



CURRENT & EMERGING TECHNOLOGIES

CONFERENCE

Session 2B

12:40 – 1:55 PM



Aleksander Bevensee
Elliott Davis

WHAT BI/ANALYTICS TOOLS CAN DO FOR YOU NOW!

Alek frequently guest lectures at universities and industry conferences on the topics of data analytics, business intelligence, and data visualization. He aids companies in unlocking the full power of their financial and operational data to find solutions to complex challenges. From executing in-depth statistical analyses to building c-suite-friendly dashboards, customers value Alek's ability to deliver effective solutions with substantial ROI.

What BI/Analytics Can Do for You Now!

Current & Emerging Technologies Conference
November 17, 2022

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EAMs and Automation



Practical Applications – Analytics & Automation



Artificial Intelligence in the Industry



Visions of the Future

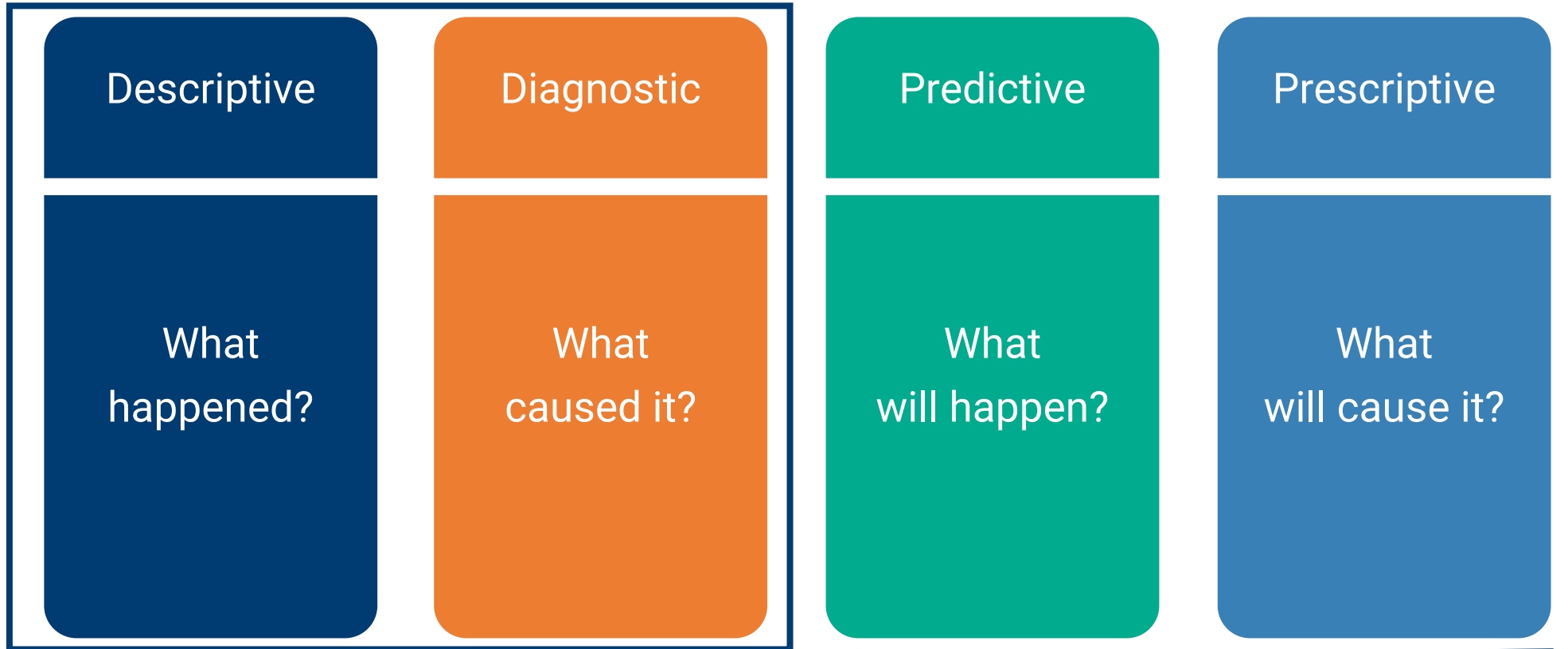
Developing Analytical Solutions



What is Data Analytics?

A process designed to uncover useful information, inform conclusions and support decision-making through the use of data.

Types of Data Analytics



Required amount of (1) Data, (2) Literacy, (3) Buy-in

Opportunities for Deployment

Finance/HR

- Financial dashboarding
- Peer comparisons
- Historical trends
- Budget v. actual
- Stress testing
- Financial forecasting
- Employee turnover
- Risk tolerance KPIs

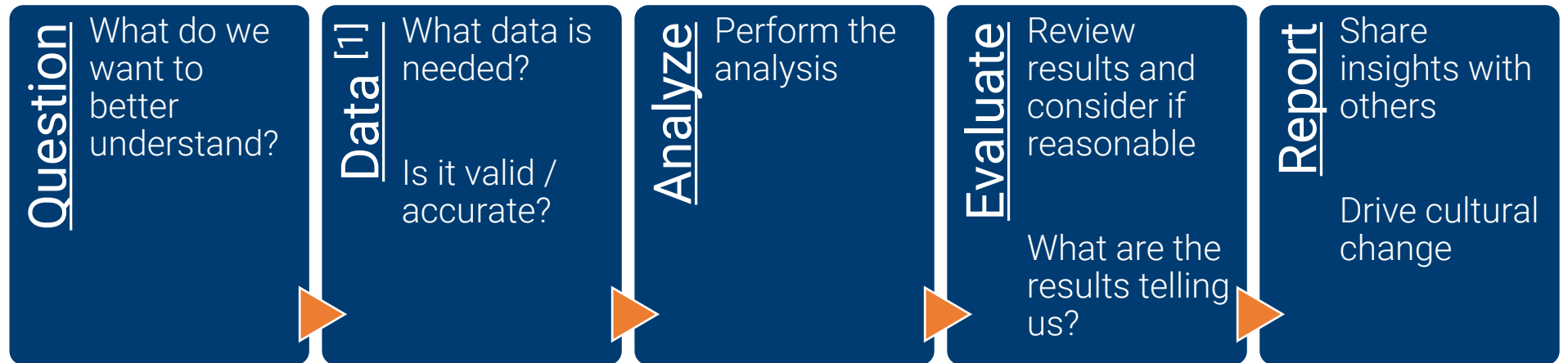
Operations/Sales

- Locational metrics
- Staff efficiency
- Cross selling
- New account openings
- Customer satisfaction
- Customer turnover
- Conversion rates
- Marketing analytics

Compliance/Audit

- Geographic analysis
- Employee expenses
- Anomaly detection
- Fraud detection
- Data quality reviews
- Journal entry review

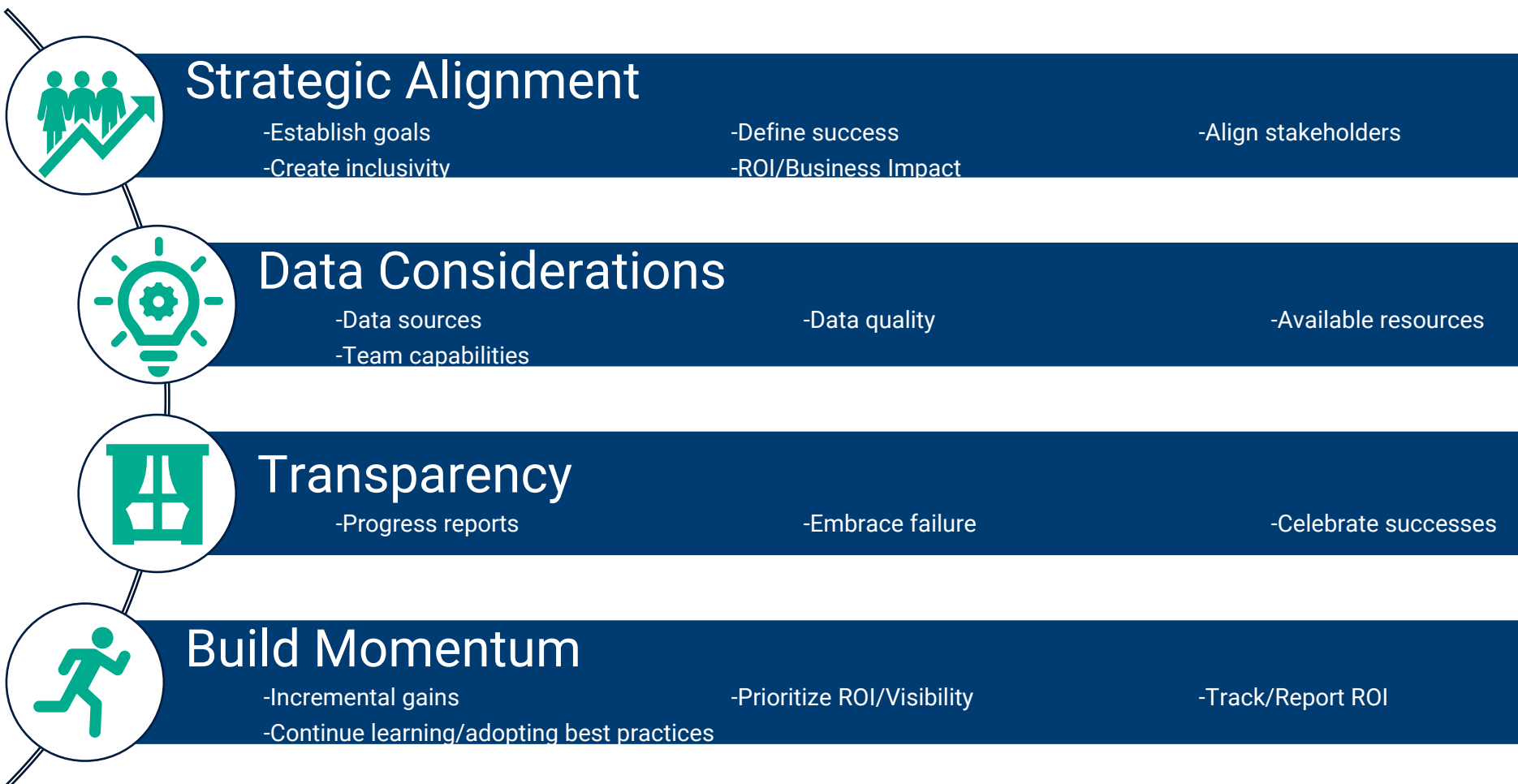
Developing a Process



[1] Data considerations:

- Needs to be in a useable format
- Needs to be complete and accurate (reconcile it)
- Keep a copy of the original

Establishing a Data-Driven Culture



EAMs and Automation



What are “EAMs”?

Embedded Audit Modules are strands of code built into software applications that are designed to capture information of audit significance in real time.

Auditors can access and review information in real time rather than compressing their review of pertinent information into scheduled fieldwork. EAMs also reduce the time and effort spent by clients pulling information to fulfill request lists.

Continuous Auditing

- Goals of continuous auditing:
 - Smoothed 'busy season'
 - Earlier detection of abnormalities
 - Ability to dig deep on material transactions sooner
- Viable alternatives:
 - Pulling work forward
 - Spreading risky audit areas throughout the year
 - Open lines of communication
 - Open access to accounting records/data

Non-EAM Continuous Auditing

External Audit

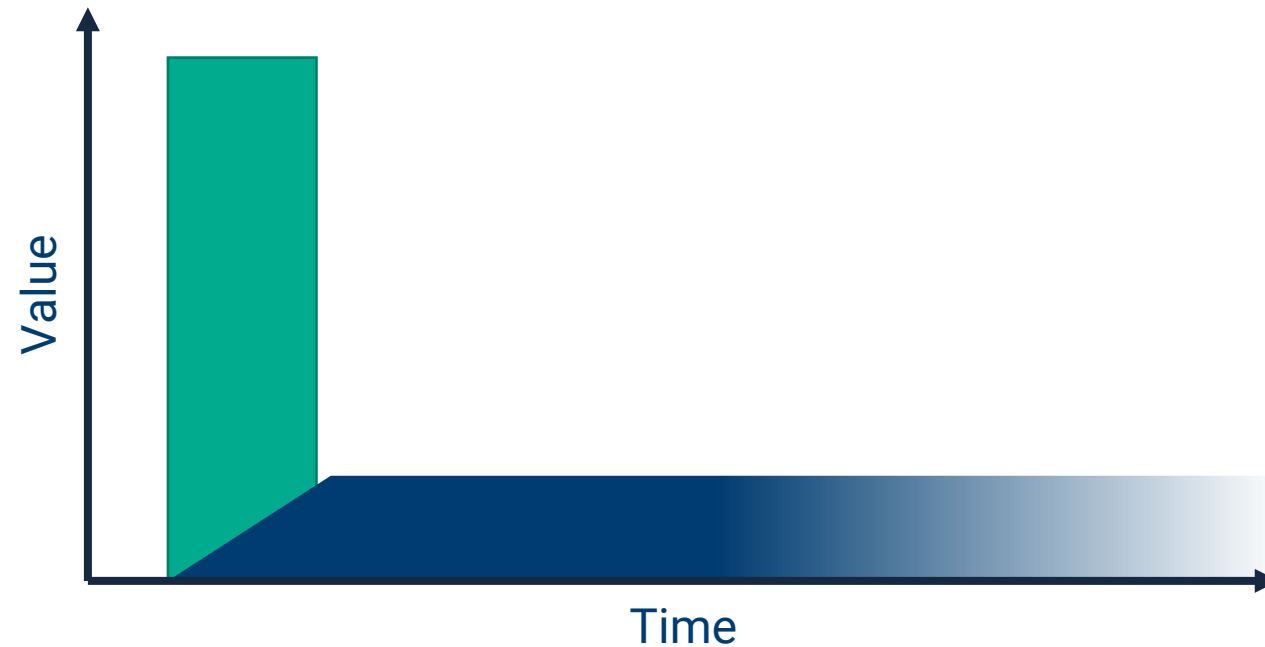
- Quarterly journal entry testing
 - Detailed review of entries meeting risk criteria
 - Rules based triggers that flag transactions

