City of Tacoma's Journey to a Modern Analytics Program

ASUG Seattle Chapter Meeting

April 20, 2022

Tacoma

TACOMA PUBLIC UTILITIES

About Tacoma

- **Municipal Government and 5 Utilities**
- **~220k residents**
- **~187k utility customers**
- **~3,600 employees**
- **26 distinct departments**
- **27 Unions**
- **~2,952 pensioners.**

  Yes, a pension!! We are hiring!

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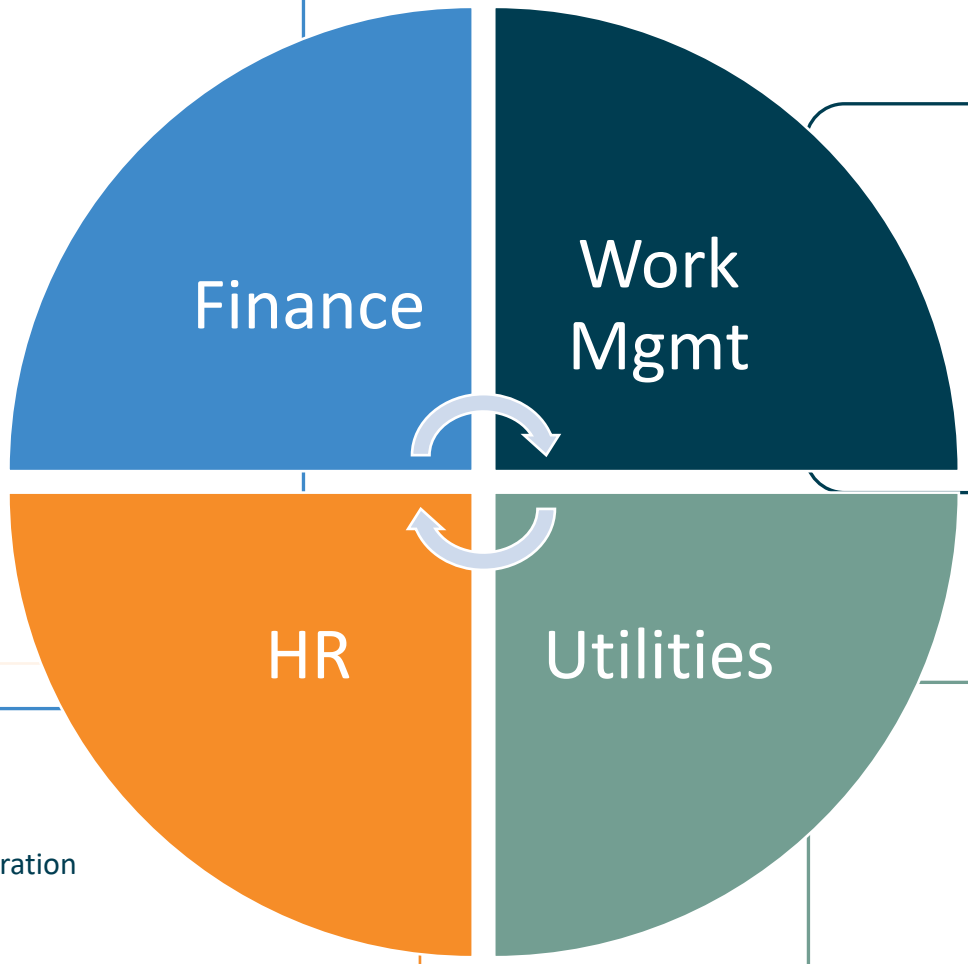
SAP at City of Tacoma

SAP Suite on HANA
(42 Modules)



General Ledger
Controlling
Treasury
Asset Accounting
Funds Management
Grants Management
Debt Management
Project Systems
GASB87
Loans
Travel & Expense
Accounts Receivable
Accounts Payable
Procurement
XiBuy
ePay
Budgeting
Allevo
Payroll

Plant Maintenance
Materials Management
Inventory Mgmt
Sales and Distribution
GuiXT
Electrical Inspections
NCS Case Management
T&L Case Management

TERS
Org Management
Personnel Administration
Benefits
Time Management
Training and Events
Employee Self Service (ESS)

Device Management
Financial Contract Accounting
Billing
Solid Waste
Customer Service
Tax and License
AMI

- **Heavily customized**
- **3rd Party Product**

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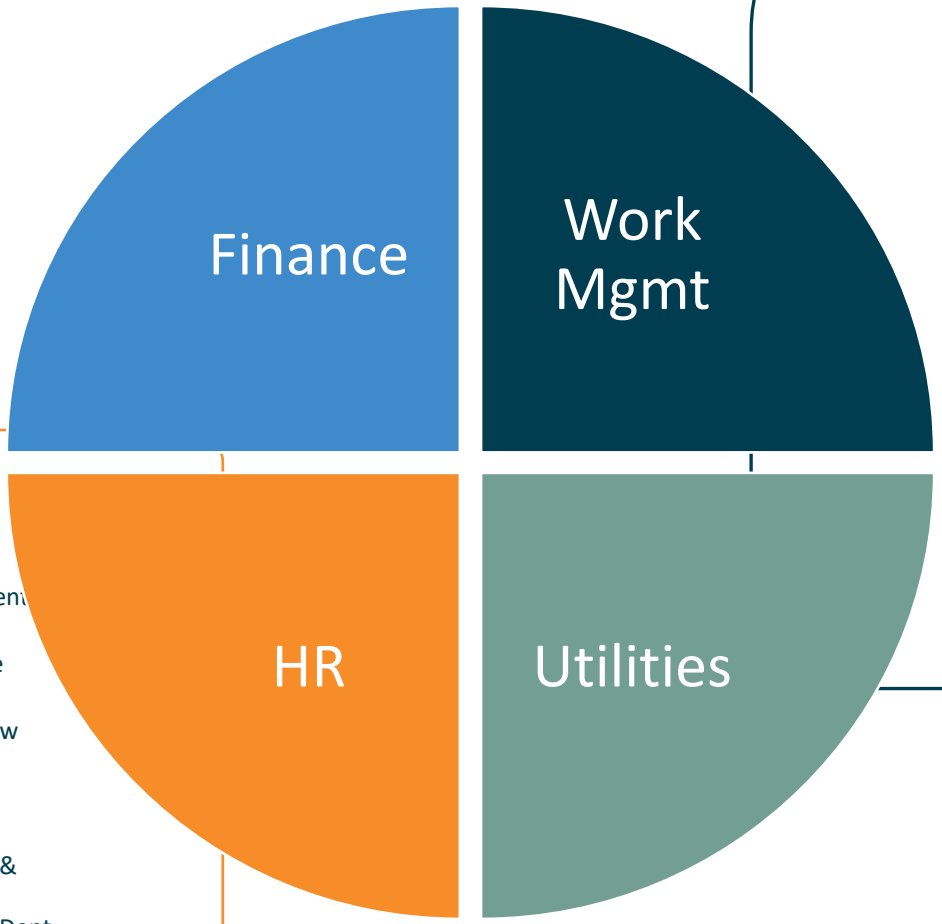
SAP at City of Tacoma

