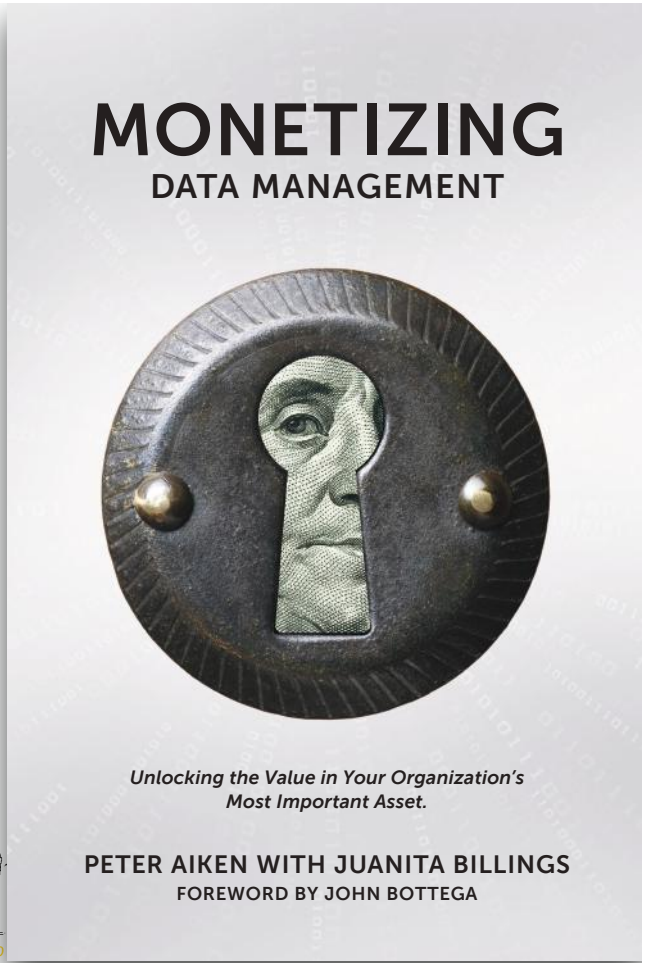
Connecting Data Governance and Data Quality to Organizational Value

$1,500,000,000.00 USD



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Peter Aiken, Ph.D.

- I've been doing this a long time
- My work is recognized as useful
- Associate Professor of IS (vcu.edu)
- Institute for Defense Analyses (ida.org)
- DAMA International (dama.org)
- MIT CDO Society (iscdo.org)
- Anything Awesome (anythingawesome.com)
- Experienced w/ 500+ data management practices worldwide
- 12 books and dozens of articles
- Multi-year immersions
  - US DoD (DISA/Army/Marines/DLA)
  - Nokia
  - Deutsche Bank
  - Wells Fargo
  - Walmart
  - HUD …

$1,500,000,000.00 USD

Chapter Contents

Chapter Overview

This database ain't big enough for the two of us

– Bumpersticker seen on an automobile in Texas

Complex Data Governance Environment

DATA COMMISSION

- EXECUTIVE
- Region representatives
- LEGISLATIVE
- JUDICIAL

Advise Governor

Data sharing and analytics
- Identify goals and objectives
- Prioritize initiatives
- Study & report
- Recommend changes to budget and code

execute

- Define, approve, and communicate data strategies, policies, standards, rules, guidelines, & best practices
- Provide a governance, policy, and technology framework
- Define agency data governance responsibilities
- Encourage & facilitate data sharing
- Facilitate coordination to prevent duplication
- Coordinate policy and technology proposals and recommendations
- Administer and manage the commonwealth data trust
- Track and enforce compliance and conformance
- Oversee dissemination of open data

Data Governance Council

- Liaise between agency operations & CDO
- Advise CDO on technology, policy, and governance strategies
- Administer data governance policies set by the board
- implement data sharing & analytics projects
- Review open data assets
- Report progress & compliance to the Board

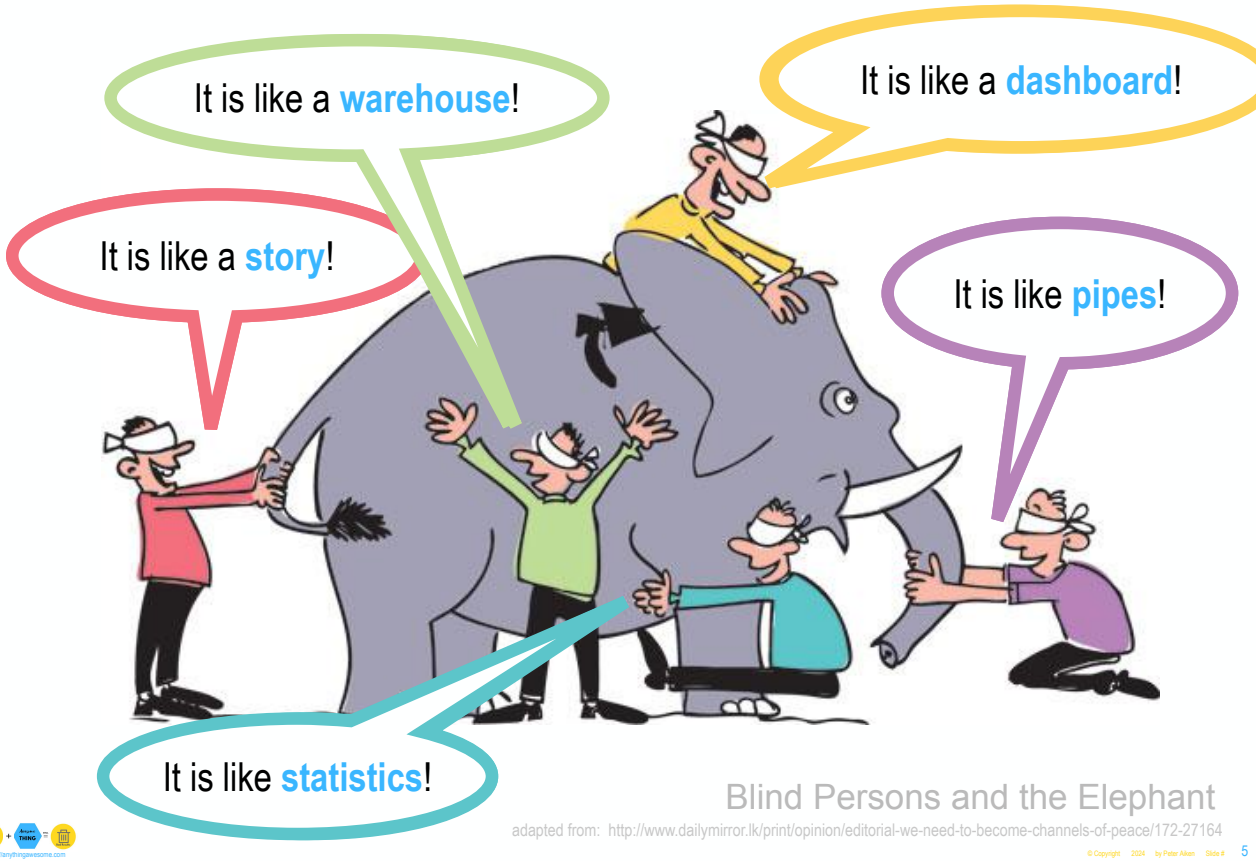
Advise CDO

Executive data board

- Translate commonwealth goals to agency performance targets
- provide resources
- Remove organizational obstacles
- appoint data governance council members
- Oversee the data governance council
- Oversee data sharing & analytics projects

Oversee council

Data Is Not Broadly or Widely Understood



Blind Persons and the Elephant

adapted from: http://www.dailymirror.lk/print/opinion/editorial-we-need-to-become-channels-of-peace/172-27164