Internal Audit

- Recurring analysis to provide ongoing monitoring of high-risk areas
- Does not have to be based on a “live” data feed

Analytics by Frequency

- Single Analysis
- Recurring Analysis



Single Analysis

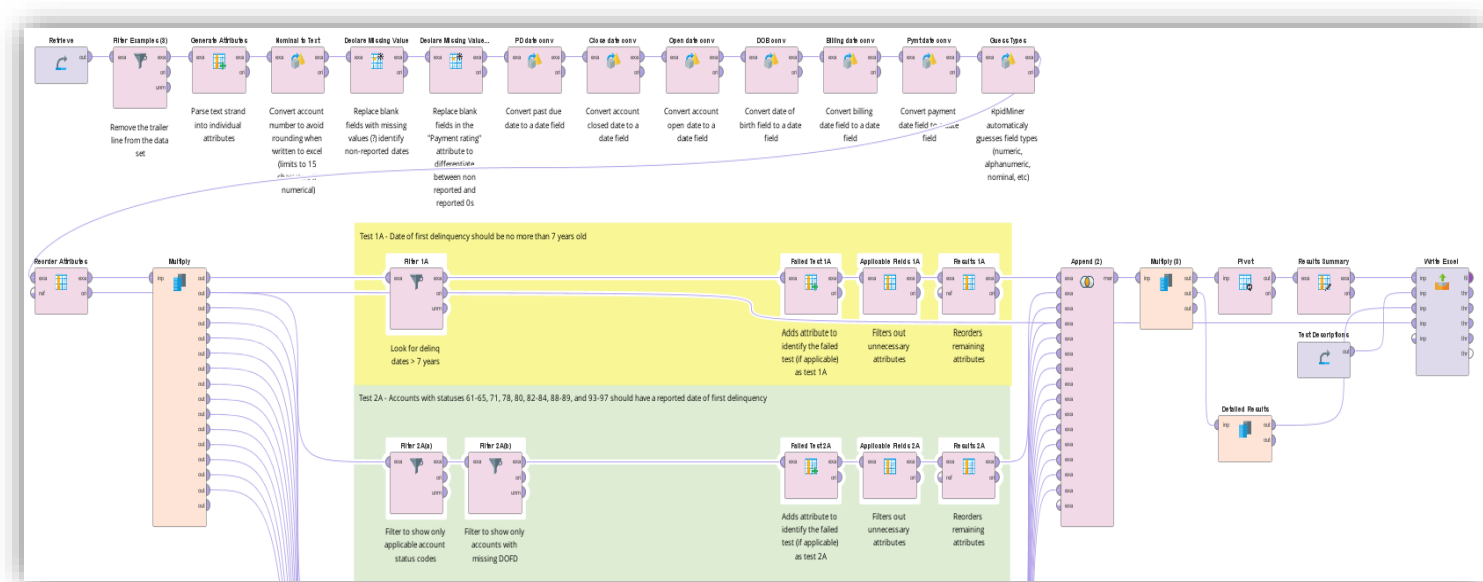
- Large value in finding a solution
- Continued evaluation is unnecessary
- Likely a strategic priority
- Examples: merger support, investigation of known fraud, major capital expenditures, etc.

Recurring Analysis

- Continued monitoring provides value
- Upfront “costs” can be spread over several uses
- Can serve as building blocks for a strong data culture
- Continued process improvement
- Allows for process automation
- Examples: peer benchmarking, financial performance, back testing, etc.

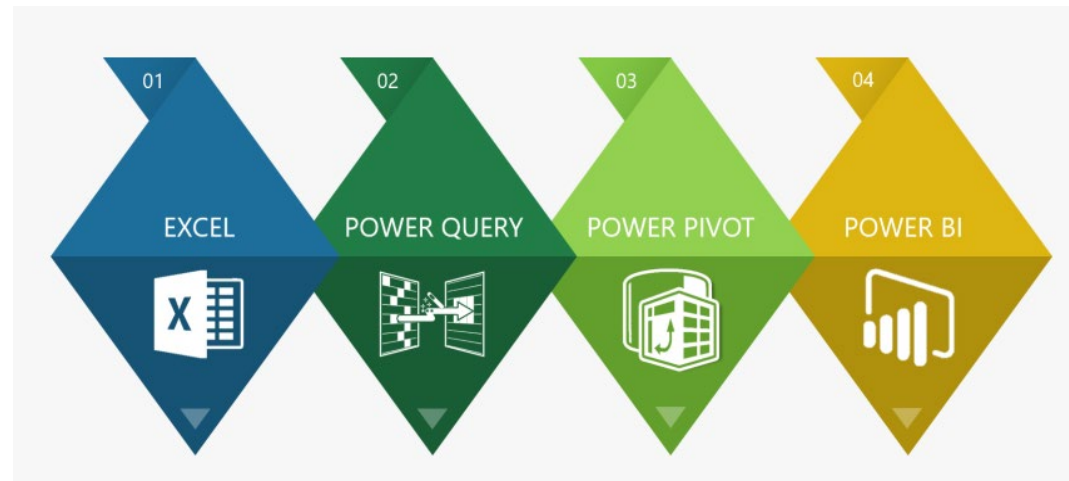
Forms of Automation

- Programming languages
- Robotic process automation (RPA)
- Specialized software
- Microsoft Excel/Power BI



Automating with Excel/Power BI

- By building an analytical process in a manner that “stores” procedures, data preparation and analysis can be quickly executed



▲ APPLIED STEPS	
Source	✳
Navigation	✳
Changed Type	
Promoted Headers	✳
Removed Top Rows	✳
Unpivoted Other Columns	
Renamed Columns	
Cleaned Text	
Trimmed Text	
Filtered Rows	✳
Split Column by Delimiter	✳
Removed Columns	
Added Custom6	✳
Replaced Value1	✳

Automation Case Study – Excel

Industry: Packaged Food Manufacturing

Legacy Process
30+ minutes/refresh
Excel
<ul style="list-style-type: none">Each morning, the plant manager:<ul style="list-style-type: none">Pulls up the following reports: (1) Sales Orders (2) Shipments (3) InventoryFilters the reports for applicable information then pastes data into a source tab in the production planning workbookCalculates amounts to be shipped that day (by comparing sales orders to outgoing shipments)Identifies inventory shortages resulting from outstanding sales ordersAdjusts production plan as necessaryOversees physical changes in production resulting from adjustments identified
<ul style="list-style-type: none">Manual (data is <u>pulled</u>)ReactiveUpdated once dailyVersioning control issues

Time (actively spent)

Final File Type

Process

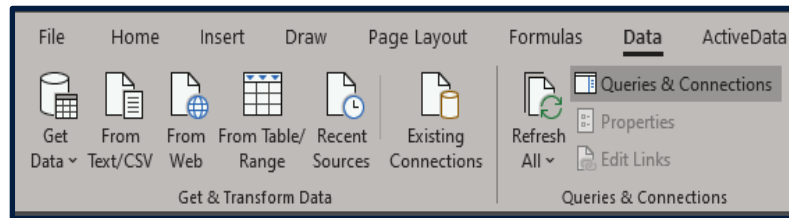
Problems | Advantages

Problem Area: Production planning

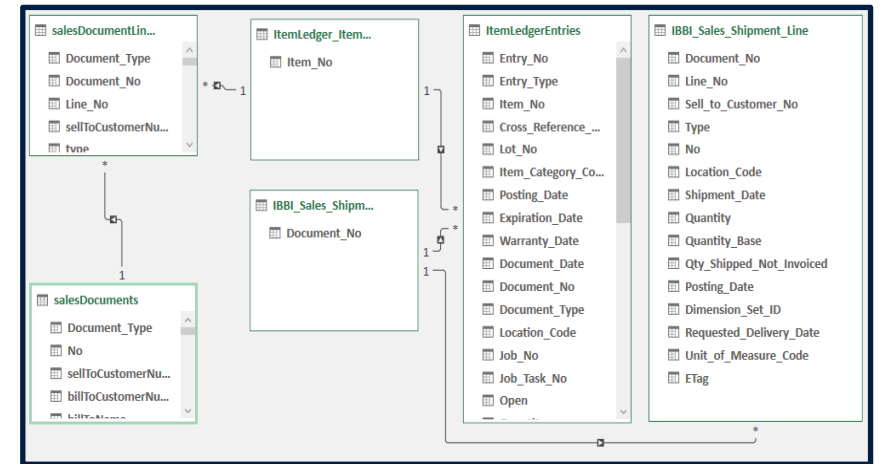
Automated Process
2 minutes/day
Excel
<ul style="list-style-type: none">On an ongoing basis the plant manager:<ul style="list-style-type: none">Reviews inventory shortages automatically flagged by the updated workbookOversees physical changes in production resulting from adjustments identified
<ul style="list-style-type: none">Automated (data is <u>pushed</u>)Updated constantlyAllows multiple individuals to view and interact with production planning workbook simultaneously

Automation Case Study – Excel

Step 1: Link external data sources in Excel



Step 2: Create a data model to manage relationships



Step 3: Have live data feed pivot tables detailing:

- Cases on order
- Cases shipped
- Cases in inventory

Step 4: Redesign calculations intended to identify inventory shortages and apply conditional formatting for an enhanced user experience

Automation Case Study – Software

Industry: Financial Services

Legacy Process
~4 hours
Sample
5
Manual Excel Review
<ul style="list-style-type: none">• The internal auditor uses the codified Metro2 credit reporting document and selects a sample of loans for testing.• Credit reporting information related to that sample is decoded to allow the internal auditor to understand the information being reported.• 5-10 high risk data fields are reviewed to ensure information reported to credit bureaus is accurate.
<ul style="list-style-type: none">• Testing performed on a sample• Only high-risk data fields are considered• Requires extensive experience to perform• Manual documentation of findings required

Time (actively spent)

Loans Reviewed

Tests Performed

Method

Process

Problems | Advantages

Problem Area: Fair Credit Reporting Act

Automated Process
~45 seconds
Complete Population
47
Automated Software
<ul style="list-style-type: none">• Codified Metro2 submission file is loaded into the established process within the software.• The internal auditor presses “play”.• Results for 47 unique data validation tests are summarized and documented automatically through the process and provided to the user in an /csv data file.
<ul style="list-style-type: none">• Testing entire population• 47 comprehensive tests performed covering more unique and nuanced reporting rules• Documentation of findings is automated

Automation Case Study – Software

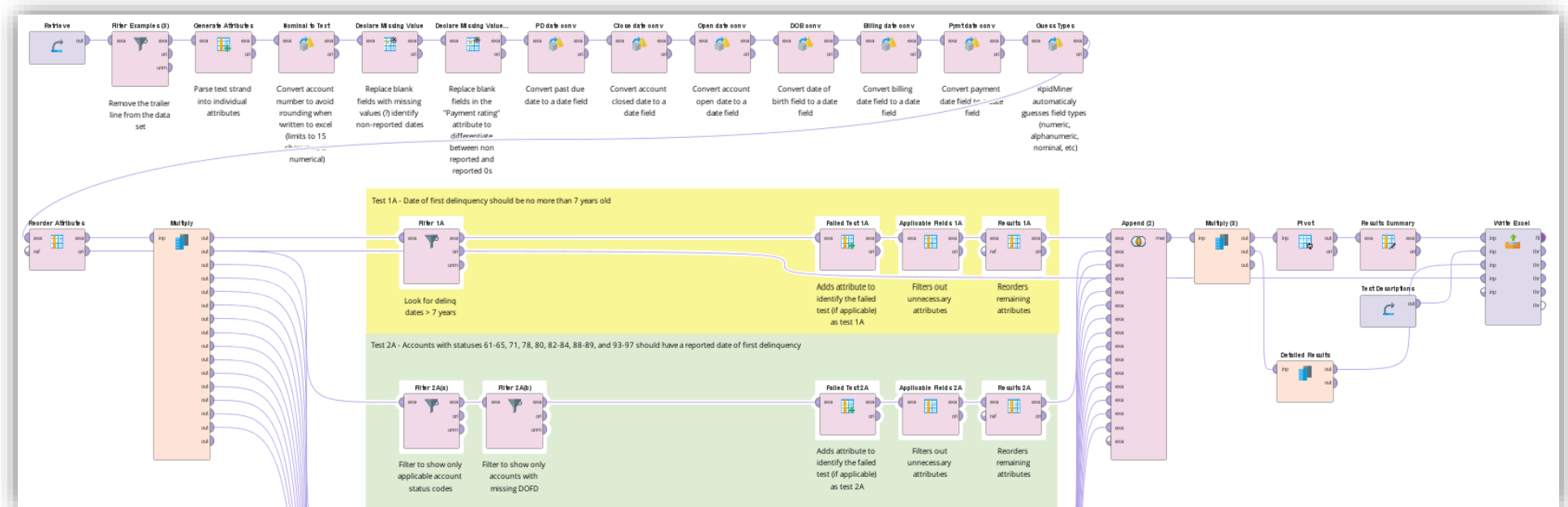
Codified data input provided to credit reporting bureaus.