SAP Ecosystem
>150 Integration Points



- Accela (3)
- ACH (2)
- Ariba (4)
- Cash Desk (2)
- Collections (3)
- Conservation
- E-Box
- Elavon payment
- Epay
- File Local (4)
- Fire Interface
- GG IVR
- Intra City Utility Bill
- Invoice imaging
- Library AP data
- Muni Court
- Norwesco
- Paybox
- Pcard
- Pos Pay (3)
- Rebates
- RFQ extracts
- Telcom Billing
- Trust Commerce (2)
- US Bank Payment Utility AutoPay
- Unclaimed Prop
- Wells Fargo

- AD
- ADP (5)
- Benefits (6)
- Cobra
- DRS retirement
- ESS
- MWFM Time
- NeoGov
- OrgChart Now
- Payroll (10)
- Rail EOY tax
- Telestaff (3)
- TERS Health & Transit
- TERS Health Dept
- TERS Miliman (2)
- Union Pension Transfer to RHS
- Virgin Pulse (2)

- AMI Work Status
- BUD (2)
- Electrical Permitting
- ESRI – ES
- ESRI – PW (2)
- ESRI – Water (2)
- Fleet Data Mgmt
- Fleet Poolcar Reservation
- K5 Case Creation
- MWFM WorkBook
- MWFM WorkSpace
- Notif Mass Load
- One Call(2)
- Paradigm Scale
- SmallWorld
- Stark (2)
- TF311

- AMI Energy IP
- AMI Sensus (2)
- AMI Tribus (3)
- AMI MDUS (2)
- AppXtender (3)
- Cass/Presort
- CardConnect
- Credit Check
- CS IVR
- CEP
- Electrical inspection
- Electric Meter
- EIM (5)
- Energy Mgmt
- EPA Portfolio Mgr
- Escrow Portal
- iNovah
- Itron
- Meter read upload
- My Account (3)
- OMS (3)
- Paybox Kiosks
- Pledge Portal
- StreamServe
- Property Mgr(2)
- Revenue Collector
- Waterscope

Business Problem

- **The City's Business Warehouse was not widely used – approximately 40 consistent users**
  - Live SAP reports had been favored to do most of the reporting
  - The City never switched from BEx to BOBJ, so reporting was antiquated
  - Data is "locked" inside BW and is very difficult to join it with non-SAP datasets
  - Many users simply ran BW reports so they could export the data to Excel/Access for analysis
- **Our BW version was coming up on End of Life, and either need a major upgrade, or replacement**
- **Wanted to reduce reporting load on the SAP system**
- **It was decided that a cloud-based reporting platform would suit our needs best**

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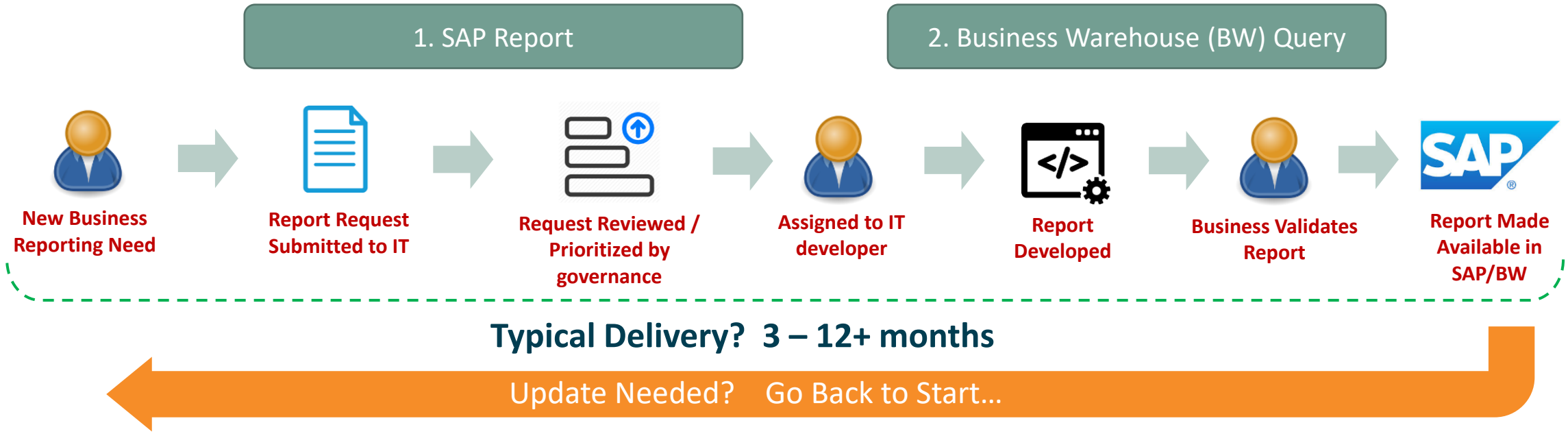
Former SAP Reporting Process



