

evolve'17
CONFERENCE

**WHERE BIG DATA
AND PROCUREMENT
DATA MEET**

Presenter



Jonathan White

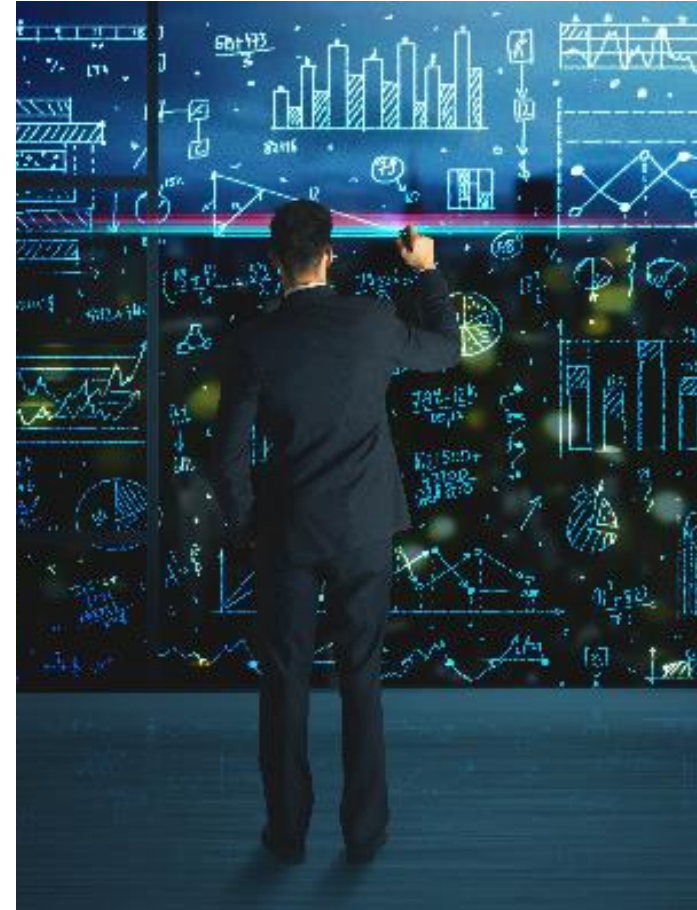
Director – Business Development
Spikes Cavell – a DXC Technology
Company



Spikes Cavell

Presentation Outline

1. What is and is not Big Data?
2. What are forward thinking procurement teams trying to achieve?
3. How can data help them?
4. What are some specific examples?



What is and is not Big Data?

Unstructured Data Dark Data
Smart Data
Prescriptive Analytics Hadoop
Data Lake Business Intelligence
Visualizations **BIG DATA** Predictive Analytics
Data Jungle Data Warehouse
Machine Learning IoT Data
Data Science

Data Warehouse ≠ Big Data



Query/Lookup \neq Big Data Spreadsheet with 500k rows \neq Big Data



What are the
common attributes
that define Big
Data?

Big Data Definition



Volume

Velocity

Variety

- Big Data typically defined by being high in at least one of these three attributes
- Common examples: Customer service decision support, flight crash reduction, delivery tracking and routing, academic fraud detection, airline ticket booking

Small Data Definition



- Small data is everything else – most procurement analytics today
- Can be done on a desktop or laptop, Excel or other visualization tool (PowerBI, Tableau, Qlik)
- Today's big data is tomorrow's medium data, is the future's small data
- Even small data projects can have big impacts on your organization

Example: How busy
is the road?

Non Procurement Example



Getting to Big Data is a journey. Its not going to happen tomorrow or because you build a data warehouse.



Future of Procurement Analytics

~~Advanced Analytics~~
Descriptive Analytics
Diagnostic Analytics
Predictive Analytics
Prescriptive Analytics
Robotics
Machine Learning
~~Artificial Intelligence~~



Future of Procurement Analytics

Descriptive Analytics – what happened?

Diagnostic Analytics – why did it happen?

Predictive Analytics – what will happen next?

Prescriptive Analytics – what should we do next?

Robotics – replicating human action

Machine Learning – replicating human decisions



**What are forward
thinking
procurement
teams trying to
achieve?**

Historic Goal

Provide the **right goods or services** at the **right time** and the **right place**.



Today and Tomorrow's Goals

Help the customer procure the **right good or service**, at the best **overall value**, at the **right time**, with **acceptable risk**, in an **efficient** way, **transparently and fairly**, with **sustainability** in mind and manage that supplier and contract **relative to its strategic value** to the organization **over time**.

**How can data help
achieve those
goals?**



Procurement

**Data and
Analytics**

Data and Analytics Outcomes

	Urgent	Not Urgent
Important	1	2
Not Important	3	4

How Does Data Help?

Find and Focus on the Strategic and Important

- Identify inefficiencies to create more streamlined and responsive procurement processes
- Drive focus to strategic priorities by automating the things that should be automated.
- Identify ways change the process required or change the thresholds
- Quickly and more easily respond to requests for information

How Does Data Help?

Better Support the Organization's Mission

- Plan, monitor, support and achieve procurement policy objectives
- Monitor and maintain compliance with legal requirements
- Identify, quantify and minimize risk
- Help departments get what they need to deliver their mission – speed, quality, cost

How Does Data Help?

Deliver Savings and Value

- Few if any procurement teams, public or private, actually save money. It ALWAYS gets spent on something
- Getting a \$1.01 or more of value for every \$1.00 spent
- Getting \$1.00 of value for \$0.80
- Free up funds for additional resources or other key initiatives

**What are some
specific
examples?**

Strategic Analysis

- Procurement Activity Planning
- Systems Planning
- Savings & Benefits Analysis
- Outcomes Measurement
- Policy Planning
- Team Composition
- Overall Risk Reduction
- Innovation Opportunities/Advanced Analytics
- Small/Local/Minority Goals and Policies
- Sentiment Analysis
- Benchmarking and Comparison
- Supplier/Customer/Competitor/Partner
- Relationship Mapping
- Business/Department Engagement
- Internal Collaboration
- Inventory/MM Analytics

Sourcing Analytics

- Needs & Requirements
- Market/Commodity
- Spend/Transactions/Suppliers
- Price Benchmarking
- Demand Prediction
- Sourcing Process
- Process Compliance

Are we buying the right things, using the right process, using the right information to get the most value out of our spend?

Procure-to-Pay Analytics

- P2P Process
- Approval Thresholds
- Workflow Automation
- Payment Method & Terms
- Compliance

Are we carrying out the best procure to pay process we can, making it easy to buy the right things, automating the process where we can, and paying our suppliers in the most advantageous way?