- 426 characters per record reporting borrower name, credit score, payment history, and more.
- Many institutions blindly rely on information flowing from their core system into this report.
- Reporting errors could have a direct impact on the borrower's credit score.

```
00001400852      M260326200200000000000054553010M0000004450000044511 000000000000000000000000 0000136280000000000000000070120200000000000000006
                                                                J2
00001402089      K4                L1                N1
I060601200100000000000057000060M000000000000000097 LLLLLLLLLLLLLLLLLLLLLLLLLL 000000498000000498000004980701202006232014000000003
                                                                J2
00001402453      K4                L1                N1
M26072920020000000000012400015M00000000000000000130000000000000000000000000000 000000000000000000000000052720200000000527202005
                                                                J2
00001402620      K4                L1                N1
M26112720020000000000006500005M0000004450000044511 000000000000000000000000 0000328330000000000000000070120200000000000000006
                                                                J2
00001402987      K401              1127202200060972 L1                N1
I060808200300000000000060300006M0000018050000361011 02211000000000101000100 000122065000000000000000007012020000000000000006
                                                                J2
00001403566      K4                L1                N1
I06092920050000000000010450006M0000008110000084011 000000000000000000000000 0000321040000000000000000070120200000000000000007
                                                                J2
```


Automation Case Study – Software

- Step 1:** Build out automated ETL process that takes the input (codified Metro2) file and translates it into readable data fields
- Step 2:** Translate reporting rules and requirements into a series of if/then logic statements to run the data through



Practical Applications

Analytics & Automation

Financial Reporting Example

59.22M
YTD Revenue

44.95M
YTD Gross Profit

Period

All



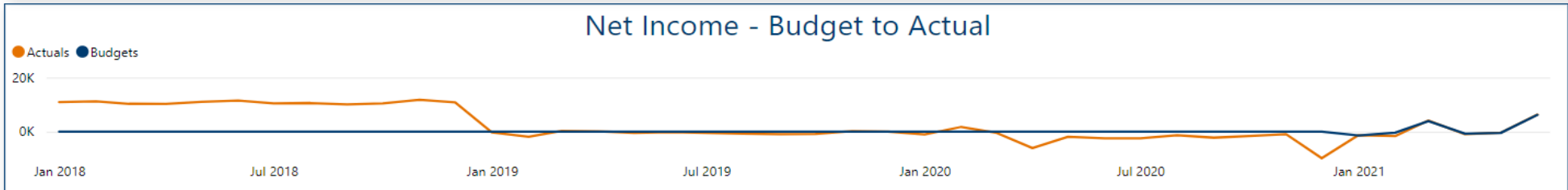
Business Unit

All

8.38M
YTD EBITDA

50.33M
YTD OpEx

Account Type	Date Account Subgroup	1/1/21				2/1/21				3/1/21				4/1/21				5/1/21	
		Actuals	Budgets	Var(\$)	Var(%)	Actuals	Budgets	Var(\$)	Var(%)	Actuals	Budgets	Var(\$)	Var(%)	Actuals	Budgets	Var(\$)	Var(%)	Actuals	Budgets
Revenue	Claims processing	2,047.72	2,089.58	-41.86	-2.00%	1,980.76	2,448.11	-467.35	-19.09%	1,914.28	2,147.20	-232.92	-10.85%	2,224.86	2,244.23	-19.37	-0.86%	2,134.45	2,137.44
	Cloud faxing	259.79	300.53	-40.75	-13.56%	241.09	302.28	-61.19	-20.24%	278.98	304.60	-25.62	-8.41%	267.60	305.77	-38.16	-12.48%	264.85	307.51
	Credit cards	568.24	596.25	-28.02	-4.70%	466.65	475.76	-9.11	-1.92%	469.51	410.11	59.40	14.48%	446.52	480.30	-33.78	-7.03%	403.17	406.31
	Equipment sales	361.00	386.61	-25.62	-6.63%	213.72	416.20	-202.48	-48.65%	460.69	404.45	56.24	13.91%	262.61	399.73	-137.11	-34.30%	138.38	408.82
	eVisits	1,306.63	1,262.43	44.20	3.50%	1,270.20	1,449.56	-179.36	-12.37%	1,204.40	1,305.81	-101.41	-7.77%	1,423.66	1,382.21	41.45	3.00%	1,312.95	1,304.51
	Hardware maintenance	563.67	618.97	-55.30	-8.93%	556.09	616.80	-60.70	-9.84%	531.76	615.01	-83.25	-13.54%	552.39	612.72	-60.32	-9.85%	549.96	610.24
	Installation and training	64.18	81.53	-17.35	-21.28%	56.84	95.41	-38.57	-40.42%	98.17	88.40	9.77	11.06%	53.46	79.63	-26.17	-32.87%	61.40	100.48
	Interest Revenue	-0.01	0.00	-0.01	-	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	0.00
	Miscellaneous revenue	1.02	21.24	-20.23	-95.21%	5.61	2.41	3.20	133.03%	1.55	8.81	-7.26	-82.43%	3.50	15.21	-11.71	-76.99%	-0.67	6.74
	Other Non-Operating Income	0.26	0.00	0.26	-	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	0.00
	Other transactional	153.43	155.11	-1.68	-1.08%	161.82	170.84	-9.02	-5.28%	226.18	165.05	61.13	37.04%	179.90	165.97	13.93	8.40%	183.59	170.25
	Payment processing	267.45	451.12	-183.67	-40.71%	378.52	598.27	-219.75	-36.73%	421.17	367.98	53.18	14.45%	482.33	487.31	-4.99	-1.02%	708.93	610.73
	Software maintenance	3,299.72	3,562.29	-262.57	-7.37%	3,300.58	3,556.17	-255.58	-7.19%	3,286.34	3,552.22	-265.89	-7.49%	3,255.66	3,545.77	-290.11	-8.18%	3,239.13	3,538.41
	Software sales	386.15	345.40	40.74	11.80%	370.34	431.43	-61.09	-14.16%	491.96	409.15	82.82	20.24%	247.78	336.10	-88.32	-26.28%	371.86	438.15
	Veterinary services	478.72	614.51	-135.79	-22.10%	581.12	612.45	-31.33	-5.12%	521.39	610.34	-88.94	-14.57%	505.00	695.34	-190.34	-27.37%	509.77	693.07
	Total	9,757.97	10,485.60	-727.62	-6.94%	9,583.35	11,175.68	-1,592.33	-14.25%	9,906.39	10,389.13	-482.74	-4.65%	9,905.27	10,750.28	-845.01	-7.86%	9,877.77	10,732.66
Cost of Sales	Cost of Claims Processing	-163.28	-229.20	65.92	-28.76%	-356.82	-268.53	-88.30	32.88%	-139.28	-235.52	96.24	-40.86%	-137.74	-246.16	108.43	-44.05%	-372.85	-234.45
	Cost of Cloud Faxing	-124.58	-146.47	21.89	-14.95%	-118.24	-147.32	29.09	-19.74%	-136.59	-148.45	11.86	-7.99%	-134.23	-149.02	14.79	-9.93%	-132.05	-149.87
	Cost of Credit Cards	-388.60	-475.42	86.82	-18.26%	-554.25	-327.75	-226.51	69.11%	-341.20	-343.22	2.03	-0.59%	-380.95	-409.32	28.37	-6.93%	-325.94	-310.30
	Cost of Equipment	-291.01	-341.93	50.92	-14.89%	-205.63	-368.09	162.46	-44.14%	-287.75	-355.92	68.17	-19.15%	-205.77	-352.45	146.68	-41.62%	-118.62	-359.43
	Cost of eVisits	-801.54	-776.06	-25.48	3.28%	-780.95	-891.10	110.15	-12.36%	-660.63	-802.74	142.10	-17.70%	-829.36	-849.70	20.34	-2.39%	-762.43	-801.93
	Cost of Hardware Maintenance	-170.43	-147.39	-23.04	15.63%	-152.83	-146.84	-5.99	4.08%	-142.79	-146.28	3.49	-2.39%	-111.34	-145.63	34.29	-23.54%	-31.93	-144.86
	Cost of Other Transactional	-17.40	-27.68	10.28	-37.14%	-16.74	-27.02	10.28	-38.06%	-32.66	-27.02	-5.64	20.89%	-22.32	-27.68	5.36	-19.37%	-18.64	-27.02
	Cost of Payment Processing	-160.55	-140.49	-20.06	14.28%	-184.19	-160.97	-23.23	14.43%	-173.10	-158.93	-14.17	8.92%	-207.97	-201.88	-6.09	3.02%	-410.74	-282.93
	Cost of Software	-118.48	-160.15	41.67	-26.02%	-104.80	-164.80	60.00	-36.41%	-247.60	-157.20	-90.40	57.51%	-52.24	-155.93	103.69	-66.50%	-148.87	-155.86



Financial Reporting Example

Step 1: Worked with financial analyst to redesign the source workbook and establish a set file location.

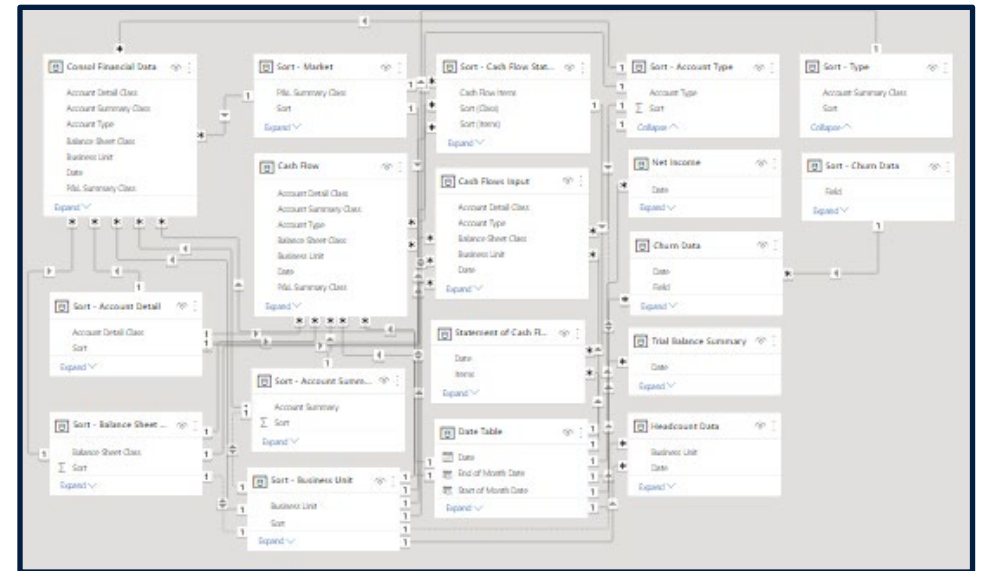
8 source tabs
4 GL mapping tabs



3 source tabs

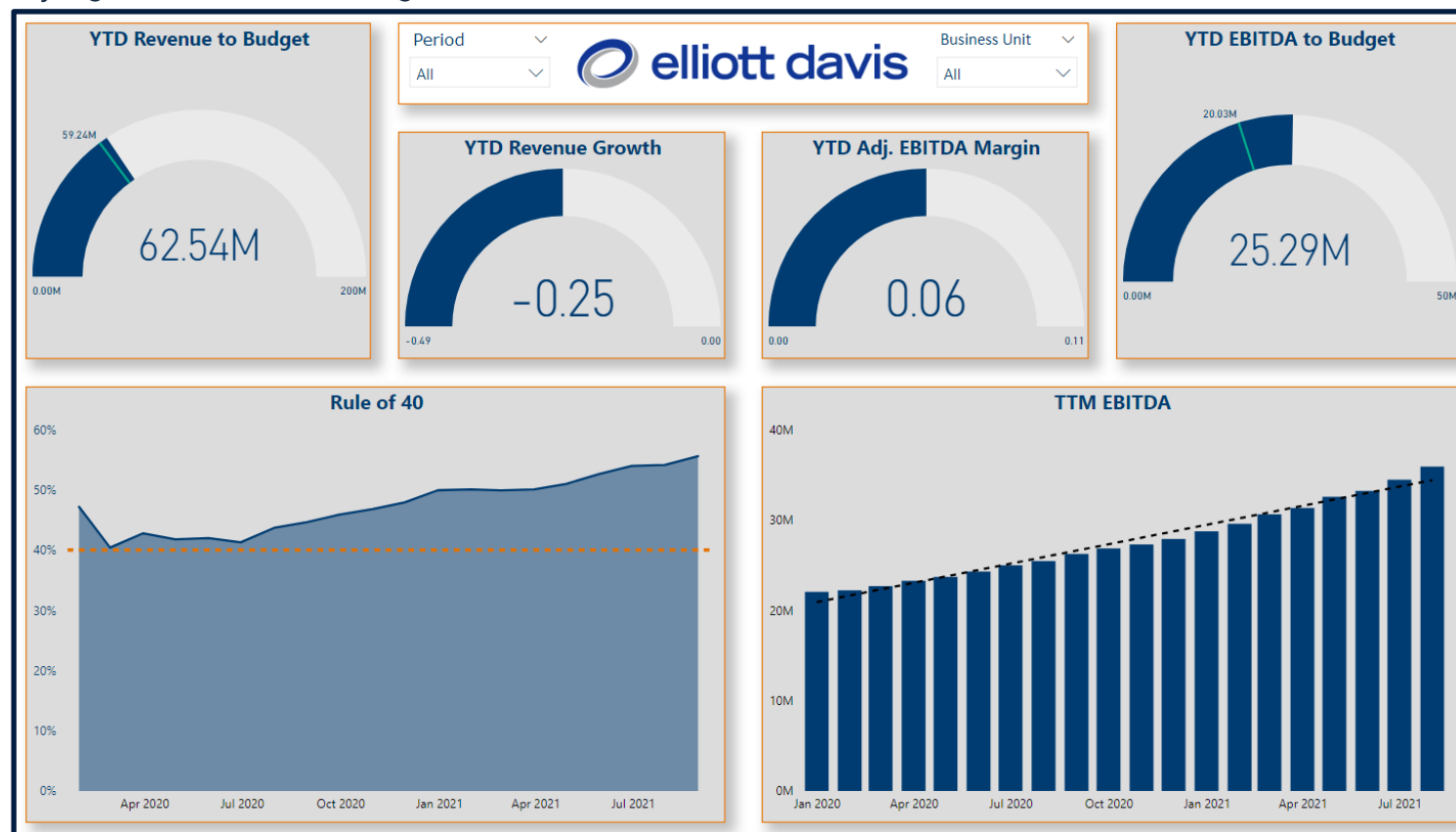
Step 3: Design a data model allowing the various data sets (financial, headcount and churn) to be displayed and evaluated across various time horizons and for varying aggregations and levels of consolidation.

