_x, F_y, F_z)$$

$$\delta(\rho_2) = \sqrt{0.16}$$

$$\alpha^2 + b^2 = c^2$$

$$\alpha, \beta, \gamma \in C$$

$$C = \begin{pmatrix} 0, 1 \\ 1, 0 \end{pmatrix}$$

$$y = \operatorname{tg} x$$

$$y = \operatorname{cot} \operatorname{tg} x$$

$$\lambda_2 = i \sqrt{14}$$

$$\int_R(x, y) \frac{\sqrt{a+x^2+b^2}}{c+x^2} dx$$

$$\frac{\operatorname{sin} x}{x} \leq \frac{x}{x} = 1$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 0$$

$$f(x) = 2^{-x} + 1, \epsilon = 0.005$$

$$e^2 - xy^2 = e, A[0, e, 1]$$

$$\frac{2x}{x^2 + 2y^2} = 2$$

$$z = \frac{1}{x} \operatorname{arctg} \frac{\sqrt{2}}{2}$$

$$\sin(x+y) = \sin x \cos y + \cos x \sin y$$

$$\eta_1 = \lambda_1^2 - 3\lambda_1 + 1 + 0$$

$$\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x} = \frac{2}{5}$$

$$|x| + |\beta| \neq 0, \gamma \neq 0$$

$$A = \begin{pmatrix} x, 1+x^2, 1 \\ y, 1+y^2, 1 \\ z, 1+z^2, 1 \end{pmatrix}, x=0, y=1, z=2$$

$$y' - \frac{\sqrt{y}}{x+2} = 0, y(0) = 1$$

$$|z| = \sqrt{a^2 + b^2}$$

$$D(\frac{\partial F}{\partial x}) = 16 - x^2 + 16y^2 - 4z > 0$$

$$A \quad B \quad C$$

$$B \quad C \quad A$$

2003-2015

PROFESSOR OF ASTROPHYSICS AND
COMPUTATIONAL SCIENCE

GEORGE MASON UNIVERSITY -
DEPT OF COMPUTATIONAL & DATA SCIENCES
(FAIRFAX, VIRGINIA)



<https://mapr.com/blog/growth-hackers-journey-right-place-right-time/>



Data Literacy in 2 parts: Data Science and Data Ethics



<http://www.kirkborne.net/cds151/>

1) How to use data



<http://dilbert.com/strip/2008-05-07>

2) How to use data correctly



<http://dilbert.com/strip/2000-11-13>

Quote from H.G. Wells (1903; writer) ...

“Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.”

Well, that day is here now!

Statistical & Data Literacy Matters!

Quote from Ronald Coase (economist) ...

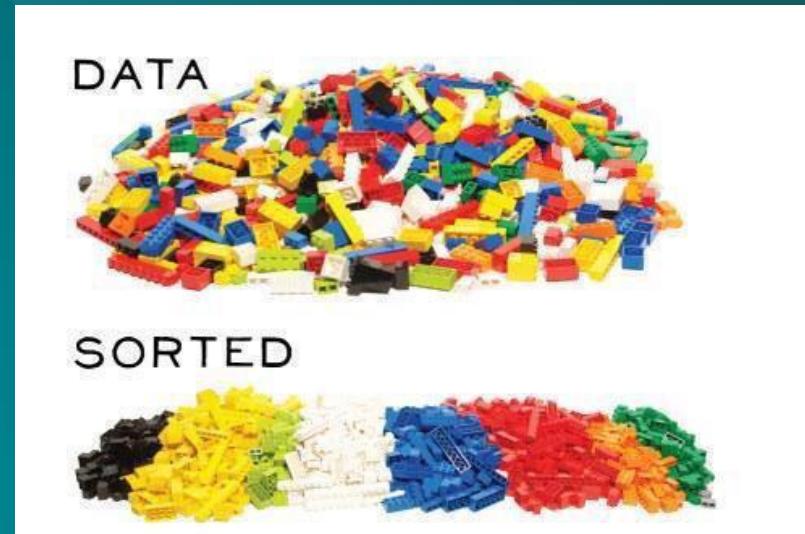
*“If you torture your data long enough,
it will confess to anything.”*

Quote from somebody (?) ...

