data blueprint

UNLOCKING BUSINESS VALUE

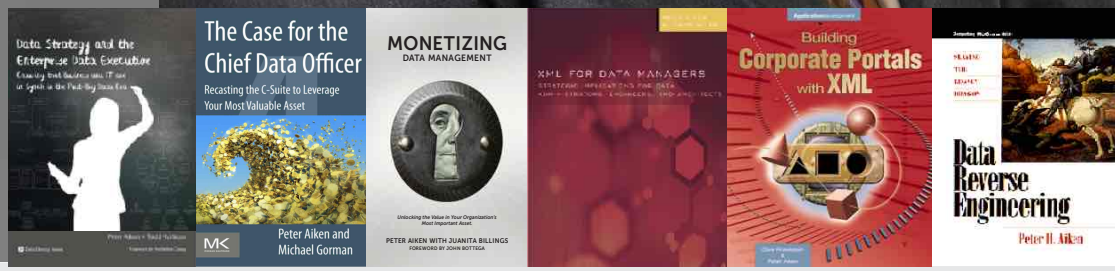
Valuing Data Assets

Auditors should enjoy a birds eye view!

Peter Aiken PhD

Peter Aiken, Ph.D.

- I've been doing this a long time
- My work is recognized as useful
- Associate Professor of IS (vcu.edu)
- Founder, Data Blueprint (datablueprint.com)
- DAMA International (dama.org)
- 10 books and dozens of articles
- Experienced w/ 500+ data management practices worldwide
- Multi-year immersions
  - US DoD (DISA/Army/Marines/DLA)
  - Nokia
  - Deutsche Bank
  - Wells Fargo
  - Walmart
  - …



data blueprint

UNLOCKING BUSINESS VALUE

Highest recorded bird flight from a man-made structure

Dubai 2015 - https://www.youtube.com/watch?v=D1gG9aLKXBw&frags=pl%2Cwn

PennDOT Selling Drivers' Personal Information? NBC10 Investigators

- Since 2010, PennDOT has earned $157 million selling driver information to third parties. According to PennDOT there are 2,527 business accounts, 16,529 sub accounts, and seven wholesalers with 13,489 sub accounts – all with paid access to driver information.

https://www.nbcphiladelphia.com/news/local/PennDOT-Selling-Drivers-Personal-Information--NBC10-Investogators-364903281.html

PennDOT saves taxpayers $150+ million using lawful data sales!

- Since 2010, PennDOT has saved taxpayers at least $157 million by lawfully selling driver and other information to third parties. All transactions are carefully monitored for compliance with existing data legislation.

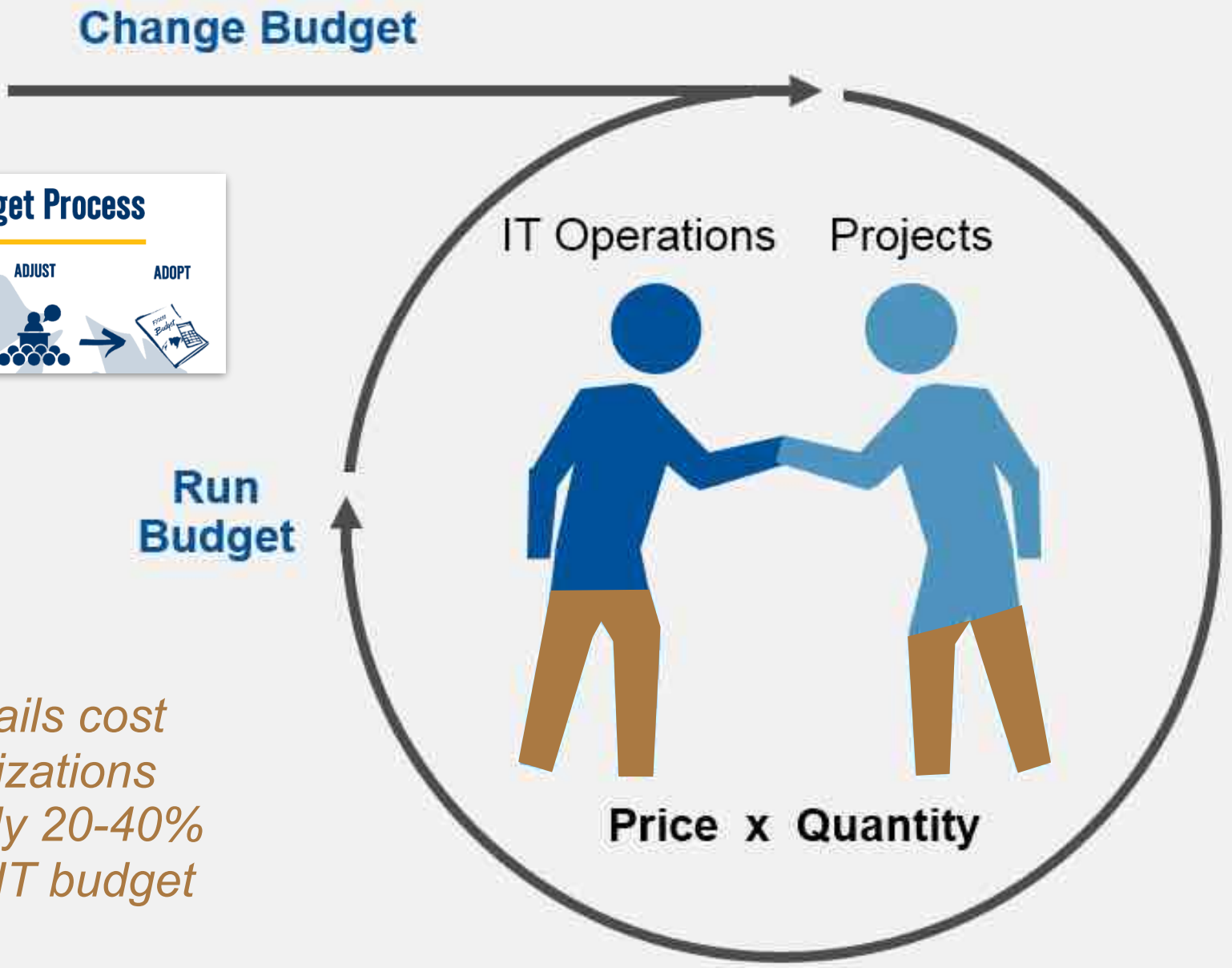
https://www.nbcphiladelphia.com/news/local/PennDOT-Selling-Drivers-Personal-Information--NBC10-Investogators-364903281.html

Texas is not alone

- Nearly two-thirds of all publicly known ransomware attacks in the US in 2019 have targeted state or local governments, according to a report published Wednesday by the IT security firm Barracuda Networks.
- Of the 55 attacks Barracuda's researchers looked at, just three hit state government agencies — Massachusetts' public-defender agency and Georgia's court system and public-safety department — while the remaining targeted town-, city- and county-level entities. Of those municipal victims, communities of fewer than 50,000 residents accounted for 45 percent of the ransomware activity, while 24 percent had fewer than 15,000. Prevent future events by:

1. Keep clear inventories of all of your digital assets and their locations, so cyber criminals do not attack a system you are unaware of.
2. Keep all software up to date, including operating systems and applications.
3. Back up all information every day, including information on employee devices, so you can restore encrypted data if attacked.
4. Back up all information to a secure, offsite location.
5. Segment your network: Don't place all data on one file share accessed by everyone in the company.
6. Train staff on cyber security practices, emphasizing not opening attachments or links from unknown sources.
7. Develop a communication strategy to inform employees if a virus reaches the company network.
8. Before an attack happens, work with your board to determine if your company will plan to pay a ransom or launch an investigation.
9. Perform a threat analysis in communication with vendors to go over the cyber security throughout the lifecycle of a particular device or application.
10. Instruct information security teams to perform penetration testing to find any vulnerabilities.

Integrated Cycle for Continuous Optimization



Data fails cost organizations minimally 20-40% of their IT budget

Hidden Data Factories are expensive

https://hbr.org/2016/09/bad-data-costs-the-u-s-3-trillion-per-year

- Consider these two questions:
  - Were your systems explicitly designed to be integrated or otherwise work together?
  - If not then what is the likelihood that they will just happen to work well together?

"The choice of data structure and algorithm can make the difference between software running in a few seconds or many days."

http://slideplayer.com/slide/7664141/

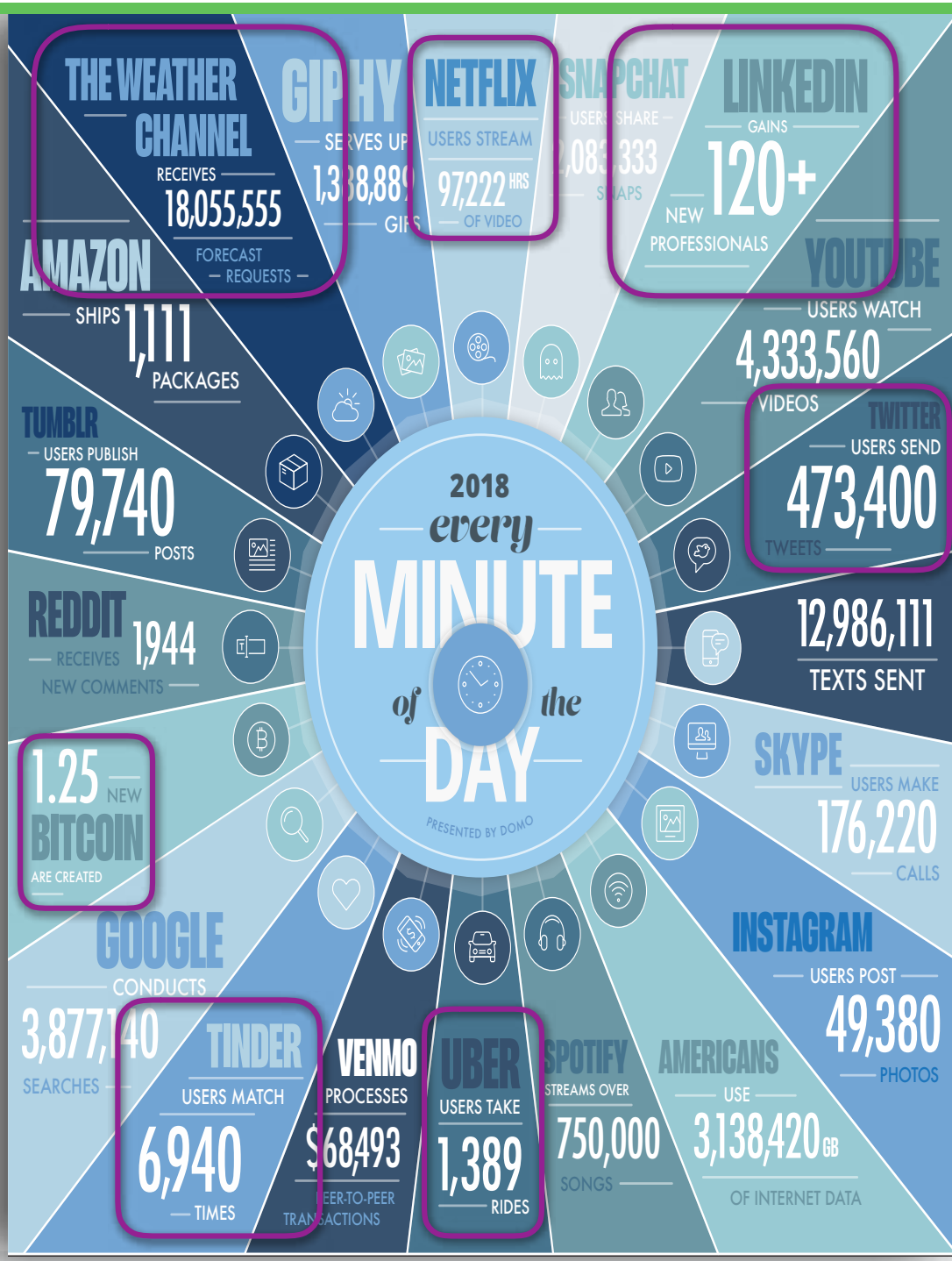
- Data must function at the most granular interaction or it results in things that:
  - Take longer (end-of-day job runs 45 hours)
  - Cost more (the wrong assets are transferred)
  - Deliver less (features are not delivered)
  - Present greater risk (billing delayed 30 days, monthly)

- 20-40% of IT budgets are spent evolving data:
  - Data migration (changing the location from one place to another)
  - Data conversion (changing it into another form, state, or product)
  - Data improvement (inspecting, manipulating it, preparing for subsequent use)

How much Data, by the minute!

For the entirety of 2018, every minute of every day:

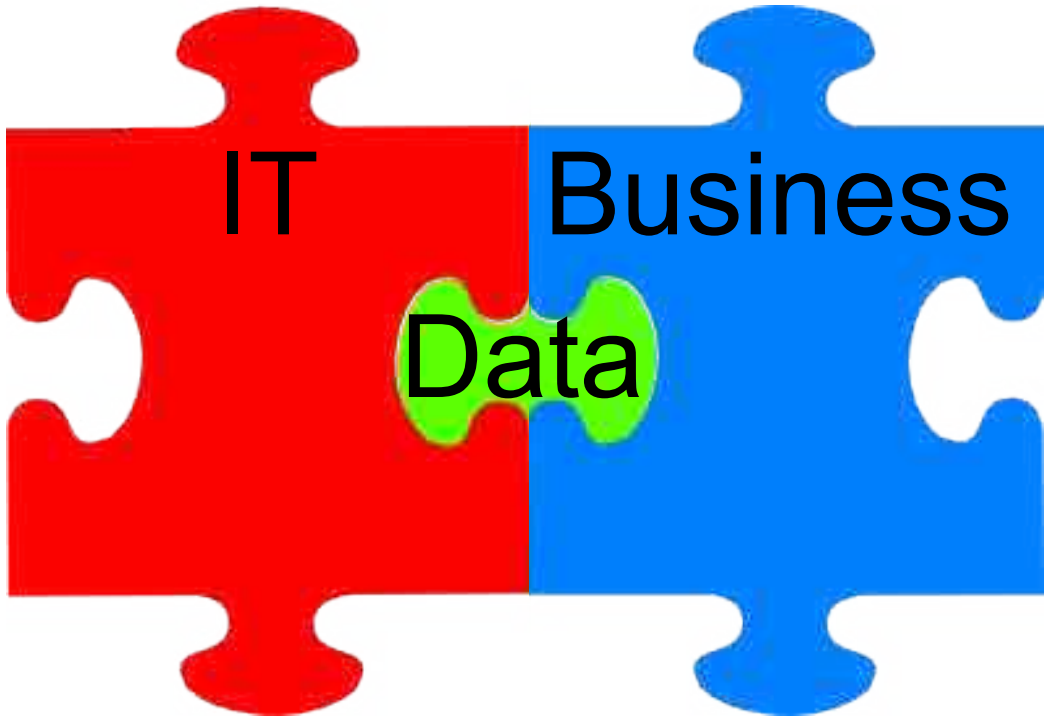
- 18 million weather forecast requests
- Netflix streams almost 100,000 hours of video
- LinkedIn adds 120+ individuals
- 1,300 Uber rides
- (almost) a half million tweets
- 7,000 Tinder matches
- 1.25 new cryptocurrencies are created
- ...



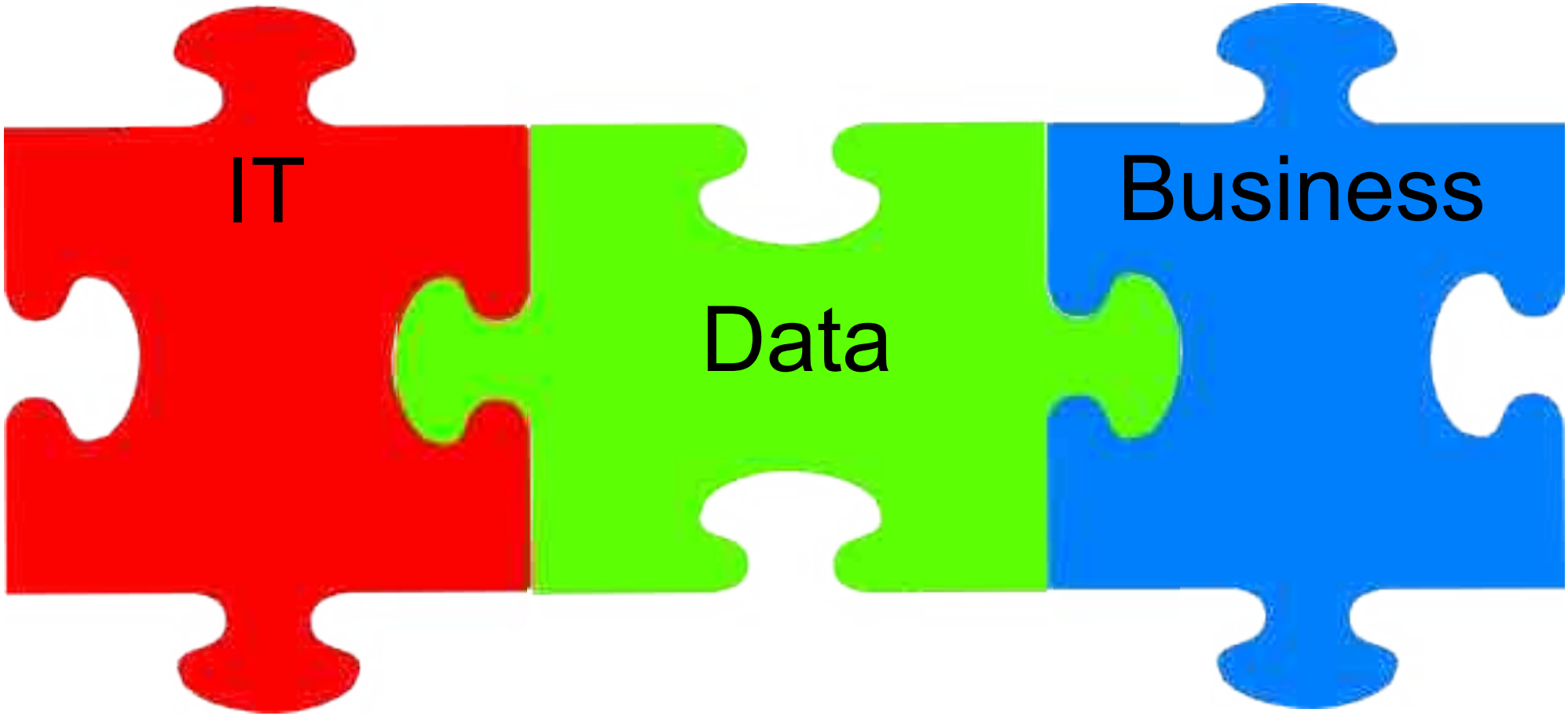
https://www.domo.com/learn/data-never-sleeps-6