Contract & Supplier Management Analytics

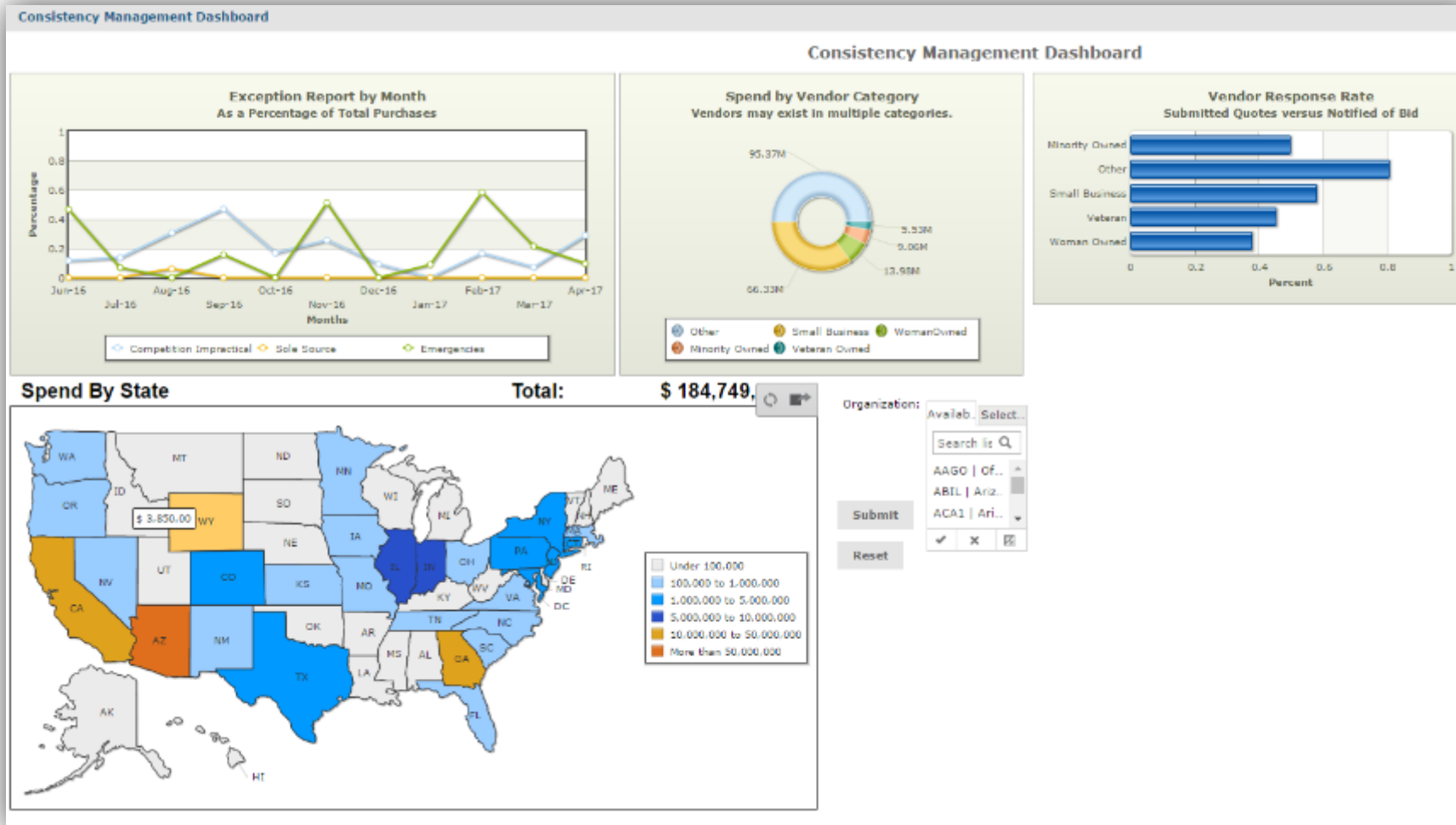
- Price & Volume Discount
- Contract Compliance (internal and supplier)
- Supplier Segmentation
- Inventory Management
- Risk – financial, reputational, service delivery, regulatory

Are we efficiently segmenting and appropriately managing each supplier and contract based on its strategic value to the organization, actively managing risk to our organization from supplier relationships and ensuring we are always getting the best price and terms based on changing market conditions?

Strategic Analysis

- Procurement Activity Planning
- Systems Planning
- Savings & Benefits Analysis
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- Team Composition
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- Supplier/Customer/Competitor/ Partner Relationship Mapping
- Business/Department Engagement
- Internal Collaboration
- Inventory/MM Analytics

Organizational Overview



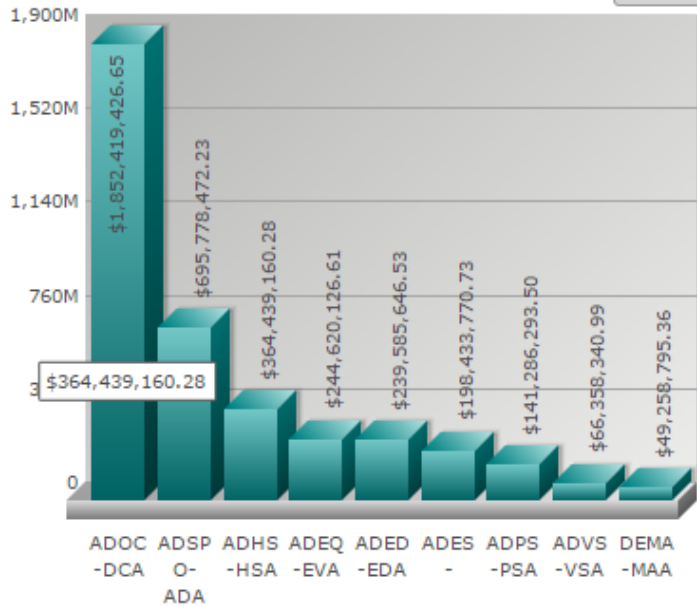
Diversity Analysis

Supplier Diversity Office Dashboard

Supplier Diversity Office Dashboard

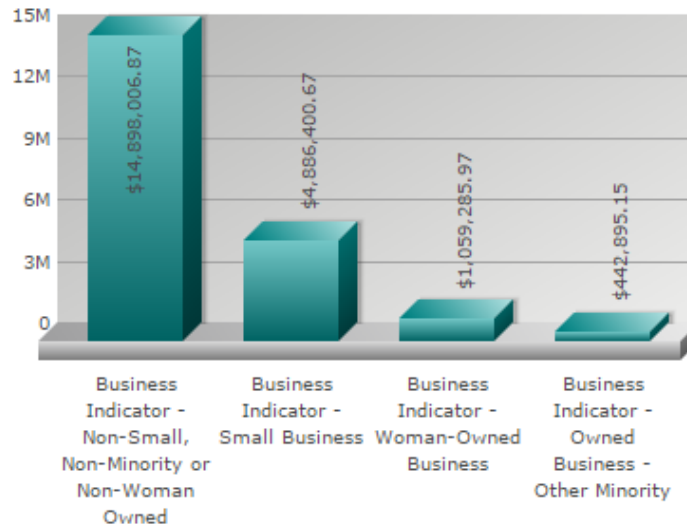
Supplier Diversity Office

Diversity Spend by Org



Spend by Diversity Type

Total spend with all vendors for selected orgs. **\$65,837,659.01**
 Combined spend for all selected categories and responses. **\$21,286,588.66**



Vendor Category

Available: 8 Selected: 1

Search list...