- Process is slow and resource intensive
- Doesn't support urgent or changing business needs
- Provides access to SAP information (only) in MS Excel

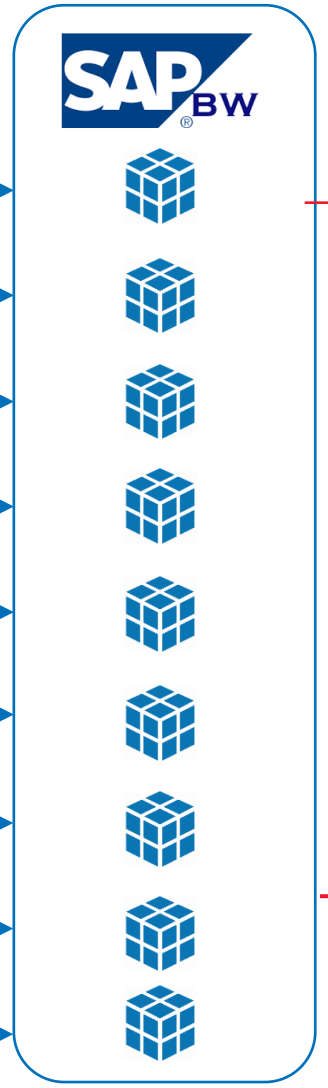
Former Architecture

Miscellaneous SAP Modules/Datasets

- Financial Controlling
- General Ledger
- Financial Controlling
- Contract Accounts
- Accounts Payable
- Customer Care System
- Plant Maintenance
- Sales and Distribution
- Materials Management

Loaded Nightly

Real Time



BEx Analyzer

Data is commonly copied to other spreadsheets or department-owned database systems and combined with other needed datasets

SAP Business Objects generates static reports

SAP BusinessObjects

AP
FI
GL
CCS
SD

Universes

Microsoft SQL Server

MySQL

The Project

HANA + Analytics = Hanalytics!

- Phase 1 – Needed a new analytics platform
- Phase 2 – Start with finance general data enablement
- Phase 3 – Customer data general data enablement
- Phase 4 – PM data and the rest of BW stragglers*

*Stragglers ended up being a huge chunk of work!

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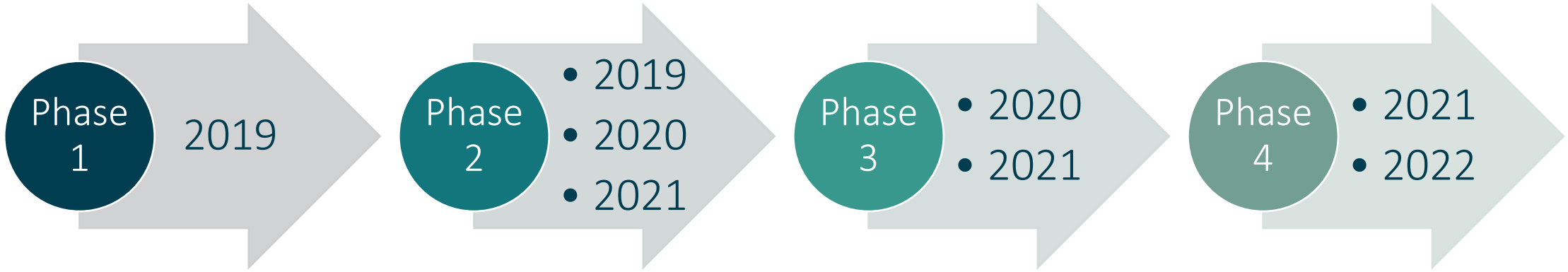
Large Organizational Impact



- **All 26 distinct departments were impacted**
- **27% of staff were impacted stakeholders**
- **Integration of Change Management at initiation due to scale and scope of project**
- **Shift from having no centralized analytics program to emphasis on 'data-driven' decisions during these 'unprecedented times'**