Step 2: Design “stored procedures” in Power BI that automate the ETL (extract, transform, and load) process. This not only created the “live” data linkages but also removed the need for manual calculation adjustments to account for the change in period.



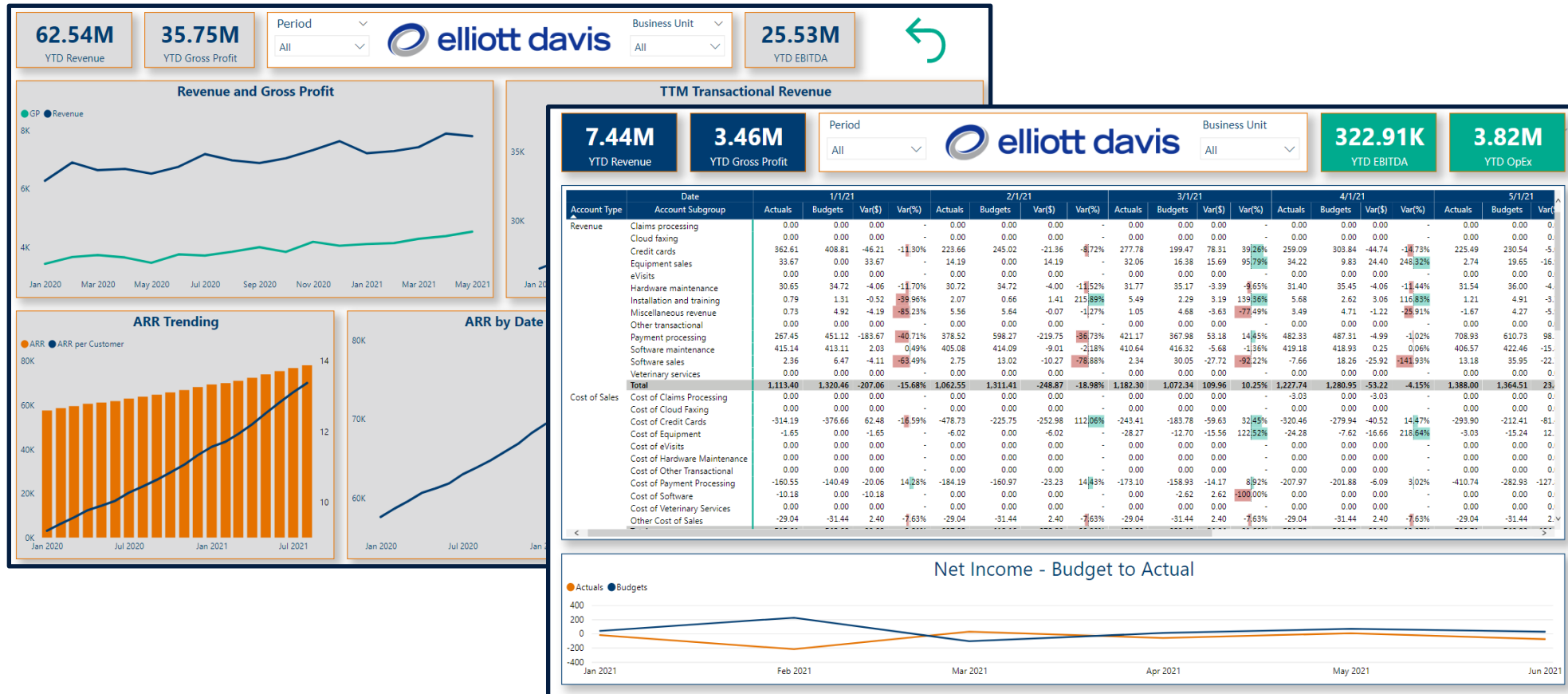
Financial Reporting Example

Step 4: Design a financial highlights tab that provides executive leadership with a snapshot of how the company is performing across 6 key metrics. Each of these visualizations hyperlink to a more detailed view of the underlying information driving these outcomes.



Financial Reporting Example

Step 5: Design value-add views of information pertinent to the successful management of the company. Consolidate disparate views of varying metrics and business units into a cohesive, easy to navigate, dashboard.



Peer Benchmarking Example

Step 1:

Identify how your organization compares to applicable benchmarks at an aggregated level

Company A is exceeding GP Benchmark but behind Labor and Material benchmarks at the Aggregate Level

CFMA 2021 Financial Benchmarker - Excel File Results	
Copyright © 2021. All rights reserved. No part of this report may be reproduced in whole or without written permission from the Construction Financial Management Association.	
General/Prime Contractor	
STATEMENT OF OPERATIONS (% OF TOTAL REVENUE)	
Total Revenue	100.0%
Direct Costs	
Direct Labor	14.8%
Materials	16.2%
Subcontracts	44.8%
Equipment	4.6%
Other Direct Costs	6.0%
Total Direct Costs	86.2%
Indirect Costs	2.0%
Total Costs	88.2%
Gross Profit	11.8%



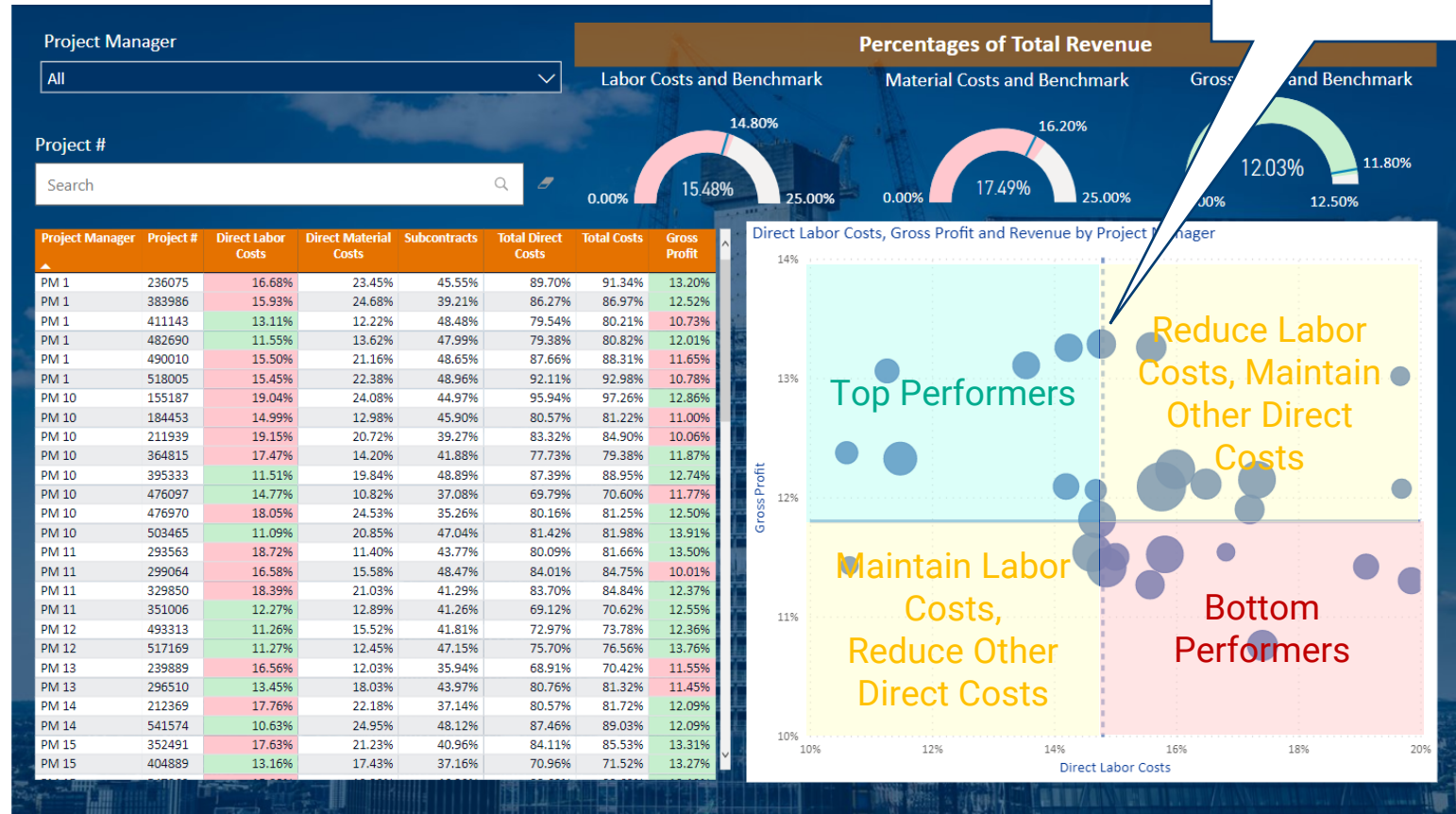
Disclaimer: the internal data example is not part of the CFMA Financial Benchmarker

Peer Benchmarking Example

Step 2:

Drill into these key metrics at a granular level by project manager and individual project

Identify which project managers are not hitting benchmarks on their assigned jobs through segmentation and correlation of labor to gross profit

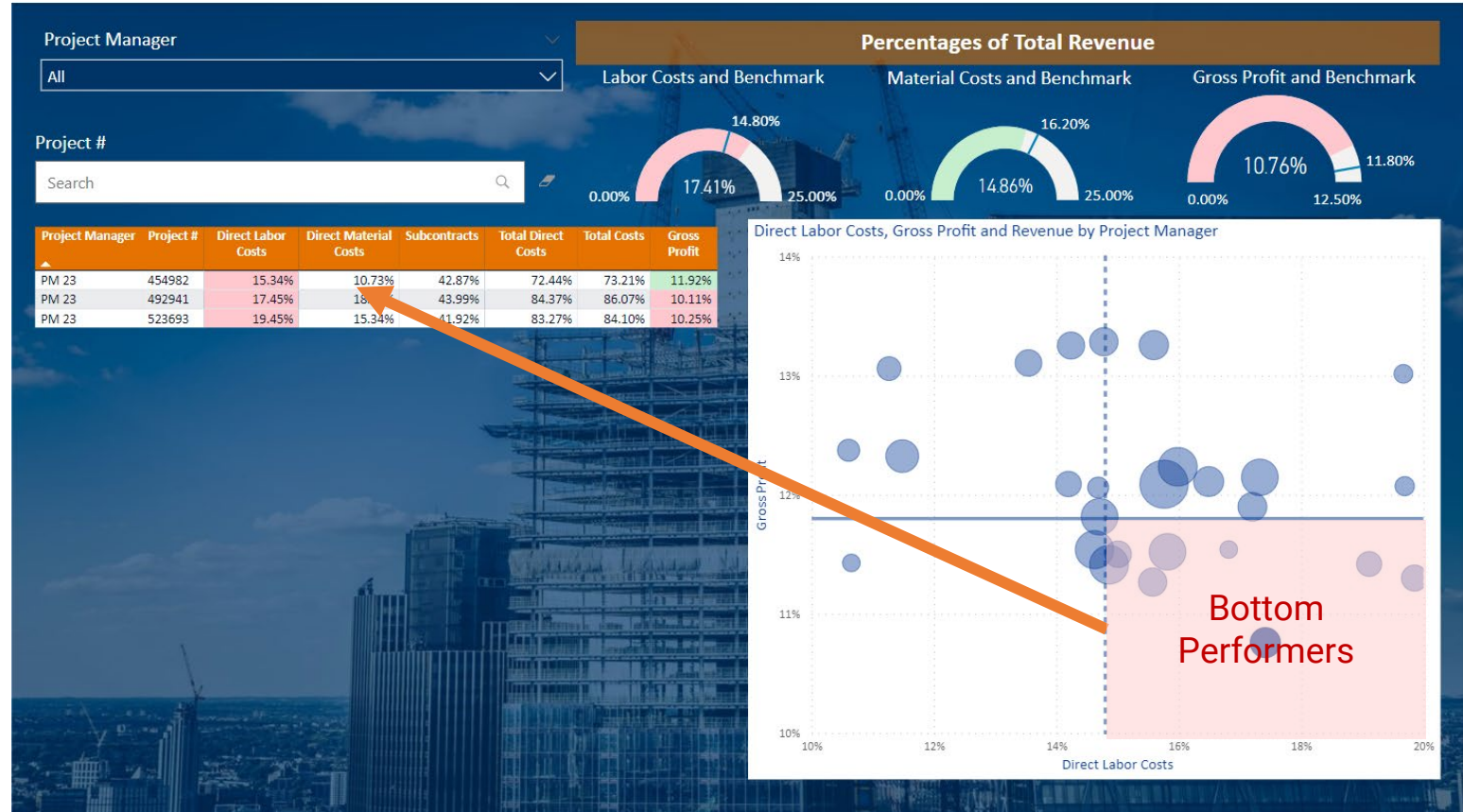


Peer Benchmarking Example

Step 3:

Select underperformers and perform a deep dive analysis into why certain jobs may not be performing as well as others

Use this information to create operational strategies to improve productivity and profitability



Sales Performance

Center Store Sales

\$9,367,457

Goal: \$8,006,110 (+17%)

Frozen Sales

\$3,766,645

Goal: \$3,240,729 (+16.23%)

Produce Sales

\$711,719

Goal: \$653,872 (+8.85%)

Cafe Sales

\$172,829

Goal: \$130,600 (+32.33%)

Total Sales BvA

\$0M

\$18M

\$16M

Busines... Location	Center Store Sales				Frozen Sales				Produce Sales				Cafe Sales			
	Actual	PY	Var \$	Var %	Actual	PY	Var \$	Var %	Actual	PY	Var \$	Var %	Actual	PY	Var \$	Var %
100	\$112,691	\$109,706	\$2,984	2.72%	\$56,150	\$48,260	\$7,890	16.35%	\$16,459	\$15,297	\$1,163	7.60%				
101	\$45,330	\$45,634	(\$304)	-0.67%	\$32,715	\$27,472	\$5,243	19.08%	\$497	\$468	\$30	6.38%				
102	\$98,336	\$103,989	(\$5,653)	-5.44%	\$47,396	\$44,934	\$2,461	5.48%	\$12,981	\$12,868	\$114	0.88%				
105	\$53,049	\$53,797	(\$748)	-1.39%	\$20,927	\$18,535	\$2,391	12.90%	\$435	\$458	(\$23)	-5.04%	\$292	\$350	(\$58)	-16.48%
108	\$65,594	\$65,062	\$532	0.82%	\$36,970	\$33,208	\$3,763	11.33%	\$7,382	\$6,890	\$492	7.14%				
110	\$61,827	\$63,737	(\$1,910)	-3.00%	\$33,320	\$28,735	\$4,584	15.95%	\$7,755	\$7,102	\$653	9.20%				
111	\$83,200	\$82,782	\$419	0.51%	\$39,429	\$34,971	\$4,458	12.75%	\$1,563	\$1,316	\$246	18.71%	\$1,386	\$1,668	(\$282)	-16.89%
112	\$79,841	\$75,413	\$4,428	5.87%	\$45,360	\$38,377	\$6,983	18.20%	\$13,236	\$14,042	(\$806)	-5.74%	\$999	\$960	\$39	4.07%
114	\$68,075	\$65,148	\$2,926	4.49%	\$37,186	\$30,259	\$6,927	22.89%	\$2,790	\$2,510	\$280	11.14%				
116	\$34,233	\$33,854	\$379	1.12%	\$25,310	\$24,663	\$647	2.62%	\$6,648	\$6,408	\$240	3.74%				
119	\$138,628	\$148,684	(\$10,056)	-6.76%	\$48,687	\$48,656	\$31	0.06%	\$18,216	\$18,056	\$159	0.88%	\$2,253	\$1,607	\$645	40.16%
120	\$61,681	\$61,144	\$536	0.88%	\$32,140	\$28,287	\$3,853	13.62%	\$2,247	\$2,418	(\$171)	-7.06%	\$1,658	\$1,436	\$223	15.51%
121	\$94,467	\$93,964	\$503	0.54%	\$28,693	\$26,575	\$2,118	7.97%	\$14,036	\$12,435	\$1,601	12.88%				
125	\$104,723	\$113,744	(\$9,021)	-7.93%	\$50,705	\$49,821	\$884	1.77%	\$17,909	\$17,139	\$770	4.49%	\$2,345	\$1,947	\$398	20.42%
126	\$56,409	\$58,580	(\$2,171)	-3.71%	\$42,774	\$37,120	\$5,654	15.23%	\$464	\$552	(\$87)	-15.83%				
127	\$83,915	\$86,981	(\$3,066)	-3.53%	\$46,920	\$42,117	\$4,803	11.41%	\$5,298	\$6,362	(\$1,064)	-16.73%	\$496	\$584	(\$88)	-15.06%
128	\$81,869	\$91,117	(\$9,248)	-10.15%	\$42,031	\$35,554	\$6,477	18.22%	\$8,271	\$6,157	\$2,114	34.33%	\$2,678	\$2,685	(\$8)	-0.28%
130	\$27,115	\$33,075	(\$5,960)	-18.02%	\$13,559	\$16,214	(\$2,654)	-16.37%	\$158	\$282	(\$124)	-44.12%				
131	\$110,568	\$109,544	\$1,024	0.93%	\$48,579	\$43,351	\$5,229	12.06%	\$11,960	\$11,440	\$520	4.54%	\$1,703	\$1,694	\$9	0.56%
133	\$40,212	\$39,574	\$638	1.61%	\$27,415	\$22,321	\$5,094	22.82%	\$805	\$923	(\$118)	-12.80%	\$1,408	\$1,000	\$409	40.89%
134	\$148,521	\$149,135	(\$614)	-0.41%	\$59,824	\$54,641	\$5,183	9.49%	\$19,231	\$19,373	(\$141)	-0.73%	\$1,519	\$1,374	\$145	10.53%
135	\$63,153	\$61,248	\$1,905	3.11%	\$33,810	\$32,478	\$1,332	4.10%	\$6,954	\$6,523	\$431	6.61%	\$1,386	\$992	\$393	39.61%
137	\$67,087	\$62,852	\$4,234	6.74%	\$38,710	\$31,639	\$7,071	22.35%	\$1,758	\$1,951	(\$194)	-9.93%				
138	\$262,879				\$50,017				\$18,768							
140	\$52,099	\$65,812	(\$13,713)	-20.84%	\$30,527	\$28,208	\$2,319	8.22%	\$409	\$446	(\$37)	-8.19%	\$704	\$673	\$30	4.53%
141	\$49,367	\$46,793	\$2,574	5.50%	\$32,797	\$29,529	\$3,268	11.07%	\$631	\$801	(\$169)	-21.15%				
146	\$38,116	\$38,535	(\$419)	-1.09%	\$27,083	\$25,667	\$1,416	5.52%	\$827	\$1,098	(\$271)	-24.65%				
148	\$71,583	\$67,752	\$3,831	5.66%	\$51,948	\$47,708	\$4,240	8.89%	\$2,106	\$2,350	(\$244)	-10.39%				
149	\$96,072	\$106,632	(\$10,561)	-9.90%	\$30,804	\$28,837	\$1,967	6.82%	\$16,961	\$18,081	(\$1,120)	-6.20%	\$1,262	\$1,073	\$189	17.62%
150	\$64,359	\$65,738	(\$1,379)	-2.09%	\$37,473	\$33,869	\$3,604	10.64%	\$465	\$437	\$28	6.41%	\$8			
Total	\$100,462	\$97,125	\$719	0.74%	\$43,215	\$38,287	\$4,928	12.46%	\$8,178	\$7,734	\$444	2.73%	\$2,588	\$2,097	\$300	14.33%

-170

Customer Δ

8.3%

Attrition Rate

99.6%

YTD Retention



Veterinary Health Technologies



189.29

CLTV (12 mo.)

38.41

CAC (12 mo.)

Period

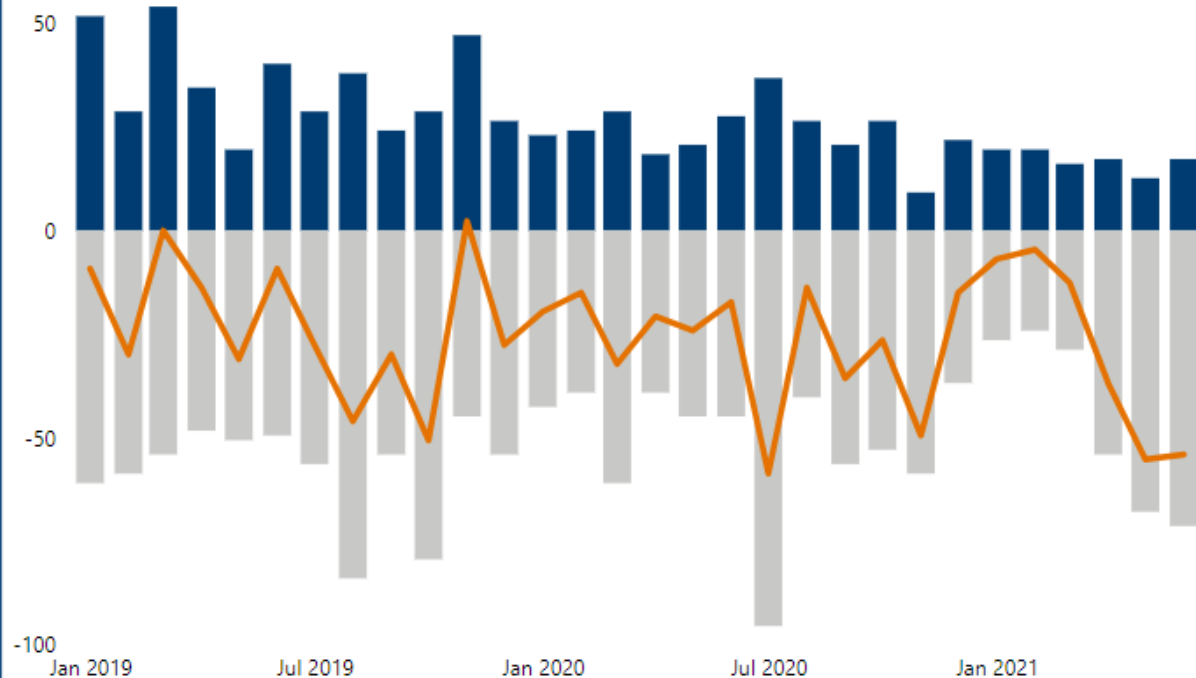
2019

2020



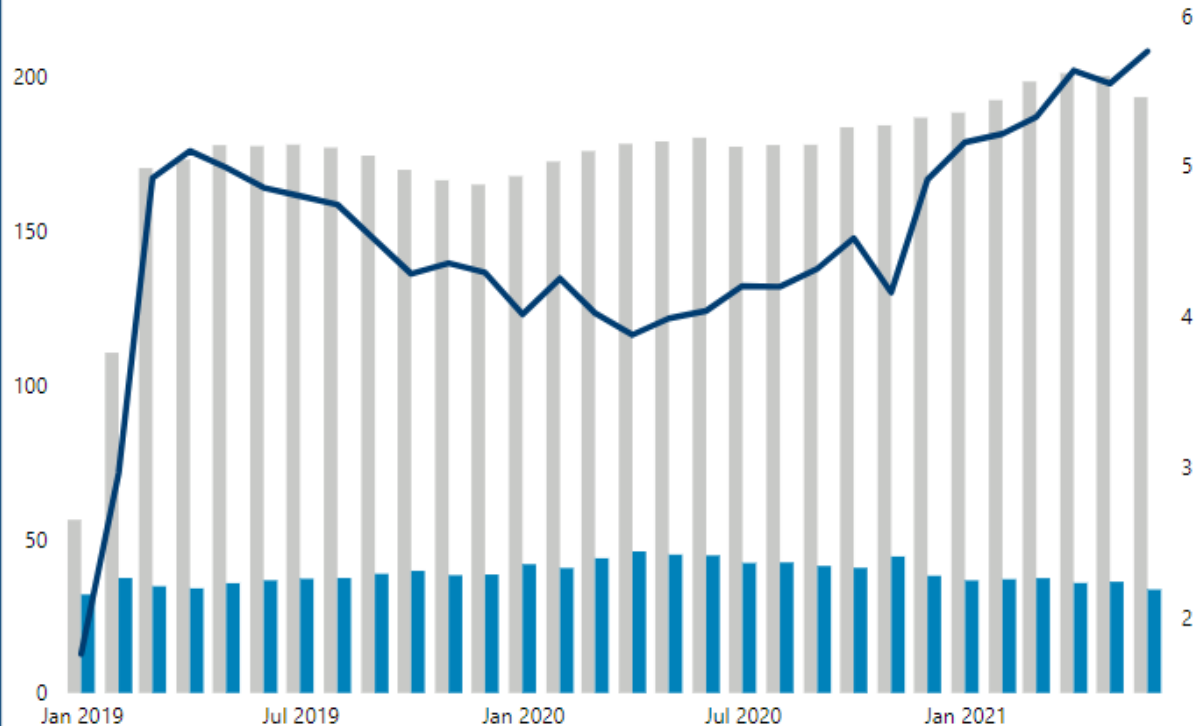
Net Change in Customers

● Additions ● Cancellations ● Net Change



CLTV/CAC Ratio

● CLTV ● CAC ● CLTV/CAC Ratio



Field	1/31/19	2/28/19	3/31/19	4/30/19	5/31/19	6/30/19	7/31/19	8/31/19	9/30/19	10/31/19	11/30/19	12/31/19	1/31/20	2/29/20	3/31/20	4/30/20	5/31/20	6/30/20	7/31/20	8/31/20	9/30/20	10/31/20	11/30/20	12/31
StartCount	7,360	7,351	7,321	7,321	7,307	7,276	7,267	7,239	7,193	7,163	7,113	7,115	7,087	7,068	7,053	7,021	7,000	6,976	6,959	6,900	6,886	6,851	6,824	6,
Additions	52	29	54	35	20	40	29	38	24	29	47	26	23	24	29	18	21	28	37	26	21	26	9	
Losses	61	59	54	48	51	49	56	84	54	79	45	54	43	39	61	39	45	45	95	40	56	53	59	
EndCount	7,351	7,321	7,321	7,307	7,276	7,267	7,239	7,193	7,163	7,113	7,115	7,087	7,068	7,053	7,021	7,000	6,976	6,959	6,900	6,886	6,851	6,824	6,775	6,