- Business Indicator
- Entity Type
- Veteran-Owned Business

Select All Deselect All Invert

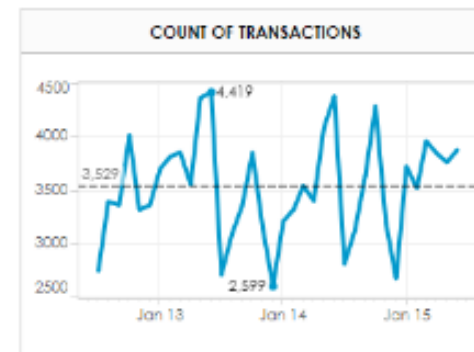
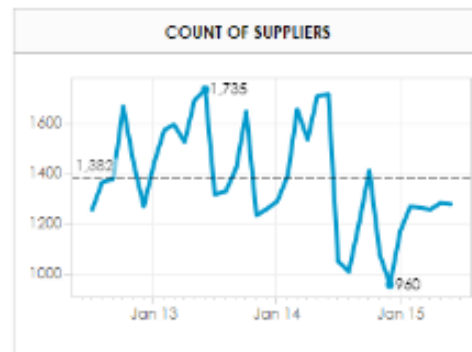
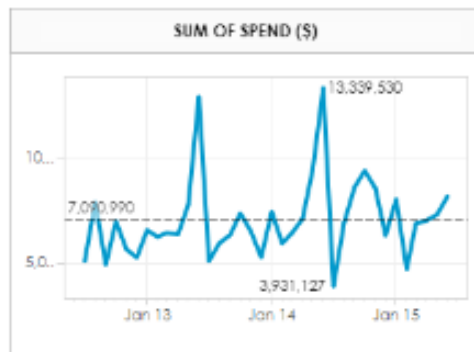
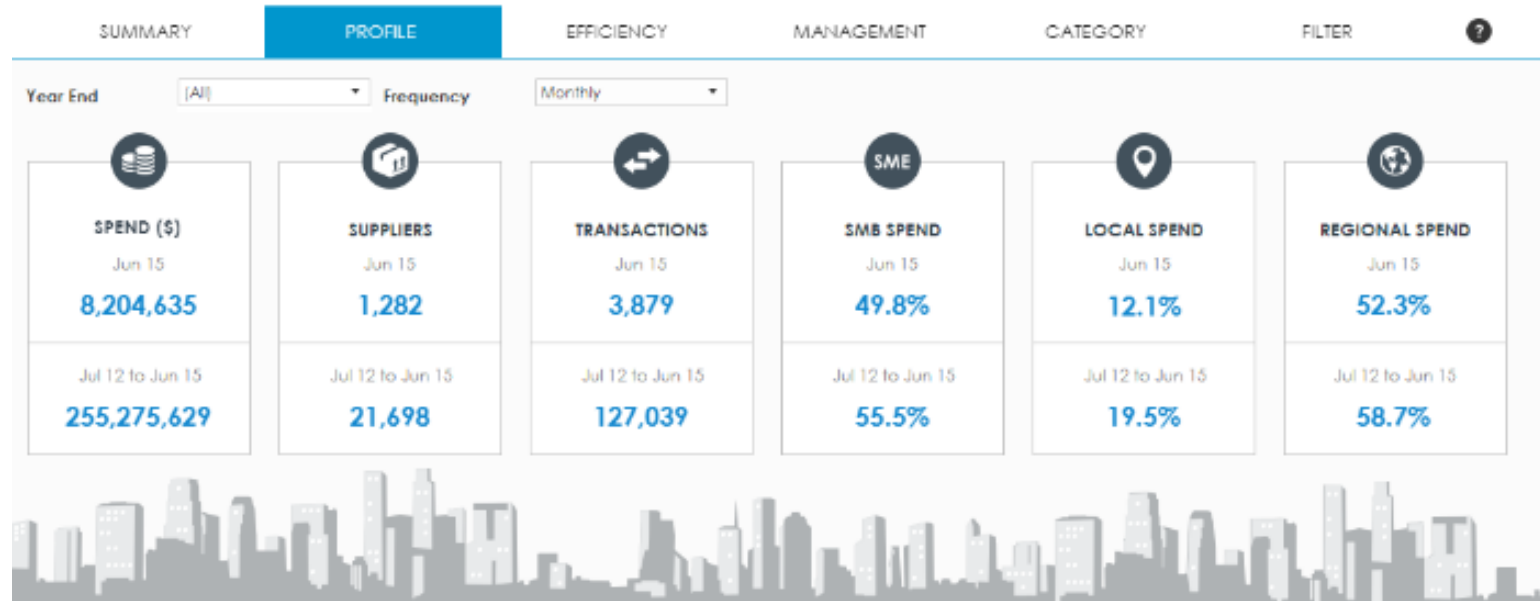
Available: 26 Selected: 4

Search list...

- Business Indicator - Small Business
- Business Indicator - Owned Business - Other Minority
- Business Indicator - Woman-Owned Business