As articulated by Micheline Casey

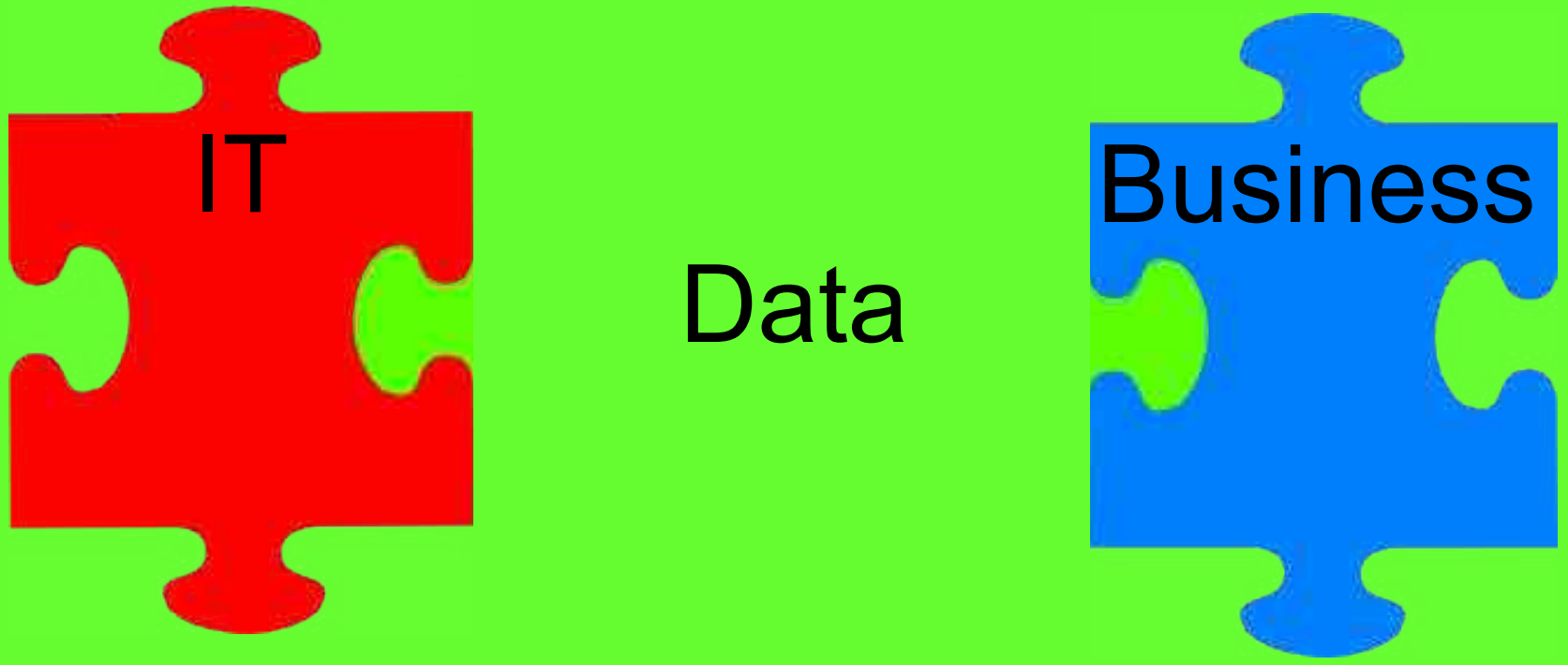
Perceived State of Data



Desired To Be State of Data

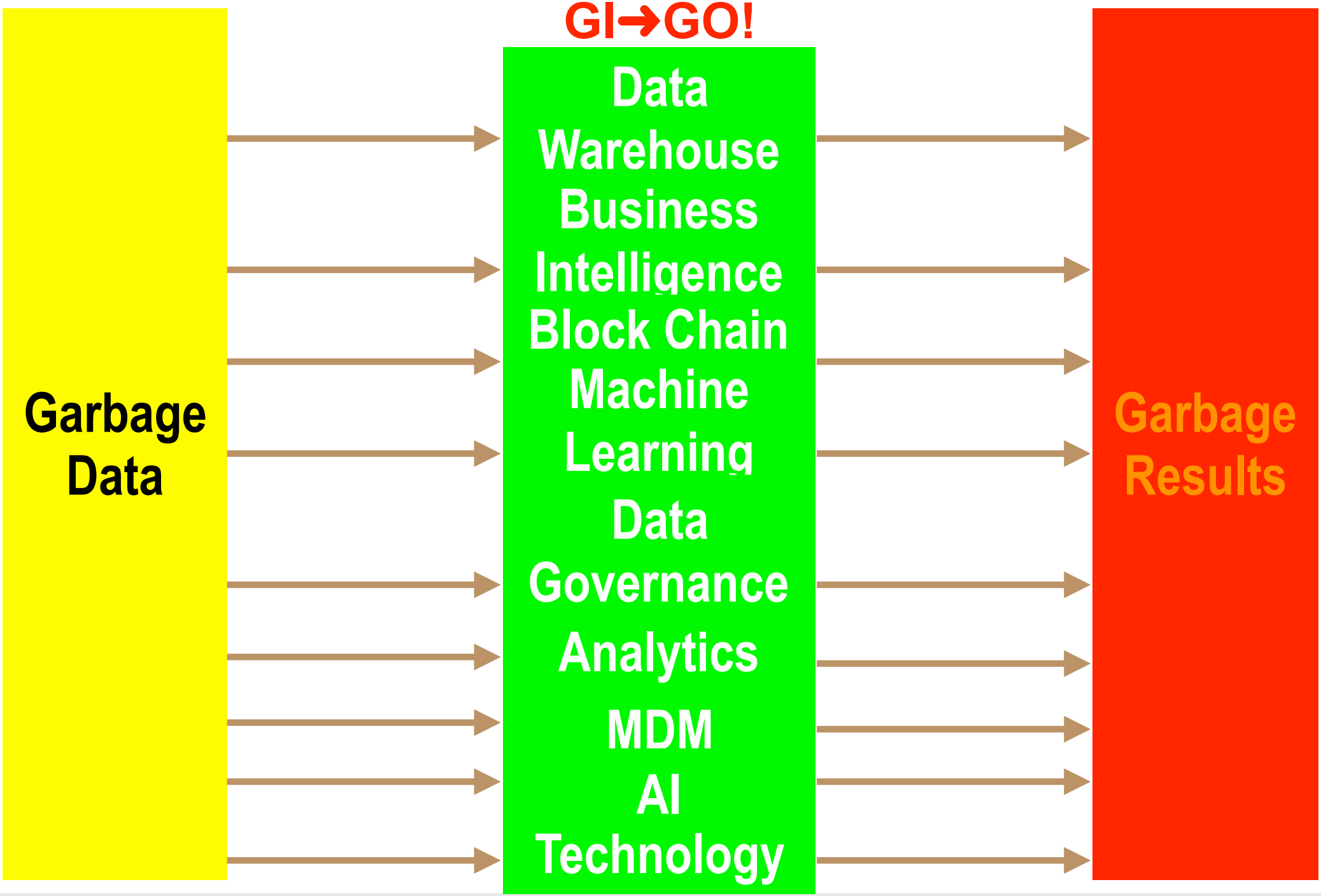


The Real State of Data



My most profound lesson! (so far)

Garbage In ➜ Garbage Out!



Quality In ➔ Quality Out!

Valuing Data Assets

Value

Capabilities Level-1

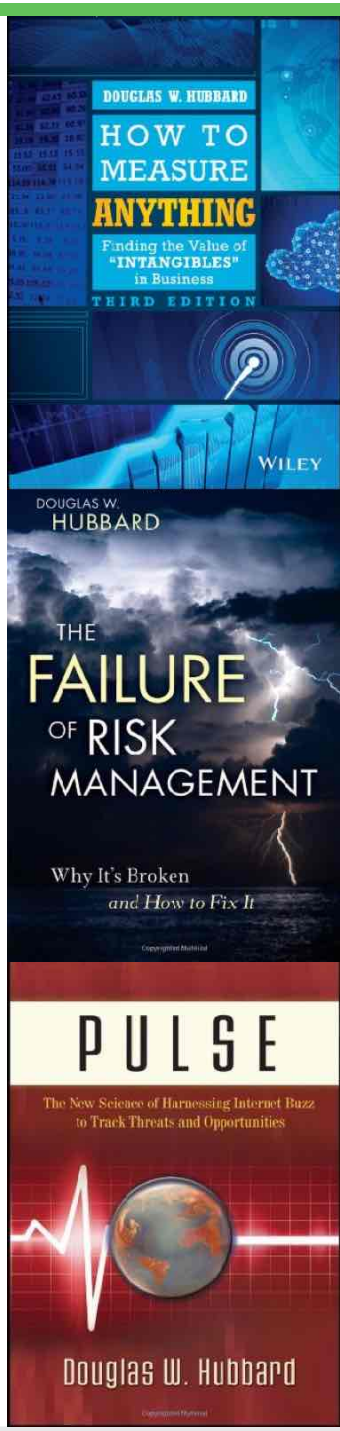
Data is a by-product of IT

Detritus (waste or debris of any kind)

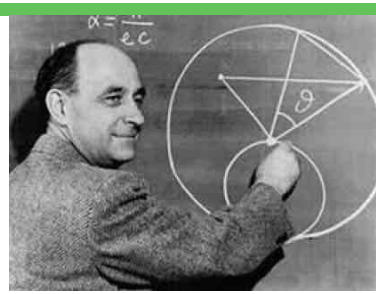
Time/Effort

Great inspiration towards valuation ...

- *How to Measure Anything: Finding the Value of Intangibles in Business* by Douglas Hubbard (ISBN: 0470539399)
- Measurement is a reduction in uncertainty
- Formalizing stuff forces clarity
- Whatever your measurement problem is,
  - it's been done before
- You have more data than you think
- You need less data than you think
- Getting data is more economical than you think
- You probably need different data than you think
- Special shout out to Chapter 7
  - Measuring the value of additional information to a decision



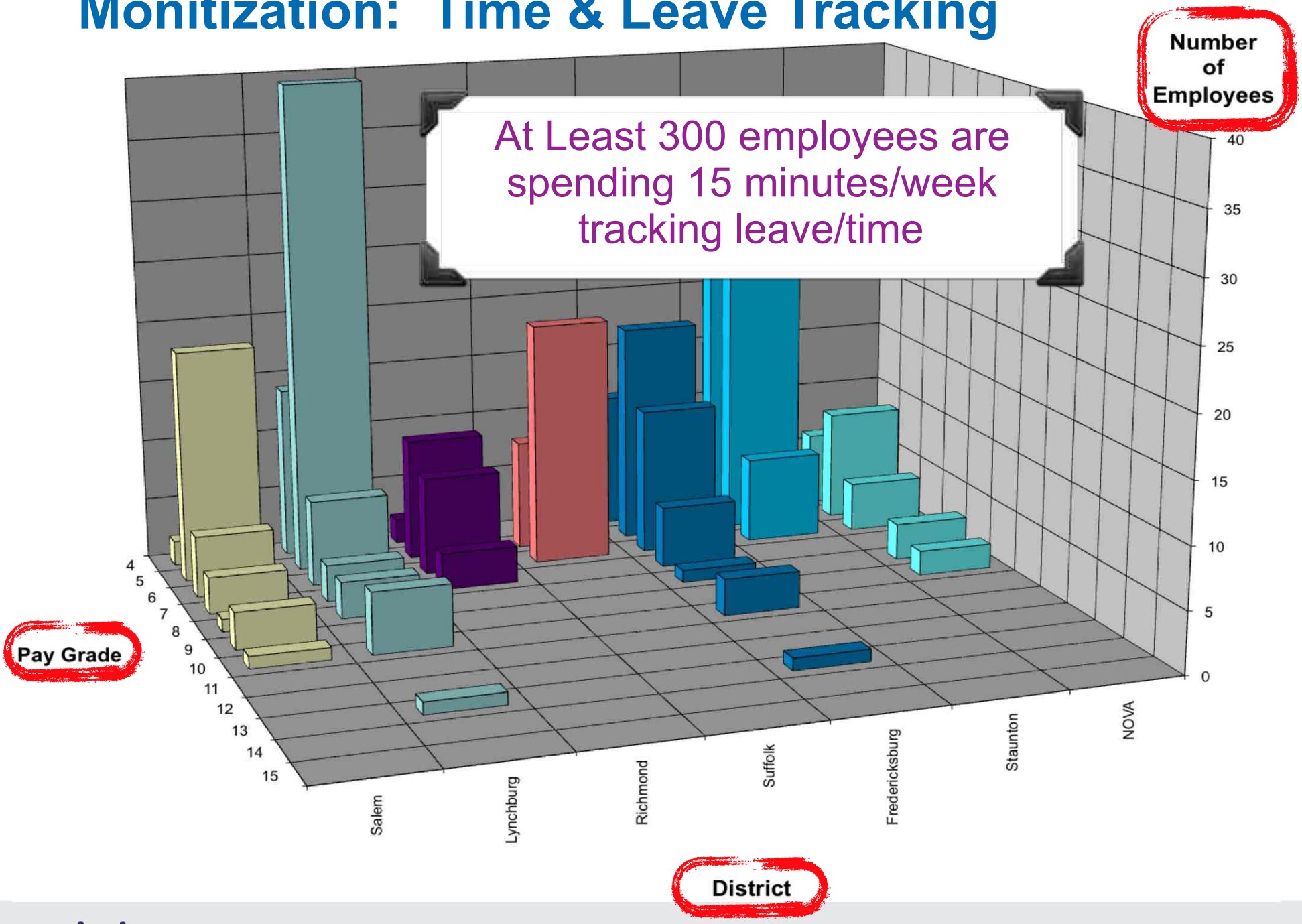
Enrico Fermi (Nobel Prize Physics 1938)



- How many piano tuners in the city of Chicago?
  - Without using existing lists such as yellow pages, google ...
  - Current population of Chicago (3 million at the time)
  - Average number of people per household (2 or 3)
  - Share of households with regularly tuned pianos (1 in 3)
  - Required frequency of tuning (1/year)
  - How many pianos can a tuner tune daily? (4 or 5)
  - How many days/year are worked (250)

- Tuners in Chicago ≈ Population/people per household
  times % households with tuned pianos
  times tunings per year
  divided by (tunings per tuner per day
  times workdays/year)

Monitization: Time & Leave Tracking



Capture Cost of Labor/Category

Annual

Grade	Step 5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	$ 12,020.00	$ 12,290.00	$ 12,567.00	$ 12,850.00	$ 13,140.00	$ 13,436.00	$ 13,738.00	$ 14,048.00	$ 14,364.00	$ 14,688.00	$ 15,018.00	$ 15,357.00	$ 15,703.00	$ 16,056.00	$ 16,418.00
2	$ 13,140.00	$ 13,436.00	$ 13,738.00	$ 14,048.00	$ 14,364.00	$ 14,688.00	$ 15,018.00	$ 15,357.00	$ 15,703.00	$ 16,056.00	$ 16,418.00	$ 16,788.00	$ 17,166.00	$ 17,552.00	$ 17,948.00
3	$ 14,364.00	$ 14,688.00	$ 15,018.00	$ 15,357.00	$ 15,703.00	$ 16,056.00	$ 16,418.00	$ 16,788.00	$ 17,166.00	$ 17,552.00	$ 17,948.00	$ 18,352.00	$ 18,765.00	$ 19,188.00	$ 19,620.00
4	$ 15,703.00	$ 16,056.00	$ 16,418.00	$ 16,788.00	$ 17,166.00	$ 17,552.00	$ 17,948.00	$ 18,352.00	$ 18,765.00	$ 19,188.00	$ 19,620.00	$ 20,062.00	$ 20,514.00	$ 20,976.00	$ 21,449.00
5	$ 17,166.00	$ 17,552.00	$ 17,948.00	$ 18,352.00	$ 18,765.00	$ 19,188.00	$ 19,620.00	$ 20,062.00	$ 20,514.00	$ 20,976.00	$ 21,449.00	$ 21,932.00	$ 22,426.00	$ 22,931.00	$ 23,447.00
6	$ 18,765.00	$ 19,188.00	$ 19,620.00	$ 20,062.00	$ 20,514.00	$ 20,976.00	$ 21,449.00	$ 21,932.00	$ 22,426.00	$ 22,931.00	$ 23,447.00	$ 23,975.00	$ 24,515.00	$ 25,068.00	$ 25,632.00
7	$ 20,514.00	$ 20,976.00	$ 21,449.00	$ 21,932.00	$ 22,426.00	$ 22,931.00	$ 23,447.00	$ 23,975.00	$ 24,515.00	$ 25,068.00	$ 25,632.00	$ 26,209.00	$ 26,800.00	$ 27,403.00	$ 28,021.00
8	$ 22,426.00	$ 22,931.00	$ 23,447.00	$ 23,975.00	$ 24,515.00	$ 25,068.00	$ 25,632.00	$ 26,209.00	$ 26,800.00	$ 27,403.00	$ 28,021.00	$ 28,652.00	$ 29,297.00	$ 29,957.00	$ 30,632.00
9	$ 24,515.00	$ 25,068.00	$ 25,632.00	$ 26,209.00	$ 26,800.00	$ 27,403.00	$ 28,021.00	$ 28,652.00	$ 29,297.00	$ 29,957.00	$ 30,632.00	$ 31,322.00	$ 32,027.00	$ 32,749.00	$ 33,486.00
10	$ 26,800.00	$ 27,403.00	$ 28,021.00	$ 28,652.00	$ 29,297.00	$ 29,957.00	$ 30,632.00	$ 31,322.00	$ 32,027.00	$ 32,749.00	$ 33,486.00	$ 34,240.00	$ 35,012.00	$ 35,800.00	$ 36,607.00
11	$ 29,297.00	$ 29,957.00	$ 30,632.00	$ 31,322.00	$ 32,027.00	$ 32,749.00	$ 33,486.00	$ 34,240.00	$ 35,012.00	$ 35,800.00	$ 36,607.00	$ 37,431.00	$ 38,274.00	$ 39,136.00	$ 40,018.00
12	$ 32,027.00	$ 32,749.00	$ 33,486.00	$ 34,240.00	$ 35,012.00	$ 35,800.00	$ 36,607.00	$ 37,431.00	$ 38,274.00	$ 39,136.00	$ 40,018.00	$ 40,919.00	$ 41,841.00	$ 42,783.00	$ 43,747.00
13	$ 35,012.00	$ 35,800.00	$ 36,607.00	$ 37,431.00	$ 38,274.00	$ 39,136.00	$ 40,018.00	$ 40,919.00	$ 41,841.00	$ 42,783.00	$ 43,747.00	$ 44,732.00	$ 45,740.00	$ 46,770.00	$ 47,823.00
14	$ 38,274.00	$ 39,136.00	$ 40,018.00	$ 40,919.00	$ 41,841.00	$ 42,783.00	$ 43,747.00	$ 44,732.00	$ 45,740.00	$ 46,770.00	$ 47,823.00	$ 48,900.00	$ 50,002.00	$ 51,128.00	$ 52,280.00
15	$ 41,841.00	$ 42,783.00	$ 43,747.00	$ 44,732.00	$ 45,740.00	$ 46,770.00	$ 47,823.00	$ 48,900.00	$ 50,002.00	$ 51,128.00	$ 52,280.00	$ 53,457.00	$ 54,661.00	$ 55,892.00	$ 57,151.00
16	$ 45,740.00	$ 46,770.00	$ 47,823.00	$ 48,900.00	$ 50,002.00	$ 51,128.00	$ 52,280.00	$ 53,457.00	$ 54,661.00	$ 55,892.00	$ 57,151.00	$ 58,439.00	$ 59,755.00	$ 61,101.00	$ 62,477.00
17	$ 50,002.00	$ 51,128.00	$ 52,280.00	$ 53,457.00	$ 54,661.00	$ 55,892.00	$ 57,151.00	$ 58,439.00	$ 59,755.00	$ 61,101.00	$ 62,477.00	$ 63,884.00	$ 65,323.00	$ 66,794.00	$ 68,299.00
18	$ 54,661.00	$ 55,892.00	$ 57,151.00	$ 58,439.00	$ 59,755.00	$ 61,101.00	$ 62,477.00	$ 63,884.00	$ 65,323.00	$ 66,794.00	$ 68,299.00	$ 69,837.00	$ 71,410.00	$ 73,019.00	$ 74,663.00
19	$ 59,755.00	$ 61,101.00	$ 62,477.00	$ 63,884.00	$ 65,323.00	$ 66,794.00	$ 68,299.00	$ 69,837.00	$ 71,410.00	$ 73,019.00	$ 74,663.00	$ 76,345.00	$ 78,064.00	$ 79,823.00	$ 81,621.00
20	$ 65,323.00	$ 66,794.00	$ 68,299.00	$ 69,837.00	$ 71,410.00	$ 73,019.00	$ 74,663.00	$ 76,345.00	$ 78,064.00	$ 79,823.00	$ 81,621.00	$ 83,459.00	$ 85,339.00	$ 87,261.00	$ 89,226.00
21	$ 71,410.00	$ 73,019.00	$ 74,663.00	$ 76,345.00	$ 78,064.00	$ 79,823.00	$ 81,621.00	$ 83,459.00	$ 85,339.00	$ 87,261.00	$ 89,226.00	$ 91,236.00	$ 93,291.00	$ 95,392.00	$ 97,541.00
22	$ 78,064.00	$ 79,823.00	$ 81,621.00	$ 83,459.00	$ 85,339.00	$ 87,261.00	$ 89,226.00	$ 91,236.00	$ 93,291.00	$ 95,392.00	$ 97,541.00	$ 99,738.00	$ 101,984.00	$ 104,282.00	$ 106,630.00
23	$ 85,339.00	$ 87,261.00	$ 89,226.00	$ 91,236.00	$ 93,291.00	$ 95,392.00	$ 97,541.00	$ 99,738.00	$ 101,984.00	$ 104,282.00	$ 106,630.00	$ 109,032.00	$ 111,488.00	$ 113,999.00	$ 116,567.00