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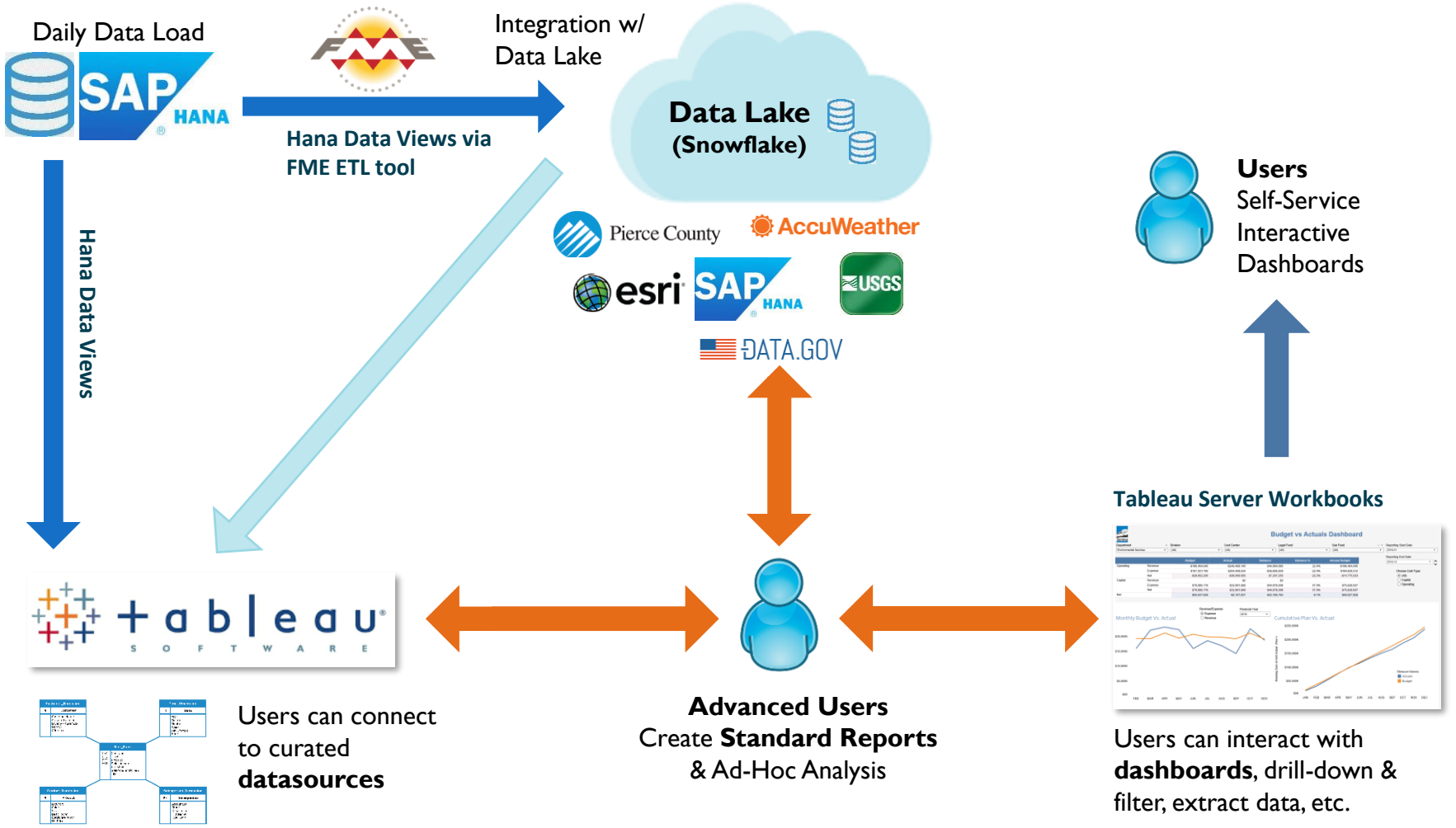
Solution Overview



Hanalytics Deliverables

- **Hana Data Views**
  - 65 Phase 2 Views
  - 76 Phase 3a Views
  - 38 PM & BW Retirement Views
  - 511 Underlying Private & Re-Used Views (building blocks)
- **154 Snowflake Data Views**
- **FMEs Workspace / Automation**
  - 255 (estimate) SAP to Snowflake Feeds
  - 7 Other (e.g. Interfaces)
- **Datasources**
  - 11 Enterprise Tableau Datasource
  - 5 Snowflake Datasources
  - Hundreds of Tableau Datasources (Operational, unique requirement, and One-Off)
- **17 Enterprise Reports**
- **Hundreds of Department Reports Utilizing Hana Data**

Over 1,000 assets created by the project and the analytics community!

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Report Examples: Monthly Financials

Before

City of Tacoma - Overall Budget Vs. Actual Report
All Cost Object Integration (Cost Center, PM, IO, WBS)

Version: Plan/actual version
Period/Year: 04/2022
Cost Center Group 4600
User JCUMMINGS
Run Date: 04/11/2022

Cost Center View | Cost Element View | Cost Element Group | CE Group Combined

Cost Center View	Period Actuals	YTD Actuals	BTD Actuals	Biennium Budget	Budget Balance
Operating	3,541,910.95-	9,928,404.45-	40,775,307.68-	0.16-	40,775,307.52
Cost Center	3,821,405.46-	10,223,921.08-	41,329,203.77-	0.16-	41,329,203.61
Revenues	3,393,690.69-	35,422,986.78-	169,031,840.78-	203,548,377.25-	34,516,536.47-
Expenditures	427,714.77-	25,199,065.70	127,702,637.01	203,548,377.09	75,845,740.08
Budgetary Expenditures	427,714.77-	20,251,125.26	103,693,060.14	203,548,377.09	99,855,316.95
Salaries and Wages	540,145.23-	6,299,038.97	33,248,267.75	56,386,364.60	23,138,096.85
Personnel Benefits	694,222.60	3,429,004.17	14,266,002.43	23,681,787.02	9,415,784.59
Secondary Labor Costs	618,385.20-	2,551,558.49-	10,638,914.49-	16,713,329.04-	6,074,414.55-
Supplies	5,510.81-	1,952,999.28	9,929,181.33	16,962,270.24	7,033,088.91
Services and Charges	34,646.87	1,122,437.34	6,245,829.05	13,085,397.70	6,839,568.65
Other Services and Charges	6,980.00	2,730,005.08	14,931,022.85	22,840,982.35	7,909,959.50
Overhead Charges ZC		818,771.09-	4,012,452.54-	1,134,469.58-	2,877,982.96
Alloc from Serv Providers-non Gen F		2,861,863.03	13,737,582.75	24,268,626.12	10,531,043.37
General Fund Assessments-ZC		279,859.14	1,348,035.54	2,187,613.27	839,577.73
Non-Operating Expenditures	477.00	4,946,247.83	24,667,684.57	67,196,007.85	42,528,323.28
Ending Cash Balance					
5700200 Cap A&G Exp			29,179.10-	5,212,873.44-	5,183,694.34-
Non-Budgetary Expenditures		4,947,940.44	24,009,576.87		24,009,576.87-
Personnel Services-Non-Budgetary			181,319.00-		181,319.00
Other Services & Charges - Non-Bu		4,947,940.44	24,190,895.87		24,190,895.87-
Internal Orders		0.14-	7,229.60-		7,229.60
PM Orders	279,494.51	279,494.50	279,345.78		279,345.78-
WBS Elements		16,022.27	281,779.91		281,779.91-

After

General Fund | General Fund Revenue | General Fund Expense | Other Funds | About this Dashboard