“It is now beyond any doubt that cigarettes are the biggest cause of statistics”

Start Young with Statistical and Data Literacy!

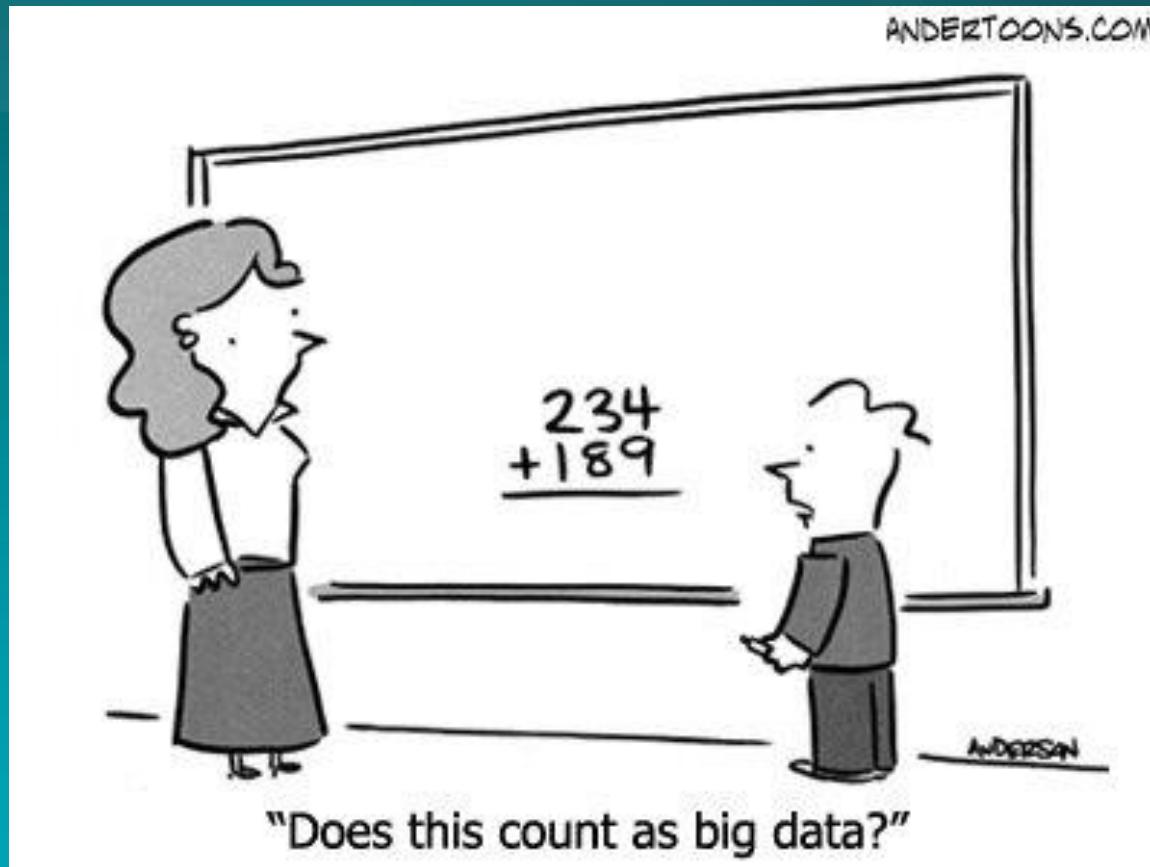
- Incorporate data & statistical literacies in every grade, in every type of course (not just math / STEM classes).
- Teach the 4 R's: Reading, wRiting, aRithmetic, and "R"
- Humans (**even little ones**) naturally characterize, sort, cluster, and classify by different observable attributes:



- Sign the Global Data Literacy petition:
<http://oceansofdata.org/call-action-promote-data-literacy>