Select All Deselect All Invert

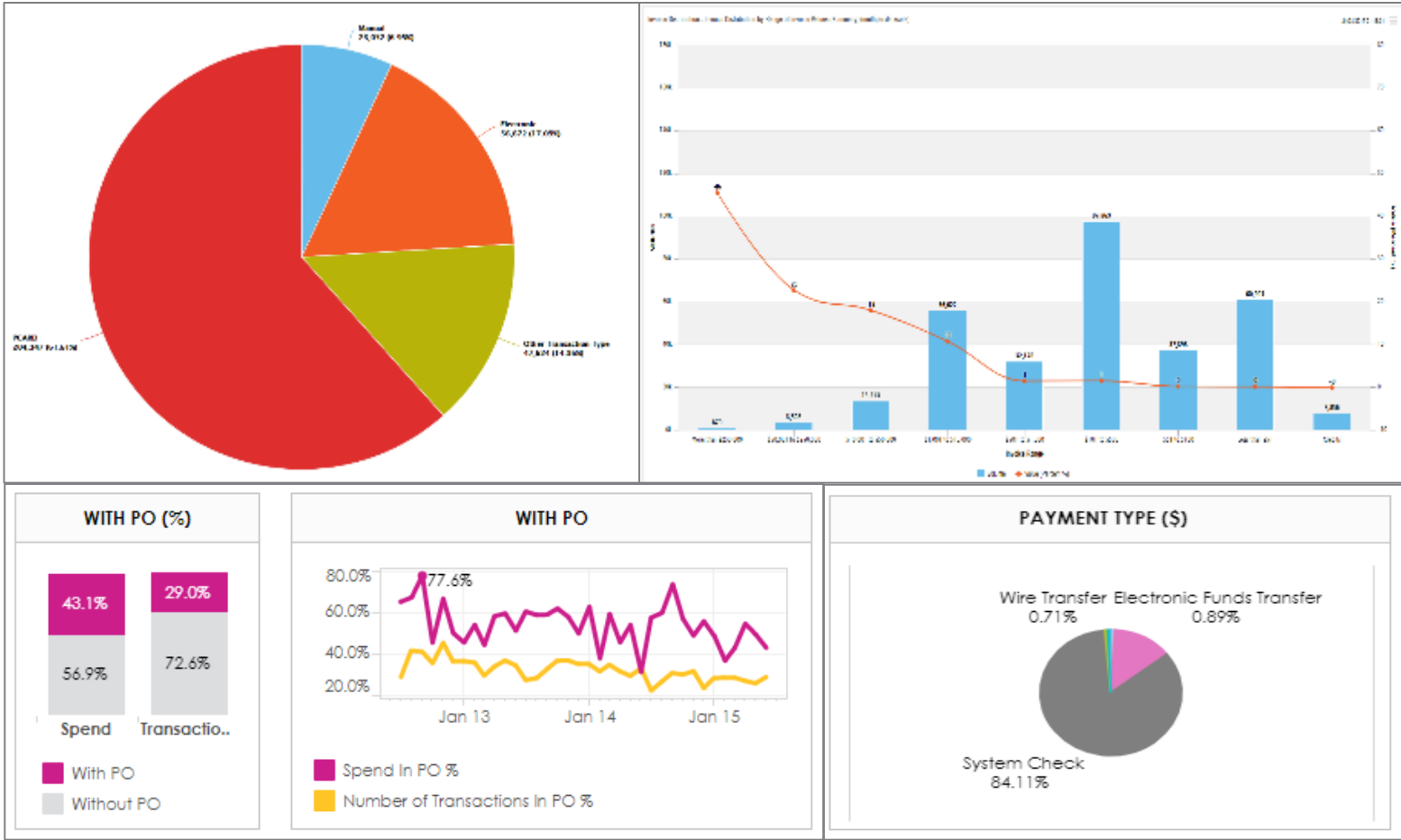
Departmental Engagement



Benchmarking

Business Sector	Benchmark (\$)	Institution (\$)	Delta (\$)	Delta %
Construction	1,692.11	1,647.80	-44.31	-2.62
Education	588.60	380.06	-208.54	-35.43
Information Technology	468.78	486.99	18.21	3.88
Facilities Management	314.18	558.80	244.62	77.86
Utilities & Energy	247.46	286.83	39.37	15.91
Food, Beverage & Catering	178.15	12.29	-165.86	-93.10
Marketing & Media	154.21	208.58	54.37	35.26
Financial Services	118.52	77.44	-41.08	-34.66
Waste & Environmental Ser..	110.19	50.00	-60.19	-54.62
Vehicles	105.89	26.23	-79.66	-75.23
Travel & Accommodation	101.28	124.06	22.78	22.49
Business Support Services	89.81	88.45	-1.35	-1.51
Arts, Sport & Recreation	86.09	62.36	-23.74	-27.57
Manufacturing & Machinery	67.94	21.64	-46.30	-68.15
Professional Services	66.97	90.36	23.38	34.92
Laboratory	59.49	82.16	22.67	38.11
Office Supplies	51.37	40.85	-10.52	-20.48
Retail & Wholesale	49.41	32.18	-17.23	-34.88
Healthcare	49.13	72.77	23.65	48.14
Security Equipment & Servi..	39.73	44.20	4.47	11.25
Transportation	36.02	85.75	49.73	138.08
Human Resources	34.01	44.09	10.08	29.63
Public Sector Bodies	29.10	3.54	-25.57	-87.84
Charitable & Religious Activ..	25.04	0.99	-24.05	-96.04
Legal	13.14	6.07	-7.06	-53.76
Animals & Farming	11.43	4.06	-7.37	-64.51
Social Care & Services	9.47	35.44	25.97	274.22
Other Goods & Services	7.64	8.10	0.47	6.09
Clothing	6.59	8.31	1.71	26.01
Unclassified	112.17	103.51	-8.67	-7.73

Policy and System Planning



Budget vs Actual Analysis

Which budgets are wildly different than reality?
Which departments are likely to exceed their budget in a given category this year?

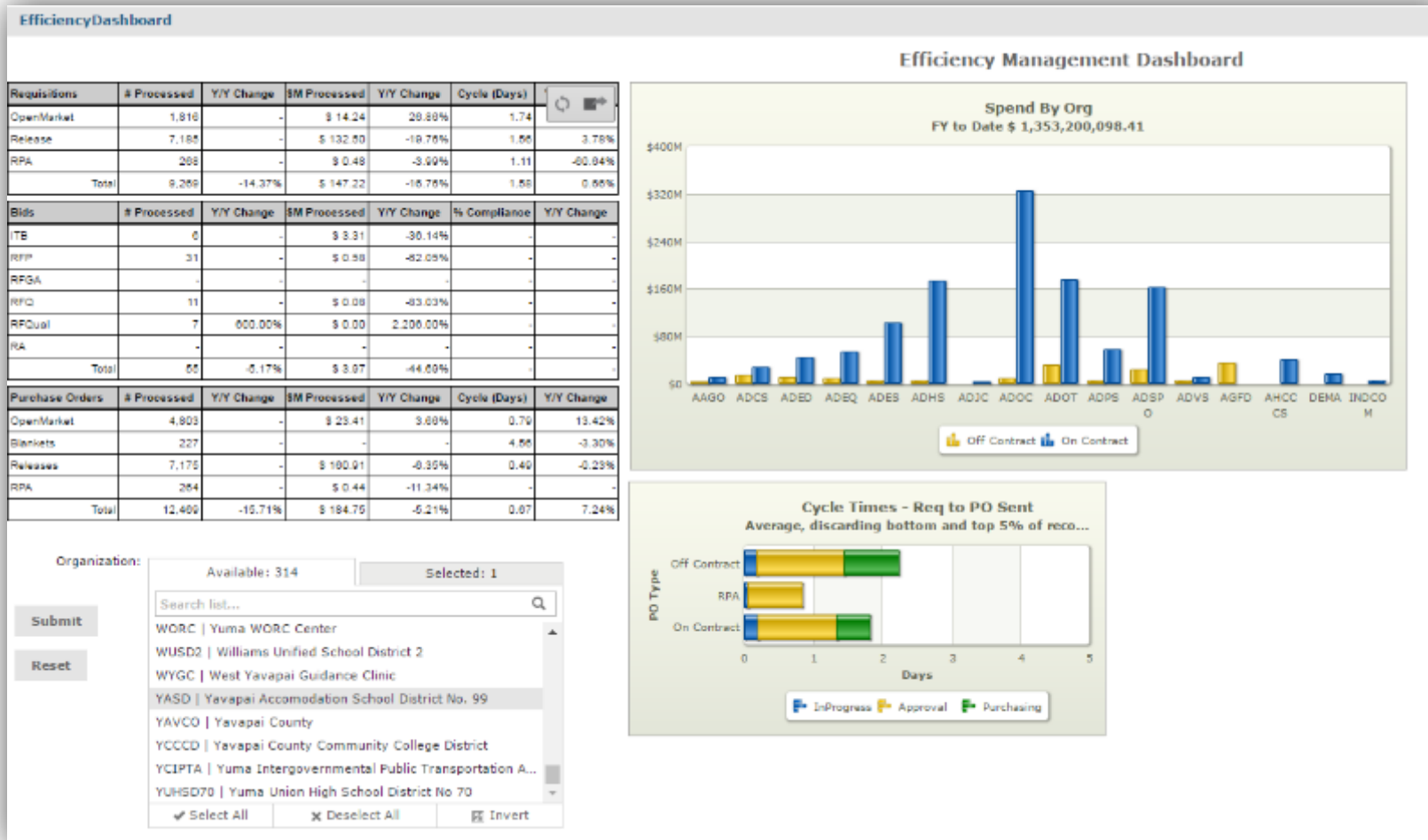


Sourcing Analytics

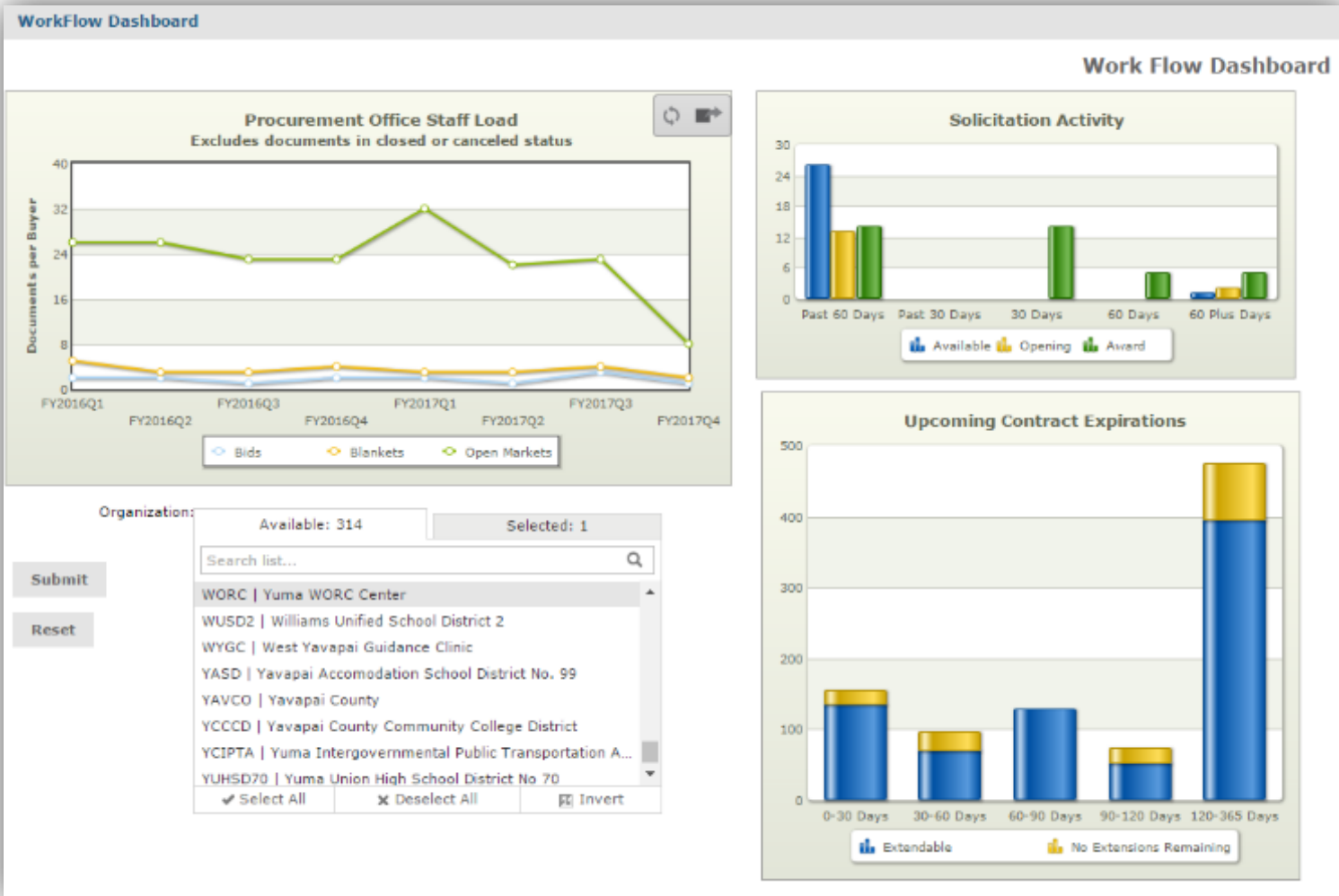
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Sourcing Activity Analysis