Monthly

Grade	Step 5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	$ 1,001.67	$ 1,024.17	$ 1,047.25	$ 1,070.83	$ 1,095.00	$ 1,119.67	$ 1,144.83	$ 1,170.67	$ 1,197.00	$ 1,224.00	$ 1,251.50	$ 1,279.75	$ 1,308.58	$ 1,338.00	$ 1,368.17
2	$ 1,095.00	$ 1,119.67	$ 1,144.83	$ 1,170.67	$ 1,197.00	$ 1,224.00	$ 1,251.50	$ 1,279.75	$ 1,308.58	$ 1,338.00	$ 1,368.17	$ 1,399.00	$ 1,430.50	$ 1,462.67	$ 1,495.67
3	$ 1,197.00	$ 1,224.00	$ 1,251.50	$ 1,279.75	$ 1,308.58	$ 1,338.00	$ 1,368.17	$ 1,399.00	$ 1,430.50	$ 1,462.67	$ 1,495.67	$ 1,529.33	$ 1,563.75	$ 1,599.00	$ 1,635.00
4	$ 1,308.58	$ 1,338.00	$ 1,368.17	$ 1,399.00	$ 1,430.50	$ 1,462.67	$ 1,495.67	$ 1,529.33	$ 1,563.75	$ 1,599.00	$ 1,635.00	$ 1,671.83	$ 1,709.50	$ 1,748.00	$ 1,787.42
5	$ 1,430.50	$ 1,462.67	$ 1,495.67	$ 1,529.33	$ 1,563.75	$ 1,599.00	$ 1,635.00	$ 1,671.83	$ 1,709.50	$ 1,748.00	$ 1,787.42	$ 1,827.67	$ 1,868.83	$ 1,910.92	$ 1,953.92
6	$ 1,563.75	$ 1,599.00	$ 1,635.00	$ 1,671.83	$ 1,709.50	$ 1,748.00	$ 1,787.42	$ 1,827.67	$ 1,868.83	$ 1,910.92	$ 1,953.92	$ 1,997.92	$ 2,042.92	$ 2,089.00	$ 2,136.00
7	$ 1,709.50	$ 1,748.00	$ 1,787.42	$ 1,827.67	$ 1,868.83	$ 1,910.92	$ 1,953.92	$ 1,997.92	$ 2,042.92	$ 2,089.00	$ 2,136.00	$ 2,184.08	$ 2,233.33	$ 2,283.58	$ 2,335.08
8	$ 1,868.83	$ 1,910.92	$ 1,953.92	$ 1,997.92	$ 2,042.92	$ 2,089.00	$ 2,136.00	$ 2,184.08	$ 2,233.33	$ 2,283.58	$ 2,335.08	$ 2,387.67	$ 2,441.42	$ 2,496.42	$ 2,552.67
9	$ 2,042.92	$ 2,089.00	$ 2,136.00	$ 2,184.08	$ 2,233.33	$ 2,283.58	$ 2,335.08	$ 2,387.67	$ 2,441.42	$ 2,496.42	$ 2,552.67	$ 2,610.17	$ 2,668.92	$ 2,729.08	$ 2,790.50
10	$ 2,233.33	$ 2,283.58	$ 2,335.08	$ 2,387.67	$ 2,441.42	$ 2,496.42	$ 2,552.67	$ 2,610.17	$ 2,668.92	$ 2,729.08	$ 2,790.50	$ 2,853.33	$ 2,917.67	$ 2,983.33	$ 3,050.58
11	$ 2,441.42	$ 2,496.42	$ 2,552.67	$ 2,610.17	$ 2,668.92	$ 2,729.08	$ 2,790.50	$ 2,853.33	$ 2,917.67	$ 2,983.33	$ 3,050.58	$ 3,119.25	$ 3,189.50	$ 3,261.33	$ 3,334.83
12	$ 2,668.92	$ 2,729.08	$ 2,790.50	$ 2,853.33	$ 2,917.67	$ 2,983.33	$ 3,050.58	$ 3,119.25	$ 3,189.50	$ 3,261.33	$ 3,334.83	$ 3,409.92	$ 3,486.75	$ 3,565.25	$ 3,645.58
13	$ 2,917.67	$ 2,983.33	$ 3,050.58	$ 3,119.25	$ 3,189.50	$ 3,261.33	$ 3,334.83	$ 3,409.92	$ 3,486.75	$ 3,565.25	$ 3,645.58	$ 3,727.67	$ 3,811.67	$ 3,897.50	$ 3,985.25
14	$ 3,189.50	$ 3,261.33	$ 3,334.83	$ 3,409.92	$ 3,486.75	$ 3,565.25	$ 3,645.58	$ 3,727.67	$ 3,811.67	$ 3,897.50	$ 3,985.25	$ 4,075.00	$ 4,166.83	$ 4,260.67	$ 4,356.67
15	$ 3,486.75	$ 3,565.25	$ 3,645.58	$ 3,727.67	$ 3,811.67	$ 3,897.50	$ 3,985.25	$ 4,075.00	$ 4,166.83	$ 4,260.67	$ 4,356.67	$ 4,454.75	$ 4,555.08	$ 4,657.67	$ 4,762.58
16	$ 3,811.67	$ 3,897.50	$ 3,985.25	$ 4,075.00	$ 4,166.83	$ 4,260.67	$ 4,356.67	$ 4,454.75	$ 4,555.08	$ 4,657.67	$ 4,762.58	$ 4,869.92	$ 4,979.58	$ 5,091.75	$ 5,206.42
17	$ 4,166.83	$ 4,260.67	$ 4,356.67	$ 4,454.75	$ 4,555.08	$ 4,657.67	$ 4,762.58	$ 4,869.92	$ 4,979.58	$ 5,091.75	$ 5,206.42	$ 5,323.67	$ 5,443.58	$ 5,566.17	$ 5,691.58
18	$ 4,555.08	$ 4,657.67	$ 4,762.58	$ 4,869.92	$ 4,979.58	$ 5,091.75	$ 5,206.42	$ 5,323.67	$ 5,443.58	$ 5,566.17	$ 5,691.58	$ 5,819.75	$ 5,950.83	$ 6,084.92	$ 6,221.92
19	$ 4,979.58	$ 5,091.75	$ 5,206.42	$ 5,323.67	$ 5,443.58	$ 5,566.17	$ 5,691.58	$ 5,819.75	$ 5,950.83	$ 6,084.92	$ 6,221.92	$ 6,362.08	$ 6,505.33	$ 6,651.92	$ 6,801.75
20	$ 5,443.58	$ 5,566.17	$ 5,691.58	$ 5,819.75	$ 5,950.83	$ 6,084.92	$ 6,221.92	$ 6,362.08	$ 6,505.33	$ 6,651.92	$ 6,801.75	$ 6,954.92	$ 7,111.58	$ 7,271.75	$ 7,435.50
21	$ 5,950.83	$ 6,084.92	$ 6,221.92	$ 6,362.08	$ 6,505.33	$ 6,651.92	$ 6,801.75	$ 6,954.92	$ 7,111.58	$ 7,271.75	$ 7,435.50	$ 7,603.00	$ 7,774.25	$ 7,949.33	$ 8,128.42
22	$ 6,505.33	$ 6,651.92	$ 6,801.75	$ 6,954.92	$ 7,111.58	$ 7,271.75	$ 7,435.50	$ 7,603.00	$ 7,774.25	$ 7,949.33	$ 8,128.42	$ 8,311.50	$ 8,498.67	$ 8,690.17	$ 8,885.83
23	$ 7,111.58	$ 7,271.75	$ 7,435.50	$ 7,603.00	$ 7,774.25	$ 7,949.33	$ 8,128.42	$ 8,311.50	$ 8,498.67	$ 8,690.17	$ 8,885.83	$ 9,086.00	$ 9,290.67	$ 9,499.92	$ 9,713.92

ay Period

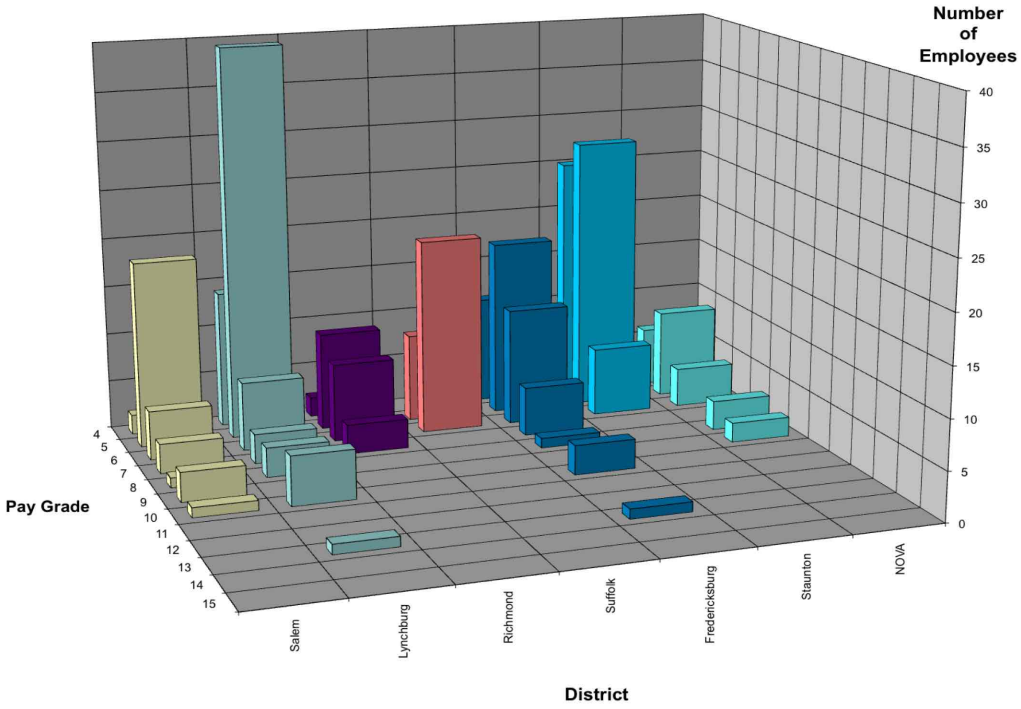
Grade	Step 5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	$ 500.83	$ 512.08	$ 523.63	$ 535.42	$ 547.50	$ 559.83	$ 572.42	$ 585.33	$ 598.50	$ 612.00	$ 625.75	$ 639.88	$ 654.29	$ 669.00	$ 684.08
2	$ 547.50	$ 559.83	$ 572.42	$ 585.33	$ 598.50	$ 612.00	$ 625.75	$ 639.88	$ 654.29	$ 669.00	$ 684.08	$ 699.50	$ 715.25	$ 731.33	$ 747.83
3	$ 598.50	$ 612.00	$ 625.75	$ 639.88	$ 654.29	$ 669.00	$ 684.08	$ 699.50	$ 715.25	$ 731.33	$ 747.83	$ 764.67	$ 781.88	$ 799.50	$ 817.50
4	$ 654.29	$ 669.00	$ 684.08	$ 699.50	$ 715.25	$ 731.33	$ 747.83	$ 764.67	$ 781.88	$ 799.50	$ 817.50	$ 835.92	$ 854.75	$ 874.00	$ 893.71
5	$ 715.25	$ 731.33	$ 747.83	$ 764.67	$ 781.88	$ 799.50	$ 817.50	$ 835.92	$ 854.75	$ 874.00	$ 893.71	$ 913.83	$ 934.42	$ 955.46	$ 976.96
6	$ 781.88	$ 799.50	$ 817.50	$ 835.92	$ 854.75	$ 874.00	$ 893.71	$ 913.83	$ 934.42	$ 955.46	$ 976.96	$ 998.96	$ 1,021.46	$ 1,044.50	$ 1,068.00
7	$ 854.75	$ 874.00	$ 893.71	$ 913.83	$ 934.42	$ 955.46	$ 976.96	$ 998.96	$ 1,021.46	$ 1,044.50	$ 1,068.00	$ 1,092.04	$ 1,116.67	$ 1,141.79	$ 1,167.54
8	$ 934.42	$ 955.46	$ 976.96	$ 998.96	$ 1,021.46	$ 1,044.50	$ 1,068.00	$ 1,092.04	$ 1,116.67	$ 1,141.79	$ 1,167.54	$ 1,193.83	$ 1,220.71	$ 1,248.21	$ 1,276.33
9	$ 1,021.46	$ 1,044.50	$ 1,068.00	$ 1,092.04	$ 1,116.67	$ 1,141.79	$ 1,167.54	$ 1,193.83	$ 1,220.71	$ 1,248.21	$ 1,276.33	$ 1,305.08	$ 1,334.46	$ 1,364.54	$ 1,395.25
10	$ 1,116.67	$ 1,141.79	$ 1,167.54	$ 1,193.83	$ 1,220.71	$ 1,248.21	$ 1,276.33	$ 1,305.08	$ 1,334.46	$ 1,364.54	$ 1,395.25	$ 1,426.67	$ 1,458.83	$ 1,491.67	$ 1,525.29

Compute Labor Costs

District-L (as an example)	Leave Tracking	Time Accounting
Employees	73	50
Number of documents	1000	2040
Timesheet/employee	13.7	40.8
Time spent	0.08	0.25
Hourly Cost	$6.92	$6.92
Additive Rate	$11.23	$11.23
Cost per timekeeper	$12.31	$114.56
Total timekeeper cost	$898.49	$5,727.89
Monthly cost	**$21,563.83**	**$137,469.40**

Annual Organizational Totals

- $100,000 Salem
- $159,000 Lynchburg
- $100,000 Richmond
- $100,000 Suffolk
- $150,000 Fredericksburg
- $100,000 Staunton
- $100,000 NOVA
- $800,000/month or $9,600,000/annually
- *Awareness of the cost of things considered overhead*

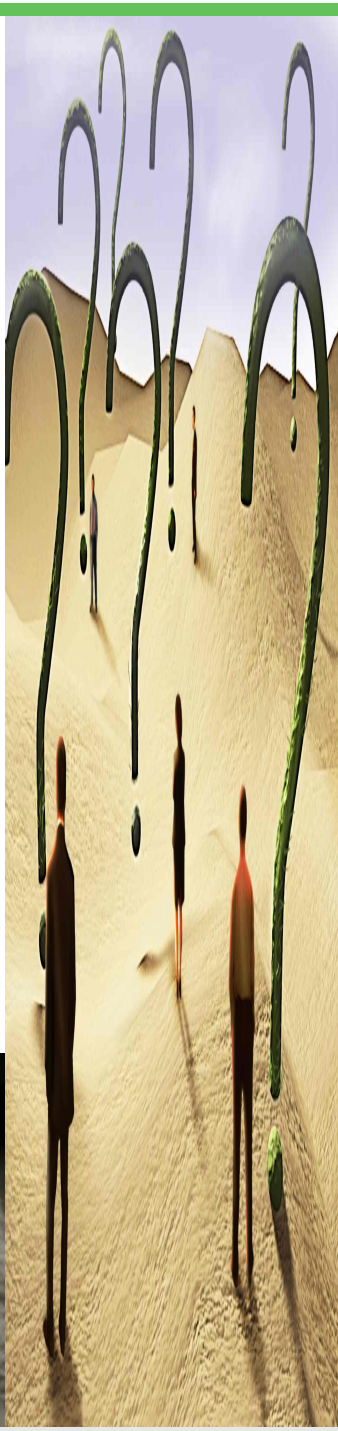


Put simply, organizations:

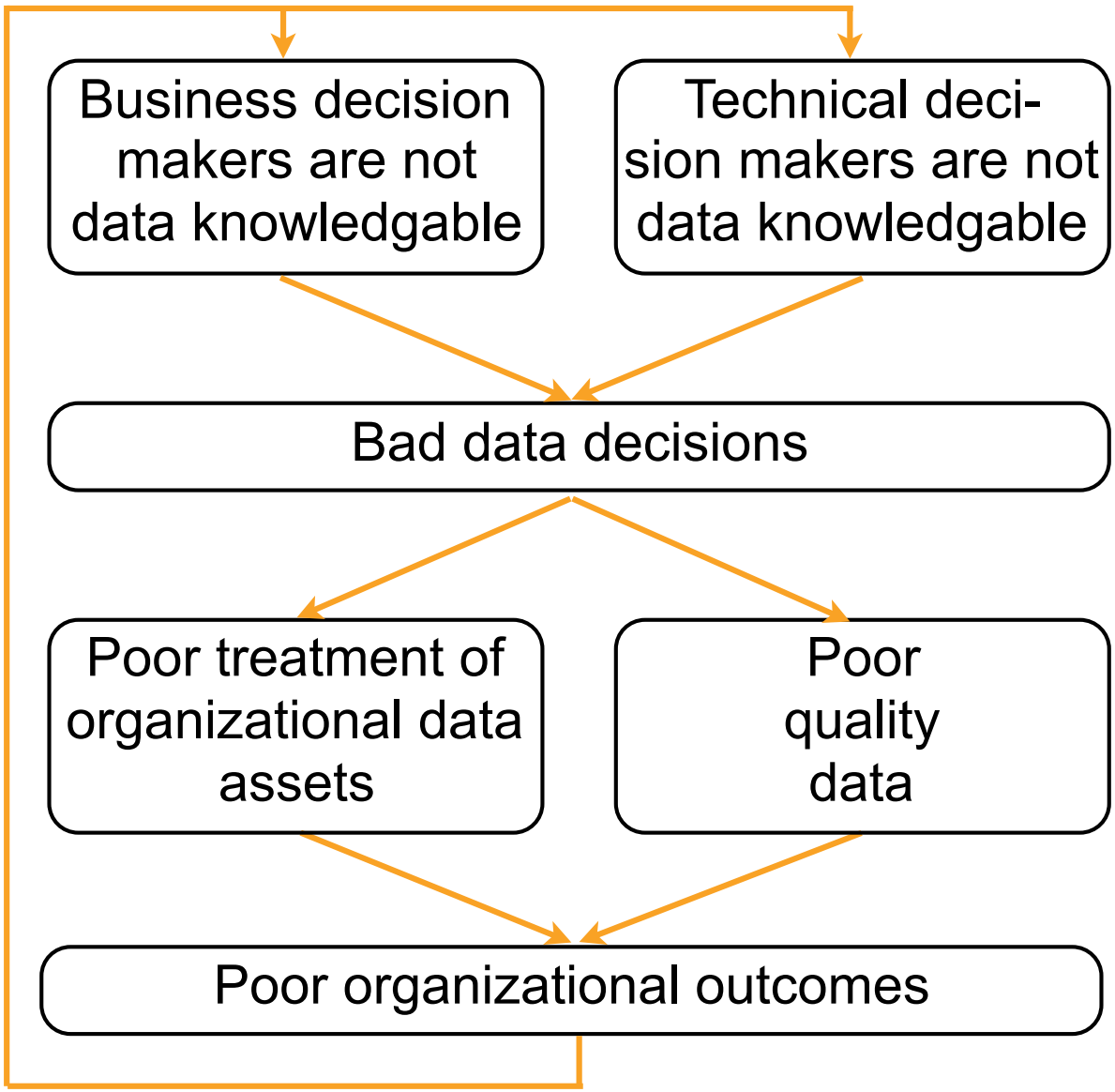
- Have little idea what data they have
- Do not know where it is (and)
- Do not know what their knowledge workers do with it

Data Knowledge is insufficient and informal

- Data management happens 'pretty well' at the workgroup level
  - Defining characteristic of a workgroup
  - Without guidance, what are the chances that all workgroups are pulling toward the same objectives?
  - Consider the time spent attempting informal practices
- Data chaff becomes sand in the machinery
  - Preventing smooth interoperation and exchanges
  - Difficulties that have been hard to account for
- Organizations and individuals lack
  - Skills
  - Knowledge (architecture)
  - Data Engineering (how)
  - Data Strategy (why)



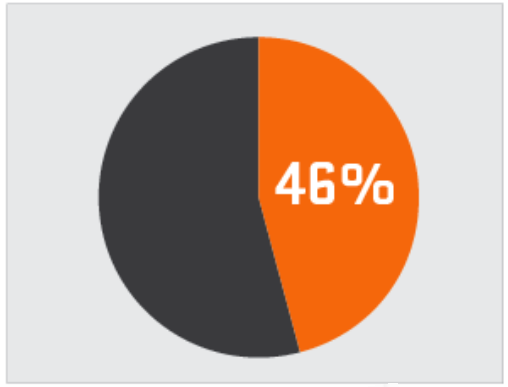
Bad Data Decisions Spiral



NEWS FLASH!

46% of companies report they made an inaccurate business decision based on bad or outdated data. Bad data leads to bad business decisions. Companies need to be careful that their data is sound – especially when dealing with investors.