Data Literacy For All – A Reading List

<http://rocketdatascience.org/?p=356>



Big Data and Data Science For All

Kirk Borne (@KirkDBorne) - Twitter

Secure | https://twitter.com/kirkdborne

Home Notifications 99+ Messages Tweet Search Twitter

NextGen Analytics and Data Science

Harness the Power of Data

Tweets 76K Following 64.5K Followers 167K Likes 120K Lists 24 Moments 0 Edit profile

Kirk Borne @KirkDBorne

The Principal Data Scientist at @BoozAllen, PhD Astrophysicist. Top Data Science and Big Data Influencer. Ex-Professor rocketdatascience.org

Booz Allen Hamilton

linkedin.com/in/kirkdborne

Joined March 2012

Born on November 9, 1954

16.9K Photos and videos

Tweets **Tweets & replies** **Media**

Pinned Tweet

Kirk Borne @KirkDBorne · Jul 20

Honored to be #2 **#BigData** influencer in your Top [#100](#) @pierreppinna -- thank you!

[ipfconline.fr/blog/2017/05/2...](#) by @ipfconline1

FINE LIST OF 50 TOP WORLD BIG DATA EXPERTS TO FOLLOW IN 2017 [WITH MOZ SOCIAL SCORE]

1. Dell Partner: @Dell | SCORE: 84.0 MOZ:76 (Rank #23 by Hot Score)

2. Ericsson Twitter: @Ericsson | SCORE: 83.7 MOZ:81 (Rank #12 by Hot Score)

3. Ariszt van Loon Twitter: @ArisztvanLoon | SCORE: 78.3 MOZ:81 (Rank #48 by Hot Score)

4. Tsvetan Hristov Twitter: @TsvetanHristov | SCORE: 77.3 MOZ:82 (Rank #49 by Hot Score)

5. Terence Tao Twitter: @TerenceTao | SCORE: 77.3 MOZ:82 (Rank #50 by Hot Score)

6. Booz Allen Hamilton Twitter: @BoozAllen | SCORE: 74.1 MOZ:71 (Rank #10 by Hot Score)

7. HIT Test Research Twitter: @HITestResearch | SCORE: 73.9 MOZ:82 (Rank #1 by Hot Score)

8. Eric Horvitz Twitter: @EricHorvitz | SCORE: 73.0 MOZ:86 (Rank #3 by Hot Score)

9. Bill McCalley Twitter: @BillMcCalley | SCORE: 72.7 MOZ:84 (Rank #7 by Hot Score)

10. LinkedIn Twitter: @LinkedIn | SCORE: 72.6 MOZ:84 (Rank #8 by Hot Score)

11. Max Gonen Twitter: @maxgonen | SCORE: 72.2 MOZ:81 (Rank #9 by Hot Score)

12. Spiros Margaritis Twitter: @SpirosMargaritis | SCORE: 71.7 MOZ:81 (Rank #5 by Hot Score)

13. Amazon Web Services Twitter: @awscloud | SCORE: 70.9 MOZ:81 (Rank #29 by Hot Score)

14. Oracle Twitter: @Oracle | SCORE: 70.3 MOZ:81 (Rank #30 by Hot Score)

15. Al Paliogiannis Twitter: @AlPaliogiannis | SCORE: 69.6 MOZ:77 (Rank #31 by Hot Score)

16. Jim Marson Twitter: @JimMarson | SCORE: 69.3 MOZ:80 (Rank #14 by Hot Score)