Sourcing Activity Analysis



Bid Protest Avoidance

Can we correlate words, people, companies, timing, method, type of good or service, historic transactions, or other causal factors to identify bids likely to result in protest?



Demand Prediction



Market Analysis

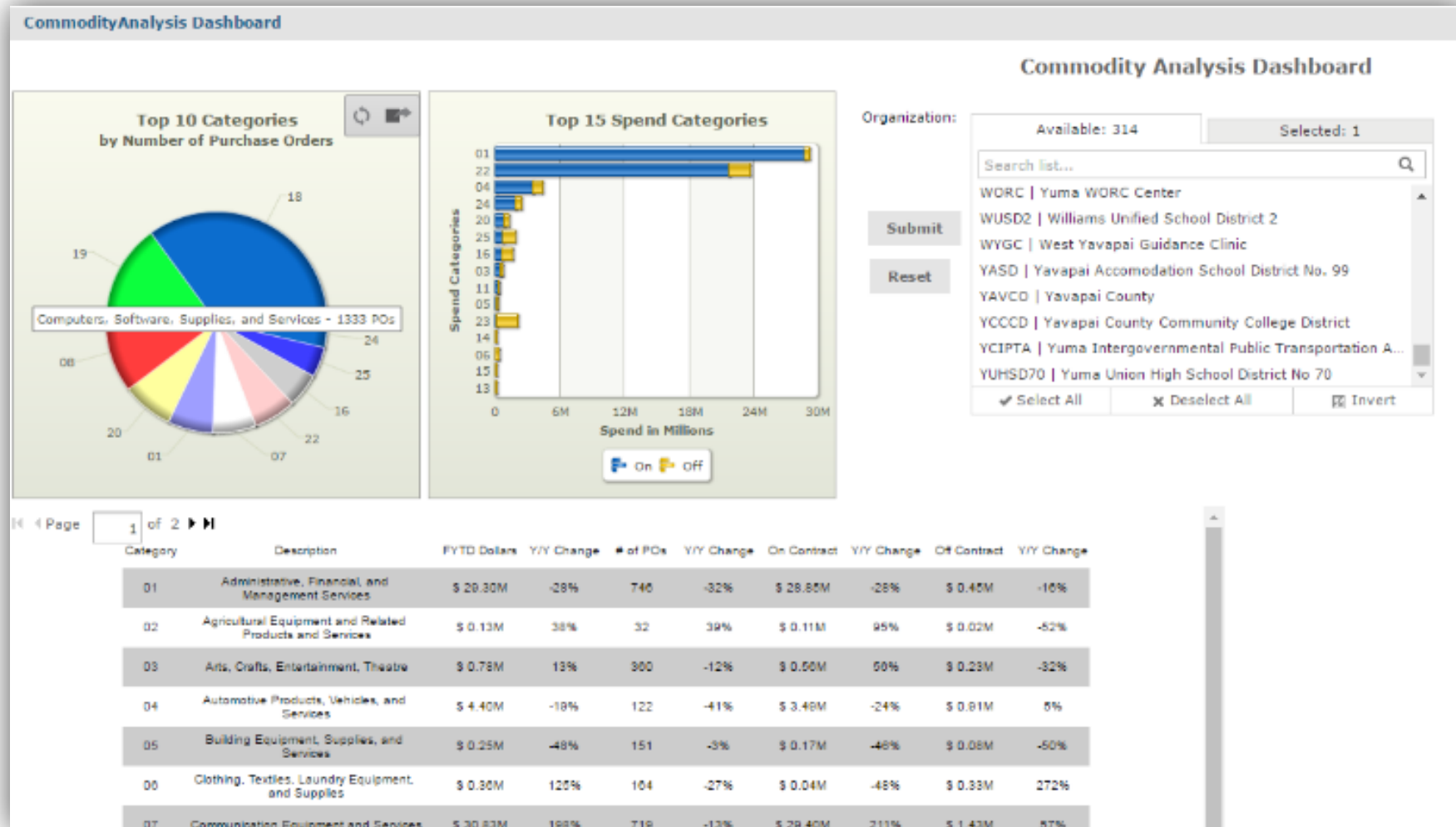


Procure-to-Pay Analytics

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- Approval Thresholds
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P2P Analytics