Like Comment Share

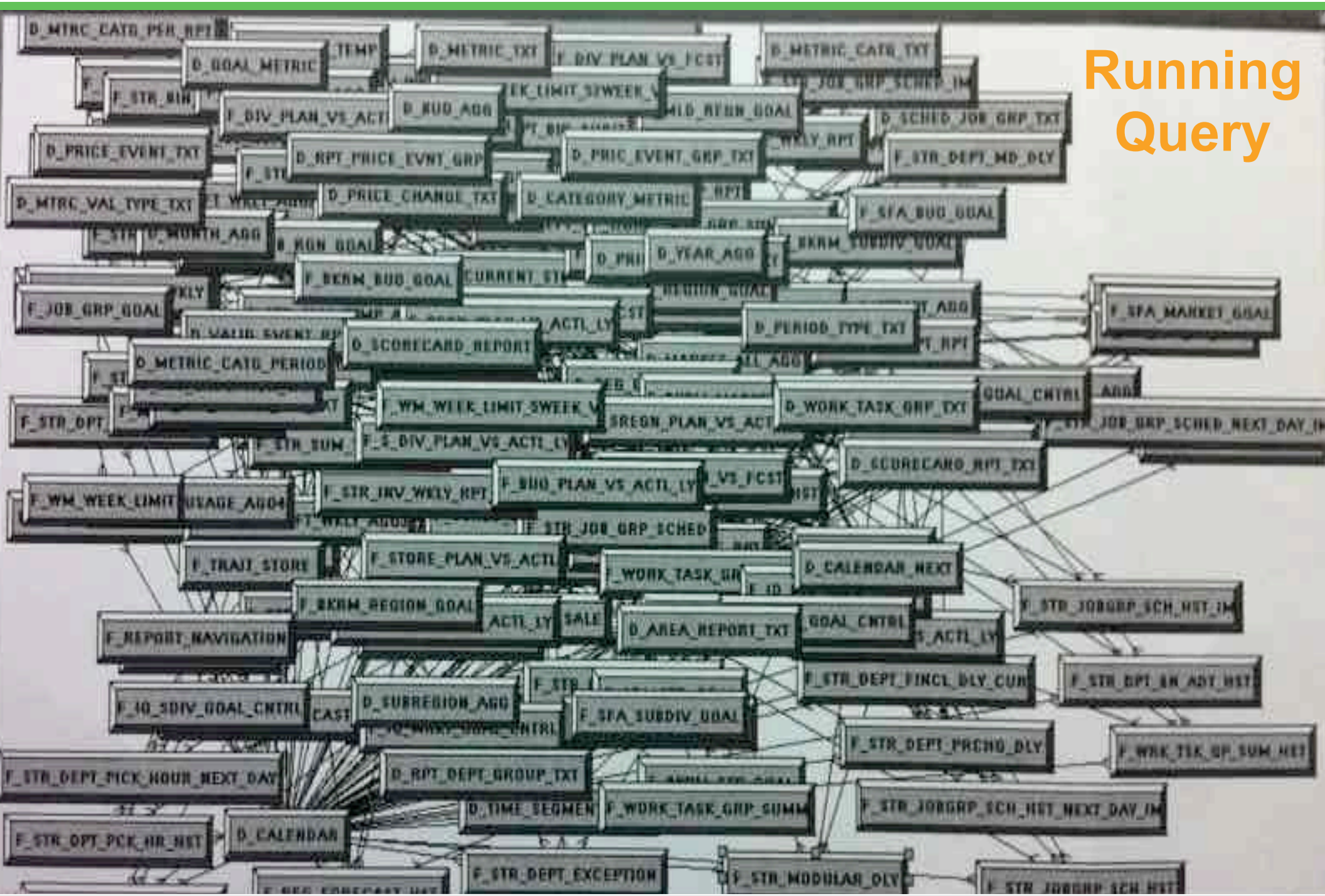


Tacoma Narrows Bridge/Gallopin' Gertie

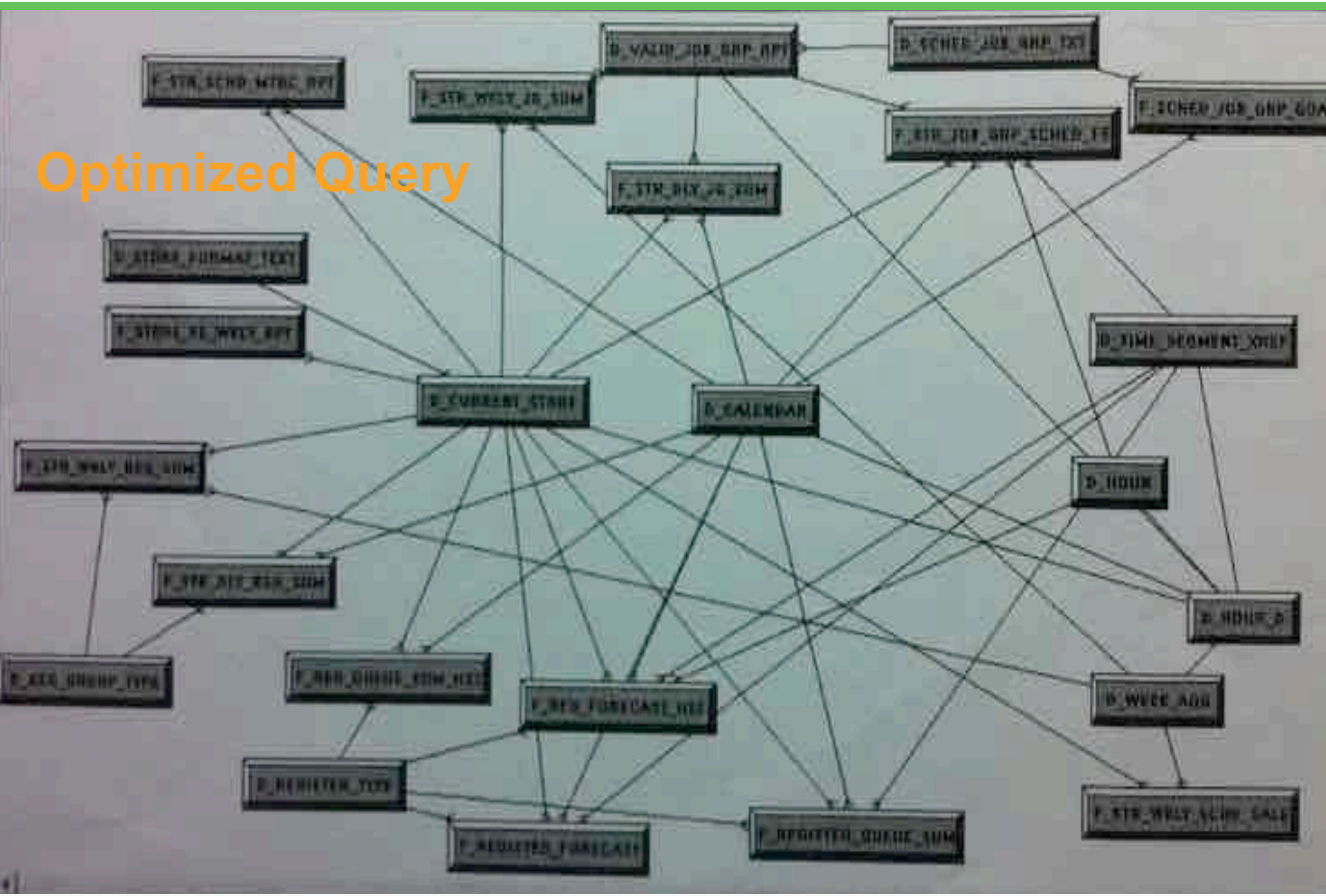
- Slender, elegant and graceful
- World's 3rd longest suspension span

- Opened on July 1st, collapsed on November 7,1940
- "The most dramatic failure in bridge engineering history"
- Changed forever how engineers design suspension bridges leading to safer spans today.

Running Query



Optimized Query



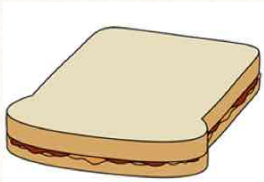
Repeat 100s, thousands, millions of times ...

Making a Better Data Sandwich

Data literacy

Standard data

Data supply

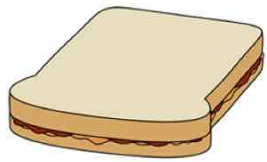


Making a Better Data Sandwich

Data literacy

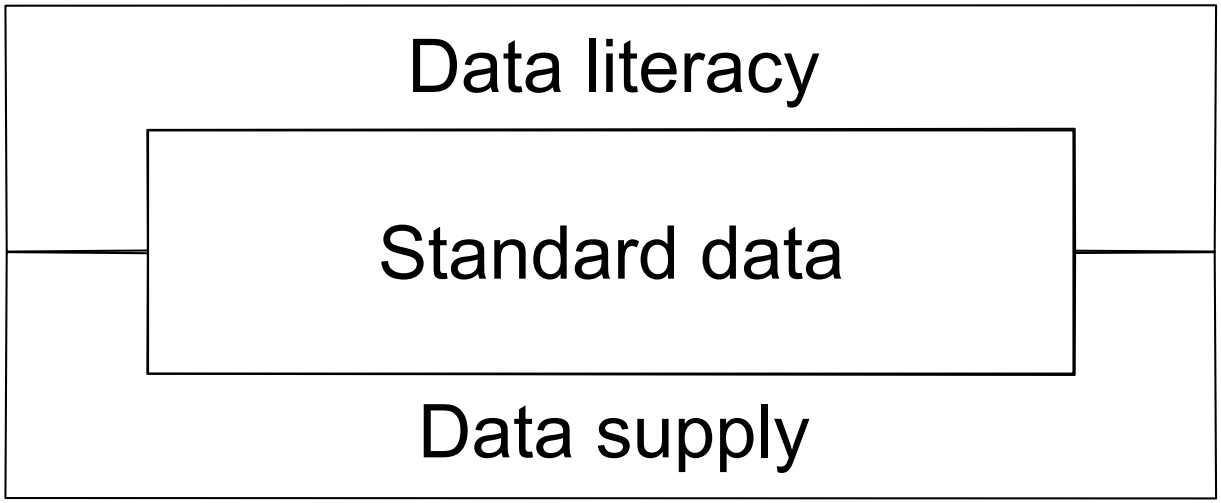
Standard data

Data supply

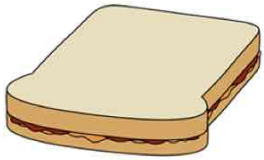


Making a Better Data Sandwich

This cannot happen without data engineering and architecture!

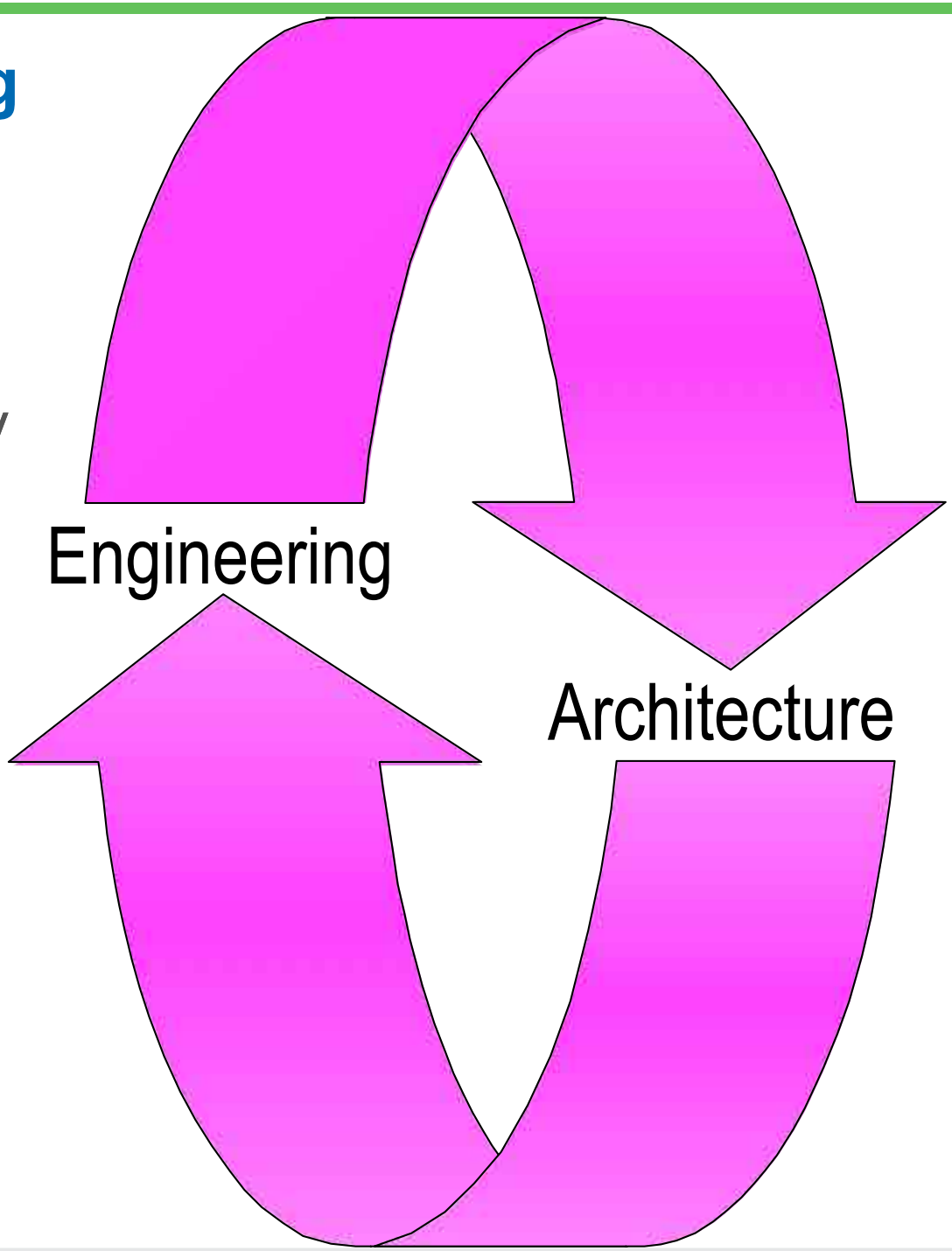


Quality data engineering/ architecture work products do not happen accidentally!



Engineering/Architecting Relationship

- Architecture is used to create and build systems too complex to be treated by engineering analysis alone
  - Require technical details as the exception
- Engineers develop the technical designs
  - Engineering/Crafts-persons deliver components supervised by:
    - Manufacturer
    - Building Contractor



Why is this an excellent engineering example?

- It is tall
- It has a clutch
- It was built in 1942
- It is cemented to the floor
- It is still in regular use!

You cannot architect after implementation!

Good Foundation?

Poor Foundation?

Unsuitable for Further Investment

Valuing Data Assets

Capabilities Level-2

Data is a resource

Growing awareness that it needs to be governed

Capabilities Level-1

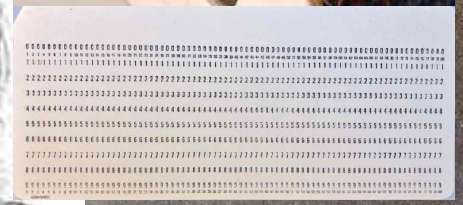
Data is a by-product of IT

Detritus (waste or debris of any kind)

Value

Time/Effort

Women in Computing



Root cause analysis focus on data assets

Identifying and Requesting Relevant Data

- What to Include?
- Focus on data that answers questions

What we are looking for….

- Specific pain points
- Inventory of assets by role
- Shadow data solutions
- How the data is organized (Architecture)
- What the data is being used for
- Methods for data integration
- Controls for data sharing
- Regulatory and compliance requirements

Example Business Needs

Human Capital

- **40 workdays per year** are spent tracking down missing vendor information to avoid tax penalties.

Cash Flow

- Inconsistencies in payment terms for vendors mean **30% of suppliers are on immediate payment terms** instead of the standard of 30-60 days.

Regulatory Impact

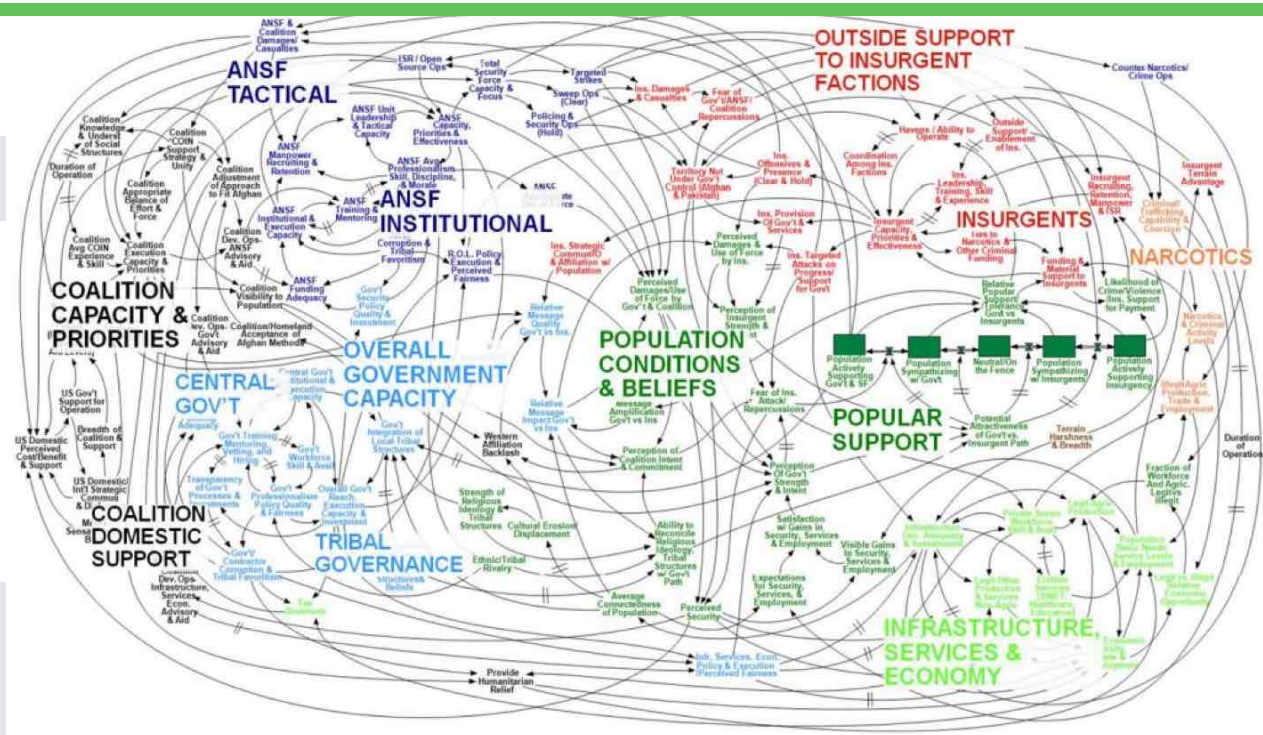
- Compliance efforts are significantly impacted by poor quality data.

Corporate Reputation

- Duplicate and erroneous customer data produces **higher costs.**

Broken Processes

Symptom	Disease
• Extensive information exchange, data redundancy, and rekeying	• Arbitrary fragmentation of a natural process
• Inventory, buffers, and other assets	• System slack to cope with uncertainty
• High ratio of checking and control to value adding	• Fragmentation
• Rework and iteration	• Inadequate feedback along chains
• Complexity, exceptions and special cases	• Accretion onto an overly simplistic base



UNLOCKING BUSINESS VALUE

Billing

- Room of 20 associates
- Manually correcting every item on every customer invoice
- Upon noting this to the responsible manager - the reply was:
  - *This is the best quarter*
  - *Of the best year*
  - *I've ever had*
  - *Perhaps I need to double the number in that room?*

Costs of Maintaining Obsolete Inventory

Undefined costs:

- Mission Readiness
  - Resources are focused on non-value added tasks of maintaining obsolete inventory, which creates distractions to the agency's main mission
- Storage
  - Physical/real estate needed to house items
- Handling
  - Includes transportation and human resources dedicated to moving, maintaining, counting and securing outdated inventory
- Opportunity
  - Inventory could be returned to manufacturer or sold to free up financial assets for more needed and critical supplies
- Systemic
  - Cost of inventorying information and maintaining paper or electronic records which should be used to support mission-critical acquisitions and distribution
- Maintenance
  - Repairing of expired items

Profiling Data - Rapid data inspection/analysis

Profile_VENDORS_No_Examiner - Column Profiling Filter... | Sampling...

Name	Unique V...	Unique %	NULL	NULL %	Datatype	Inferred %	Documented Dat...	Minimum...	Maximu...	Last Profile Run	Drilldown
Source Name											
VENDOR_ID	11084	98.99	-	-	Integer(6)	100.00	string(9)	1	99949	Nov 24, 2014 8:59:40 AM EST	☑
LAST_UPDATE_D...	7626	68.11	-	-	Date Time	100.00	string(29)	1/10/20...	9/9/201...	Nov 24, 2014 8:59:40 AM EST	☑
LAST_UPDATED_BY	32	.29	-	-	Integer(5)	100.00	string(8)	-1	9919	Nov 24, 2014 8:59:40 AM EST	☑
VENDOR_NAME	11084	98.99	-	-	String(50)	100.00	string(75)	(William)...	xBirming...	Nov 24, 2014 8:59:40 AM EST	☑
VENDOR_NAME_...	429	3.83	10732	95.85	String(40)	100.00	string(60)	Used & ...	also see...	Nov 24, 2014 8:59:40 AM EST	☑
SEGMENT1	11084	98.99	-	-	Integer(6)	100.00	string(9)	1	99880	Nov 24, 2014 8:59:40 AM EST	☑
SUMMARY_FLAG	1	.01	-	-	Fixed Length Stri...	100.00	string(2)	N	N	Nov 24, 2014 8:59:40 AM EST	☑
ENABLED_FLAG	1	.01	-	-	Fixed Length Stri...	100.00	string(2)	Y	Y	Nov 24, 2014 8:59:40 AM EST	☑
SEGMENT2	1	.01	11197	100.00	-	-	string(2)			Nov 24, 2014 8:59:40 AM EST	☑
SEGMENT3	1	.01	11197	100.00	-	-	string(2)			Nov 24, 2014 8:59:40 AM EST	☑
SEGMENT4	1	.01	11197	100.00	-	-	string(2)			Nov 24, 2014 8:59:40 AM EST	☑
SEGMENT5	1	.01	11197	100.00	-	-	string(2)			Nov 24, 2014 8:59:40 AM EST	☑
LAST_UPDATE_L...	2533	22.62	-	-	Integer(7)	100.00	string(11)	-1	994633	Nov 24, 2014 8:59:40 AM EST	☑
CREATION_DATE	8729	77.96	-	-	Date Time	100.00	string(29)	1/10/20...	9/9/201...	Nov 24, 2014 8:59:40 AM EST	☑

Page 1 of 2

Uniqueness

- Percentages
- Counts
- Key Fields

Nulls

- Percentages
- Counts
- Key Fields

Min/Max

- Unexpected Values
- Values outside domain

Completeness

- Contracted quantities/ qualities
- Non-duplication

Instances

Billing errors

- Poorly thought out approach to remediation
  - 100 x $60,000/annually = $6M?
  - Challenge the decision making process
- Better math?
  - Improve cash flow on $9 million annually
  - ROI of 30 days if fix costs less than $750,000

Inventory

- Mission Readiness ???
- Storage $$$
- Handling $$$
- Opportunity $$$
- Systemic $$$
- Maintenance $$$
- Total > $1.5 million

Managing Data with Guidance

Ask anyone ...