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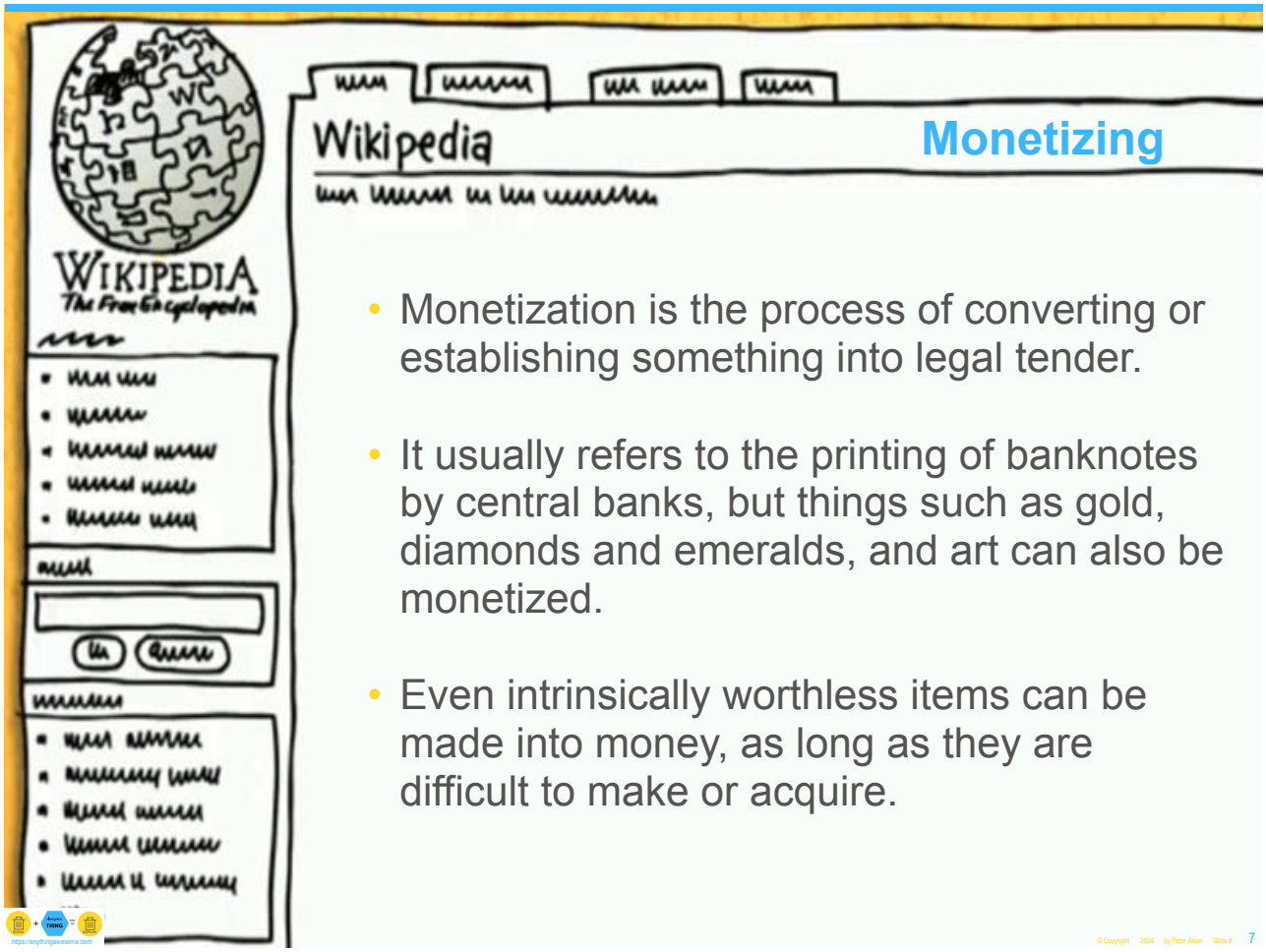
https://www.youtube.com/watch?v=NNbPxSvII-Q

Wally Easton Playing Piano

At **what** do we want our organizations to be good?

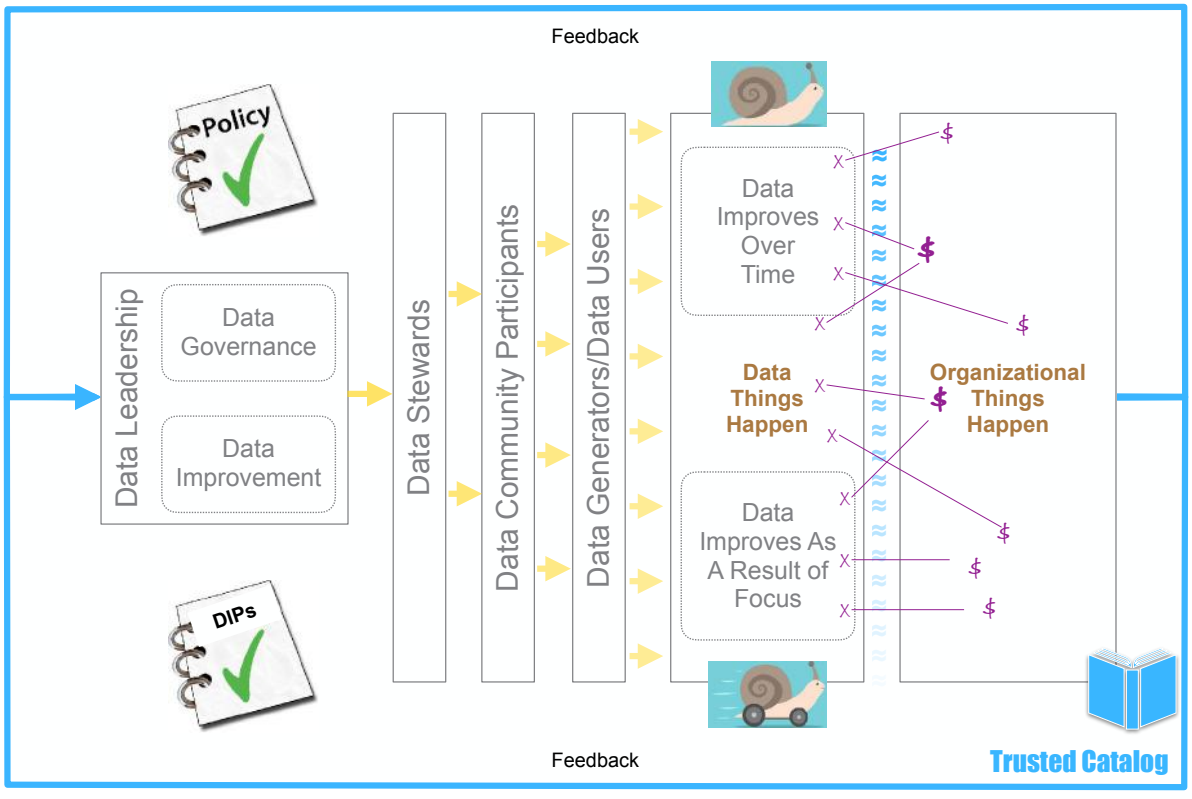
 6



Monetizing

- Monetization is the process of converting or establishing something into legal tender.
- It usually refers to the printing of banknotes by central banks, but things such as gold, diamonds and emeralds, and art can also be monetized.
- Even intrinsically worthless items can be made into money, as long as they are difficult to make or acquire.

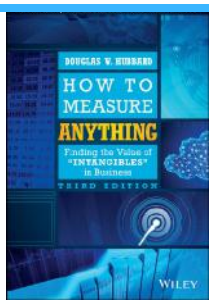
Data Governance Role: **Produce systemic organizational changes that impact data and work practices over time**



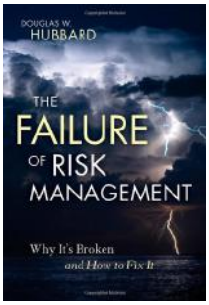
Compare Story Types

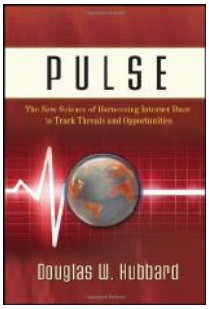
Technical	Business
Clean some data	Decrease the number of undeliverable targeted marketing ads
Reorganize the database	Increase the ability of the salesforce to perform their own analyses
Develop a taxonomy	Create a common vocabulary for the organization
Optimize a query	Shaved 1 second off a task that runs a billion times a day
Reverse engineer the legacy system	Understand: what was good about the old system so it can be formally preserved and, what was bad so it can be improved

Great inspiration ...

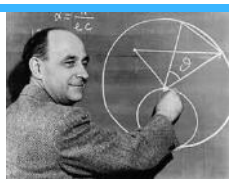


- *How to Measure Anything: Finding the Value of Intangibles in Business* by Douglas Hubbard (ISBN: 0470539399)
- Measurement is a reduction in uncertainty
- Formalizing stuff forces clarity
- Whatever your measurement problem is,
  - it's been done before
- You have more data than you think
- You need 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



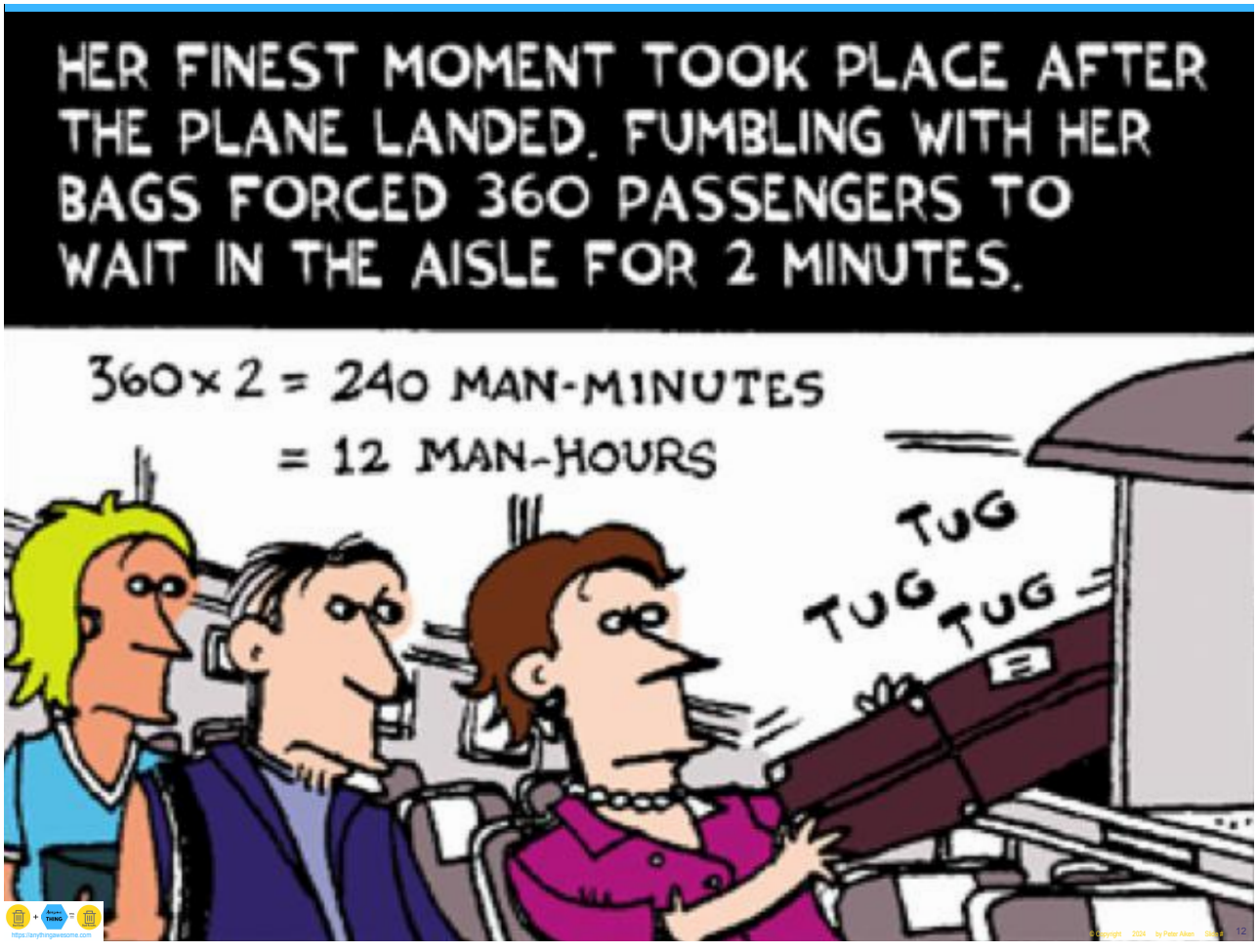


Enrico Fermi (Nobel Prize Physics 1938)