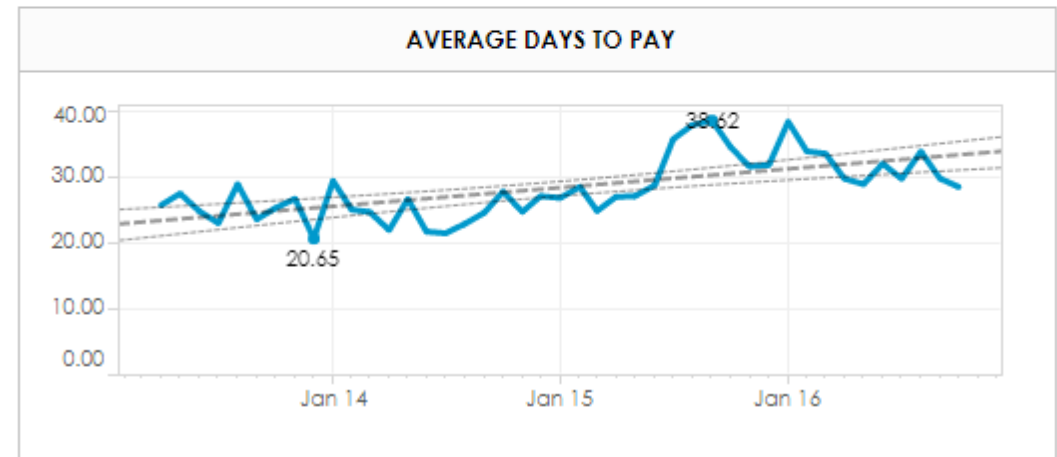
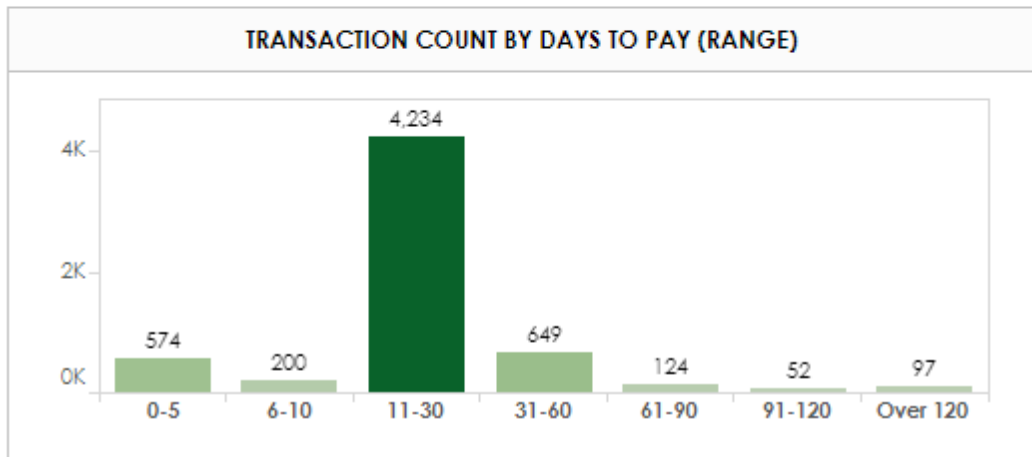
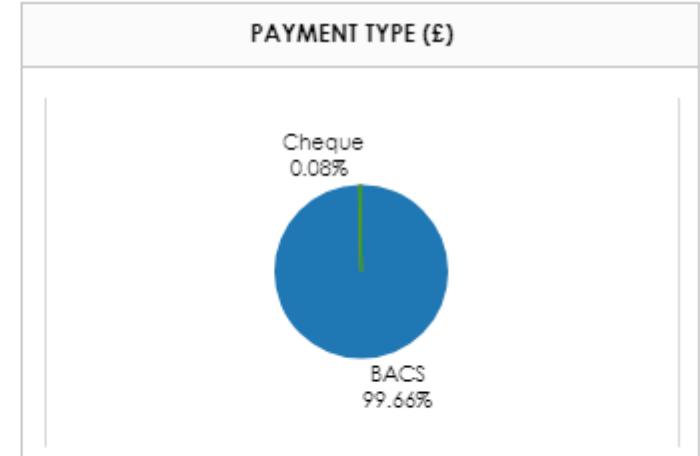
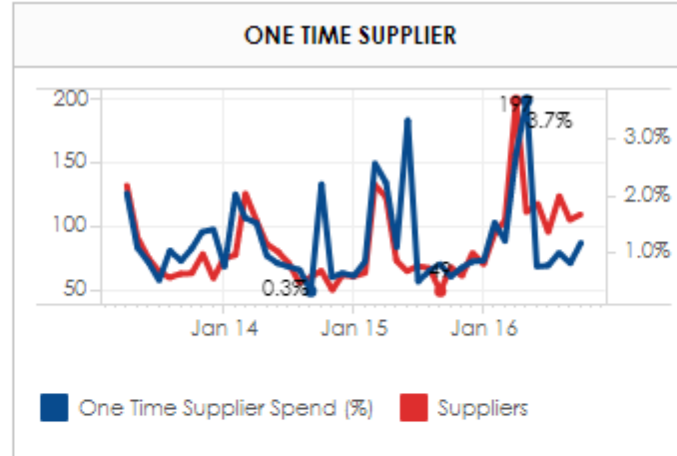
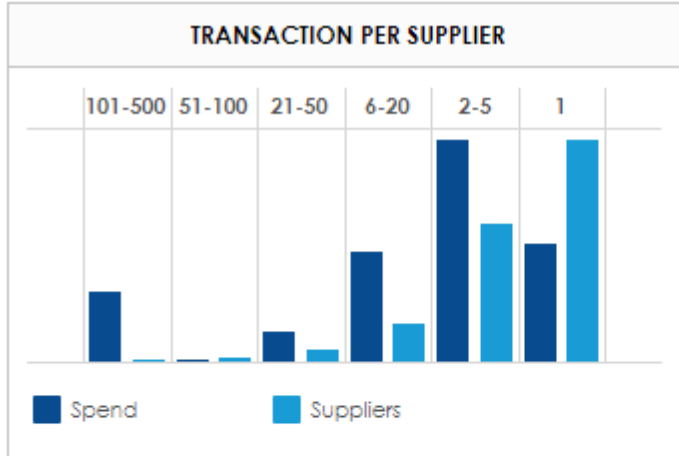


P2P Process Efficiency

Rather than a set \$500 transaction limit before procurement review with multiple approvals kicks in, how can we use machine learning to route POs in the most efficient manner for approval in the P2P process?

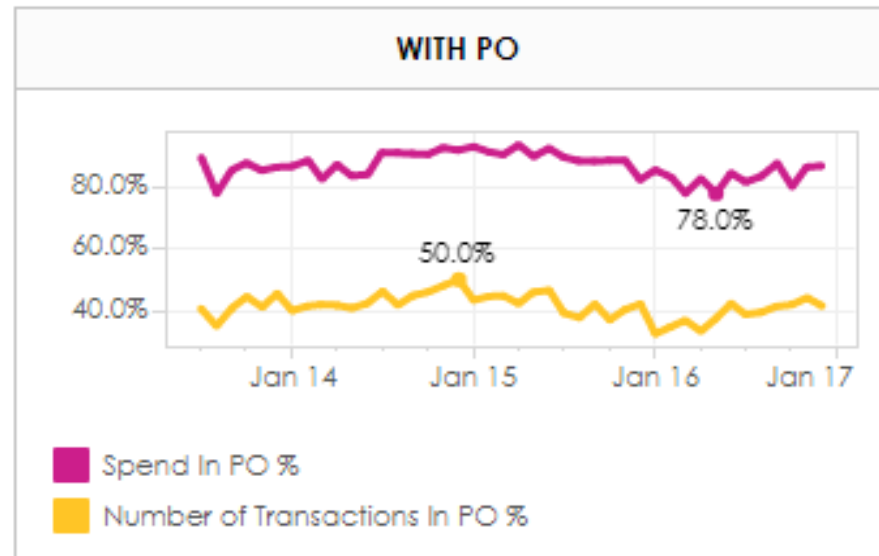
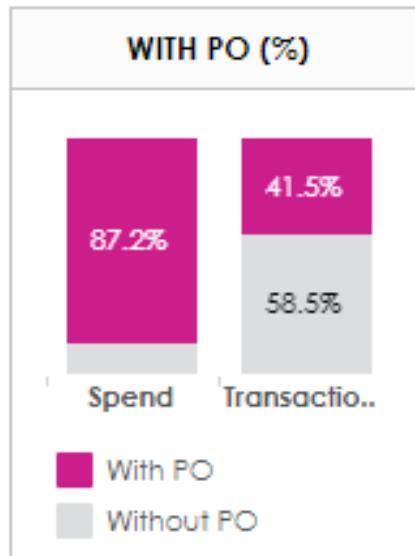
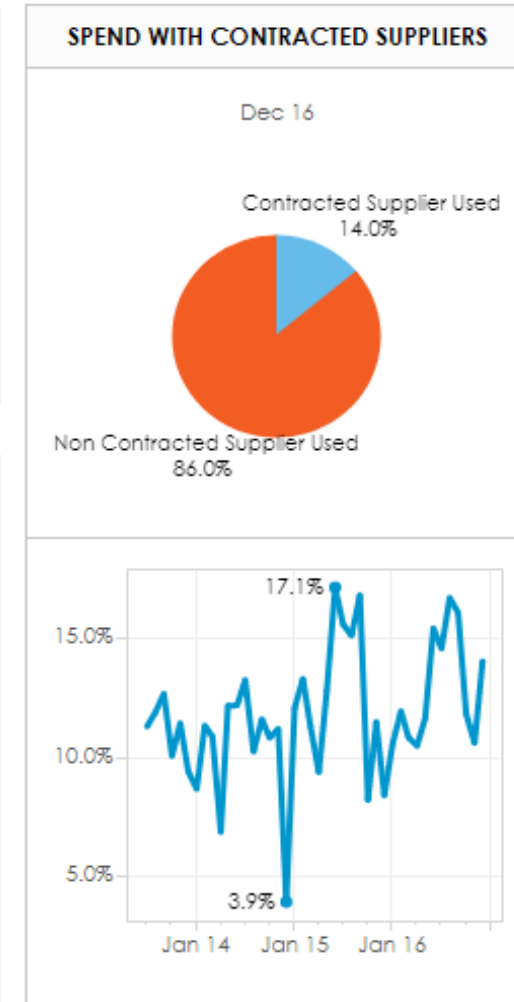