- Would you want any of your resources to be managed without guidance?

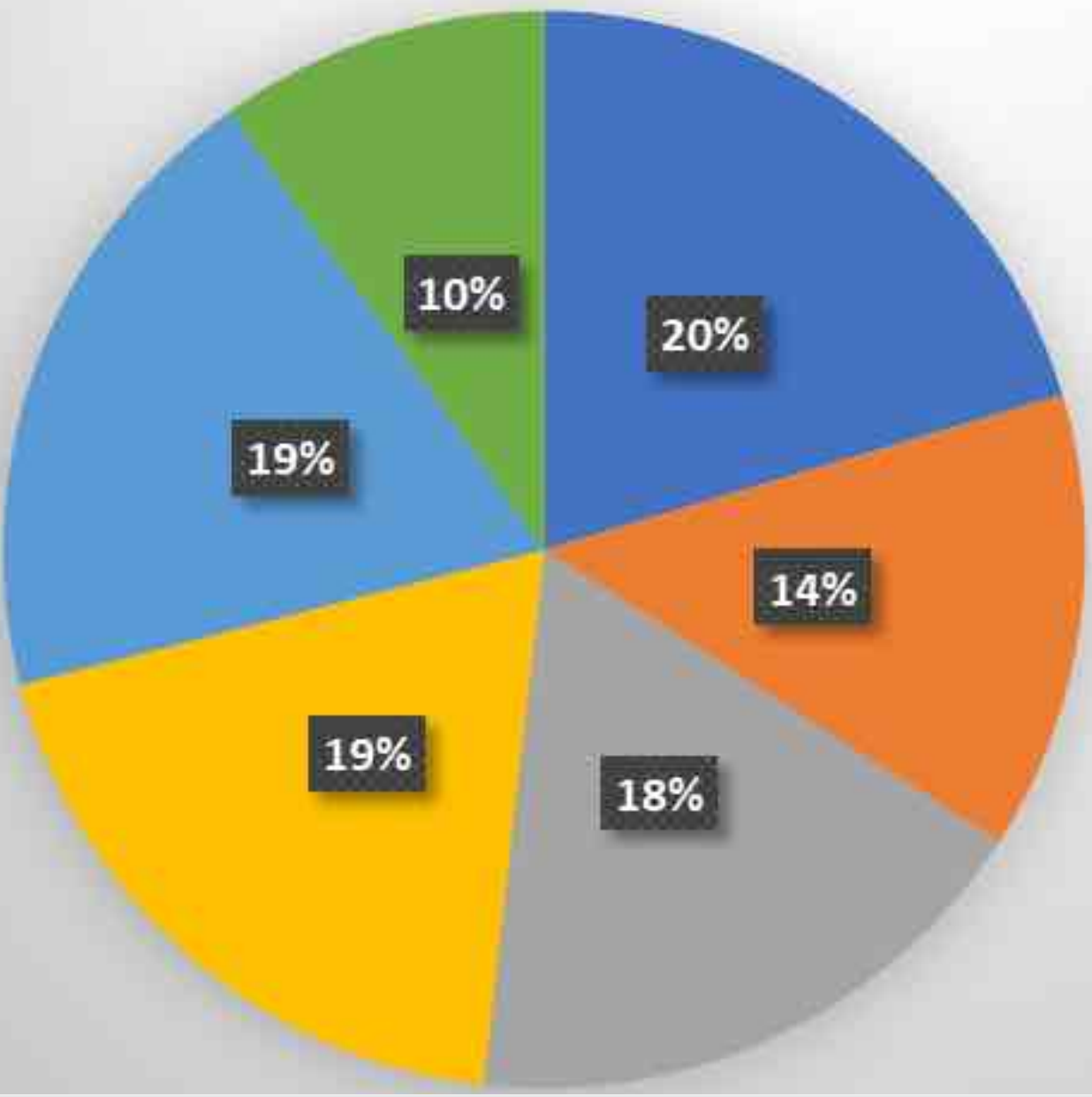
Differences between Programs and Projects

- Programs are Ongoing, Projects End
  - Managing a program involves long term strategic planning and continuous process improvement is not required of a project
- Programs are Tied to the Financial Calendar
  - Program managers are often responsible for delivering results tied to the organization's financial calendar
- Program Management is Governance Intensive
  - Programs are governed by a senior board that provides direction, oversight, and control while projects tend to be less governance-intensive
- Programs Have Greater Scope of Financial Management
  - Projects typically have a straight-forward budget and project financial management is focused on spending to budget while program planning, management and control is significantly more complex
- Program Change Management is an Executive Leadership Capability
  - Projects employ a formal change management process while at the program level, change management requires executive leadership skills and program change is driven more by an organization's strategy and is subject to market conditions and changing business goals

Your data program must last at least as long as your HR program!

Adapted from http://top.idownloadnew.com/program_vs_proje and http://management.simplicable.com/management/new/program-management-vs-project-management

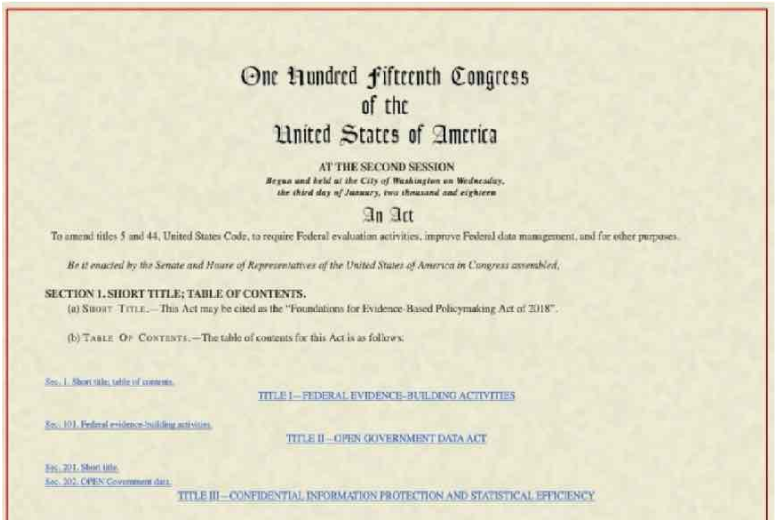
Data Model Requests by Application Area



- Account Payable
- Accounts Recievable
- Sales
- Inventory & Warehouse
- General ledger
- Manufacturing/Materials

FEPA/H.R. 4174

- **F**oundations for **E**vidence-Based **P**olicymaking **A**ct (H.R._4174,_S._2046)
- Purpose: To amend titles 5 and 44, United States Code,
  1. to require Federal evaluation activities
  2. improve Federal data management, and
  3. for other purposes.
- Opposition?
  - *FEPA Gives Bureaucrats, Private Parties, Hackers A Data Gold Mine*
    https://truthinamericaneducation.com/privacy-issues-state-longitudinal-data-systems/fepa-gives-bureaucrats-private-parties-hackers-data-gold-mine/
  - "A lifelong data citizen surveillance system from coming into fruition"
    https://youtu.be/Qr14ZmrQGu0
- Passed House 356–17 21-12-2018
- Passed Senate unanimously 21-12-2018
- Signed by the President 14-1-2019



One Hundred Fifteenth Congress
of the
United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Wednesday, the third day of January, two thousand and eighteen

An Act

To amend titles 5 and 44, United States Code, to require Federal evaluation activities, improve Federal data management, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Foundations for Evidence-Based Policymaking Act of 2018".

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—FEDERAL EVIDENCE-BUILDING ACTIVITIES

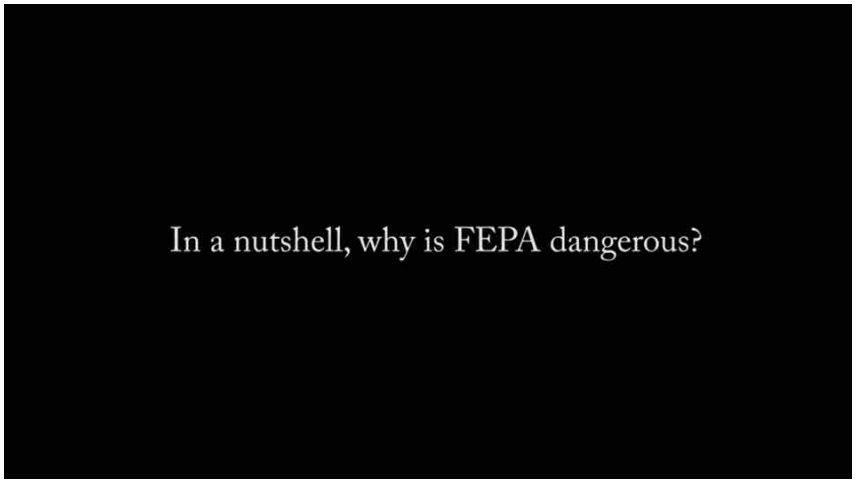
Sec. 101. Federal evidence-building activities.

TITLE II—OPEN GOVERNMENT DATA ACT

Sec. 201. Short title.
Sec. 202. OPEN Government data.

TITLE III—CONFIDENTIAL INFORMATION PROTECTION AND STATISTICAL EFFICIENCY

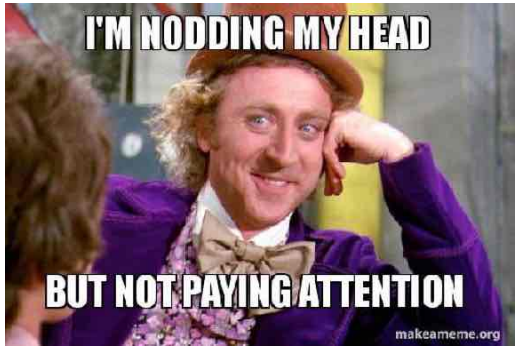
https://www.congress.gov/bill/115th-congress/house-bill/4174/text



Title I - Federal Evidence-Building Activities


One Hundred Fifteenth Congress
of the
United States of America

- All federal agencies are required to:
  - Manage its data according to industry best practices
  - Regularly analyze the data
  - Use the results to inform policymaking
- Future federal decision making process
  - Specify in advance the open data sets that the policy evaluation will consider
  - Publish in advance the model that is proposed to be used in the evaluation
  - Policy may only be changed in ways supportable by the evidence



Title II - Open Government Data Act


One hundred fifteenth Congress
of the
United States of America
AT THE SECOND SESSION
An Act

- Open
  - Guidance To Make Data Open By Default
  - Federal Agency Responsibilities To Make Data Open By Default
  - Requires all non-sensitive government data to be made available in open and machine-readable formats by default
- Data inventory and Federal data catalogue
  - Comprehensive Data Inventory
  - Public Data Assets
  - Federal Data Catalogue

Title II - Open Government Data Act (continued)


One Hundred Fifteenth Congress
of the
United States of America

- Establishes Chief Data Officers (CDO) at federal agencies
  - Distinct from the CIO role
  - Nonpolitical
  - Objective qualifications
- Responsibilities
  - Set standards for data formats, Negotiate terms for data sharing, and develop processes for data publishing;
  - Coordinate with any agency officials responsible for using, protecting, disseminating, and generating data;
  - Review the impact of agency IT infrastructure on data accessibility and coordinate with agency Chief Information Officer to reduce barriers that inhibit data accessibility;
  - Maximize the use of data in the agency to support evidence-based analysis, cybersecurity, and operational improvement;
  - Acquire and maintain training and certification related to confidential information protection and statistical efficiency; and
  - Be responsible for overall data lifecycle management.

Title III - Confidential Information Protection and Statistical Efficiency Act

- Aka
  - Confidential Information Protection and Statistical Efficiency Act of 2018
  - Improve public perception of governmental information
- Definitions
  - Agent (towards objective qualifications)
  - Business data (wide scope)
- Coordination
  - Breaches
  - Reporting
  - Processing
  - **Confidence**
- Statistical Efficiency
  - Improving interoperability's within Government
  - Specifically for DSAs: Census, BEA & BLS
  - Generally: BJS, BTS, ERS, EIA, NASS, NCES, NCHS

Valuing Data Assets

Capabilities Level-3

Data is an asset

The most powerful, yet most underutilized and poorly managed organizational asset

Capabilities Level-2

Data is a resource

Growing awareness that it needs to be governed

Capabilities Level-1

Data is a by-product of IT

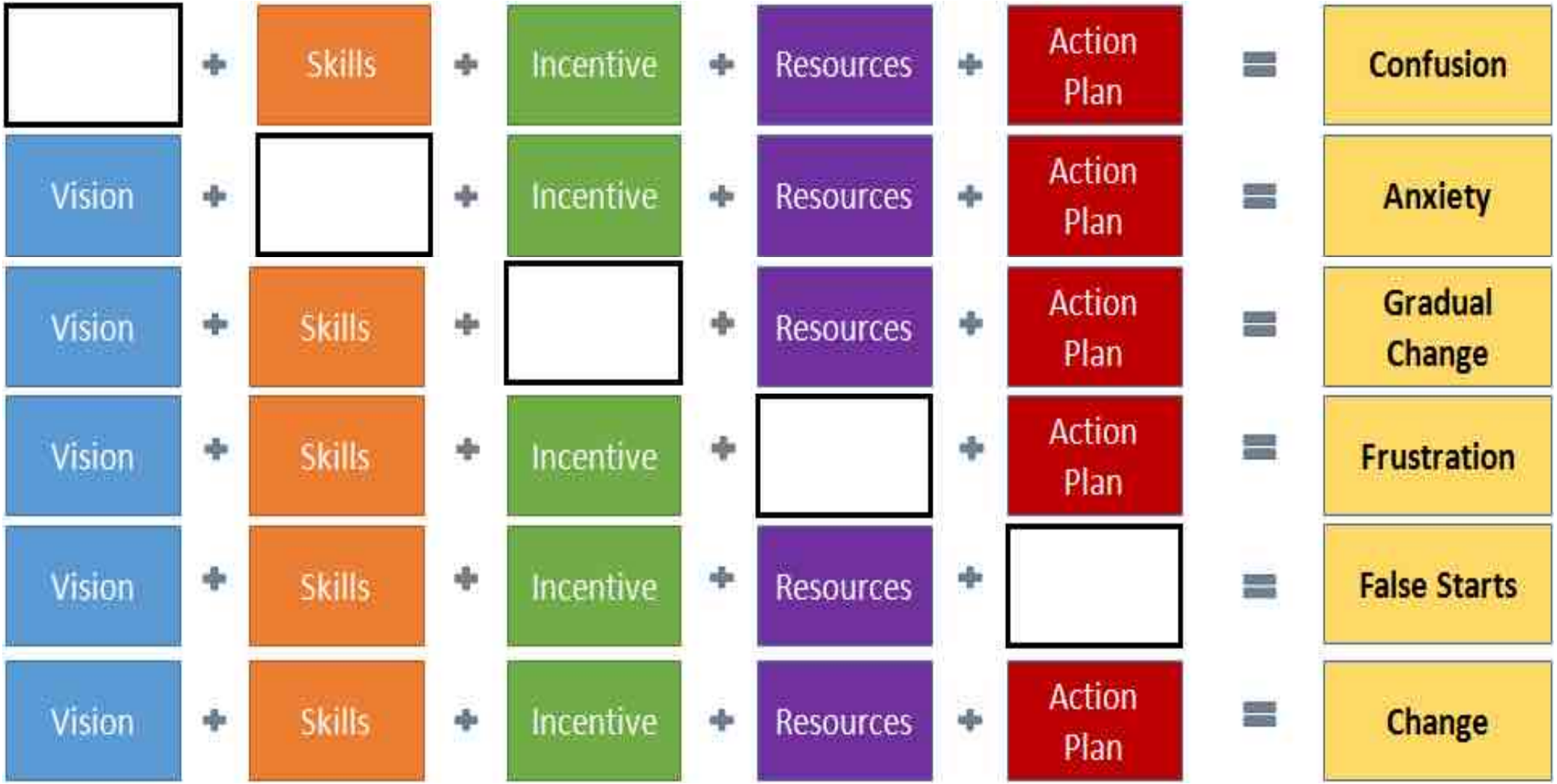
Detritus (waste or debris of any kind)

Value

Time/Effort

adapted from the *Managing Complex Change* model by Dr. Mary Lippitt, 1987

Diagnosing Organizational Readiness



Culture is the biggest impediment to a shift in organizational thinking about data!

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Dr. Peter Aiken

SEARCH

EXPERIENCE: Succeeding at Data Management—BigCo Attempts to Leverage Data

Full Text: PDF

Author: Peter Aiken Virginia Commonwealth University/Data Blueprint

Published in:

· Journal
Journal of Data and Information Quality (JDIQ) - Challenge Papers, Regular Papers and Experience Paper JDIQ Homepage archive
Volume 7 Issue 1-2, June 2016
Article No. 8
ACM New York, NY, USA
table of contents doi>10.1145/2893482

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Organizational Assets

- Cash & other financial instruments
- Real property
- Inventory
- Intellectual Property
- Human
  - Knowledge
  - Skills
  - Abilities
- Financial
- Organizational reputation
- Good will
- Brand name
- **Data**!!!

Data Assets Win!

Asset: A resource controlled by the organization as a result of past events or transactions and from which future economic benefits are expected to flow [Wikipedia]

- Today, data is the most powerful, yet underutilized and poorly managed organizational asset
- Data is your
  - Sole
  - Non-depletable
  - Non-degrading
  - Durable
  - Strategic
- Asset
  - Data is the new oil!
  - Data is the new (s)oil!
  - Data is the new bacon!
- As such, data deserves:
  - It's own strategy
  - Attention on par with similar organizational assets
  - Professional ministration to make up for past neglect

	Data Assets	Financial Assets	Real Estate Assets	Inventory Assets
Non-depletable	Available for subsequent use	Can be used up		Can be used up
Non-degrading	√	√	Can degrade over time	Can degrade over time
Durable	Non-taxed		√	√
Strategic Asset	√	√	√	√

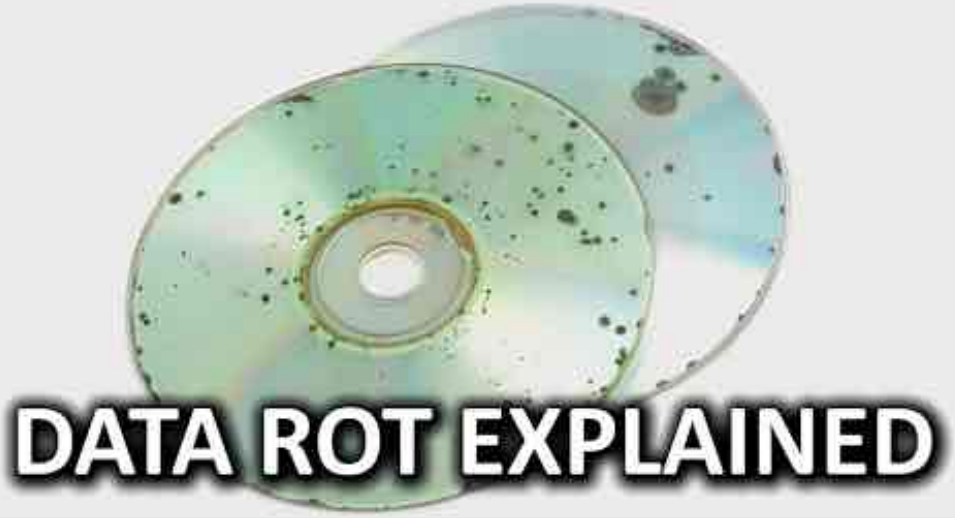
Separating the Wheat from the Chaff

- Data that is better organized increases in value

- Poor data management practices are costing organizations money/time/effort

- 80% of organizational data is **ROT**

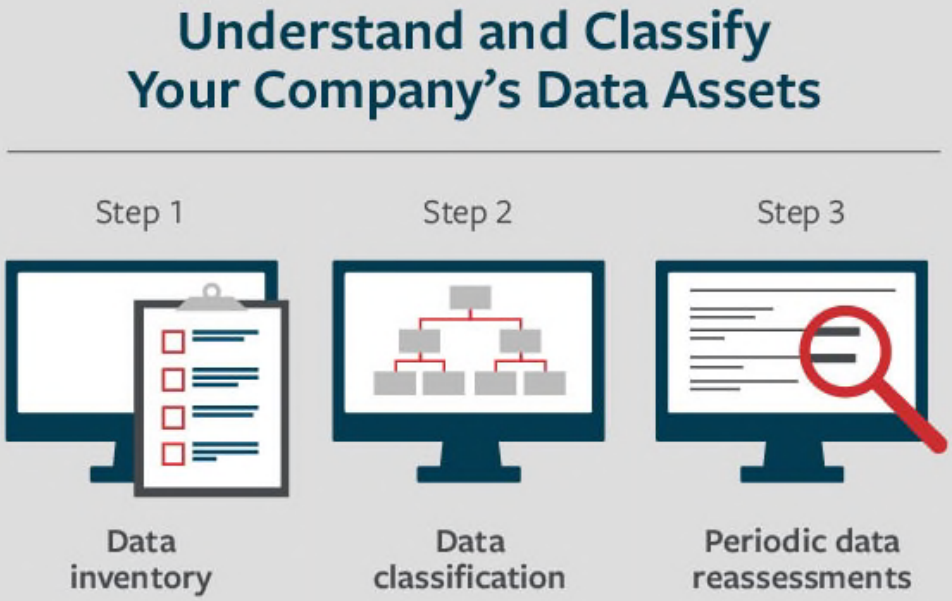
  - **R**edundant
    Incomplete
  - **O**bsolete
  - **T**rivial