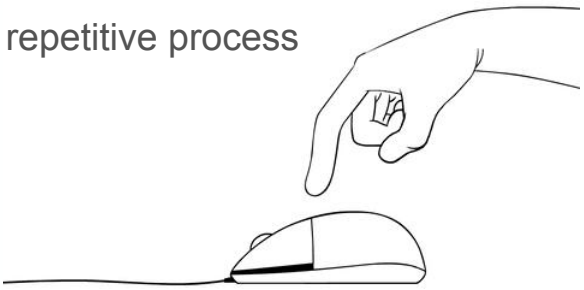
- How many piano tuners in the city of Chicago?
  - Without using existing lists such as Yellow Pages, Google ...
  - Current population of Chicago (3 million at the time)
  - Average number of people per household (2 or 3)
  - Share of households with regularly tuned pianos (1 in 3)
  - Required frequency 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]



Focus on Knowledge Worker Productivity

1. Remove 1 click from some repetitive process



https://giphy.com/gifs/xUPGcoTKhfDvStjxMA/html5

2. Tally the number of clicks

https://giphy.com/gifs/latenightseth-lol-seth-meyers-lnsm-l0XtbC8EniiuwAEOQn

3. Accurately describe the impact of the potential improvement

https://tenor.com/search/counting-money-gifs

It Seemed Simple

- Please add a new field
  - **NEW field (E) = A + B/C**
  - Where A is sourced from 1 of 6 systems
  - B is another customer record sourced from 1 of 6 systems, and
  - C is data provided by a vendor

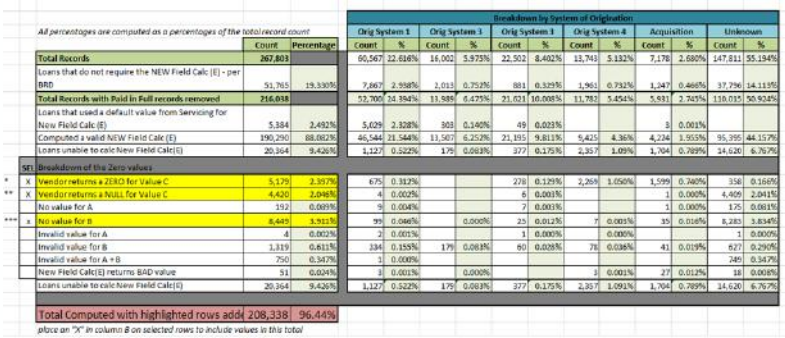
- Data challenges
  - Some loans were missing field A
  - Others were missing field B
  - Others were missing the vendor-provided value for C
- Explanation
  - We reached out to other systems to populate missing fields, and
  - We created new matching routines to grab data from disparate loan records
  - After months of effort and bringing resolution to everything we could, we were finally ready to go to user acceptance testing

It Seemed Simple

- Before approval of user acceptance testing, the team was asked one question:
  - For how many loans were we able to calculate the new field?
- The response:
  - 43%
- Next question:
  - Why only 43%?
- Responses:
  - We still have bad and missing data
  - We resolved everything we could
  - We do not have the required fields populated for all loans; therefore, the calculation does not return a value
  - We know it sounds low, but we double-checked and all requirements have been satisfied

It Seemed Simple

- Team challenged to conduct deeper dive/provide detailed metrics—not typical of developers
  - Met the challenge/produced metrics around missing data
  - Shared numbers with client, who agreed: 43% did not meet expectations!
- More analyses-after several iterations:
  - Updated business rules to accommodate the "bad data"
  - Used alternate fields when field A, B or C was blank
  - Discovered/corrected zero value errors
  - We identified vendor errors on column C



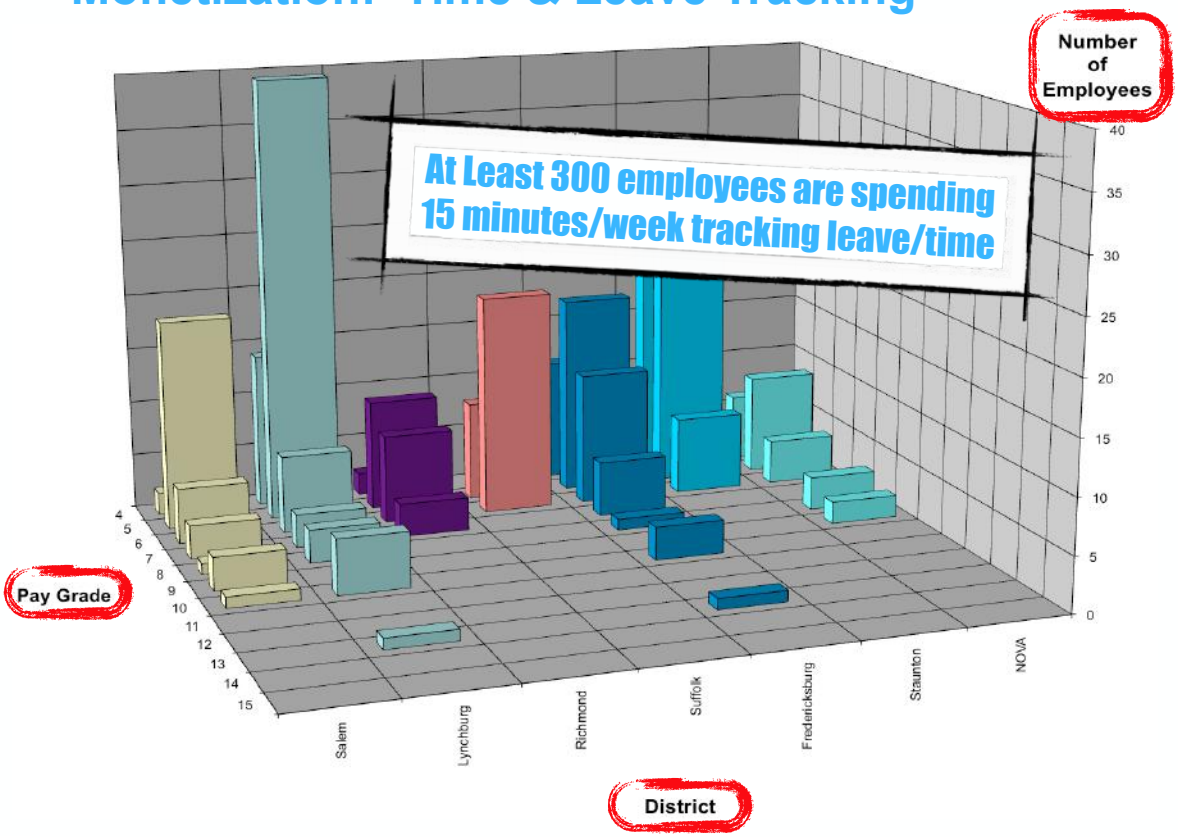
			Count	Percentage	Breakdown by System of Origination: Orig System 1 Count	%	Orig System 3 Count	%	Orig System 1 Count	%	Orig System 4 Count	%	Acquisition Count	%	Unknown Count	%
		Total Records	267,803		60,567	22.616%	16,002	5.975%	22,502	8.402%	13,743	5.132%	7,178	2.680%	147,811	55.194%
		Loans that do not require the NEW Field Calc (E) - per BRD	51,765	19.330%	7,667	2.998%	1,013	0.752%	881	0.329%	1,961	0.732%	1,247	0.466%	37,296	14.113%
		Total Records with Paid in Full records removed	216,038		52,700	24.394%	11,989	6.475%	21,621	10.008%	11,782	5.454%	5,931	2.745%	110,015	50.924%
		Loans that used a default value from Servicing for New Field Calc (E)	5,384	2.492%	5,029	2.328%	303	0.140%	49	0.023%			3	0.001%		
		Computed a valid NEW Field Calc (E)	190,290	88.082%	46,544	21.544%	11,507	6.252%	21,195	9.811%	5,425	4.36%	4,224	1.955%	95,395	44.157%
		Loans unable to calc New Field Calc(E)	20,364	9.426%	1,127	0.522%	179	0.083%	377	0.175%	2,357	1.091%	1,704	0.789%	14,620	6.767%
SET		Breakdown of the Zero values														
*	X	Vendor returns a ZERO for Value C	5,179	2.397%	675	0.312%			278	0.129%	2,269	1.050%	1,599	0.740%	358	0.166%
**	X	Vendor returns a NULL for Value C	4,420	2.046%	4	0.002%			6	0.001%			1	0.000%	4,409	2.041%
		No value for A	192	0.089%	9	0.004%			7	0.003%			1	0.000%	175	0.081%
***	x	No value for B	8,449	3.911%	99	0.046%		0.000%	25	0.012%	7	0.003%	35	0.016%	8,283	3.834%
		Invalid value for A	4	0.002%	2	0.001%			1	0.000%		0.000%			1	0.000%
		Invalid value for B	1,319	0.611%	334	0.155%	179	0.083%	80	0.028%	78	0.036%	41	0.019%	627	0.290%
		Invalid value for A + B	750	0.347%	1	0.000%									749	0.347%
		New Field Calc(E) returns BAD value	51	0.024%	3	0.001%		0.000%			3	0.001%	27	0.012%	18	0.008%
		Loans unable to calc New Field Calc(E)	20,364	9.426%	1,127	0.522%	179	0.083%	377	0.175%	2,357	1.091%	1,704	0.789%	14,620	6.767%
		Total Computed with highlighted rows add	208,338	96.44%												