Payment Method & Terms



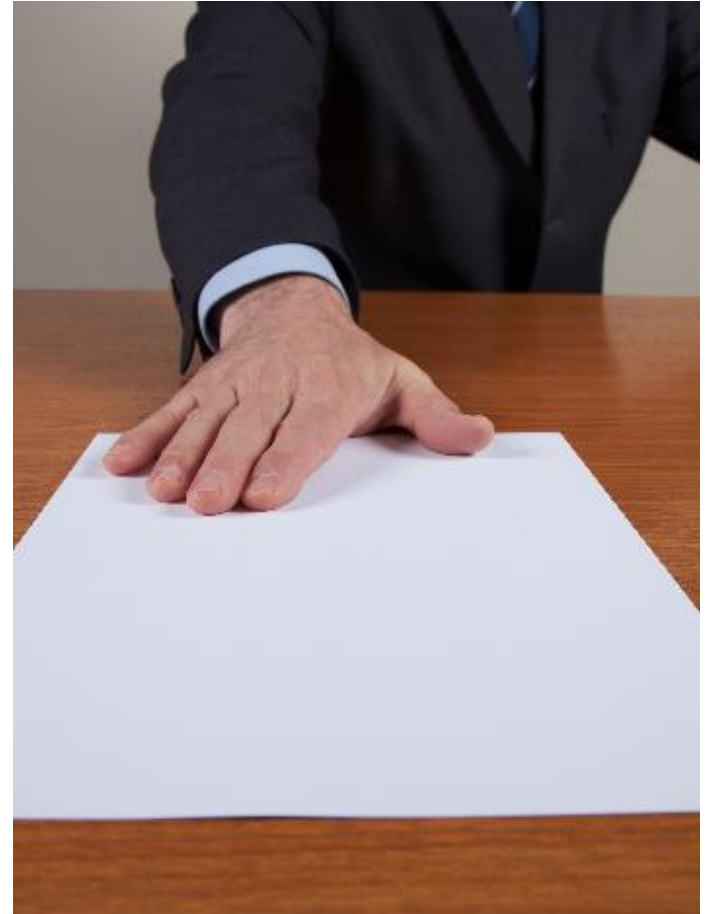
Internal Compliance Analysis

PURCHASE ORDER (\$)				
Dec 16				
PO Status	Spend	%	Transactions	%
With PO	41,084,999	87.2%	7,486	41.5%
Without PO	6,046,154	12.8%	10,537	58.5%



P2P & Compliance Support

How can we embed natural language processing and AI into the procurement process to make the buying experience faster for users, but ensure that the right supplier is chosen and the right price paid?



Contract & Supplier Management Analytics

- Price & Volume Discount
- Contract Compliance (internal and supplier)
- Supplier Segmentation
- Inventory Management
- Risk – financial, reputational, service delivery, regulatory

Are we efficiently segmenting and appropriately managing each supplier and contract based on its strategic value to the organization, actively managing risk to our organization from supplier relationships and ensuring we are always getting the best price and terms based on changing market conditions?

Contract Analysis

ContractManagement Dashboard
Contract Management Dashboard

Contract Portfolio Scorecard
 Top Contracts for Commodity Category 01: Administrative, Financial, and Management Services

Contract Number	Description	Vendor	Contract Type	Spend to Date	Expiration Date	Days Since Last Price Updates	Coop Spend to Date	Vendor Performance
ADSP012-031581	Information Technology Professional Services	Guidesoft Inc. DBA Knowledge Services	SW	\$ 235,988,312.00	10/15/2017	888		
ADSP013-039228	Master Lease 3rd Party Financing	BANC OF AMERICA PUBLIC CAPITAL CORP	SW	\$ 27,504,898.00	01/31/2018	1814		
ADSP016-111641	Instant ticket product management and distribution AZ Lottery	IGT Global Solutions Corporation	SA	\$ 10,273,994.00	01/16/2020	809		
ADSP013-040689	Furniture, Products and Services	GOODMANS INC	SW	\$ 9,115,921.00	02/28/2018	475		
ADSP016-067933	Draw Games Services	SCIENTIFIC GAMES INC	SA	\$ 6,520,829.00	08/31/2028	705		

[View More...](#)

Select Category:

Organization:

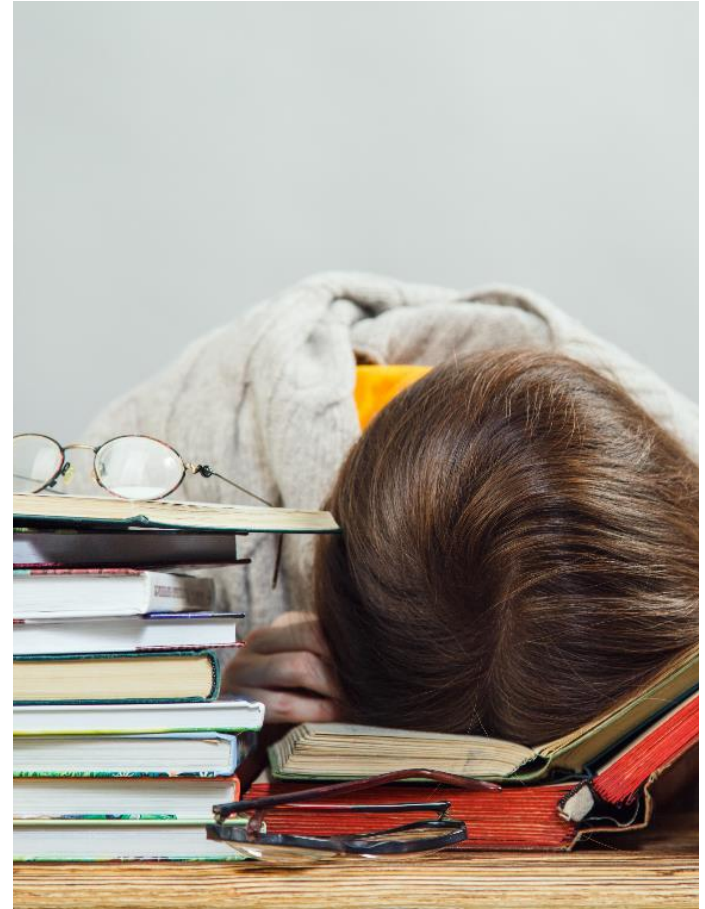
- ABIL | Ariz..
- ACA1 | Ari...
- ACHIEVEH...