Data Inventory

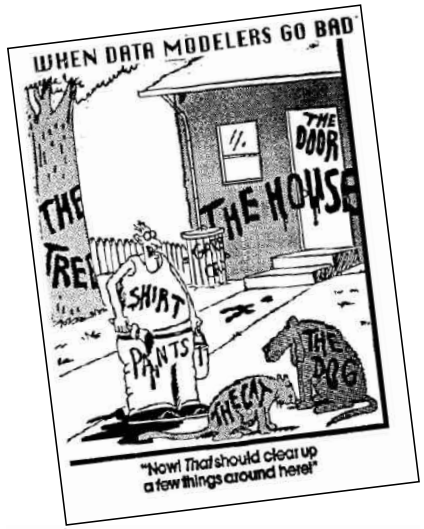
- When will it be done?
  - Sounds like a task or a project
  - Data is not a project
  - No organization has ever completed a data inventory!
- Reframe the question
  1. How rapidly can we achieve the required capabilities?
  2. What sort of preexisting classification frameworks can be used to jumpstart?
  3. How often does each classification require reassessment?

https://www.everteam.com/en/building-your-data-inventory/



https://www.travelers.com/resources/cyber-security/data-assessment-inventory-and-classification

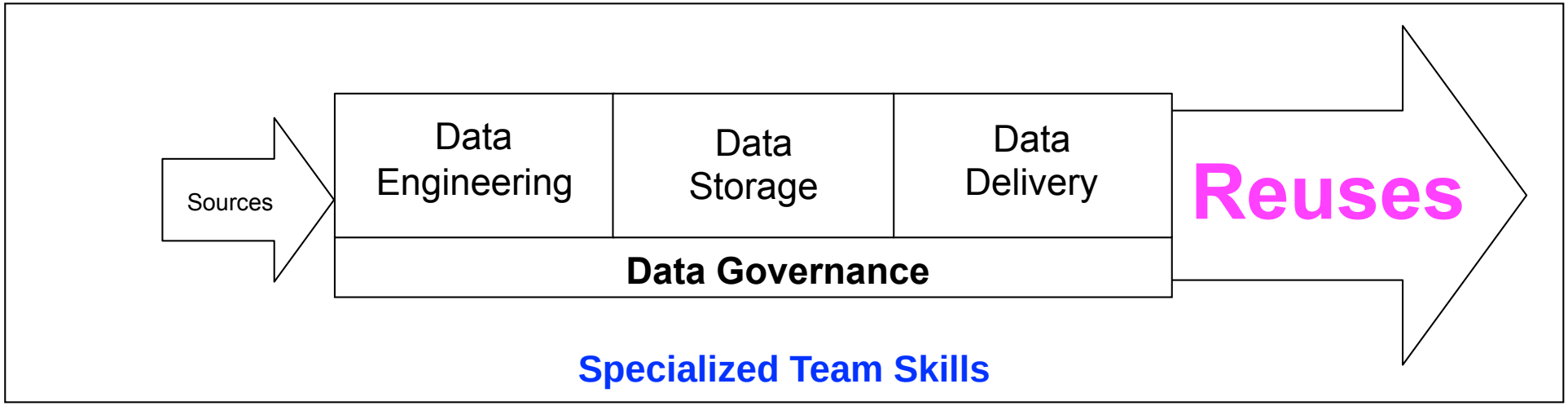
Data Asset Inventory (Implementation)



1. Purpose is the goal of understanding, not definitions
   - Definitions are passive, purpose statements incorporate strategic elements, the rationale and justification based on the need for data
2. The sharing of inventoried data assets are categorized as:
   A. Data items that are shared with external organizations
   B. Data items that are shared within the organization
   C. Data items that are not shared but are used to derive shared data items
   D. Data items not shared outside but used to support workgroup activities
   E. Organizational data ROT
3. Assign each data asset inventoried, an existing subject area from which that data item best supports the organizational mission (ex. PAY is part of BACK OFFICE OPERATIONS) – based on (refine-able) purpose statements, primary subject-area allegiance is posited
4. Identify, de-dupe and harmonize data assets participating in synonyms/homonym/ other challenges - ensure only one item is designated as a (current) golden source
5. Identify which data items are deemed to be sensitive or personal data items and what specific controls need to be in place
6. Document all mapping rules for data items in categories 2A and 2B above

Note: this exercise cannot be comprehensively performed in a single cycle so equally as important as the exercise itself, a processing system needs to be established so that as other data items are inevitably discovered, this inventory can be easily updated

What is data management?



Understanding the current and future data needs of an enterprise and making that data effective and efficient in supporting business activities

Aiken, P, Allen, M. D., Parker, B., Mattia, A., "Measuring Data Management's Maturity: A Community's Self-Assessment" *IEEE Computer* (research feature April 2007)

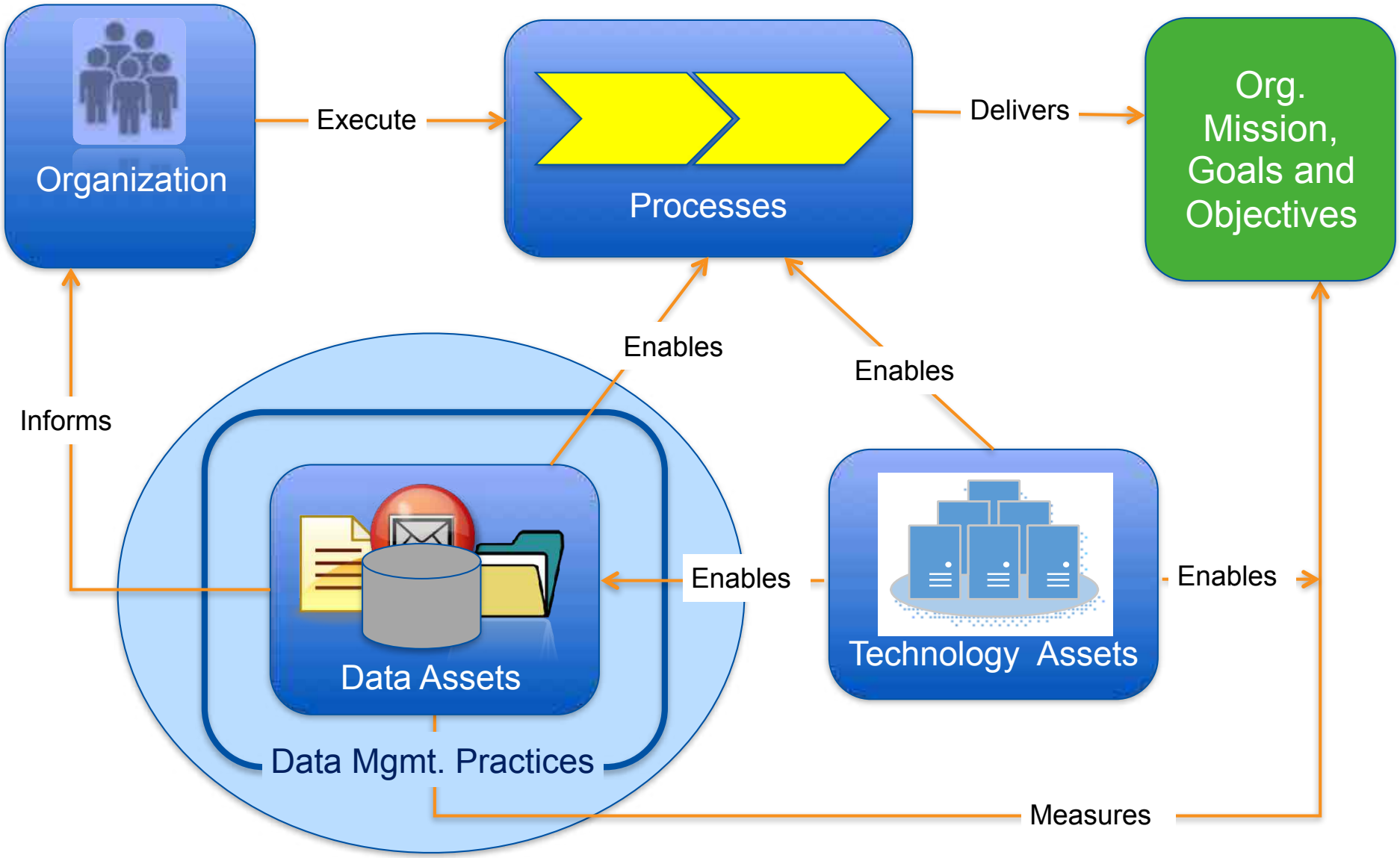
Data management practices connect data sources and uses in an organized and efficient manner

- Engineering
- Storage
- Delivery
- Governance

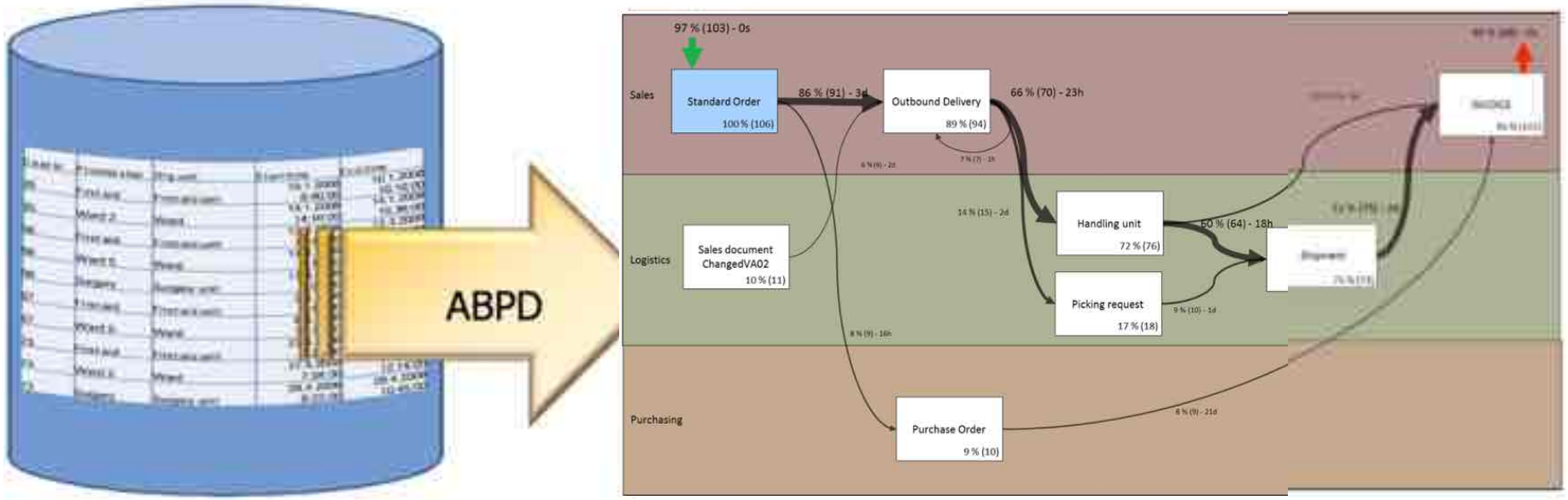
When executed, engineering, storage, and delivery implement governance

Note: does not well-depict data reuse

Setting the Context: Data Mgmt. Practices

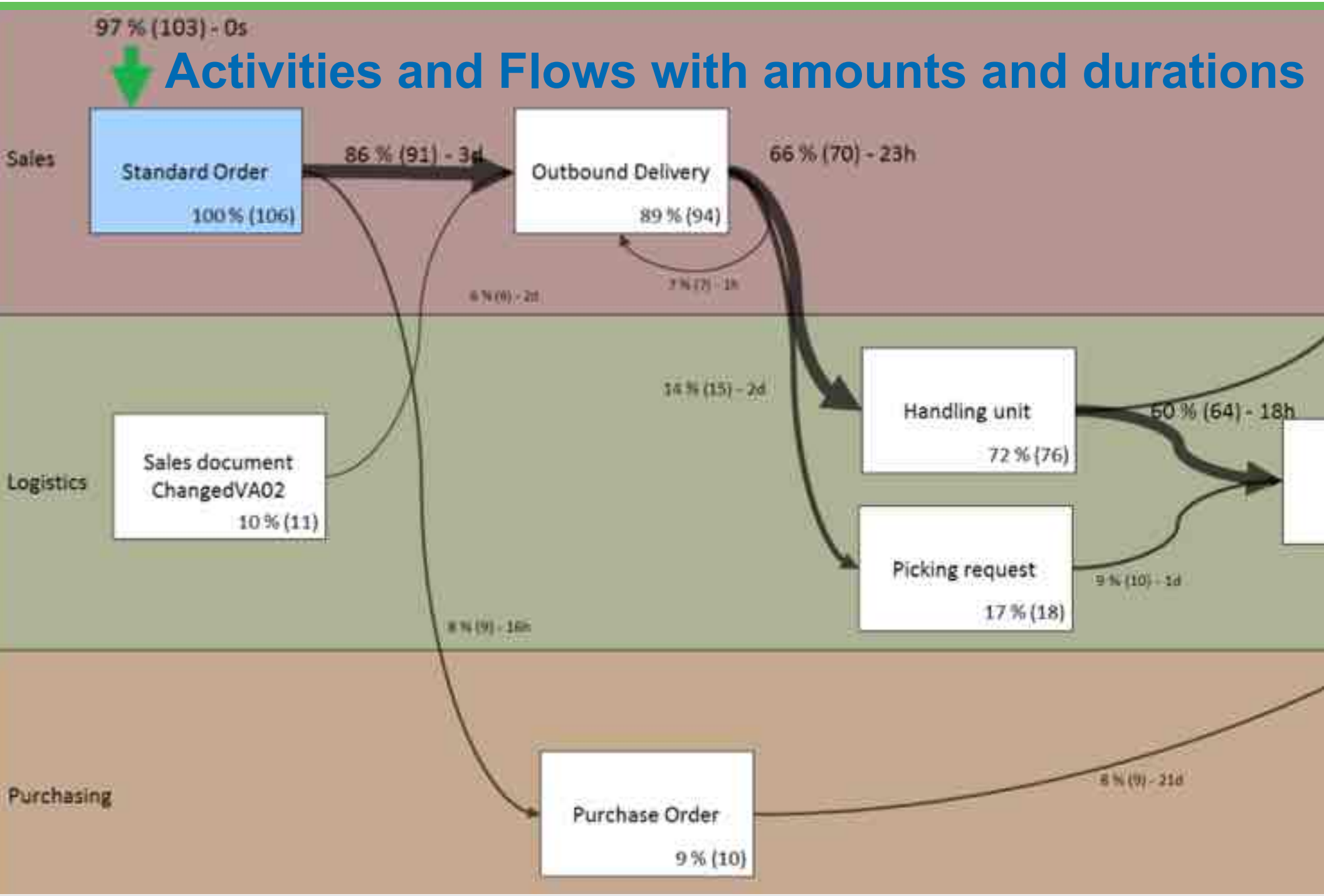


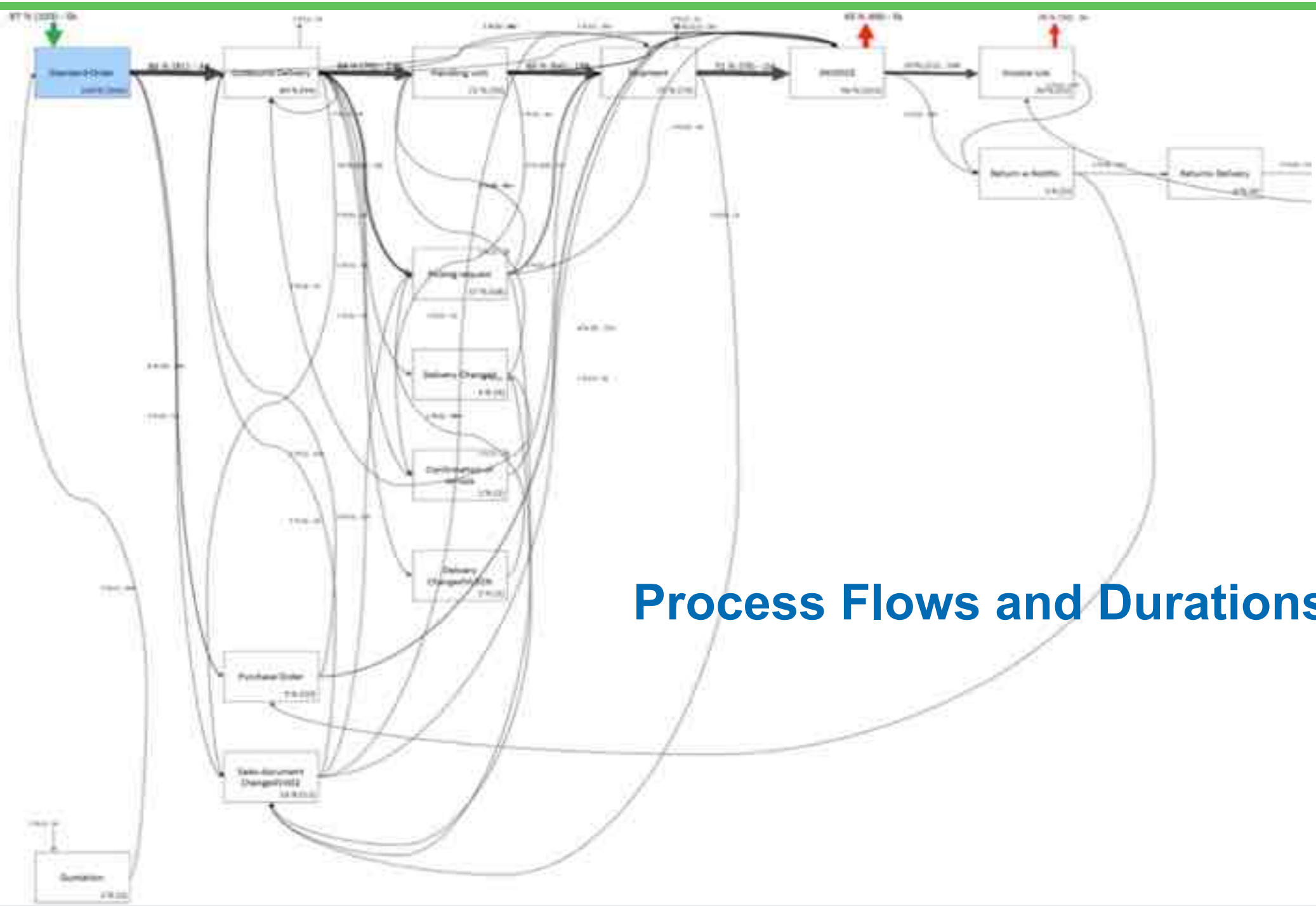
Automating Business Process Discovery (qpr.com)



- Benefits
  - Obtain holistic perspective on roles and value creation
  - Customers understand and value outputs
  - All develop better shared understanding
- Results
  - Speed up process
  - Cost savings
  - Increased compliance
  - Increased output
  - IT systems documentation

Activities and Flows with amounts and durations





Process Flows and Durations

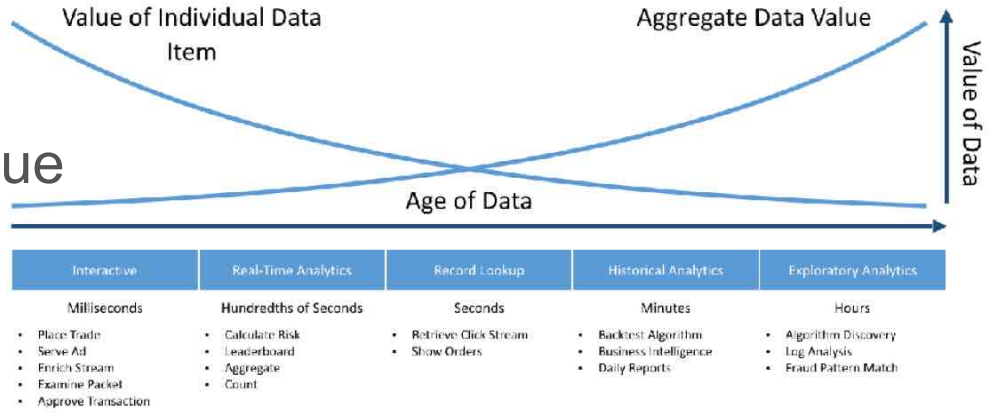
Motivations for doing more with data

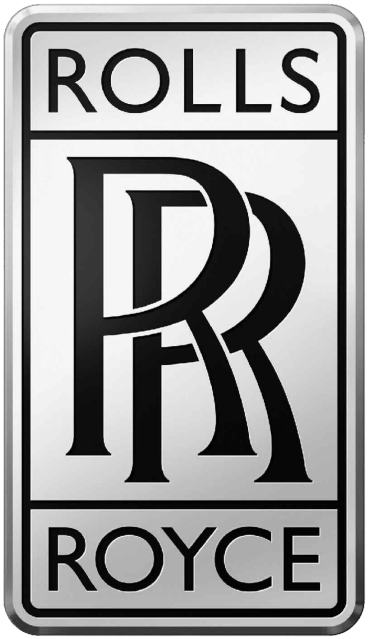
Improve your organization's data → Improve the way your people use its data → Improve the way your data and your people support your organizational strategy

- Because data points to where valuable things are located
- Because data has intrinsic value by itself
- Because data has inherent combinatorial value

- Valuing Data
  - Use data to measure change
  - Use data to manage change
  - Use data to motivate change

- Creating a competitive advantage with data





What did Rolls Royce Learn from Formula 1

- Old model
  - Sell jet engines
- New model
  - Sell hours of thrust power
  - Power-by-the-hour
  - No payment for down time
  - Wing to wing
  - When was it invented?