Monthly Financial Reporting
General Fund Summary

Last Closed Financial Period: November 2021
Data Last Updated: 12/30/2021 10:22:33 PM

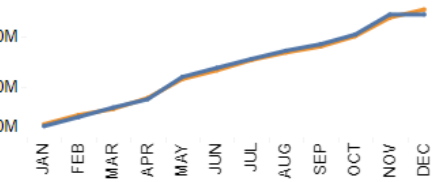
Select Report Year 2021
Select Month to Report Through November

Budget
Actual

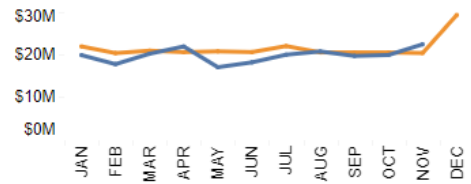
	YTD Budget	YTD Actual	YTD Variance	YTD Variance %
Revenue	$238,027,861	$244,382,204	$6,354,343	2.7%
Expenditure	$228,092,039	$216,695,071	$11,396,968	5.0%
Net	$9,935,822	$27,687,133	$17,751,311	1.1%

Revenue: Monthly Budget Vs. Actual

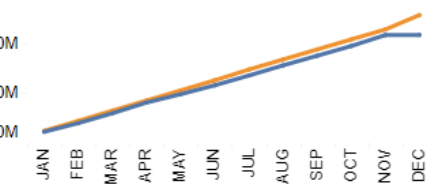
Revenue: Cumulative Budget Vs. Actual



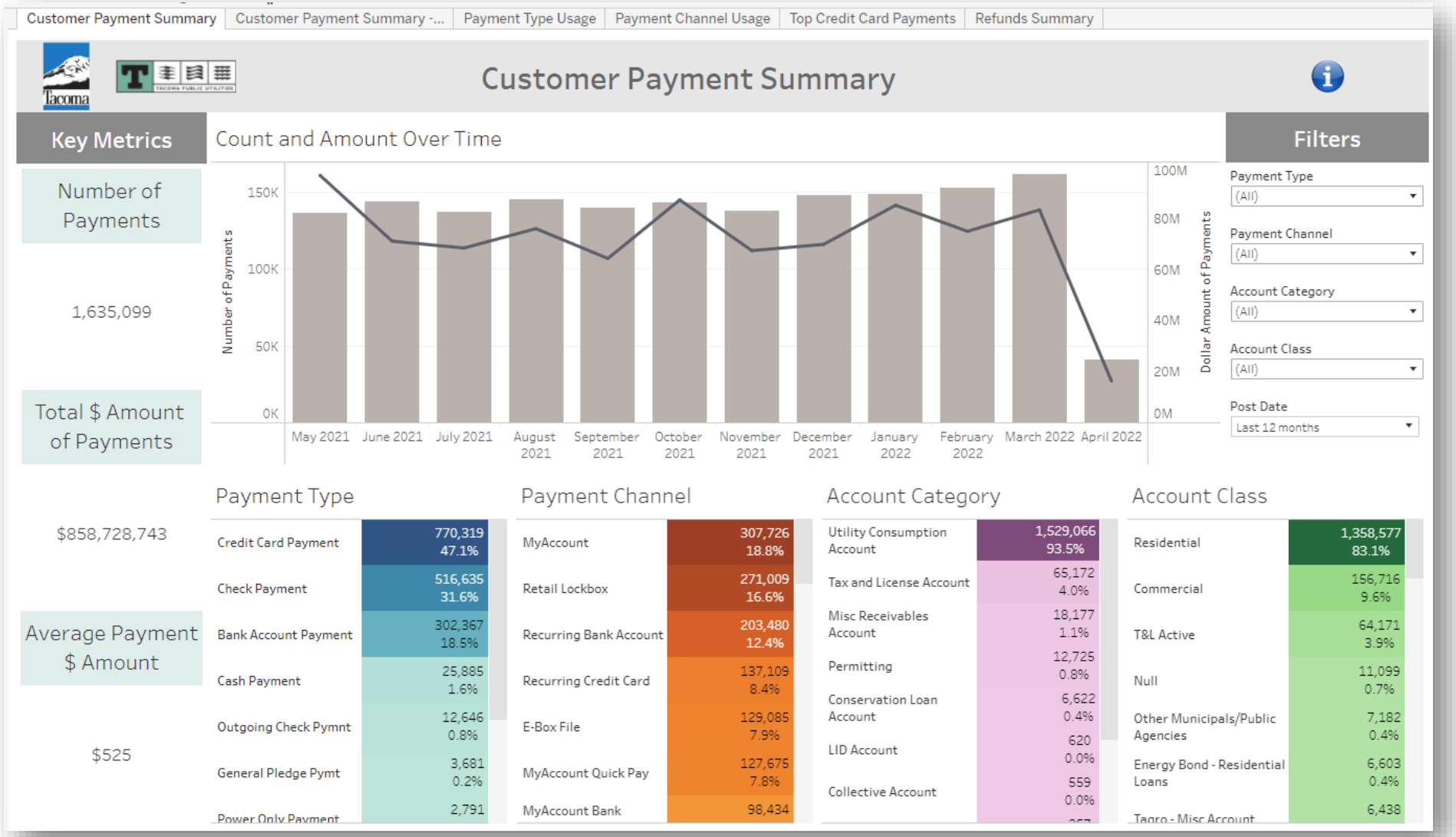
Expense: Monthly Budget Vs. Actual



Expense: Cumulative Budget Vs. Actual



Report Examples: Customer Payments



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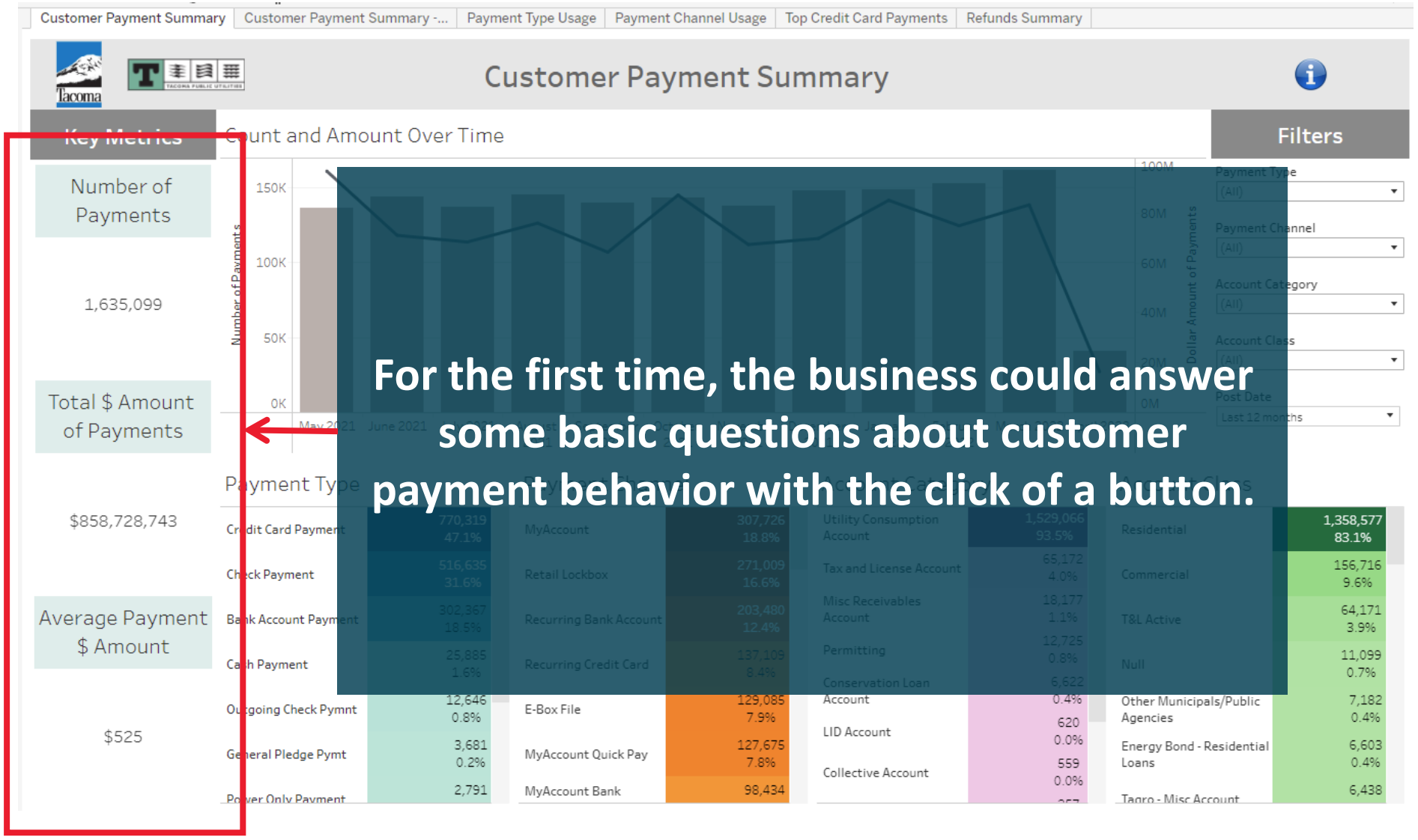
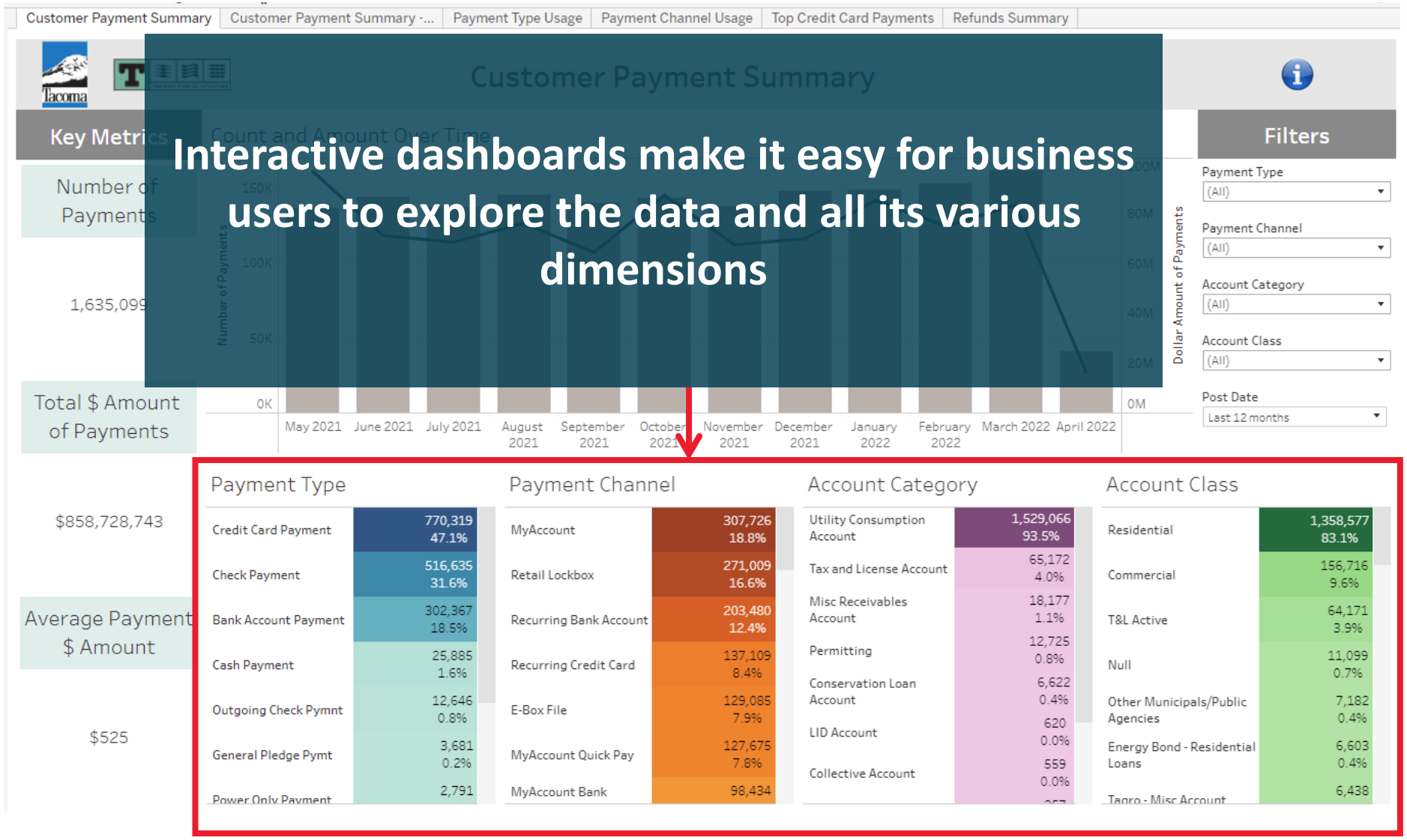