1161

Loans (#)

65.58M

Current Balance

Current Balance by Name

Lahousse

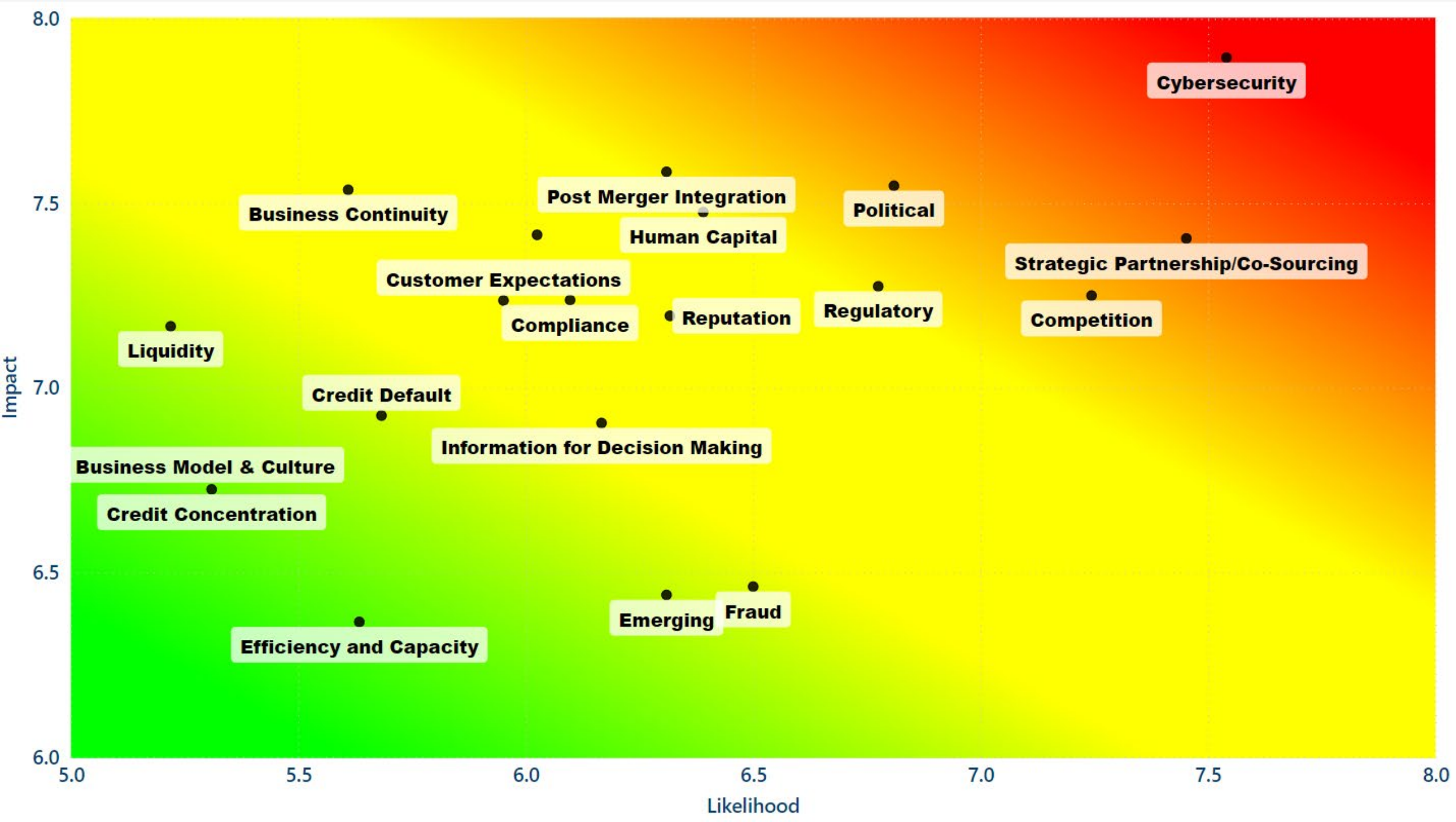
Koth

Koupal

Farmer

Becker

Address	Current Balance	Loans to Address	Unique Borrowers
500 EAST MOREHEAD STREET	4,003,830.95	32	1
929 FINNEY DRIVE	32,251.08	18	1
192 SHADY SQUARE	315,454.17	14	14
BERNIE MADOFF	6,475.00	1	1
BERTHA HEYMAN	33,800.00	1	1
CASSIE CHADWICK	12,000.00	1	1
CHARLES PONZI	34,533.33	1	1
DANIEL LEVEY	22,166.67	1	1
DAVID LEMAR	19,500.00	1	1
GEORGE APPO	32,800.00	1	1
GEORGE PARKER	17,812.50	1	1
GINA MARKS	29,100.00	1	1
LOU BLONGER	1,333.33	1	1
MICHAEL SCOTT	19,500.00	1	1
PHILLIP MUSICA	19,000.00	1	1
SOAPY SMITH	35,766.67	1	1
WILLIAM MCCLOUDY	31,666.67	1	1
445 BARRETT RD	1,316,716.05	12	1
1546 TROUTDALE HWY	337,930.00	11	1
714 REDD DRIVE	209,373.50	10	1
P O BOX 661	1,407,851.93	10	1
1703 CORNERSTONE RD	781,887.93	9	1
535 WEST UNION ST	134,781.46	9	1
65 AUBURN LANE	623,476.50	9	1
P O BOX 563	153,394.58	9	2
1170 PILGRIM FORK RD	403,333.33	8	1
1951 NEW RIVER PKWY	346,474.54	7	1
203 PENNY LN	643,946.19	7	2
1292 FIELDVIEW RD	133,401.40	6	1
P O BOX 143	295,900.00	6	1
P O BOX 426	339,046.67	6	1
115 A LAVENDER RD	325,214.29	5	3
151 HARDIN ROAD	528,966.67	5	1
1907 CROSS ROADS DRIVE	89,095.93	5	1
Total	65,579,093.98	1161	817



HW Type

All

Model

All

Missing Patch

All

828

Count

2.8

Average Age

206

Missing Patch

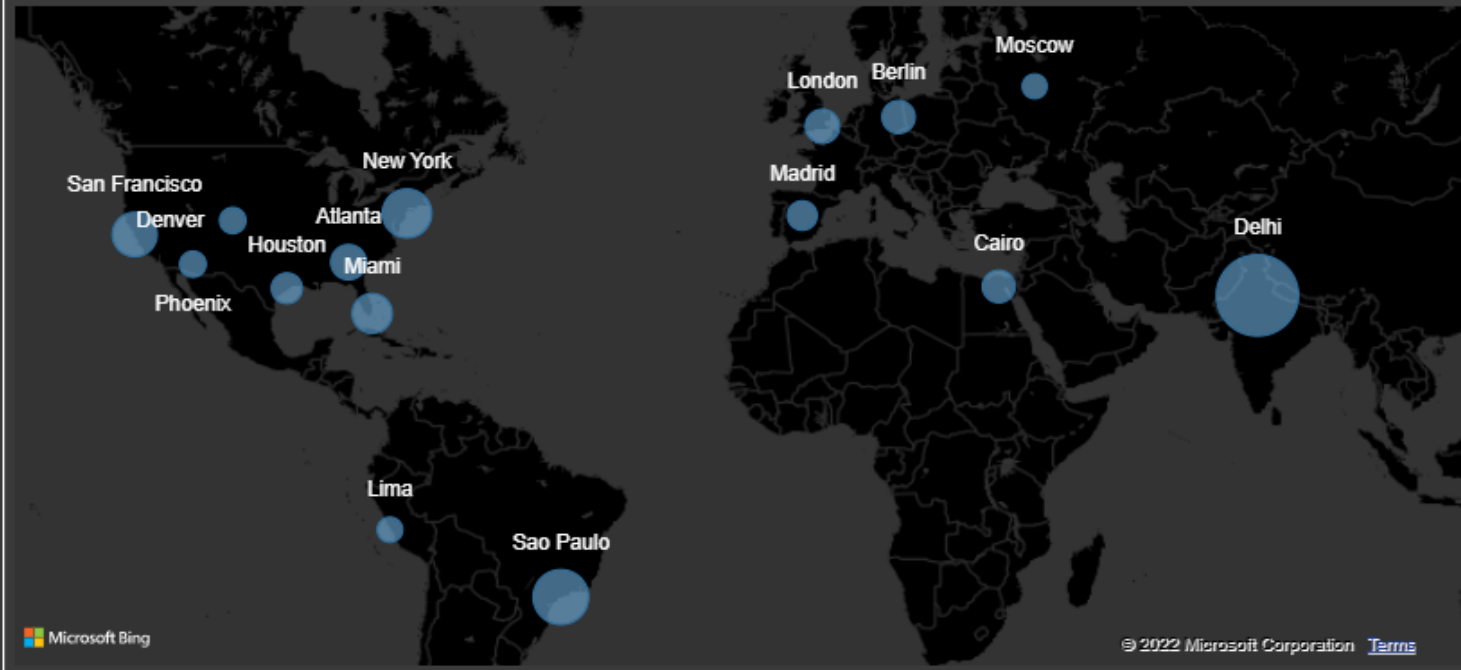
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10

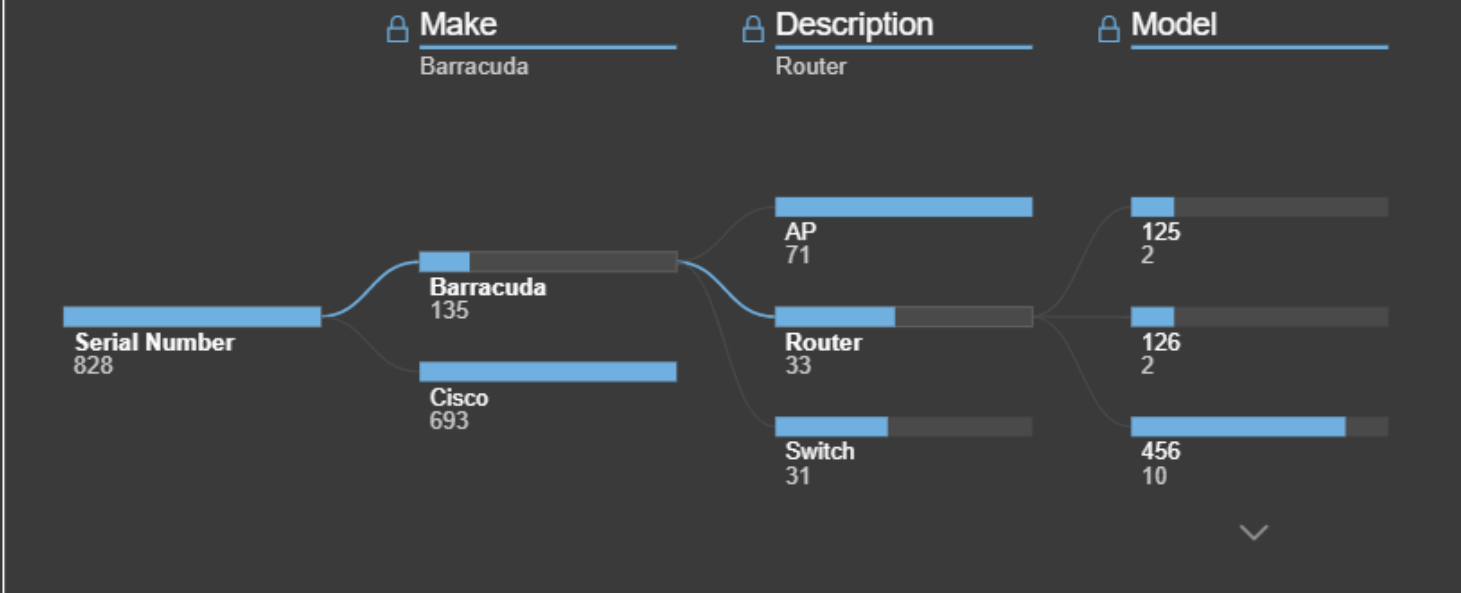
Description	Make	Model	Serial Number	City	Age	Missing Patch
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AP	Barracuda	123	10949943	Atlanta	1	no
AP	Cisco	123	10943605	Atlanta	2	no
AP	Cisco	123	11880112	Atlanta	2	no
AP	Cisco	123	17749249	Atlanta	1	no
AP	Cisco	123	19027107	Atlanta	2	no
AP	Cisco	123	19322429	Atlanta	1	no
AP	Cisco	124	1234568	Atlanta	2	no
AP	Cisco	124	12891557	Atlanta	2	no
AP	Cisco	124	18392260	Atlanta	4	no
AP	Cisco	124	19027108	Atlanta	4	no
AP	Cisco	124	19814569	Atlanta	2	no
AP	Cisco	124	21092427	Atlanta	4	no
AP	Cisco	125	11873774	Atlanta	2	no
AP	Cisco	125	11961388	Atlanta	2	no
AP	Cisco	125	21092428	Atlanta	2	no
Router	Barracuda	456	10949944	Atlanta	2	no
Router	Barracuda	458	11861388	Atlanta	5	no
Router	Cisco	456	11165827	Atlanta	5	yes
Router	Cisco	456	18749249	Atlanta	2	no
Router	Cisco	456	18749251	Atlanta	5	no
Router	Cisco	456	19328060	Atlanta	2	no
Router	Cisco	456	20027107	Atlanta	5	no

Assets by Location *



Assets by Hardware Type *



185M

COGS - Actual

186M

COGS - Standard

736.54K

Material Variance (\$)

1.47M

Labor Variance (\$)