Rolls-Royce celebrates 50th anniversary of Power-by-the-Hour

Tuesday, 30 October 2012

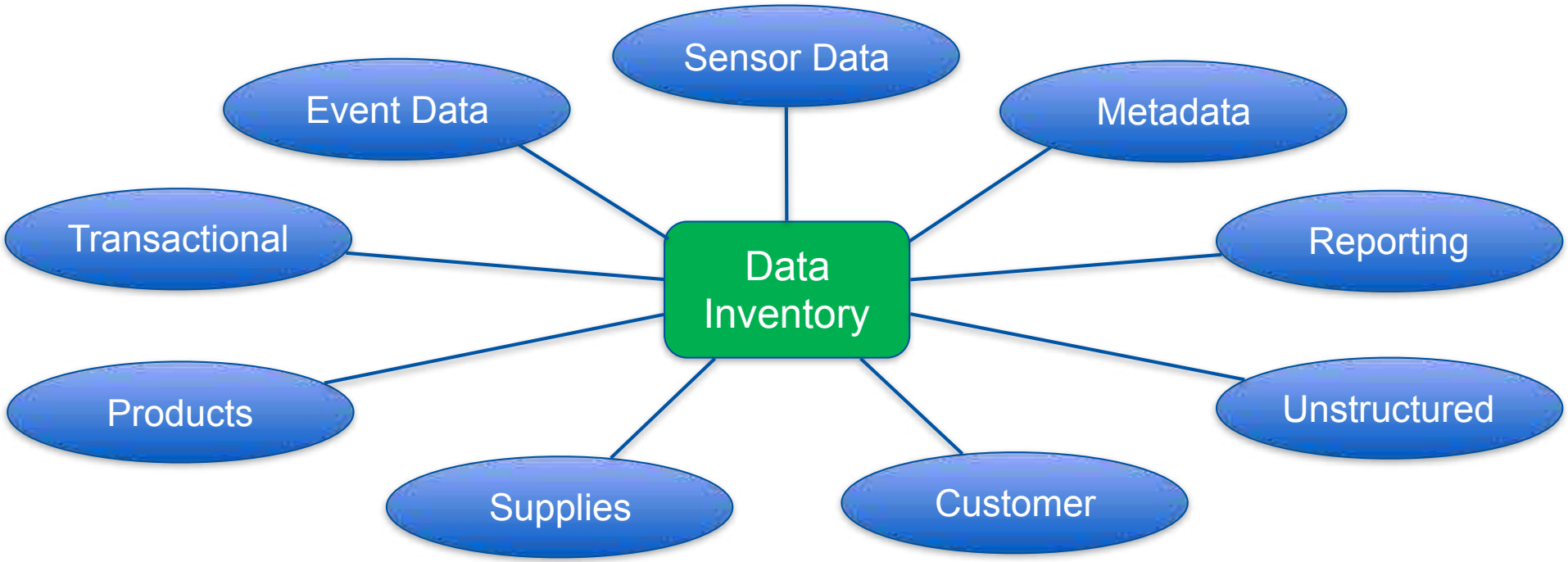
Rolls-Royce, the global power systems company, today celebrated the 50th anniversary of 'Power-by-the-Hour', its pioneering approach to engine maintenance management that forms the basis of the company's market-leading CorporateCare® service.

'Power-by-the-Hour' a Rolls-Royce trademark, was invented in 1962 to support the Viper engine on the de Havilland/Hawker Siddeley 125 business jet. A complete engine and accessory replacement service was offered on a fixed-cost-per-flying-hour basis. This aligned the interests of the manufacturer and operator, who only paid for engines that performed well.

ROLLS ROYCE

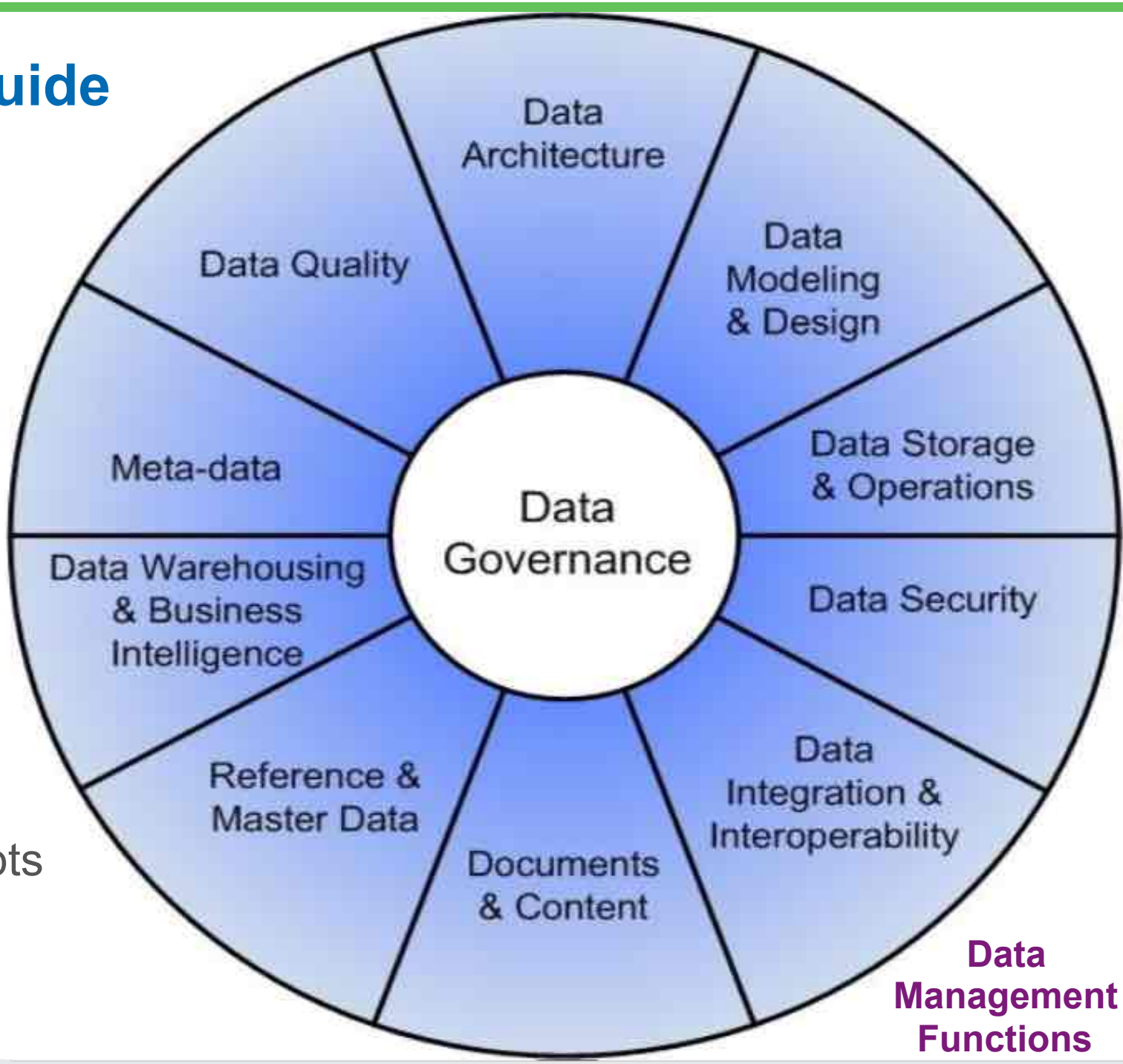
Eating the data "Elephant"

- Identify what's important – all data is not equal
- De-prioritize the Data ROT (Redundant, Obsolete, Trivial)
- Organize thinking into data 'roles'



The DAMA Guide to the Data Management Body of Knowledge

- Good enough to criticize
  - All models are wrong
  - Some models are useful
- Missing two important concepts
  - Optionality
  - Dependency

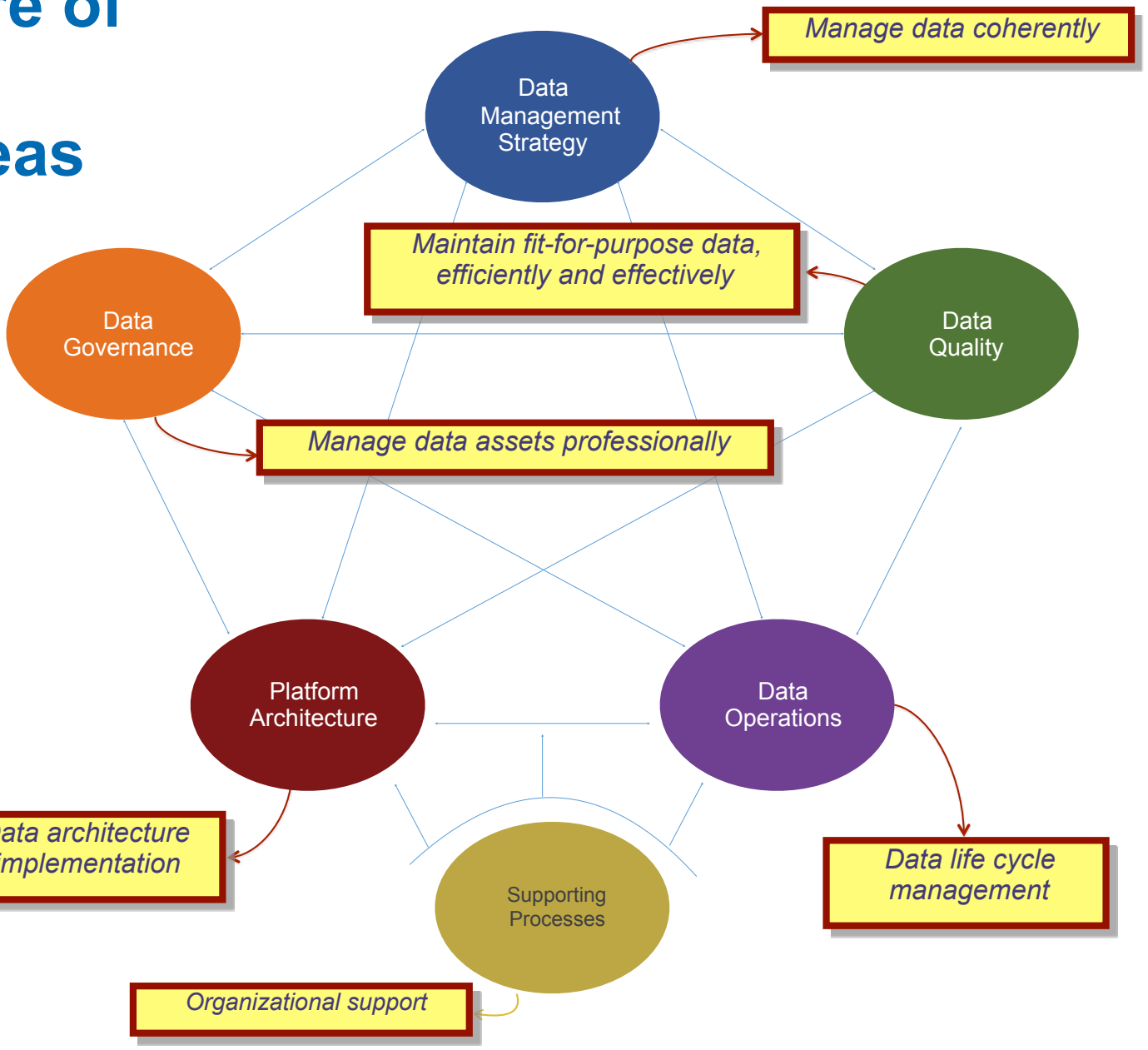


Data Management Functions

from *The DAMA Guide to the Data Management Body of Knowledge* © 2009 by DAMA International

DMM℠ Structure of 5 Integrated DM Practice Areas

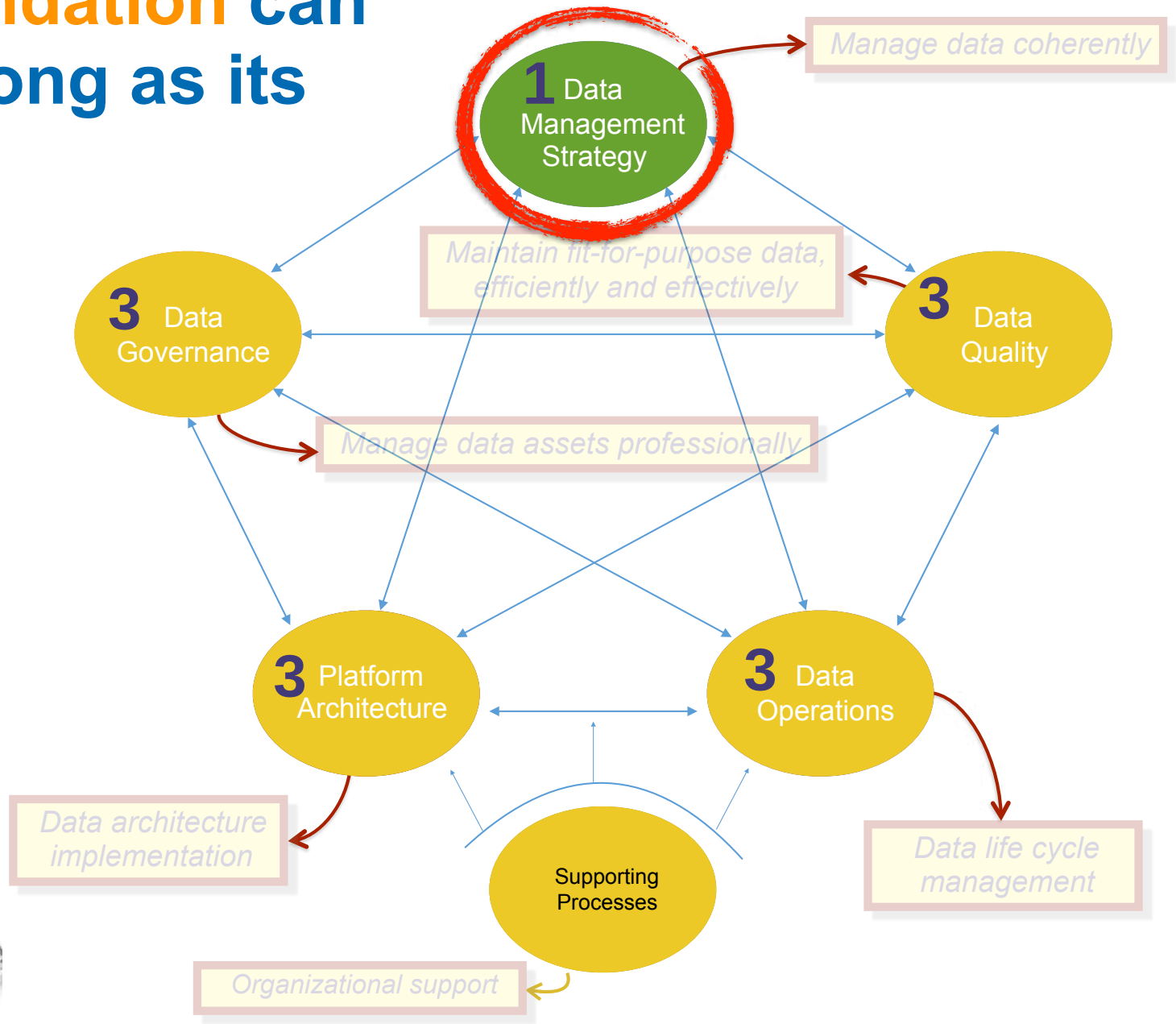
Component	Process Areas
Data Management Strategy	Data Management Goals Corporate Culture Data Management Funding Data Requirements Lifecycle
Data Governance	Governance Management Business Glossary Metadata Management
Data Operations	Standards and Procedures Data Sourcing
Data Quality	Data Quality Framework Data Quality Assurance
Platform & Architecture	Architectural Framework Platforms & Integration
Supporting Processes	Measurement & Analysis Process Management Process Quality Assurance Risk Management Configuration Management



CMMI Institute

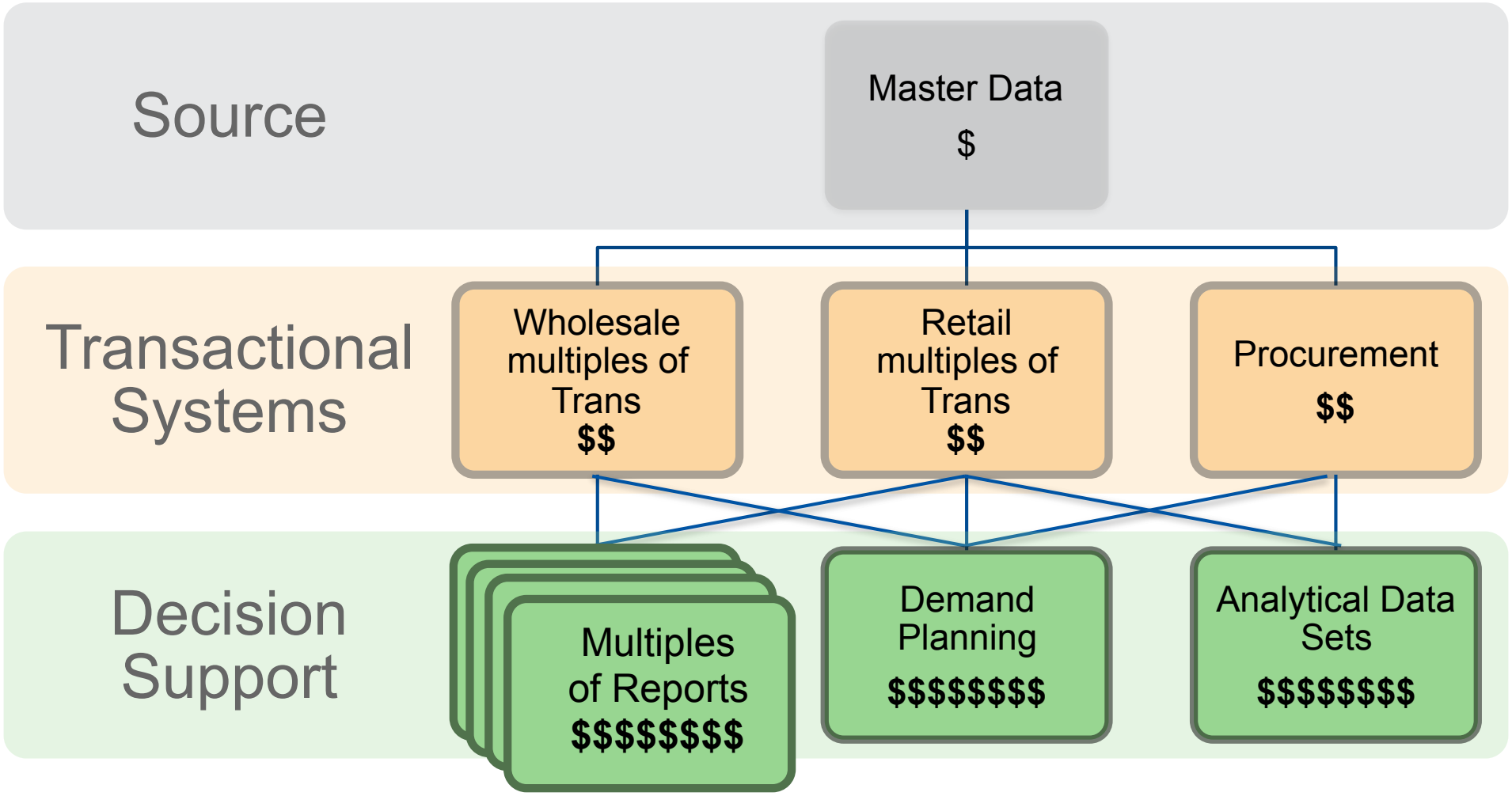
Your data foundation can only be as strong as its weakest link!