Top Contract Leakage Possibilities

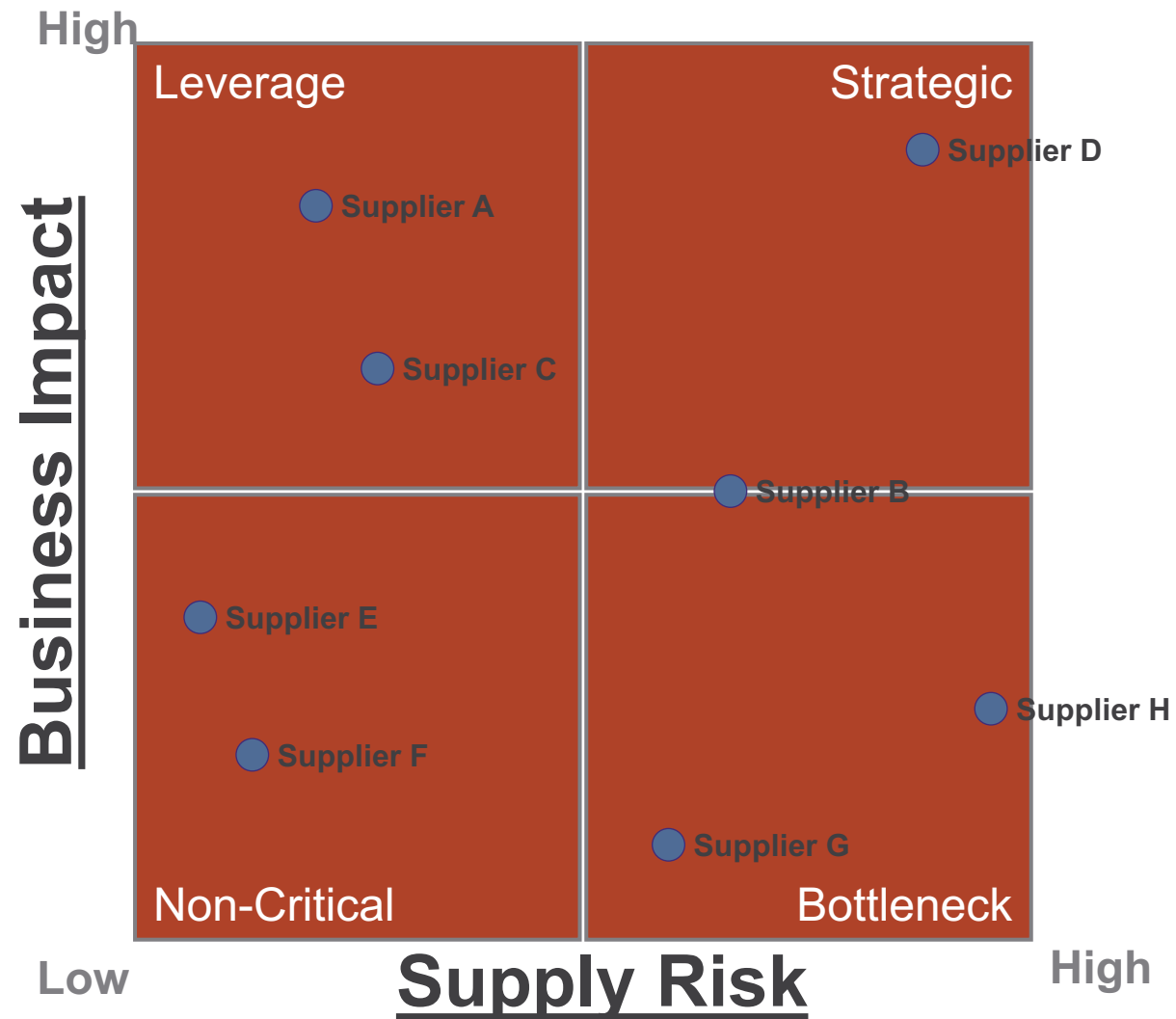
Contract Number	Total Spend	Leakage Amount
946	\$ 2,612,693.52	\$ 341,200.34
953	\$ 25,000.00	\$ 2,922.52
952	\$ 1,346,767.30	\$ 74,106.91
958	\$ 24,861,985.46	\$ 31,583.77

Unstructured Contract Analytics

Extract data out of unstructured contractual documents so that we can get alerts that an end data is approaching, that a discount threshold has been met or where payment terms are out of sync with reality.



Supplier Segmentation

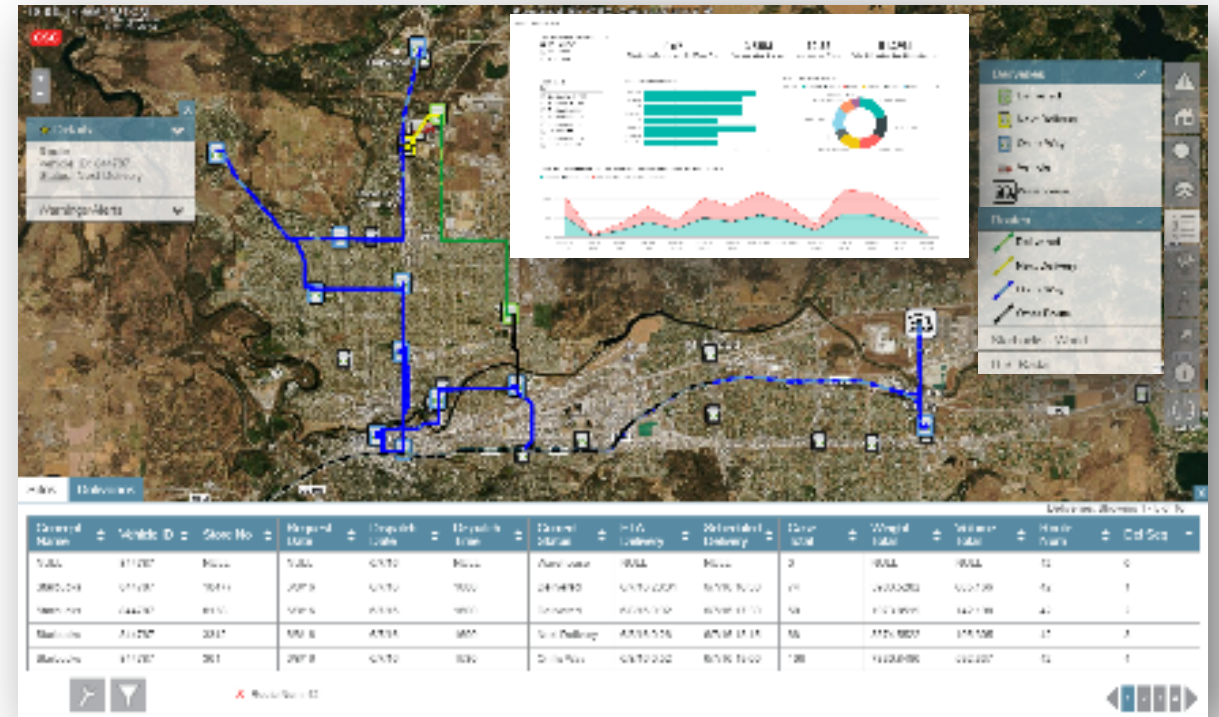


Risk Analysis

Supplier Name	Financial	Reputational	Service Disruption	Composite
Supplier A	3	6	1	10
Supplier B	7	6	4	17
Supplier C	4	8	7	19
Supplier D	5	2	3	10
Supplier E	6	3	9	18
Supplier F	5	4	7	16
Supplier G	7	1	4	12
Supplier H	9	6	3	18
Supplier I	5	1	3	9
Supplier J	5	7	2	14
Supplier K	2	7	5	14
Supplier L	8	2	1	11

Inventory Management

How can we use our materials management system, inventory tracking and sensors to make sure that we always have parts in stock at the right locations or that we dispatch automatically the day before?



Future of Procurement Analytics

Descriptive Analytics

Diagnostic Analytics

Predictive Analytics

Prescriptive Analytics

Robotics

Machine Learning



Takeaways

1. Small data is changing the procurement function today, but there are still lots of unexploited opportunities.
2. While most procurement analytics projects are small data today, that doesn't mean they are easy.
3. Like other functional areas of government, big data, analytics, robotics & machine learning will profoundly change procurement.