-1.23M

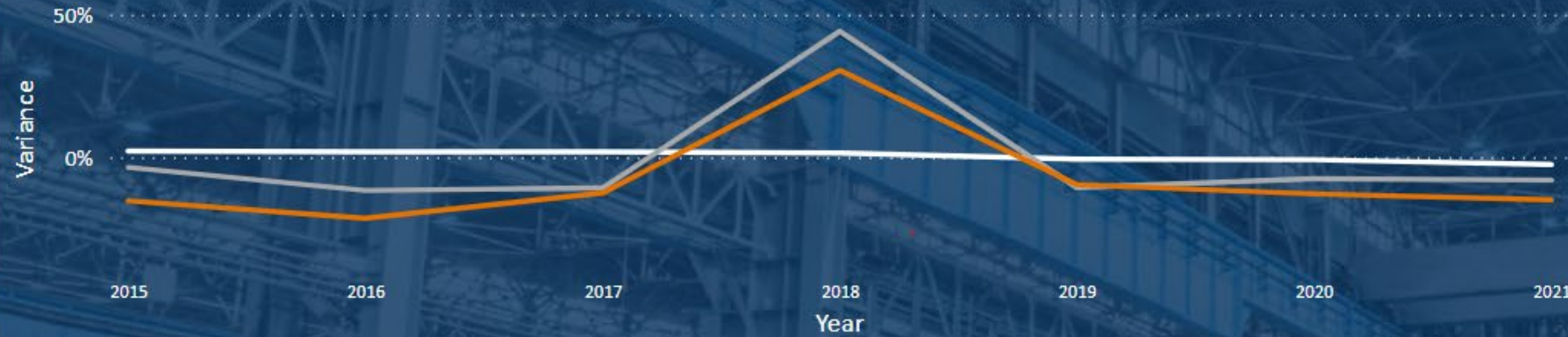
Overhead Variance (\$)

Period

All



● Material Variance (%) ● Labor Variance (%) ● Overhead Variance (%)



● Material ● Labor ● Overhead



Name	Sales Value	Material Standard	Material Actual	Material Var (\$)	Material Var (%)	Labor Standard	Labor Actual	Labor Var (\$)	Labor Var (%)	Ovhd Standard	Ovhd Actual	Ovhd Var (\$)	Ovhd Var (%)	COGS Standard	COGS Actual	COGS Var	COGS Var (%)
Wolff LLC	\$10,171,093	5,059,018	5,033,847	25,171	0.5%	3,594,846	891,829	2,703,017	75.2%	5,648,879	2,066,190	3,582,689	63.4%	14,302,743	7,991,866	6,310,877	44.1%
Schimmel, Rosenb...	\$12,440,950	6,289,246	6,173,956	115,290	1.8%	1,598,555	1,097,467	501,088	31.3%	3,071,429	2,558,791	512,638	16.7%	10,959,230	9,830,214	1,129,016	10.3%
McCullough-Cronin	\$11,884,738	5,687,474	5,633,391	54,083	1.0%	1,192,222	1,069,078	123,144	10.3%	2,513,697	2,469,026	44,671	1.8%	9,393,393	9,171,495	221,898	2.4%
Corwin-Lindgren	\$10,251,795	5,041,510	5,061,677	-20,167	-0.4%	988,748	906,314	82,434	8.3%	2,066,462	2,112,053	-45,591	-2.2%	8,096,720	8,080,044	16,676	0.2%
Kunze-Kerluke	\$10,217,132	4,774,040	4,769,007	5,033	0.1%	949,347	1,014,743	-65,396	-6.9%	2,146,704	2,347,061	-200,357	-9.3%	7,870,091	8,130,811	-260,720	-3.3%
Zemlak-Mills	\$14,331,064	6,873,572	6,736,087	137,485	2.0%	1,179,599	1,286,088	-106,489	-9.0%	2,666,551	2,999,838	-333,287	-12.5%	10,719,722	11,022,013	-302,291	-2.8%
Kassulke Ltd	\$12,521,303	6,266,008	6,195,018	70,990	1.1%	970,036	1,059,491	-89,455	-9.2%	2,208,879	2,471,385	-262,506	-11.9%	9,444,923	9,725,894	-280,971	-3.0%
White Group	\$13,628,256	6,864,159	6,804,442	59,717	0.9%	1,113,739	1,233,889	-120,150	-10.8%	2,518,017	2,852,354	-334,337	-13.3%	10,495,915	10,890,685	-394,770	-3.8%
Jakubowski-McGly...	\$12,515,791	5,962,785	5,856,623	106,162	1.8%	1,056,998	1,172,010	-115,012	-10.9%	2,405,834	2,717,869	-312,035	-13.0%	9,425,617	9,746,502	-320,885	-3.4%
Hettinger-Ondricka	\$5,140,527	2,573,164	2,534,061	39,103	1.5%	446,047	494,668	-48,621	-10.9%	1,014,492	1,158,186	-143,694	-14.2%	4,033,703	4,186,915	-153,212	-3.8%
Brown LLC	\$11,511,809	5,666,007	5,660,305	5,702	0.1%	946,682	1,056,507	-109,825	-11.6%	2,151,495	2,441,043	-289,548	-13.5%	8,764,184	9,157,855	-393,671	-4.5%
Bernhard-Monahan	\$9,748,064	4,580,004	4,527,218	52,786	1.2%	763,844	857,470	-93,626	-12.3%	1,729,652	1,992,671	-263,019	-15.2%	7,073,500	7,377,359	-303,859	-4.3%
Tromp, Kling and F...	\$13,162,229	6,299,351	6,362,214	-62,863	-1.0%	1,092,132	1,231,196	-139,064	-12.7%	2,482,714	2,858,897	-376,183	-15.2%	9,874,197	10,452,307	-578,110	-5.9%
Ziemann Ltd	\$13,199,540	6,588,466	6,579,250	9,216	0.1%	1,061,124	1,199,204	-138,080	-13.0%	2,400,383	2,777,803	-377,420	-15.7%	10,049,973	10,556,257	-506,284	-5.0%
Toy, Conn and Fadel	\$13,248,833	6,379,853	6,270,336	109,517	1.7%	1,088,088	1,230,492	-142,404	-13.1%	2,483,462	2,889,028	-405,566	-16.3%	9,951,403	10,389,856	-438,453	-4.4%
Parker, Bergstrom ...	\$9,761,616	4,539,901	4,536,189	3,712	0.1%	768,964	874,942	-105,978	-13.8%	1,723,787	2,023,290	-299,503	-17.4%	7,032,652	7,434,421	-401,769	-5.7%
Schoen, Larson an...	\$12,222,443	5,849,514	5,869,222	-19,708	-0.3%	1,009,488	1,151,298	-141,810	-14.0%	2,293,277	2,673,793	-380,516	-16.6%	9,152,279	9,694,313	-542,034	-5.9%
Tromp, Lowe and J...	\$13,372,598	6,499,187	6,485,847	13,340	0.2%	1,080,088	1,238,661	-158,573	-14.7%	2,463,826	2,872,406	-408,580	-16.6%	10,043,101	10,596,914	-553,813	-5.5%
McClure, Graham a...	\$12,974,526	6,003,219	5,981,311	21,908	0.4%	1,079,821	1,266,205	-186,384	-17.3%	2,450,709	2,920,250	-469,541	-19.2%	9,533,749	10,167,766	-634,017	-6.7%
Mills PLC	\$12,597,341	6,121,405	6,111,340	10,065	0.2%	980,745	1,160,668	-179,923	-18.3%	2,208,527	2,677,093	-468,566	-21.2%	9,310,677	9,949,101	-638,424	-6.9%
Total	\$234,901,648	113,917,883	113,181,341	736,542	0.6%	22,961,113	21,492,220	1,468,893	6.4%	48,648,776	49,879,027	-1,230,251	-2.5%	185,527,772	184,552,588	975,184	0.5%

328K

COGS - Actual

310K

COGS - Standard

6,711

Material Variance (\$)

-6,267

Labor Variance (\$)

-18.10K

Overhead Variance (\$)

Period

All



● Material Variance (%) ● Labor Variance (%) ● Overhead Variance (%)



● Material ● Labor ● Overhead



Name	Sales Value	Material Standard	Material Actual	Material Var (\$)	Material Var (%)	Labor Standard	Labor Actual	Labor Var (\$)	Labor Var (%)	Ovhd Standard	Ovhd Actual	Ovhd Var (\$)	Ovhd Var (%)	COGS Standard	COGS Actual	COGS Var	COGS Var (%)
Toy, Conn and Fadel	\$13,248,833	6,379,853	6,270,336	109,517	1.7%	1,088,088	1,230,492	-142,404	-13.1%	2,483,462	2,889,028	-405,566	-16.3%	9,951,403	10,389,856	-438,453	-4.4%
Parker, Bergstrom ...	\$9,761,616	4,539,901	4,536,189	3,712	0.1%	768,964	874,942	-105,978	-13.8%	1,723,787	2,023,290	-299,503	-17.4%	7,032,652	7,434,421	-401,769	-5.7%
Schoen, Larson an...	\$12,222,443	5,849,514	5,869,222	-19,708	-0.3%	1,009,488	1,151,298	-141,810	-14.0%	2,293,277	2,673,793	-380,516	-16.6%	9,152,279	9,694,313	-542,034	-5.9%
Tromp, Lowe and J...	\$13,372,598	6,499,187	6,485,847	13,340	0.2%	1,080,088	1,238,661	-158,573	-14.7%	2,463,826	2,872,406	-408,580	-16.6%	10,043,101	10,596,914	-553,813	-5.5%
McClure, Graham ...	\$12,974,526	6,003,219	5,981,311	21,908	0.4%	1,079,821	1,266,205	-186,384	-17.3%	2,450,709	2,920,250	-469,541	-19.2%	9,533,749	10,167,766	-634,017	-6.7%
Mills PLC	\$12,597,341	6,121,405	6,111,340	10,065	0.2%	980,745	1,160,668	-179,923	-18.3%	2,208,527	2,677,093	-468,566	-21.2%	9,310,677	9,949,101	-638,424	-6.9%
Self-Enabling Asy...	\$792,551	337,055	383,522	-46,467	-13.8%	64,871	58,707	6,164	9.5%	153,919	135,718	18,201	11.8%	555,845	577,947	-22,102	-4.0%
Optimized Client...	\$972,712	472,097	484,410	-12,313	-2.6%	76,130	78,796	-2,666	-3.5%	168,891	173,412	-5,021	-3.0%	716,618	736,618	-20,000	-2.8%
Multi-Lateral Mo...	\$440,333	211,331	206,901	4,430	2.1%	34,807	36,099	-1,292	-3.7%	77,259	82,810	-5,551	-7.2%	323,397	325,810	-2,413	-0.7%
Mandatory Met...	\$573,684	303,050	301,596	1,454	0.5%	44,141	45,893	-1,752	-4.0%	99,172	112,131	-12,959	-13.1%	446,363	459,620	-13,257	-3.0%
Open-Architecte...	\$978,909	405,724	416,002	-10,278	-2.5%	85,203	89,073	-3,870	-4.5%	190,682	202,444	-11,762	-6.2%	681,609	707,519	-25,910	-3.8%
User-Centric Mul...	\$1,098,841	522,005	521,271	734	0.1%	88,381	96,087	-7,706	-8.7%	199,312	223,233	-23,921	-12.0%	809,698	840,591	-30,893	-3.8%
Optional Fault-T...	\$524,379	271,304	268,136	3,168	1.2%	41,884	45,839	-3,955	-9.4%	93,859	103,827	-9,968	-10.6%	407,047	417,802	-10,755	-2.6%
Reactive Multi-T...	\$571,486	260,054	262,906	-2,852	-1.1%	39,433	44,262	-4,829	-12.2%	87,079	100,055	-12,976	-14.9%	386,566	407,223	-20,657	-5.3%
Centralized Acti...	\$379,313	188,237	194,981	-6,744	-3.6%	30,271	34,464	-4,193	-13.9%	67,409	79,465	-12,056	-17.9%	285,917	308,910	-22,993	-8.0%
Front-Line Regio...	\$395,605	227,446	229,041	-1,595	-0.7%	37,880	43,711	-5,831	-15.4%	85,972	101,758	-15,786	-18.4%	351,298	374,510	-23,212	-6.6%
Streamlined Solu...	\$495,387	239,083	235,116	3,967	1.7%	40,985	47,383	-6,398	-15.6%	93,824	108,838	-15,014	-16.0%	373,892	391,337	-17,445	-4.7%
Self-Enabling 3R...	\$432,635	186,166	179,455	6,711	3.6%	37,717	43,984	-6,267	-16.6%	85,971	104,075	-18,104	-21.1%	309,854	327,514	-17,660	-5.7%
Down-Sized Anal...	\$851,920	426,492	438,022	-11,530	-2.7%	61,708	72,069	-10,361	-16.8%	141,383	165,207	-23,824	-16.9%	629,583	675,298	-45,715	-7.3%
Innovative Radic...	\$531,951	198,533	202,578	-4,045	-2.0%	64,155	78,672	-14,517	-22.6%	141,880	180,317	-38,437	-27.1%	404,568	461,567	-56,999	-14.1%
Fully-Configurabl...	\$802,003	394,024	401,106	-7,082	-1.8%	61,538	82,946	-21,408	-34.8%	135,391	193,436	-58,045	-42.9%	590,953	677,488	-86,535	-14.6%
Total	\$234,901,648	113,917,883	113,181,341	736,542	0.6%	22,961,113	21,492,220	1,468,893	6.4%	48,648,776	49,879,027	-1,230,251	-2.5%	185,527,772	184,552,588	975,184	0.5%