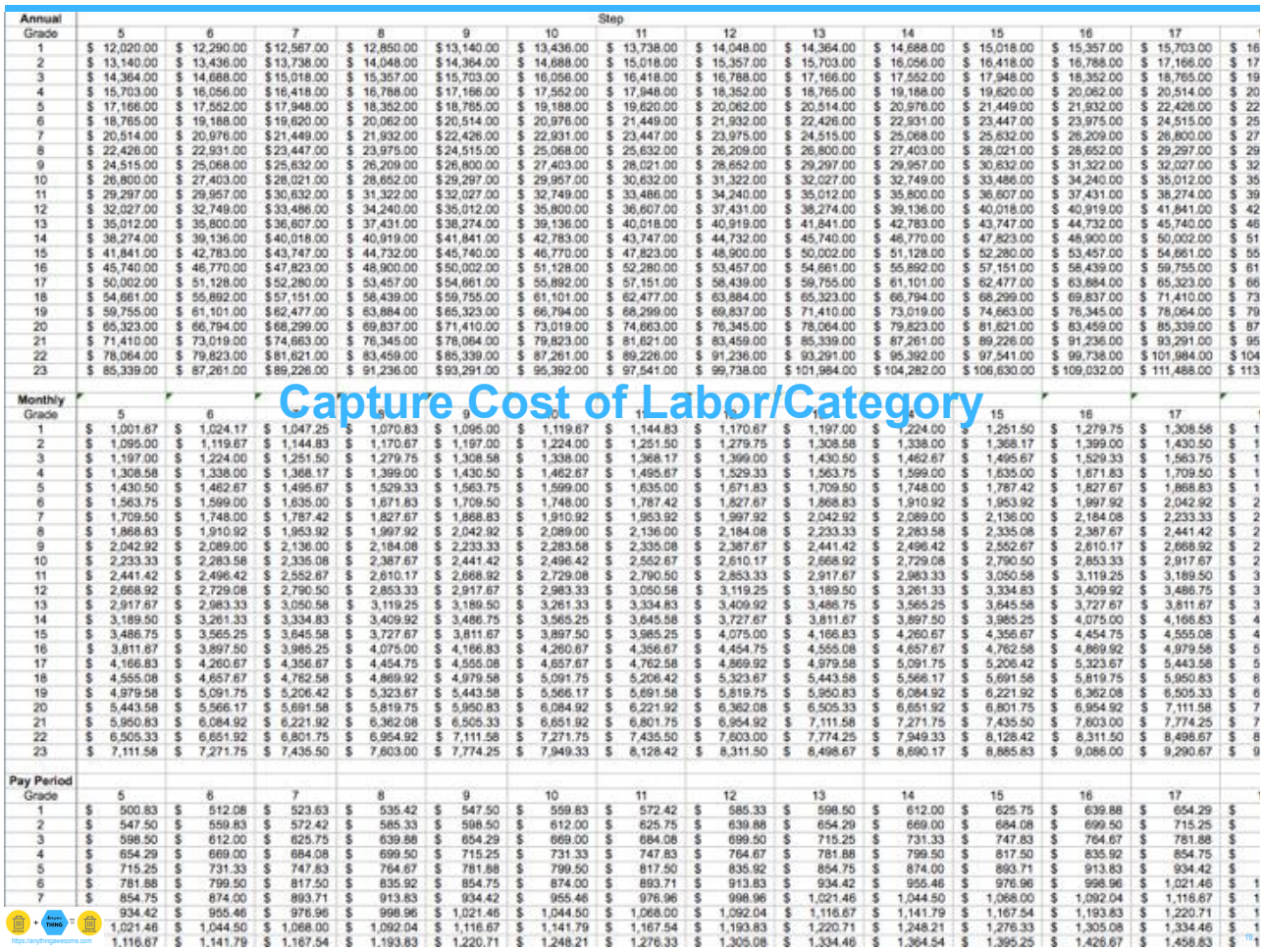
- At user acceptance, we increase the rate of "Computed a valid New Field Calc(E)" from 43% to 88% and
- Explain every scenario of accounts unable to calculate the new field

Data-Centric Perspective

- Measure success differently
- Same project
- Same process
- Different measures for success
  - Asking if our data is correct;
  - Valuing data more than we value "on time and within budget";
  - Valuing correct data more than correct processes; and
  - Auditing data rather than project documents
  - $50 million annually!
    - Articulation by Linda Bevolo

Monetization: Time & Leave Tracking





Annual	Step													
Grade	5	6	7	8	9	10	11	12	13	14	15	16	17	
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Monthly														
Grade	5	6	7	8	9	10	11	12	13	14	15	16	17	
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

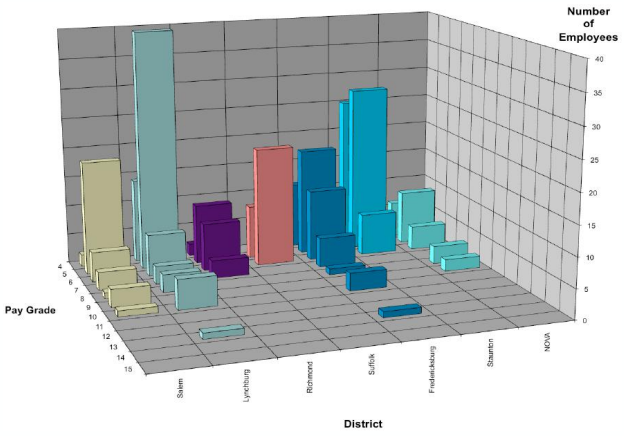
Pay Period														
Grade	5	6	7	8	9	10	11	12	13	14	15	16	17	
1	$ 500.83	$ 512.08	$ 523.63	$ 535.42	$ 547.50	$ 559.83	$ 572.42	$ 585.33	$ 598.50	$ 612.00	$ 625.75	$ 639.88	$ 654.29	$
2	$ 547.50	$ 559.83	$ 572.42	$ 585.33	$ 598.50	$ 612.00	$ 625.75	$ 639.88	$ 654.29	$ 669.00	$ 684.08	$ 699.50	$ 715.25	$
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	$
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	$
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	$
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
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
	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
	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
	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

Compute Additional 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 (Delta)	$6.92	$6.92
Additive Rate (Delta)	$11.23	$11.23
Cost per timekeeper (Delta)	$12.31	$114.56
Total timekeeper cost	$898.49	$5,727.89
Monthly cost	$21,563.83	$137,469.40

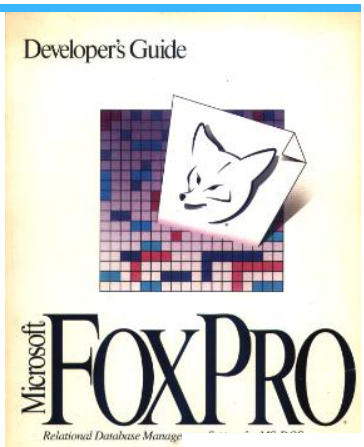
Annual Organizational Totals

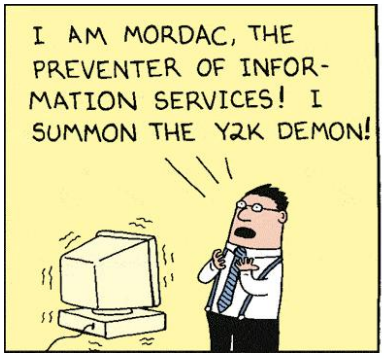
- Range $192,000 - $159,000/month
- $100,000 Salem
- $159,000 Lynchburg
- $100,000 Richmond
- $100,000 Suffolk
- $150,000 Fredericksburg
- $100,000 Staunton
- $100,000 NOVA
- $800,000/month or $9,600,000/annually
- *Awareness of the cost of things considered overhead*



Why should a knowledge worker

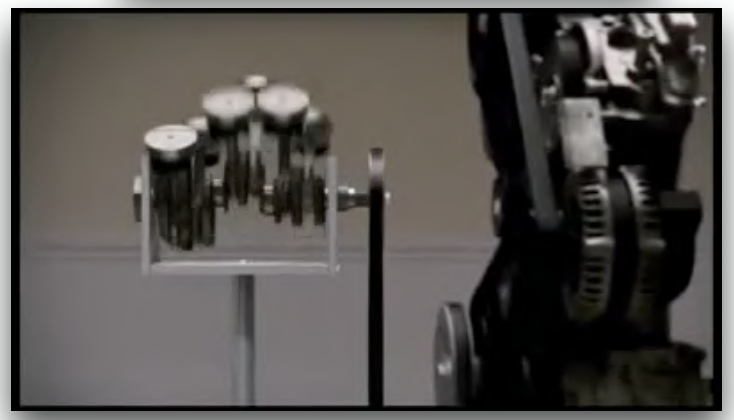
- with a PhD in Chemical Engineering
- have to know whether this product was Y2K compliant?