For the first time, the business could answer some basic questions about customer payment behavior with the click of a button.

Report Examples: Customer Payments



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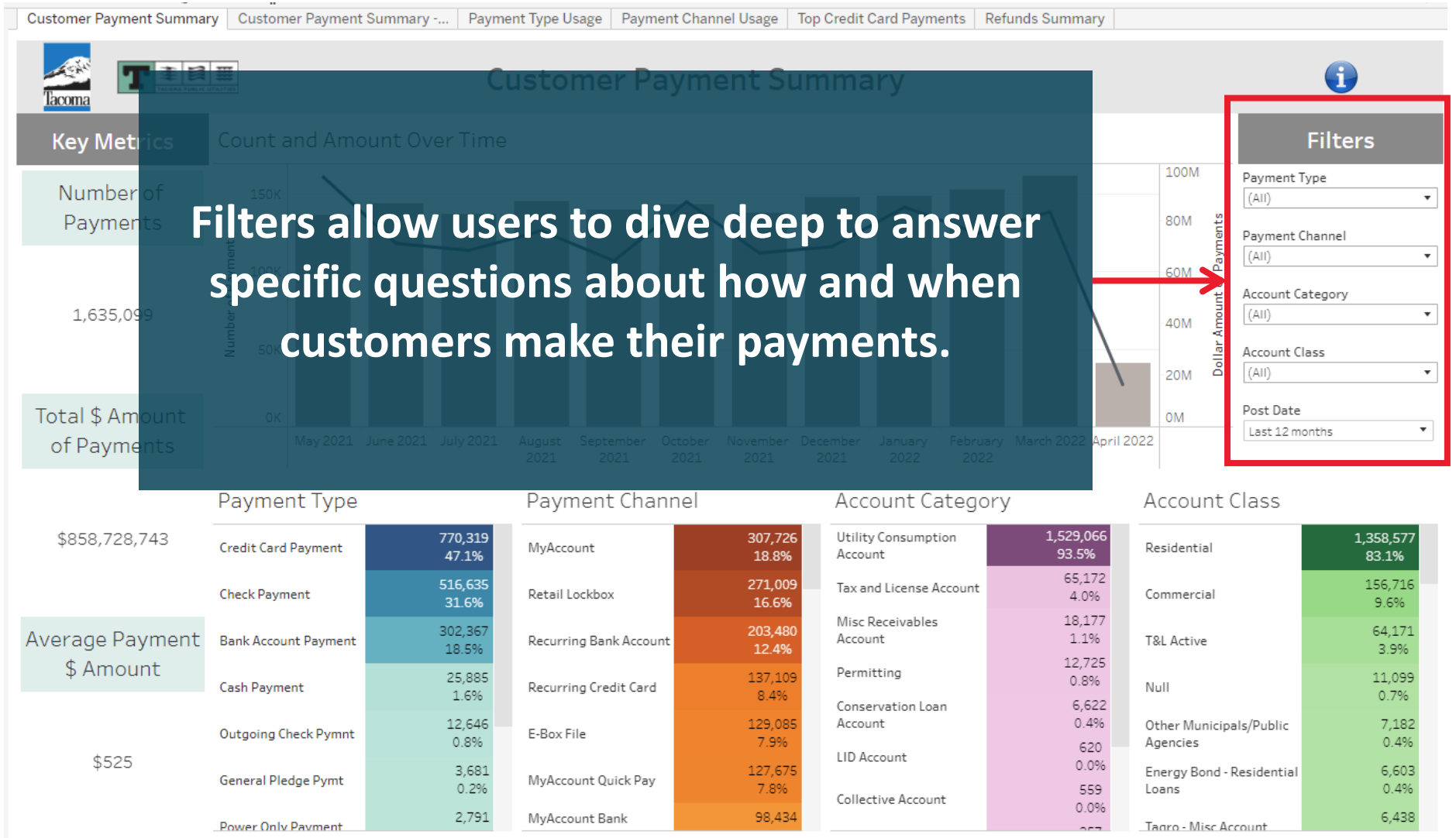
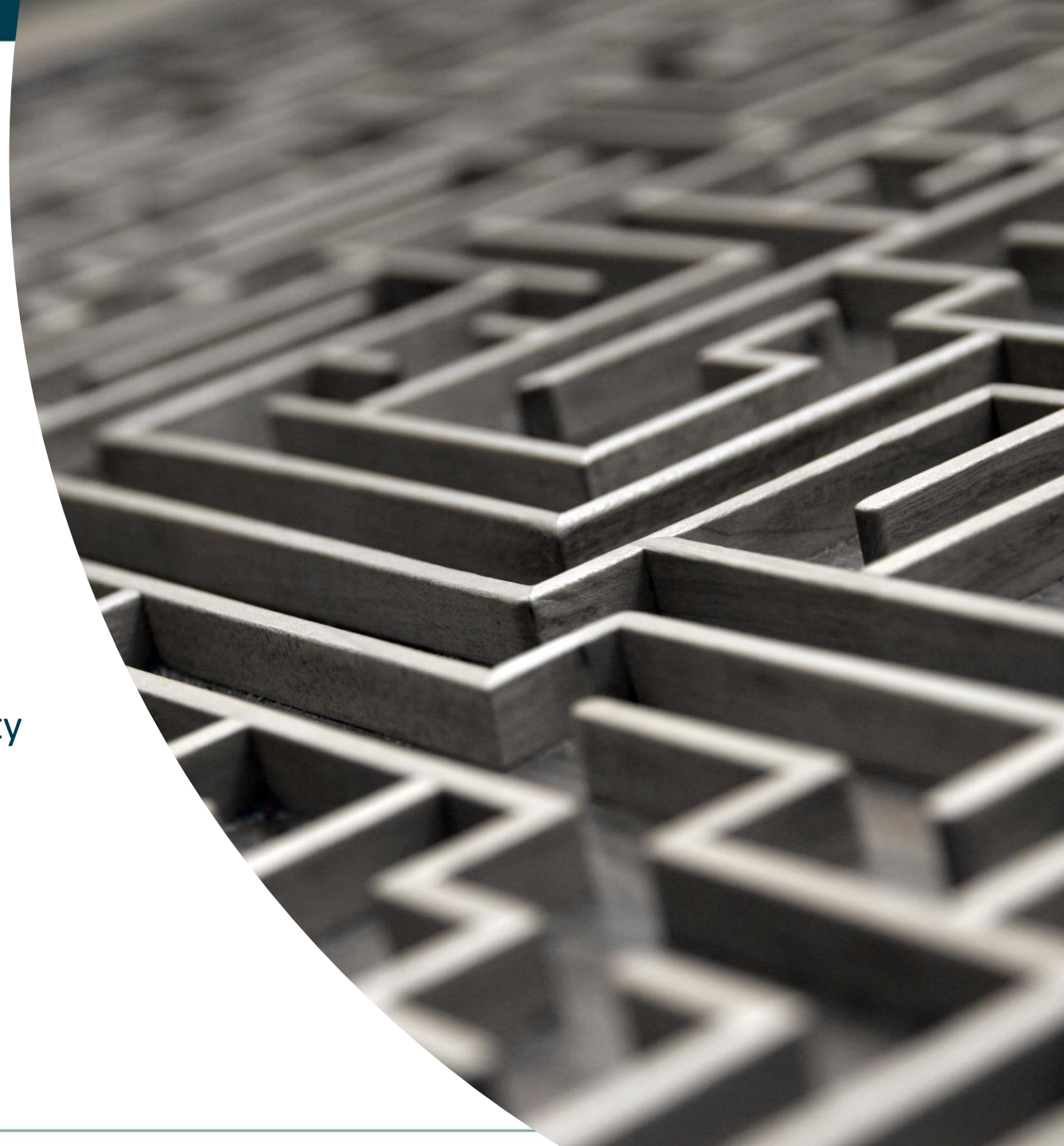