165

Team Members Strong



265

Certifications to Deliver High Quality



1454

Years Combined Experience



1,890

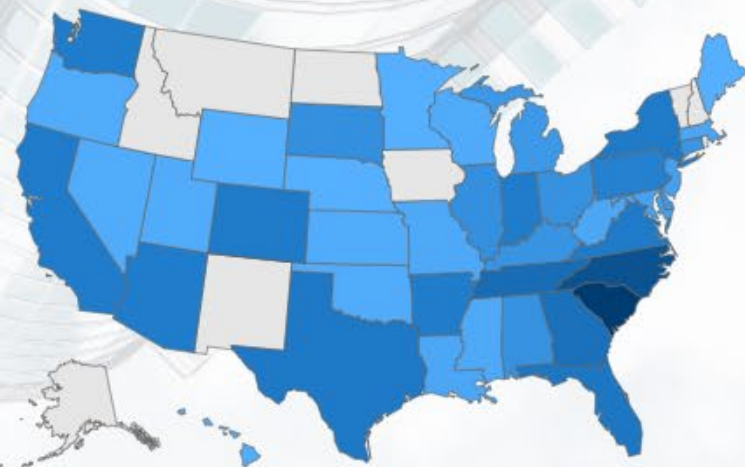
Customers Served



3,270

Engagements

Engagement Locations



1.4X

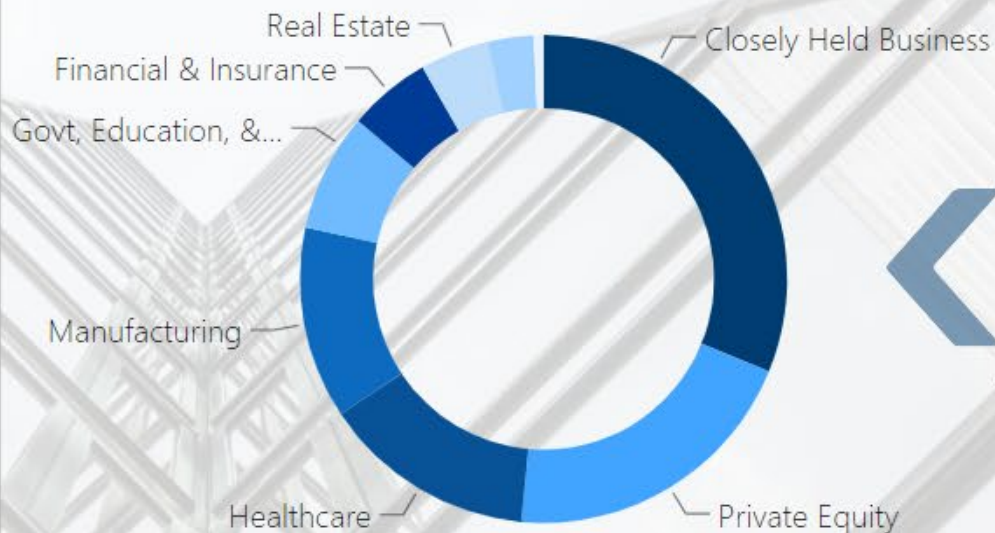
Revenue Growth Since 2020



2020

2021

2022



Real Estate

Financial & Insurance

Govt, Education, &...

Manufacturing

Healthcare

Closely Held Business

Private Equity

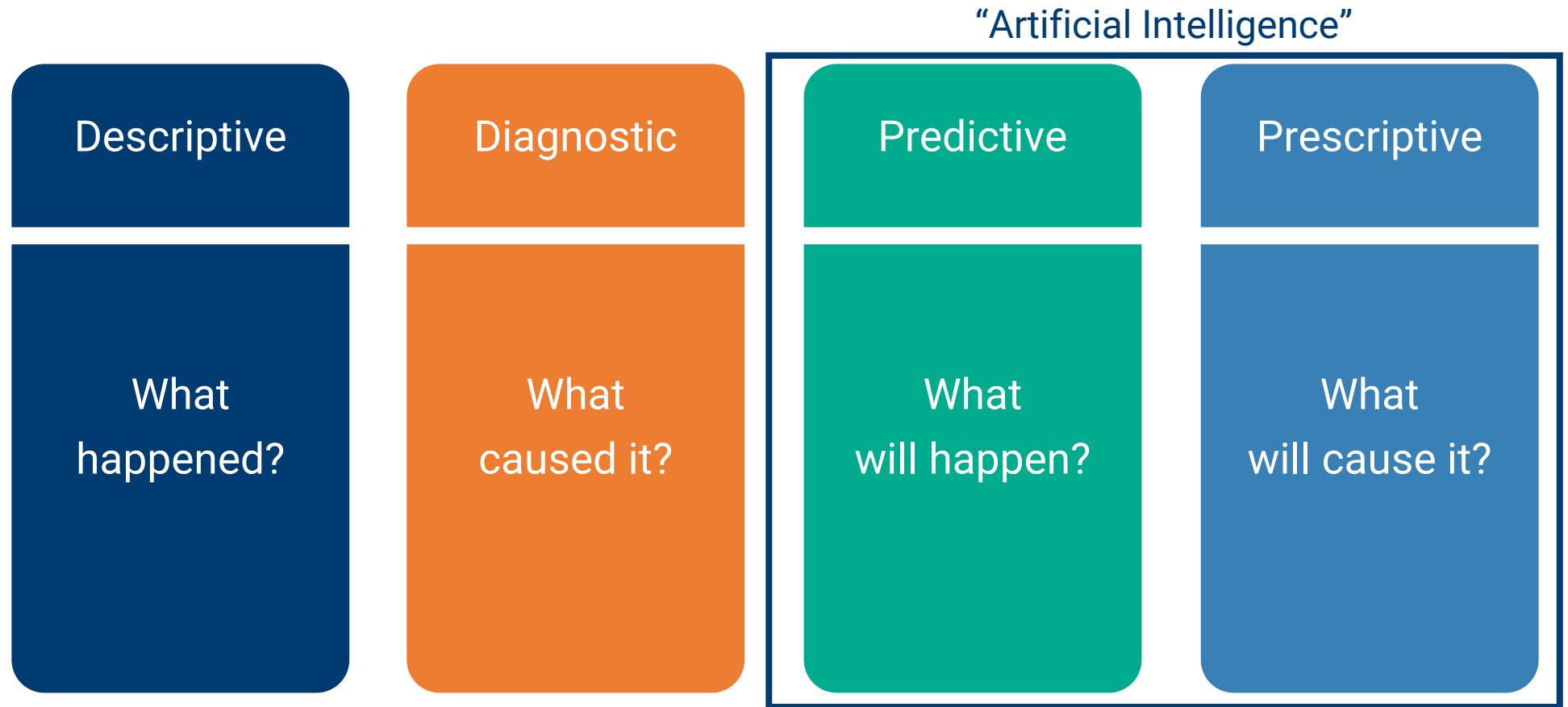


9

Industries Served

Artificial Intelligence in the Industry

Types of Data Analytics





What is Artificial Intelligence?

Any technique that allows computers to mimic human behavior. These behaviors are often predetermined and logical in nature.

Types of Artificial Intelligence

Artificial Intelligence

Any technique that allows computers to mimic human behavior. These behaviors are often predetermined and logical in nature.

Machine Learning

Techniques that allow computers to improve with experience. These methods are normally statistically based (i.e.: training a model)

Deep Learning

Techniques that allow computers to mimic the human neural network and learn in an unsupervised way.

Audit Use Cases for AI

- Text recognition/extraction
- Codified field conversion
- Assessment of full populations
- Anomaly detection
- Risk scoring
- Sample selections
- Many others

AI Software Providers

Audit

- MindBridge
- AI XPRT
- Auditmap
- OSP
- PwC GL.ai

Accounting

- Blue dot
- Vic.ai
- Indy
- Osome
- Docyt

Important Considerations

- Most audit offerings revolve around discovery/scoping
- Reliance on service providers in an audit
- Vendor due diligence considerations
- Data security
- Data integrity
- Explainability (current vs. future)
- Limitations

Current State of AI

Artificial Intelligence

- Readily available
- Standardized rules
- Easily explained
- Follows human logic
- Opportunities
 - Automation
 - Anomaly detection in static environment

Machine Learning

- Somewhat available
- Rules based
- Explainable with effort
- Born out of logic
- Opportunities
 - Anomaly detection in changing environment

Deep Learning

- Largely unavailable/unused
- Synthesizes human logic based on neural networks
- Lacks Explainability
- Opportunities
 - Will be tough to gain comfort/approval under stringent auditing standards

Visions of the Future

Current & Emerging Technologies

- Cloud Based Software / Computing
- Blockchain / Decentralized Ledgers
- Smart Contracts
- Automated Accounting Technology
- Artificial Intelligence / Machine Learning

Current & Emerging Technologies

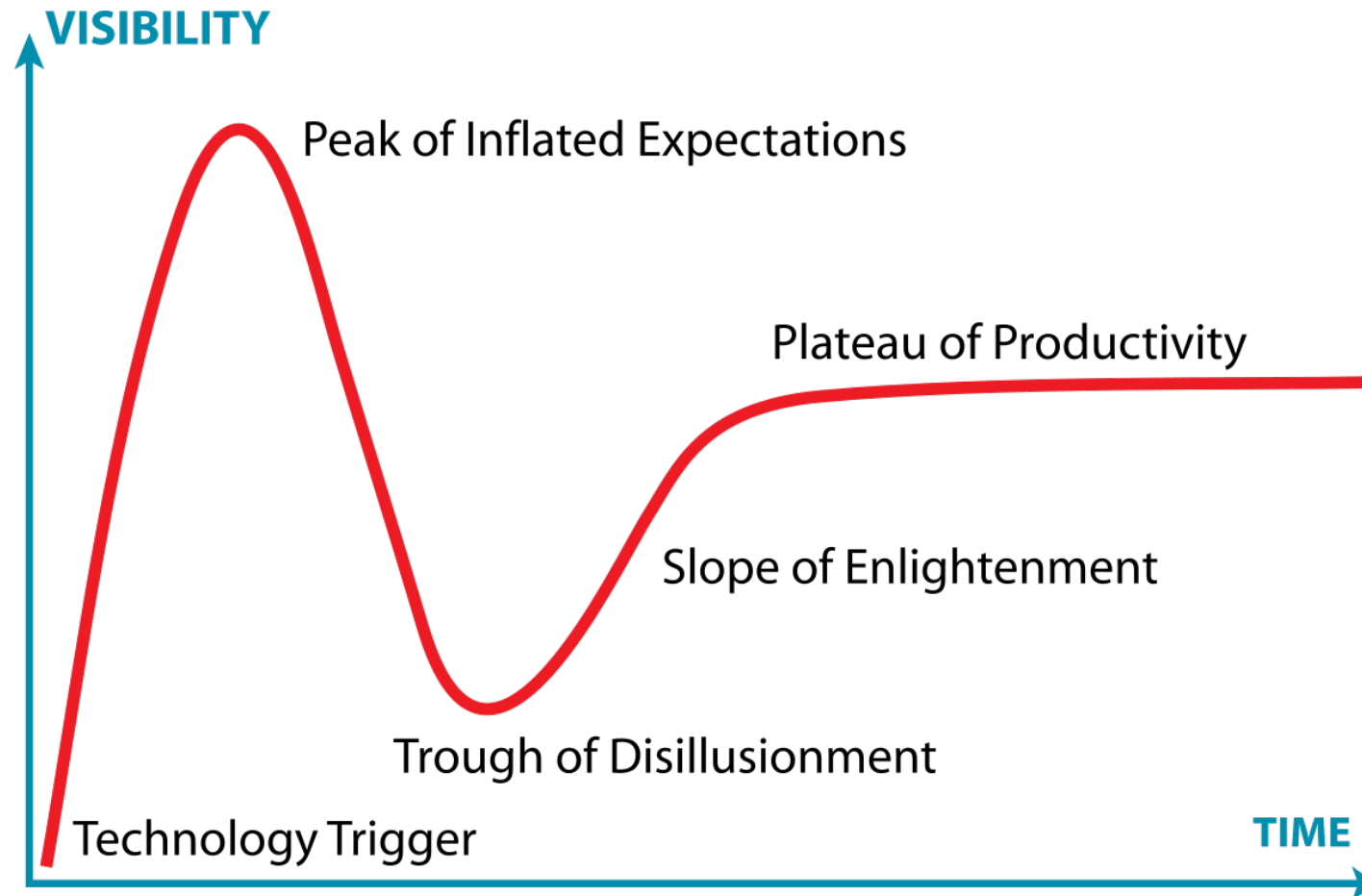


Image: Gartner Hype Cycle

Thoughts on the Future

- Humans will be tasked with less objective, more subjective, work sets
- Increased automation of repetitive tasks
- Adoption of advanced machine learning techniques will be tempered by understandability
- Smart contracts may nullify the need for escrow agents (in some cases)
- Organizations' ability to leverage and adopt new technologies will never surpass individual employees' willingness to accept, understand and engage with said technologies.

Thank You



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Alek Bevensee, CPA

Senior Manager

Services: Analytics, Assurance

Professional Overview

Alek frequently guest lectures at universities and industry conferences on the topics of data analytics, business intelligence, and data visualization. He aids companies in unlocking the full power of their financial and operational data to find solutions to complex challenges. From executing in-depth statistical analyses to building c-suite-friendly dashboards, customers value Alek's ability to deliver effective solutions with substantial ROI.

Education, Credentials, and Special Training

Certified Public Accountant

Master of Accountancy, University of South Carolina

B.S., Accounting, University of South Carolina

Professional Affiliations

American Institute of Certified Public Accountants

North Carolina Association of Certified Public Accountants

North Carolina Bankers Association

Civic and Community Activities

Blumenthal Performing Arts Center, Finance and Audit Committee Member