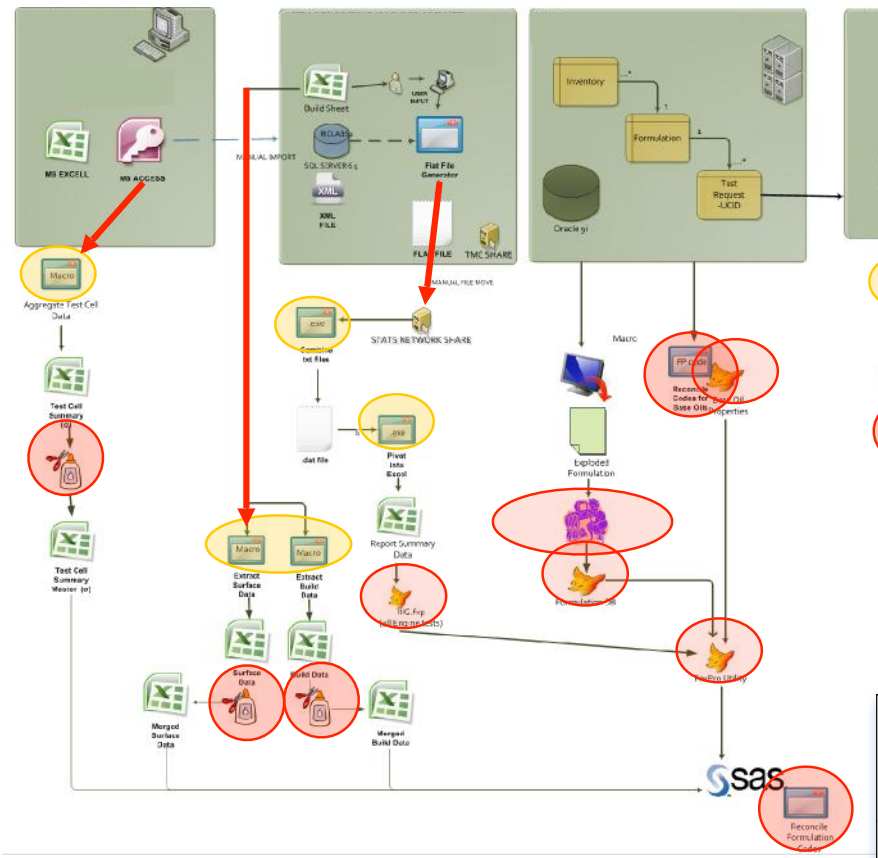




International Chemical Company Engine Testing

- $1billion (+) chemical company
- Develops/manufactures additives enhancing the performance of oils and fuels ...
- ... to enhance engine/ machine performance
  - Helps fuels burn cleaner
  - Engines run smoother
  - Machines last longer
- Tens of thousands of tests annually
  - Test costs range up to $250,000!





Improving Knowledge Worker Productivity

1.Manual transfer of digital data
2.Manual file movement/duplication
3.Manual data manipulation
4.Disparate synonym reconciliation
5.Tribal knowledge requirements
6.Non-sustainable technology

Improving Knowledge Worker Productivity

- Solution:
  - Business process improvements
  - Data architecture development
  - Data quality improvements
  - Integrated system development

The opportunity for performance improvement is huge:

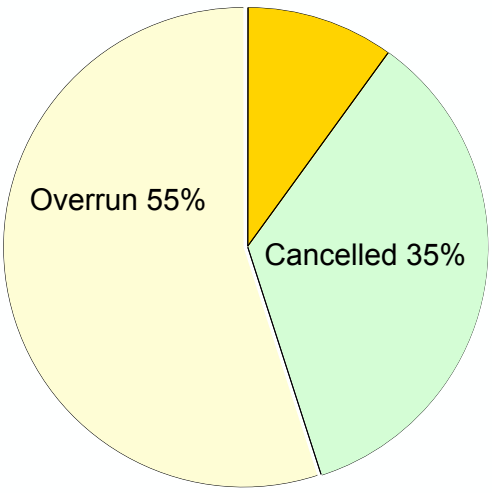
"Between the best and worst 1% of performers in a medium complexity (knowledge work) environment there is a 12 to 1 difference in output."

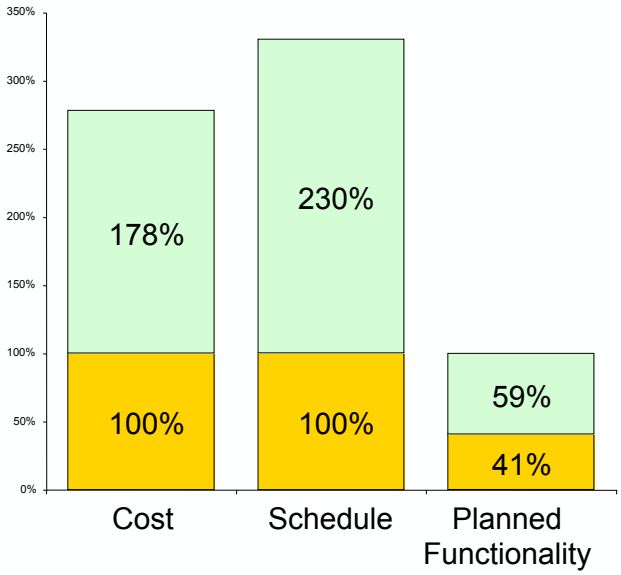
- Journal of Applied Psychology

- Results:
  - Reduced the number of tests needed to develop products
  - Increase the number of tests per researcher
  - Reduce the time to market for new product development
- According to our client's internal business case development, they expect to realize a $25 million gain each year thanks to data governance improvement

ERP Implementation Success

- Most ERP implementations today result in cost and schedule overruns; courtesy of the Standish Group





On time, within budget, as planned 10%

From someone selling integrated software?

FOCUS

36 IEEE Software March/April 1999

Case Study

Reverse-engineering a commercial client–server system from PeopleSoft yielded a valuable resource and proved to be cost-effective. The authors describe the motivations for, approach to, and results of this project, commissioned by the Commonwealth of Virginia's government.

Reverse-Engineering New Systems for Smooth Implementation

Peter Aiken and Ojelanki K. Ngwenyama, Virginia Commonwealth University
Lewis Broome, Innovative Business Solutions

ID	Task Name	Duration	Cost	Work
1	1000 ORGANIZATION	18.01	$128,335.!	82.44
2	1100 Organize Project	18d	$42,585.:	27.36
3	1200 Complete Work Program	18d	$71,739.·	46.08
4	Detailed Work Plan and Finalized Deliverable List	0d	$0.0	0d
5	1300 Develop Quality Plan	18.01	$14,011.:	9d
6	2000 ESTABLISH DEVELOPMENT ENVIRONMENT	54d	$235,364.:	228.07
7	2100 Setup Application Software	18d	$51,310.·	49.86
8	2200 Site Preparation	54d	$184,053.·	178.2
9	Comprehensive Backup Pl	0d	$0.0	0d
10	3000 PLAN CHANGE MANAGEMEN	2.01	$347,901.·	249.13
11	3100 Develop Change Mana	.01	$39,821.·	21.97
12	Change Management Plan	0d	$0.0	0d
13	3200 Implement Change Mana	36d	$123,597.·	91.08
14	3300 Develop Impact Analysi	18.01	$17,485.·	12.96
15	Impact Analysis Plan	0d	$0.0	0d
16	3400 Implement Impact Analysis Plan	18d	$166,998.:	123.12
17	4000 PERFORM CONFIGURATION TEST	72d	$93,585.:	76.14
18	4100 Prepare for Functional Configuration Testing	54d	$53,091.·	36.18
19	4200 Perform Functional Configuration Testing	18d	$40,493.!	39.96
20	5000 PRELIMINARY SYSTEM & PROCESS DESIGN	108d	$1,248,758.	1079.82
21	5100 Analyze Business Processes	54d	$621,386.:	511.92
22	5200 Software Fit Analysis	54d	$568,447.	505.44

Actual Bid From Systems Integrator

Task Summary Rolled Up Progre

Predicting Engineering Problem Characteristics

Legacy System #1: Payroll

Platform:	Amdahl
OS:	MVS
1998 Age:	15
Data Structure:	VSAM/virtual database tables
Physical Records:	780,000
Logical Records:	60,000
Relationships:	64
Entities:	4/350
Attributes:	683

Legacy System #2: Personnel

Platform:	UniSys
OS:	OS
1998 Age:	21
Data Structure:	DMS (Network)
Physical Records:	4,950,000
Logical Records:	250,000
Relationships:	62
Entities:	57
Attributes:	1478

Characteristics			Logical	Physical
Platform:	WinTel	Records:	250,000	600,000
OS:	Win'95	Relationships:	1,034	1,020
1998 Age:	new	Entities:	1,600	2,706
Data Structure:	Client/Sever RDBMS	Attributes:	15,000	7,073

New System

Extreme Data Engineering

2 person months = 40 person days

2,000 attributes mapped onto 15,000

2,000/40 person days = 500/person day
or 500/8 hours = 62.5 attributes/hour

and

15,000/40 person days = 375/person day
or 375/8 hours = 46.875 attributes/hour

Locate, identify, understand, map, transform, document

108 attributes/60 minutes

1.8 attributes/minute!