5	Optimized
4	Measured
3	Defined
2	Managed
1	Initial

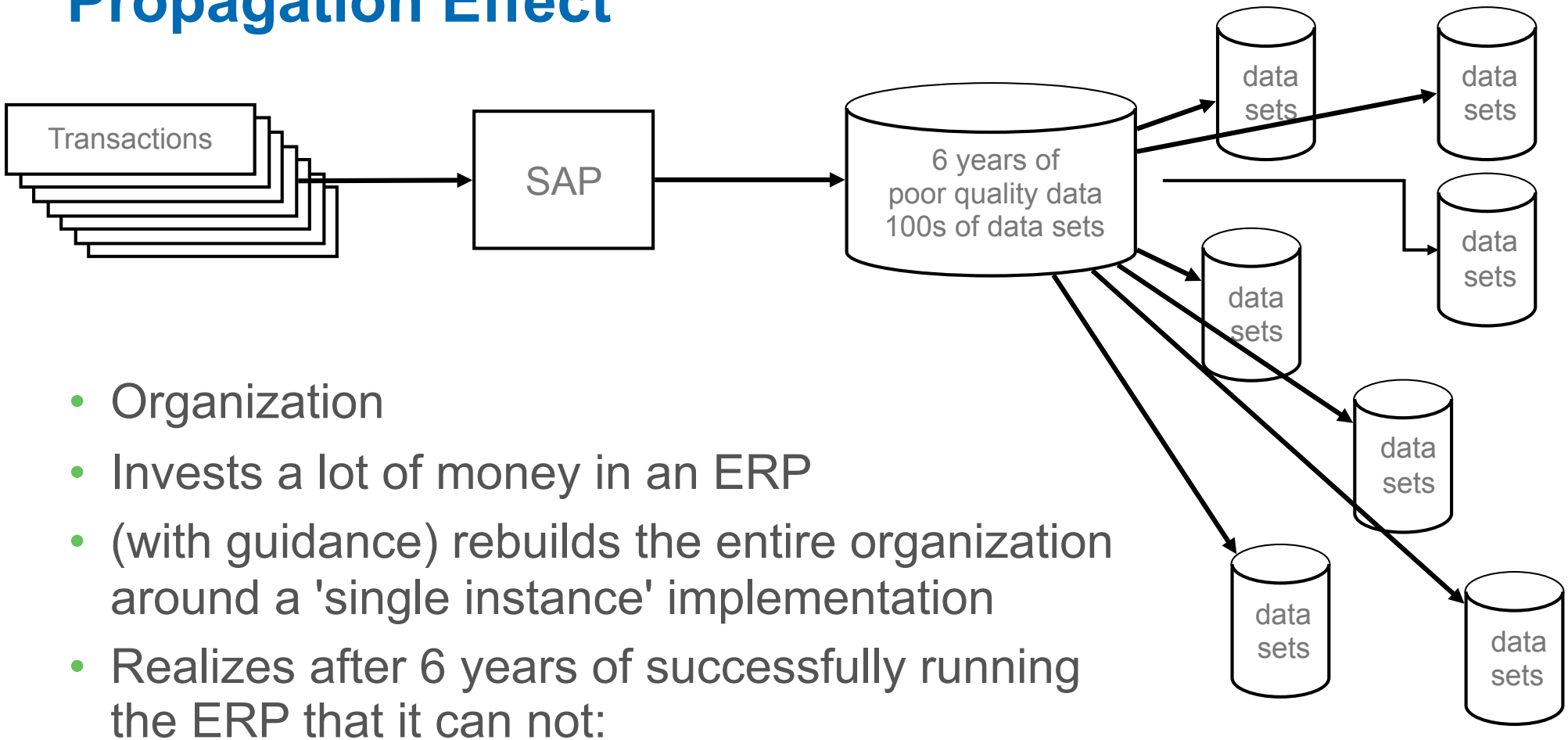


CMMI Institute

Case Study: Downstream Impact of Poor Data



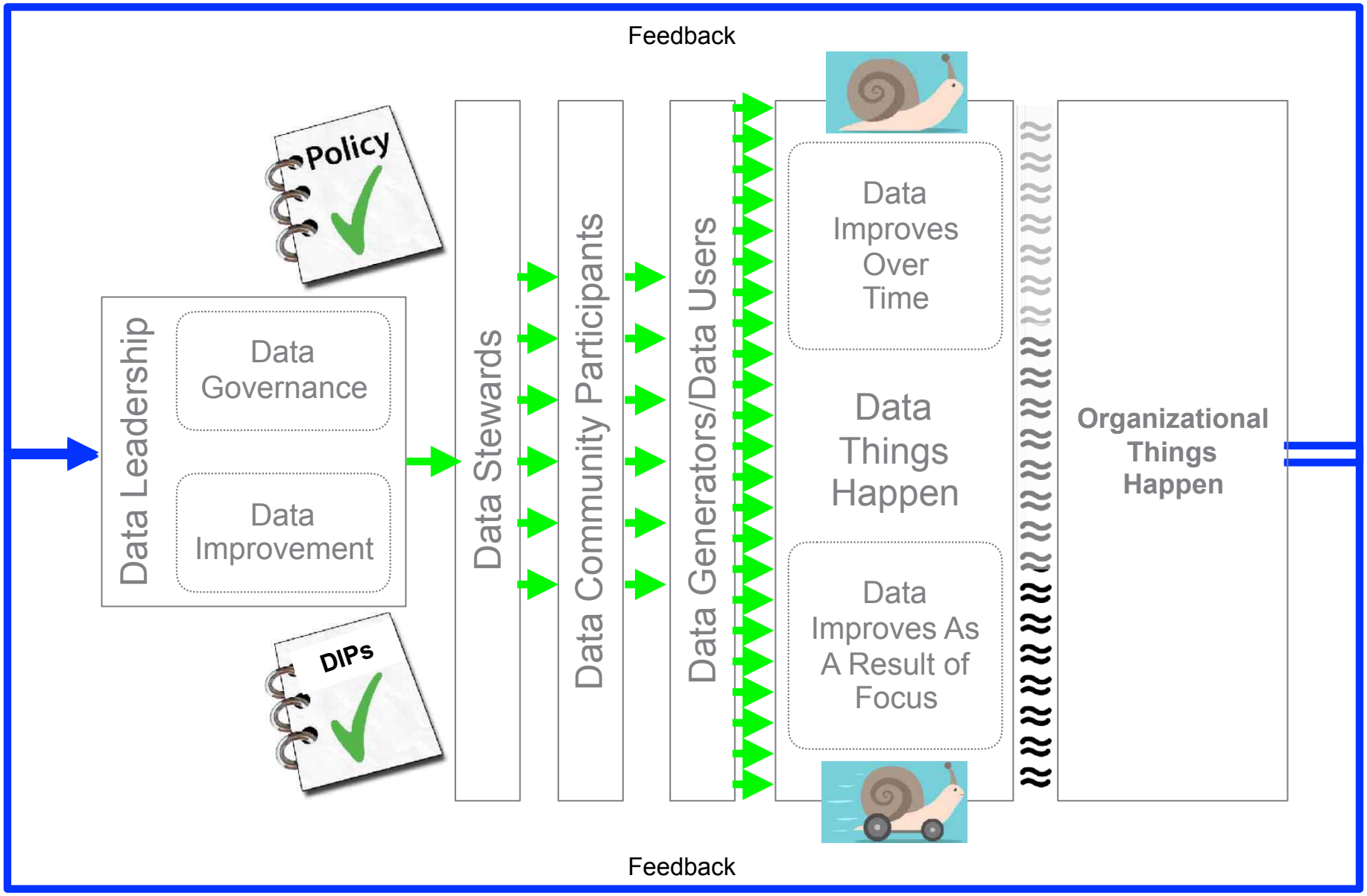
Propagation Effect



- Organization
- Invests a lot of money in an ERP
- (with guidance) rebuilds the entire organization around a 'single instance' implementation
- Realizes after 6 years of successfully running the ERP that it can not:
  - Tell what how much it has sold to its customers
  - Easily produce its monthly 'Wall Street' numbers
  - Reconcile past sales done in different currencies
  - Easily fix the problems

ERP

DIP Implementation



Health Care Data Warehouse

,335	$	4,812
,280	$	55,445
,130	$	(118,059)
,016	$	(18,016)
,238	$	(70,786)
4.39	$	(12.90)
per Visit		

The average DW costs $30M and take 18 months to build!

- 1.8 million members
- 1.4 million providers
- 800,000 providers no key
- 2.2% prov_number = 9 digits (required)
- 1 User

"I can take a roomful of MBAs and accomplish this analysis faster!"

It is Mel's first day on the job

- Colleague
  - Hey Mel - they say you like data - here this is now your dataset!
- Mel
  - Huh?
- Colleague
  - As a welcome gift, you now get that sucky dataset
- Mel
  - What's wrong with it?
- Colleague
  - I'm not sure, but we have always called it that

A day went by

- Mel
  - I looked at the dataset
  - It is 98% correct
- Colleague (shocked)
  - 98% - we always thought it was less than 30%
- Instantly the dataset went from being
  - the "sucky" dataset
  - "the right" (correct) dataset

And Mel continued on an impressive data career

Governmental Health Care Coordination Office

- Vendor
  - Pay us $1M/annually and we will 'mine' existing data and recommend cases for consolidation and/or fraud
- Locality
  - Okay I guess
- Data specialist
  - The data lake that was built does not permit sufficient critical mass to be established
- Vendor
  - Huh?
- Locality
  - So we should quit spending?
- Data specialist
  - The solution built can never produce the desired results

DATA

Virginia Internship Program Pits Grad Students Against Gov Data

For a second year, fresh sets of eyes and cutting-edge data analytics skills are the tools grad students will bring Virginia through the state's data internship program.

BY COLIN WOOD / AUGUST 25, 2015

Virginia Commonwealth University FLICKR/ANDREW BAIN

Commonwealth of Virginia

Office of Governor Terry McAuliffe

For Immediate Release
July 23, 2015

Office of the Governor
Contact: Brian Coy
Email: Brian.Coy@governor.virginia.gov

Governor McAuliffe Announces 2015-16 Data Internships

~ Virginia Commonwealth University graduate student teams to explore the use of data to improve government efficiency ~

RICHMOND – Governor Terry McAuliffe today announced that Virginia state government and the Virginia Commonwealth University School of Business will again work together on data re-engineering internships to explore the use of data to improve the effectiveness and efficiency of state government.

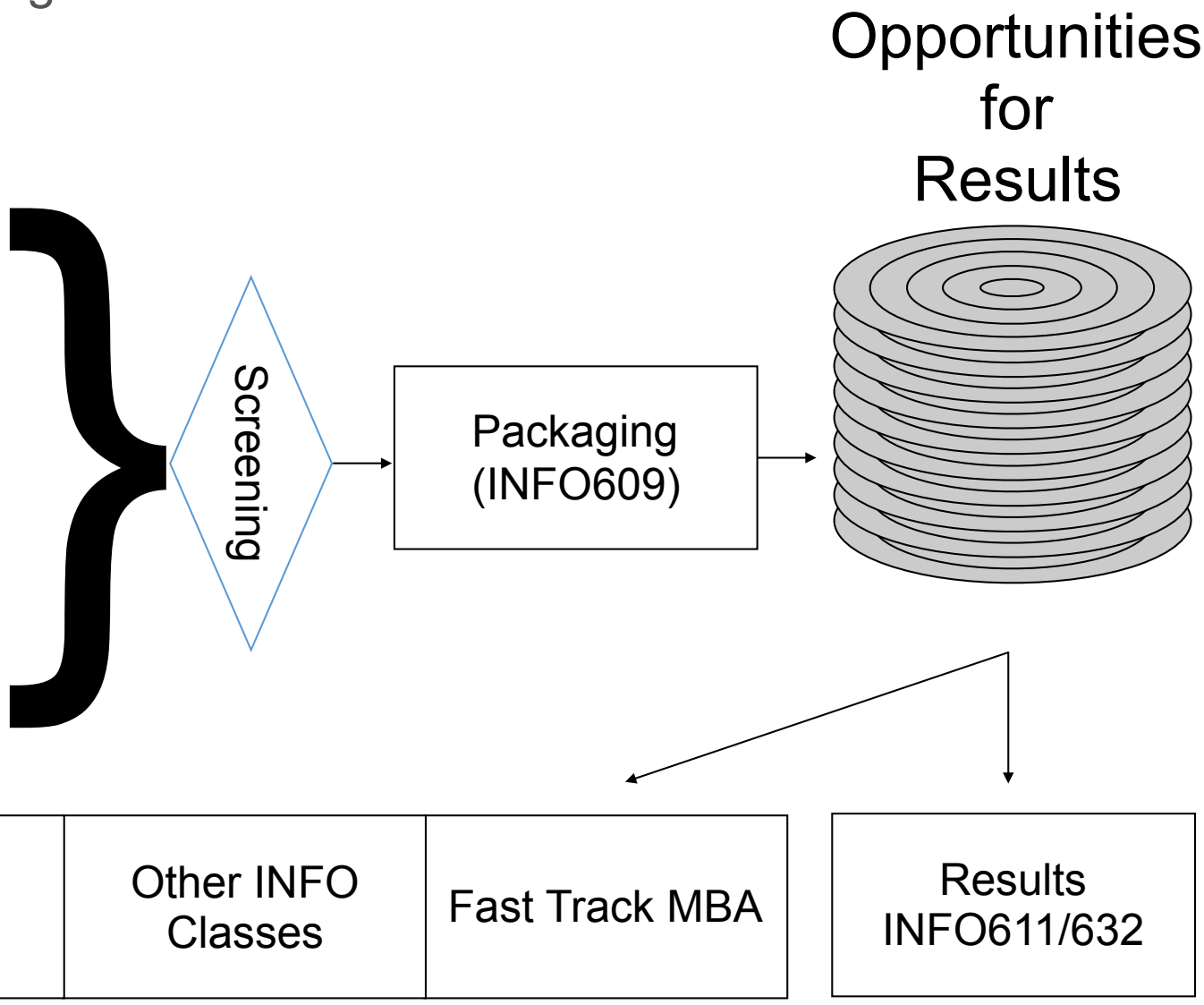
In the 2014-2015 school year, the data internship program's first, 45 graduate students and more than 20 state agencies participated. Those internships have resulted in tangible dollar savings and improved agency processes. Student/agency teams have worked on successful projects, such as

Virginia Secretary of Technology Karen Jackson and CIO of the Commonwealth Nelson Moe are leading the effort on behalf of the state. Students who want to apply for internships should contact Peter Aiken (peter.aiken@vcu.edu) for additional information.

Two Phase Approach

Commonwealth Agencies

- VDOT
- DARS
- ELECT
- DHRM
- SecHealth
- VDH
- DMAS
- DMV
- …



Hashing Process Illustrated

	First Name	Last Name	Date of Birth	Zip Code	Crime	Sentence	Gender	Race	Disability	LEP	…
1	Peter	Aiken	1/17/1959	23192	A	30	M	W	0	N	
2											
3											

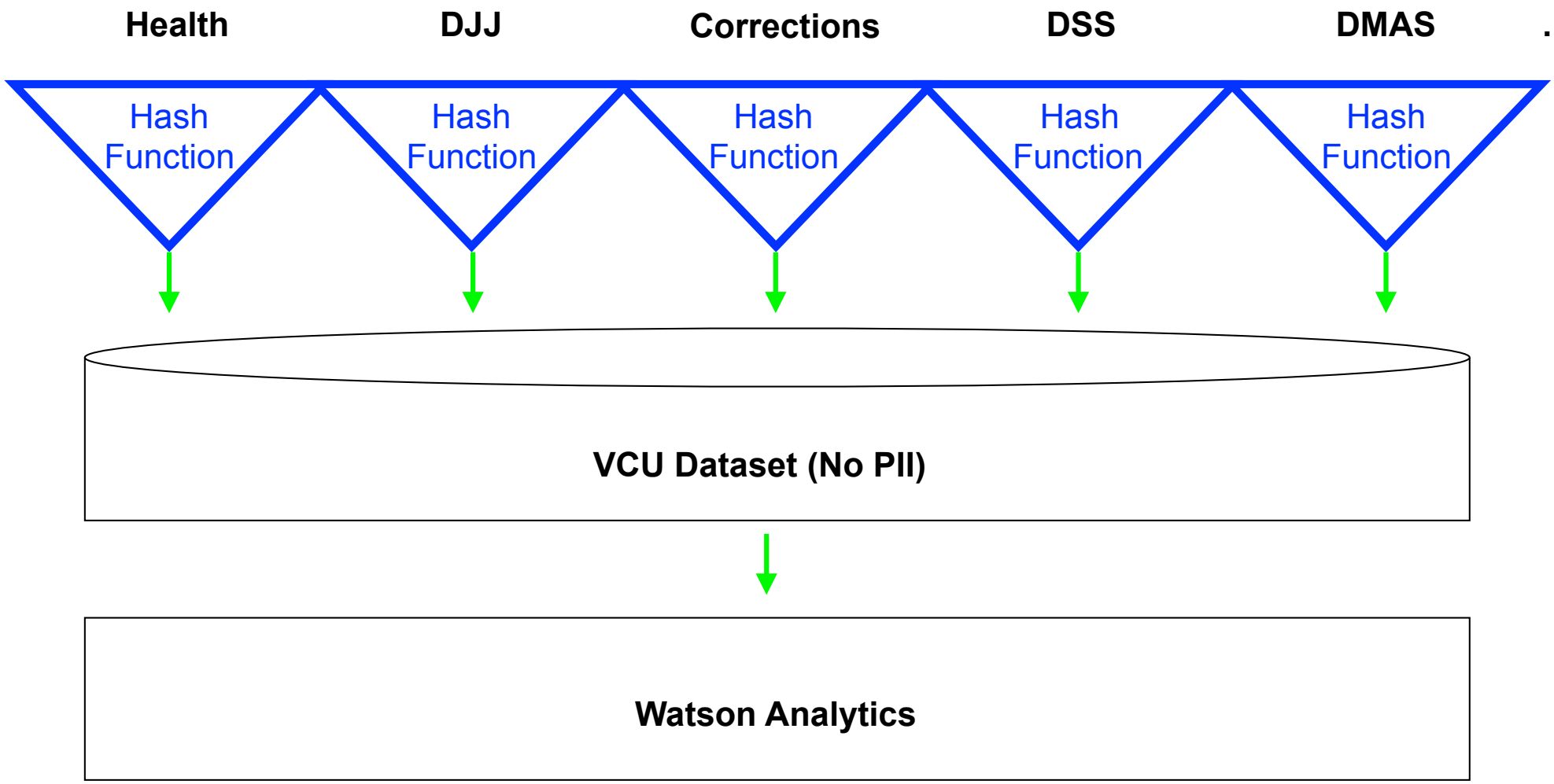
A 30 M W 0 N

Hash Function

(Replaces PII with Anonymous Identifier)

	Anonymous Identifier	Crime	Sentence	Gender	Race	Disability	LEP	…
1	92G-gqP-6ek-oy3	A	30	M	W	0	N	
2								
3								

Data Amalgamation Process



Valuing Data Assets

Capabilities Level-3

Data is an asset

The most powerful, yet most underutilized and poorly managed organizational asset

Capabilities Level-2

Data is a resource

Growing awareness that it needs to be governed

Capabilities Level-1

Data is a by-product of IT

Detritus (waste or debris of any kind)

Value

Time/Effort

Auditors should enjoy a birds eye view!

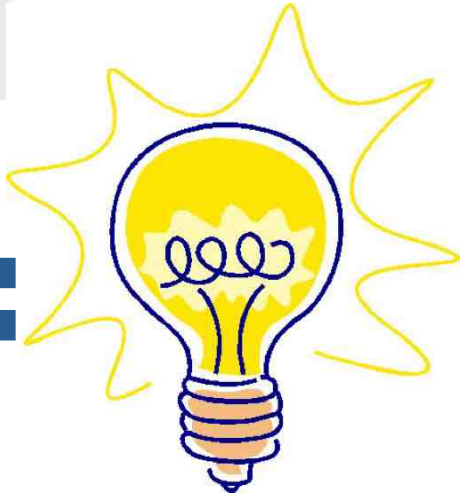
The Abbreviated State

28 of the fifty states did not conform to the original algorithm

An imaginary documentary about abbreviating all 50 States down to two letter codes made up by Gary Gulman for this 7-13-2016 stand-up routine on CONAN • https://www.youtube.com/watch?v=dLECCmKnrys

Questions?

It's your turn!
Use the chat feature or Twitter (#dataed) to submit your questions now!



UNLOCKING BUSINESS VALUE

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