17. Hiltiagors Twitter: @Hiltiagors | SCORE: 68.6 MOZ:77 (Rank #28 by Hot Score)

18. Sean Gardner Twitter: @SeanGardnerData | SCORE: 68.3 MOZ:76 (Rank #26 by Hot Score)

19. Hui Li Twitter: @HuiLi_TWITTER | SCORE: 68.1 MOZ:76 (Rank #27 by Hot Score)

20. Microsoft Azure Twitter: @AzureAI | SCORE: 67.7 MOZ:79 (Rank #5 by Hot Score)

21. Onur Polatkan Twitter: @OnurPolatkan | SCORE: 66.8 MOZ:75 (Rank #29 by Hot Score)

22. Booz Allen Hamilton Twitter: @BoozAllen | SCORE: 57.4 MOZ:82 (Rank #49 by Hot Score)

23. Lukkila Hemminki Twitter: @BigCyberHemmi | SCORE: 57.3 MOZ:76 (Rank #25 by Hot Score)

#1 or #2 (2013-present) in Big Data, Data Science, AI & Machine Learning,
#4 Martech, #13 IoT, #16 Data Security, #26 Digital Transformation, ...

Data Science Declaration

— @KirkDBorne (January 12, 2015)

“Now is the time to begin thinking of Data Science as a profession not a job, as a corporate culture not a corporate agenda, as a strategy not a stratagem, as a core competency not a course, and as a way of doing things not a thing to do.”

http://rocketdatascience.org/?page_id=2



2015-PRESENT

PRINCIPAL DATA SCIENTIST AND
EXECUTIVE ADVISOR

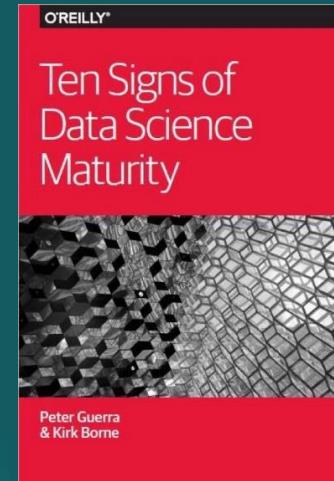
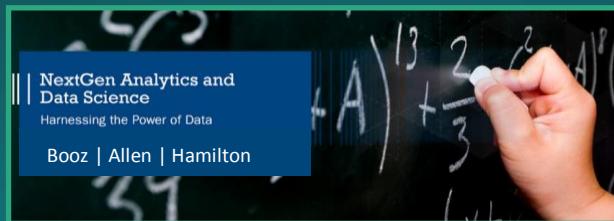
BOOZ ALLEN HAMILTON
MANAGEMENT CONSULTING FIRM
(= TAKING “DATA – TO – ACTION”)

(MARYLAND, VIRGINIA, WASHINGTON DC)

<https://mapr.com/blog/growth-hackers-journey-right-place-right-time/>

TEN SIGNS OF DATA SCIENCE MATURITY

Booz
Allen



An organization's journey to data science maturity...

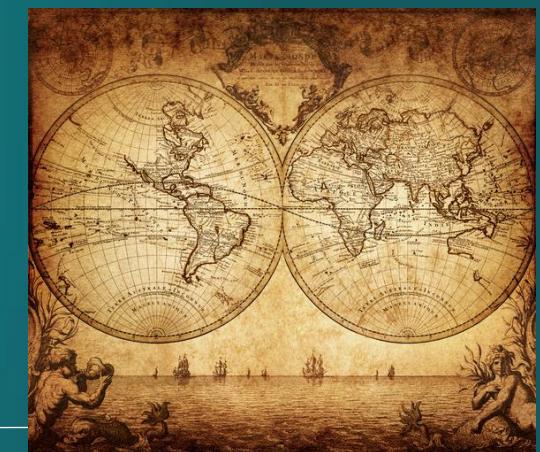
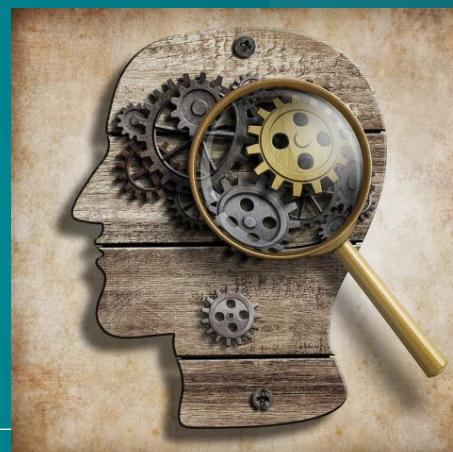
- 1) ...democratizes all data and data access
- 2) ...uses Agile for everything and leverages DataOps
- 3) ...leverages the crowd, works collaboratively (hackathons; Data Science Bowl)
- 4) ...follows rigorous scientific methodology (i.e., experimental, disciplined,...)
- 5) ...attracts & retains diverse participants; grants them freedom to explore
- 6) ...relentlessly asks the right questions, and searches for the next one
- 7) ...celebrates a fast-fail collaborative culture
- 8) ...shows insights through illustrations and tells stories
- 9) ...builds proof of value, not proof of concepts
- 10) ...personifies data science as a way of doing things, not a thing to do.