Logistics Company

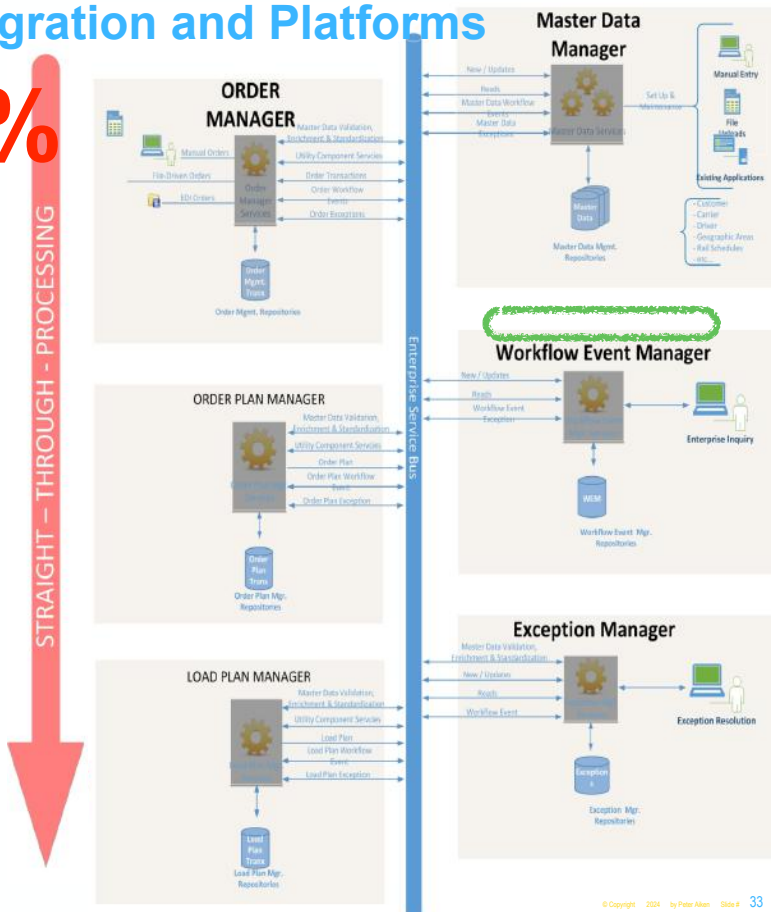
- Fortune 450
- Room of 100 associates
- Manually correcting every item on every customer invoice
- Upon noting this to the responsible manager - the reply:
  - *This is the best quarter*
  - *Of the best year*
  - *I've ever had*
  - *Perhaps I need to double the number in that room?*

If you can fix this in 1 month for less than $750,000,000 then its a positive ROI in 30 days!

Example : Data Integration and Platforms

- Straight Through Processing
  - Auto Everything
- Workflow Event Manager
  - 360 View of the order
- Exception Manager
  - Alert and Notification system when human involvement is needed

85%



Improving Data Quality during System Migration

- Challenge
  - Millions of NSN/SKUs maintained in a catalog
  - Key and other data stored in clear text/comment fields
  - Original suggestion was manual approach to text extraction
  - Left the data structuring problem unsolved
- Solution
  - Proprietary, improvable text extraction process
  - Converted non-tabular data into tabular data
  - Saved a minimum of $5 million
  - Literally person centuries of work

Data Catalog

Determining Diminishing Returns

Week #	Unmatched Items (% Total)	Ignorable Items (% Total)	Items Matched (% Total)
1	31.47%	1.34%	N/A
2	21.22%	6.97%	N/A
3	20.66%	7.49%	N/A
4	32.48%	11.99%	55.53%
…	…	…	…
14	9.02%	22.62%	68.36%
15	9.06%	22.62%	68.33%
16	9.53%	22.62%	67.85%
17	9.5%	22.62%	67.88%
18	7.46%	22.62%	69.92%

Quantifying Benefits: Original Plan

Time needed to review all NSNs once over the life of the project:	
NSNs	2,000,000
Average time to review & cleanse (in minutes)	5
Total Time (in minutes)	10,000,000
Time available per resource over a one year period of time:	
Work weeks in a year	48
Work days in a week	5
Work hours in a day	7.5
Work minutes in a day	450
Total work minutes/year	108,000
Person years required to cleanse each NSN once prior to migration:	
Minutes needed	10,000,000
Minutes available person/year	108,000
Total Person-Years	92.6
Resource Cost to cleanse NSN's prior to migration:	
Avg salary for SME year (not including overhead)	$60,000.00
Projected years required to cleanse/total DLA person years saved	93
Total cost to cleanse/Total DLA savings to cleanse NSN's:	**$5.5 million**

Quantifying Benefits: Revised Plan

Time needed to review all NSNs once over the life of the project:	
NSNs	150,000
Average time to review & cleanse (in minutes)	5
Total Time (in minutes)	750,000
Time available per resource over a one year period of time:	
Work weeks in a year	48
Work days in a week	5
Work hours in a day	7.5
Work minutes in a day	450
Total work minutes/year	108,000
Person years required to cleanse each NSN once prior to migration:	
Minutes needed	750,000
Minutes available person/year	108,000
Total Person-Years	7
Resource Cost to cleanse NSN's prior to migration:	
Avg salary for SME year (not including overhead)	$60,000.00
Projected years required to cleanse/total DLA person years saved	7
Total cost to cleanse/Total DLA savings to cleanse NSN's:	$420,000

Quantifying Benefits: Social Engineering

Time needed to review all NSNs once over the life of the project:	
NSNs	2,000,000
Average time to review & cleanse (in minutes)	5
Total Time (in minutes)	10,000,000
Time available per resource over a one year period of time:	
Work weeks in a year	48
Work days in a week	5
Work hours in a day	7.5
Work minutes in a day	450
Total work minutes/year	108,000
Person years required to cleanse each NSN once prior to migration:	
Minutes needed	10,000,000
Minutes available person/year	108,000
Total Person-Years	92.6
Resource Cost to cleanse NSN's prior to migration:	
Avg salary for SME year (not including overhead)	$60,000.00
Projected years required to cleanse/total DLA person years saved	93
Total cost to cleanse/Total DLA savings to cleanse NSN's:	**$5.5 million**

A National Cancer Institute

- This Virginia cancer center is a leader in shaping the fight against cancer
- Over 500 researchers and staff tend to over 12,000 patients annually
- This requires robust information management and analytical services
- The problem: It takes 1 month to run a report on an incident, i.e. a patient's hospital visit that shows all touch points

Results

- Solution:
  - Integrate multiple databases into one to create holistic view of data
  - Automation of manual process
- Results:
  - Data is passed safely and effectively
  - Eliminate inconsistencies, redundancies, and corruption
  - Ability to cross-analyze
  - Significantly reduced turnaround time for matching patients with potential donor -> increased potential to make life-saving connection in a manner that is faster, safer and more reliable
  - Increased safe matches from 3 out of 10 to 6 out of 10

Friendly Fire deaths traced to Dead Battery

- Date: Tue, 26 Mar 2002 10:47:52 -0500
  From:
  Subject: Friendly Fire deaths traced to dead battery

  In one of the more horrifying incidents I've read about, U.S. soldiers and allies were killed in December 2001 because of a stunningly poor design of a GPS receiver, plus "human error."

  http://www.washingtonpost.com/wp-dyn/articles/A8853-2002Mar23.html

  A U.S. Special Forces air controller was calling in GPS positioning from some sort of battery-powered device. He "had used the GPS receiver to calculate the latitude and longitude of the Taliban position in minutes and seconds for an airstrike by a Navy F/A-18."

- According to the *Post* story, the bomber crew "required" a "second calculation in 'degree decimals'" -- why the crew did not have equipment to perform the minutes-seconds conversion themselves is not explained.

- The air controller had recorded the correct value in the GPS receiver when the battery died. Upon replacing the battery, he called in the degree-decimal position the unit was showing -- without realizing that the unit is set up to reset to its *own* position when the battery is replaced.

  The 2,000-pound bomb landed on his position, killing three Special Forces soldiers and injuring 20 others.

- If the information in this story is accurate, the RISKS involve replacing memory settings with an apparently-valid default value instead of blinking 0 or some other obviously-wrong display; not having a backup battery to hold values in memory during battery replacement; not equipping users to translate one coordinate system to another (reminiscent of the Mars Climate Orbiter slamming into the planet when ground crews confused English with metric); and using a device with such flaws in a combat situation

Posted on Friday, January 15, 2010

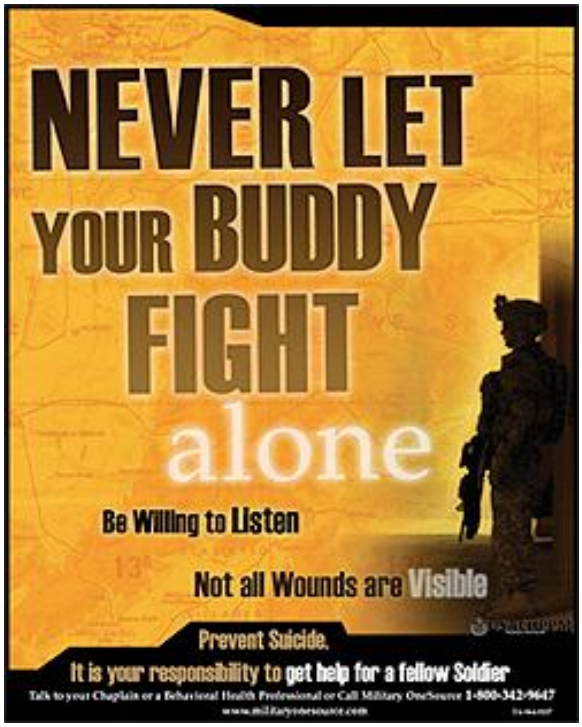
Despite prevention efforts, U.S. military suicides rise