Filters allow users to dive deep to answer specific questions about how and when customers make their payments.

Challenges

- No clear data owners/stewards of the data or the assets being created by the project
- Many SMEs with different processes and different business requirements
- Change management for hundreds of stakeholders in departments across the City
- Project team resources changed over time
- Business users largely unfamiliar with the tools and in some cases, the data
- Trying to define an analytics program and select a tool while executing the project



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Successes

- Huge growth and interest with intentional investment into Community of Practice and cross divisional support
- Analysts have access to data they never had before
- Partnership with department members embedded in project
- 40 users on BW vs 900 users on Tableau
- 4.8 billion rows, 240GB in Snowflake
- 48k FME jobs per year
- City-wide expertise in a single query tool – Tableau
- Less load on SAP and fewer exported datamarts
- No longer 3-12 month turnaround time, now fully self-service
- Able to use analytics tools for project management rather than MS Project

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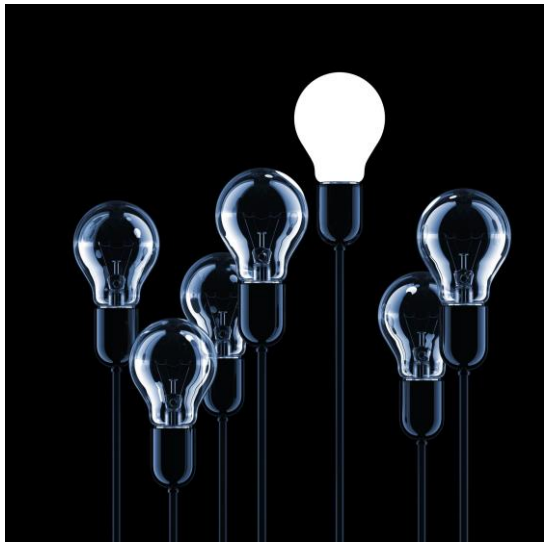
Lessons Learned



- Lots of executive and departmental support was key
- Data ownership is important; data stewardship is critical
- Data cleanliness – At the start of every project people say they're going to clean up data and processes – they don't
- Ensure project team members are dedicated to the project without competing priorities
- SAP data is way more complicated than you expect
- Prioritize what's important (44 Fact tables in CCS…can't do ‘em all)
- Success hinges on a partnership between IT and the Business
- Defined use cases are much easier than general data enablement
- No tool is perfect, so you make the best with what you have
- You can always build on things after go live

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Thank You!

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