<https://www.oreilly.com/ideas/10-signs-of-data-science-maturity> -- <http://www.boozallen.com/datascience>

SAILING THE “7” SEAS OF DATA: THE INDIVIDUAL’S JOURNEY TO DATA SCIENCE MATURITY

The Seven Seas (C's) of Data Scientists:

- 1) Cognitively Curious (ask questions ... the right questions!)
 - 2) Creative (design thinker)
 - 3) Courageous problem-solver (rocks the culture, willingness to fail)
 - 4) Cool under pressure (tolerance for ambiguity)
 - 5) Continuous life-long learner (hackathons, online classes, ...)
 - 6) Communicator (data storyteller)
 - 7) Collaborative (“data science is a team sport”)
- + 3 more:
- 8) Critical Thinker
 - 9) Computational
 - 10) Consultative



DATA SCIENTISTS ARE EXPLORERS – – EXPLORING VAST AND ENDLESS SEAS OF DATA!

*“If you want to build a ship,
don’t drum up people to
gather wood and don’t
assign them tasks and work,
but rather teach them to
yearn for the vast and
endless sea.”*

- Antoine de Saint-Exupery



<https://www.pinterest.com/pin/377106168772298092/>

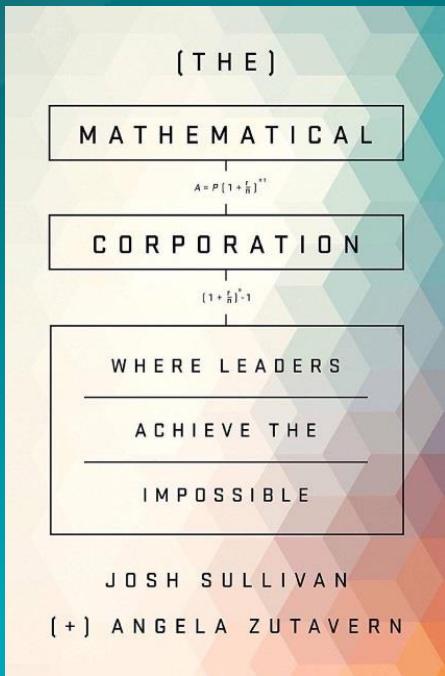
4 LIFE LESSONS IN THE DATA SCIENCE JOURNEY: HUMILITY, PARSIMONY, UTILITY, AND PRIORITY

- “*If we knew what we were doing, it would not be called research.*” – unknown(?)
- “*A scientific model should be as simple as possible, but no simpler.*” – Albert Einstein
- “*All models are wrong, but some are useful.*”
– George Box
- “*The two most important things in Data Science are the data and the science*” – @KirkDBorne 

THANK YOU!

LET US EXPLORE & BUILD A BETTER WORLD WITH DATA SCIENCE!

Learn how AI and Machine Intelligence empower *The Mathematical Corporation* ...



(Machine Intelligence)



LISTEN

@KirkDBorne
@BoozDataScience

READ, BUILD, and EXPLORE

www.boozallen.com/datascience

- Tips for Building a Data Science Capability
- The Mathematical Corporation
- 10 Signs of Data Science Maturity
- The Field Guide to Data Science
- The Data and Analytics Catalyst
- Explore:** sailfish.boozallen.com

PARTICIPATE

datasciencebowl.com