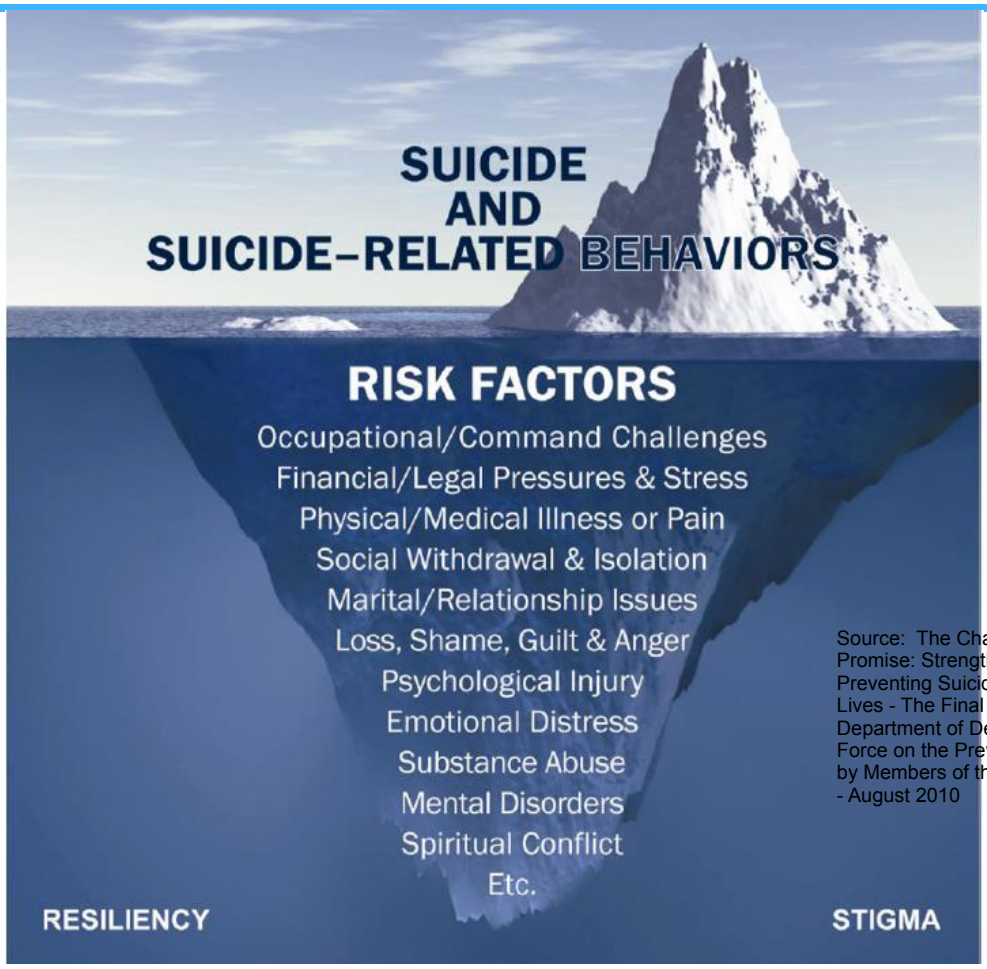
By Halimah Abdullah | McClatchy Newspapers

WASHINGTON — Eight years of war in Afghanistan and Iraq have etched indelible scars on the psyches of many of the nation's servicemen and women, and the U.S. military is losing a battle to stem an epidemic of suicides in its ranks.

Despite calls by top Pentagon officials for a sea change in attitudes about mental health, millions of dollars in new suicide prevention programming and thousands of hours spent helping soldiers suffering from what often are euphemistically dubbed "invisible wounds," the military is losing ground.

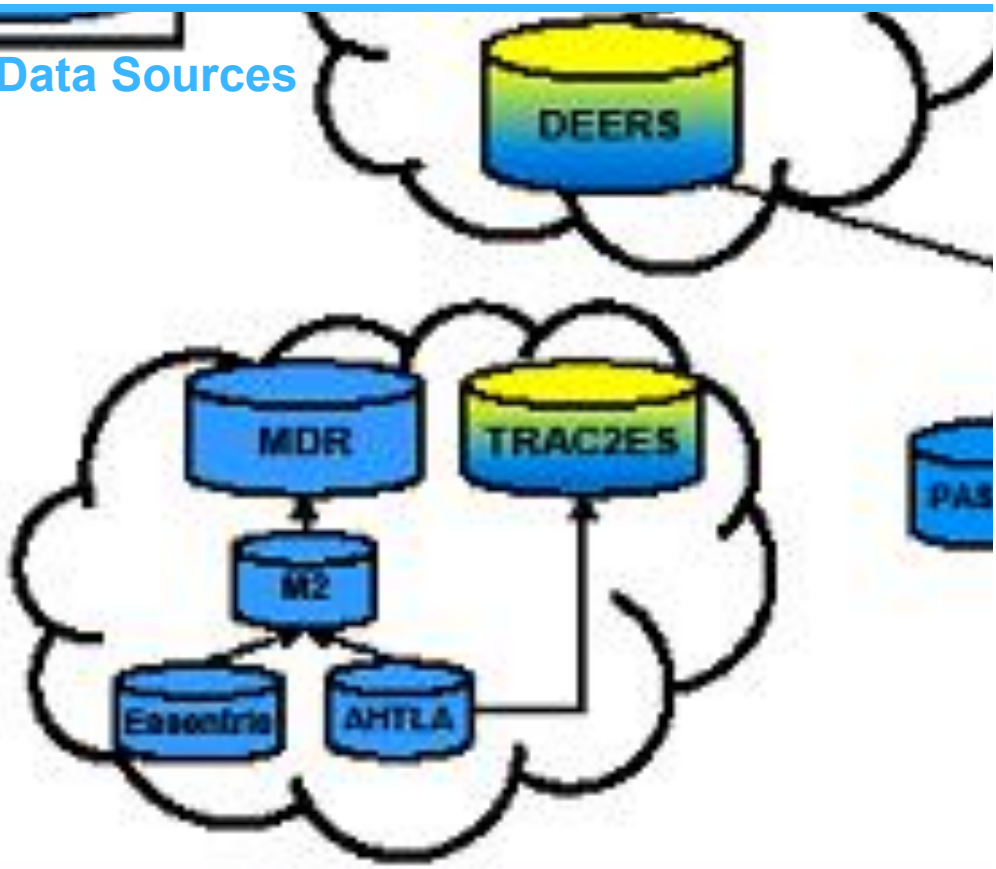
The Department of Defense Friday reported that there were 160 reported active-duty Army suicides in 2009, up from 140 in 2008. Of these, 114 have been confirmed, while the manner of death in the remaining 46 remains to be determined.



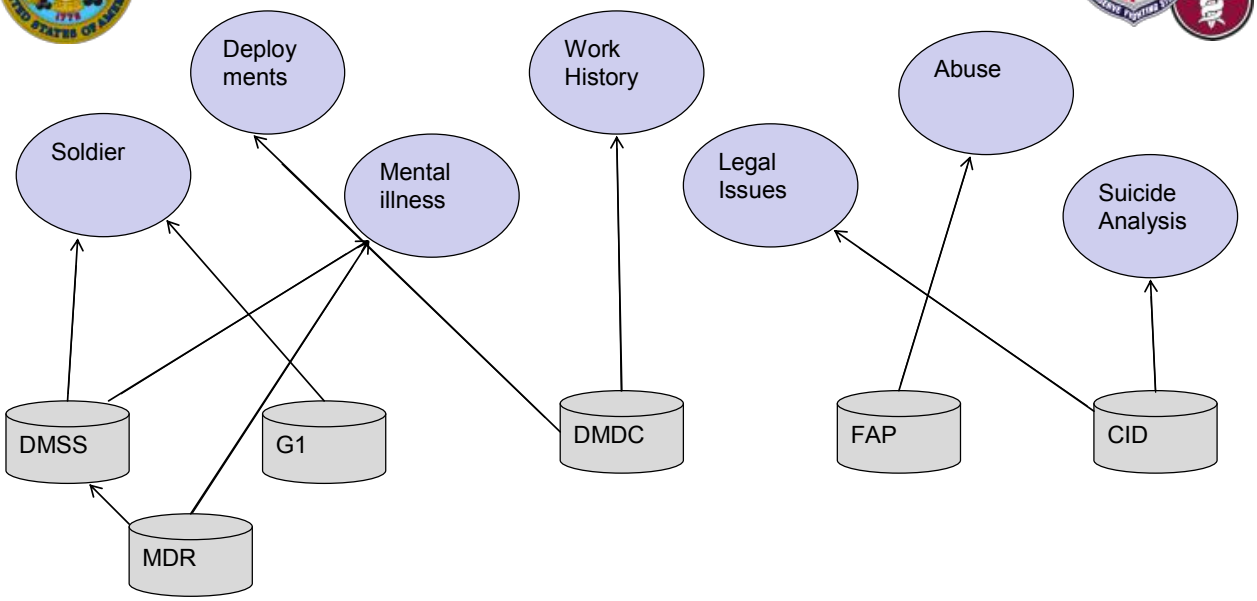


Source: The Challenge and the Promise: Strengthening the Force, Preventing Suicide and Saving Lives - The Final Report of the Department of Defense Task Force on the Prevention of Suicide by Members of the Armed Forces - August 2010

Potential Data Sources



Data Mapping



Data objects complete?

All sources identified?

Best source for each object?

How reconcile differences between sources?

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1																														
2																														
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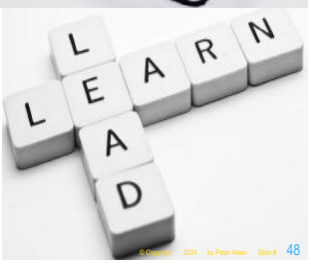
Senior Army Official

- Room full of Stewards
- A very heavy dose of management support
- Advised the group of his opinion on the matter
- Any questions as to future direction
  - "They should make an appointment to speak directly with me!"
- Empower the team
  - The conversation turned from "can this be done?" to "how are we going to accomplish this?"
  - Mistakes along the way would be tolerated
  - Implement a workable solution in prototype form



Suicide Mitigation

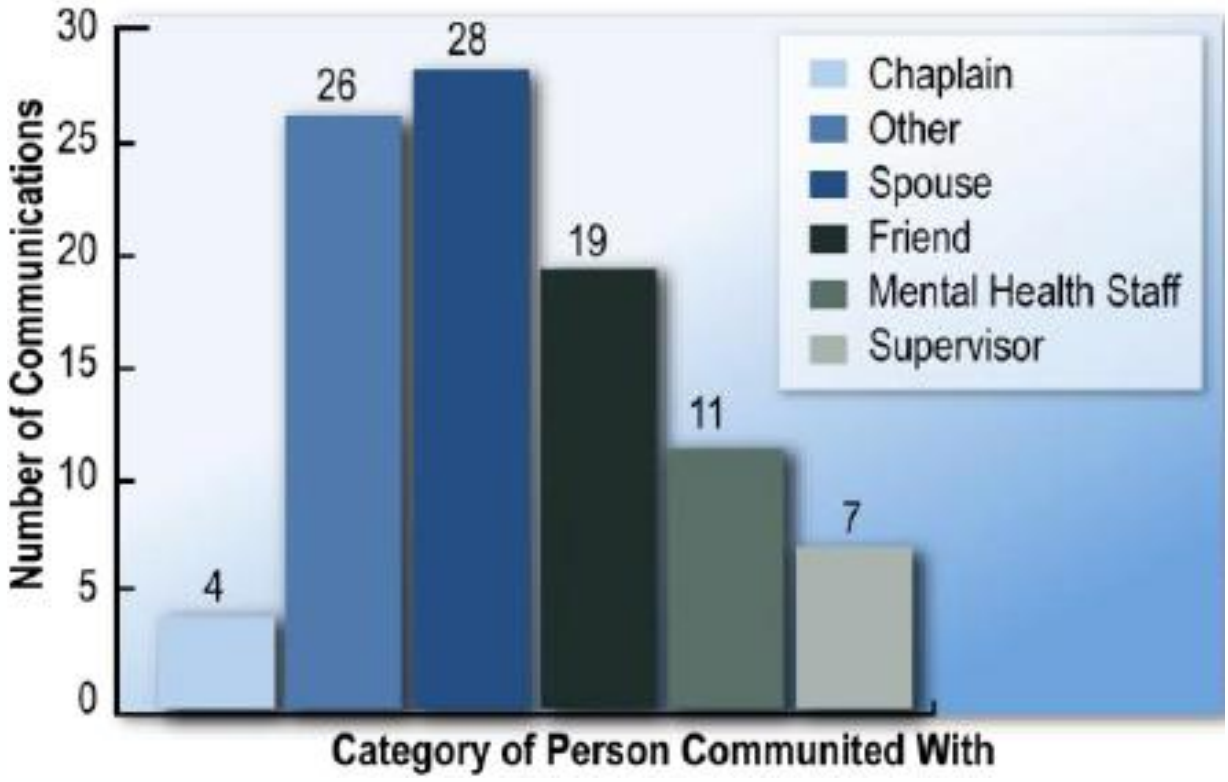
Age: 23
Rank/Occupation: Specialist/Infantry
Service Branch: U.S. Army

This Soldier joined the Army in 2002 to serve his Nation and defend his country. He deployed to Iraq as part of the initial invasion in spring 2003. After deploying to Iraq for a second time in 2005, he became increasingly sullen and depressed while deployed. He wrote to his mother from Iraq, "Lately I have been thinking I don't even want to come back alive. Granted I would never kill myself, but I hate life. If I died here, I would be young and it would be an honorable way to go. Let's face it; I have no future when I get back." He completed his tour of duty and returned stateside. He was diagnosed with Post Traumatic Stress Disorder (PTSD) and attended counseling. In poetry written shortly before his death he wrote, "Physically I am home, mentally I will never be home." He then started drinking. "Time's finally up," he wrote, "I am not a good person, I have done bad things. I have taken lives, now it's time to take mine." He died by self-inflicted gunshot wound.

Source: The Challenge and the Promise: Strengthening the Force, Preventing Suicide and Saving Lives - The Final Report of the Department of Defense Task Force on the Prevention of Suicide by Members of the Armed Forces - August 2010

Communication Patterns

Source: The Challenge and the Promise: Strengthening the Force, Preventing Suicide and Saving Lives - The Final Report of the Department of Defense Task Force on the Prevention of Suicide by Members of the Armed Forces - August 2010



Service Suicide Data By Career Field

ACTIVE DUTY AIR FORCE SUICIDES BY AIR FORCE SPECIALTY CODE 2001-2009 END OF FY														
AFSC	DUTY TITLE	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL SUICIDES 2001-2009	SUICIDES 2010 YTD (30 JUN)	AVG POPULA-TION *	AVG SUICIDE RATE PER 100,000 2001-2009 **
10XXX	Operations Commander												285	0.00
11XXX	Pilot		1				1	2			4		12,007	3.70
12XXX	Combat Systems		1				3			1	5		3,820	14.54
13XX	Space, Missile & C2												.	.
13XXX	Space, Missile & C2												4,949	0.00
14XX	Intelligence													
14XXX	Intelligence			2					1		3		2,880	11.57
15XXX	Weather							1			1		652	17.04
16XXX	Operations Support												1,304	0.00
17XXX	Non-Rated Operations												3005	0.00
1AXXX	Aircrew Operations	3	2	1	3		1	1	2		13		8,669	16.66
1CXXX	Command Control Systems Operations	2	1		2	2	1		1		9		11,732	8.52
1NXXX	Intelligence		1	1	1	3	3	3	2	5	19		11,119	18.99
1PXXX	Aircrew Flight Equipment								1	1	2		2,397	9.27
1SXXX	Safety												366	0.00
1TXXX	Aircrew Protection				1						1		2,289	4.85
1UXXX	Unmanned Aerospace System (UAS)												260	0.00
1WXXX	Weather				1						1		2,442	4.55
20XXX	Logistics Commander												181	0.00

Source: The Challenge and the Promise: Strengthening the Force, Preventing Suicide and Saving Lives - The Final Report of the Department of Defense Task Force on the Prevention of Suicide by Members of the Armed Forces - August 2010

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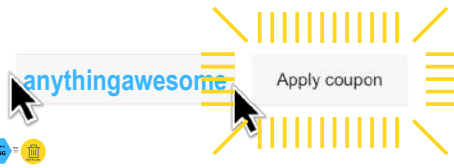

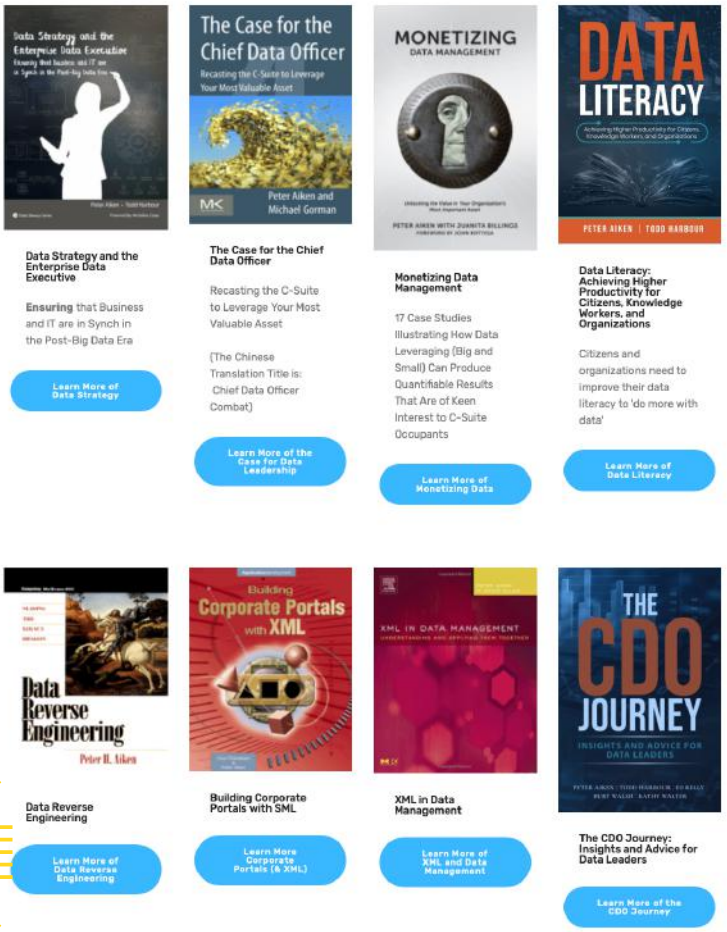

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Collaboration?

Reverse Engineering Expertise?

Hiring Assistance?

Thank You!

Use your data more strategically?

Tool/automation evaluation?

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