

Putting Data Analytics to Work at Your Council

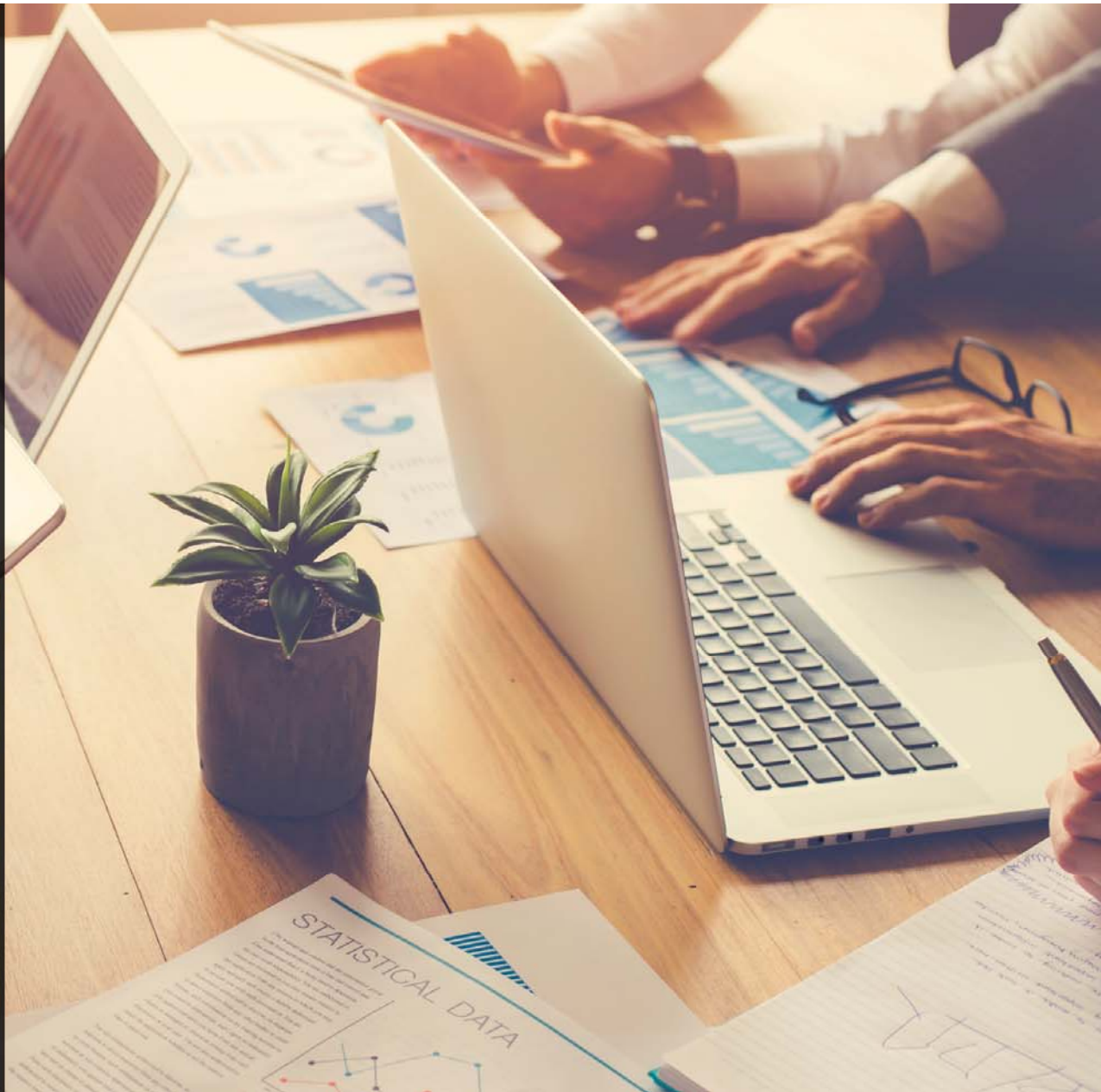
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DECISION INC.

Overview



Overview



1. Addressing the challenge and opportunity of embedding data analytics into your audit program
2. Making the most of organizational data available:
 - Reporting the right data sets
 - Greater level of assurance
 - Strategic decision making
3. Engaging the business in using data analytics beyond the internal audit function (culture of real-time information)
4. Delivering audit findings with substance – using numbers to tell the story

Challenges and opportunity



Data analytics maturity

Basic	<ul style="list-style-type: none">• Ad hoc analytics with limited repeatable solutions• Basic tools (e.g. spreadsheets etc.)
Intermediate	<ul style="list-style-type: none">• Some standardization of methods• Some repeatable analytics
Advanced	<ul style="list-style-type: none">• Standard methods and training• Advanced tools and analytical techniques

Opportunities

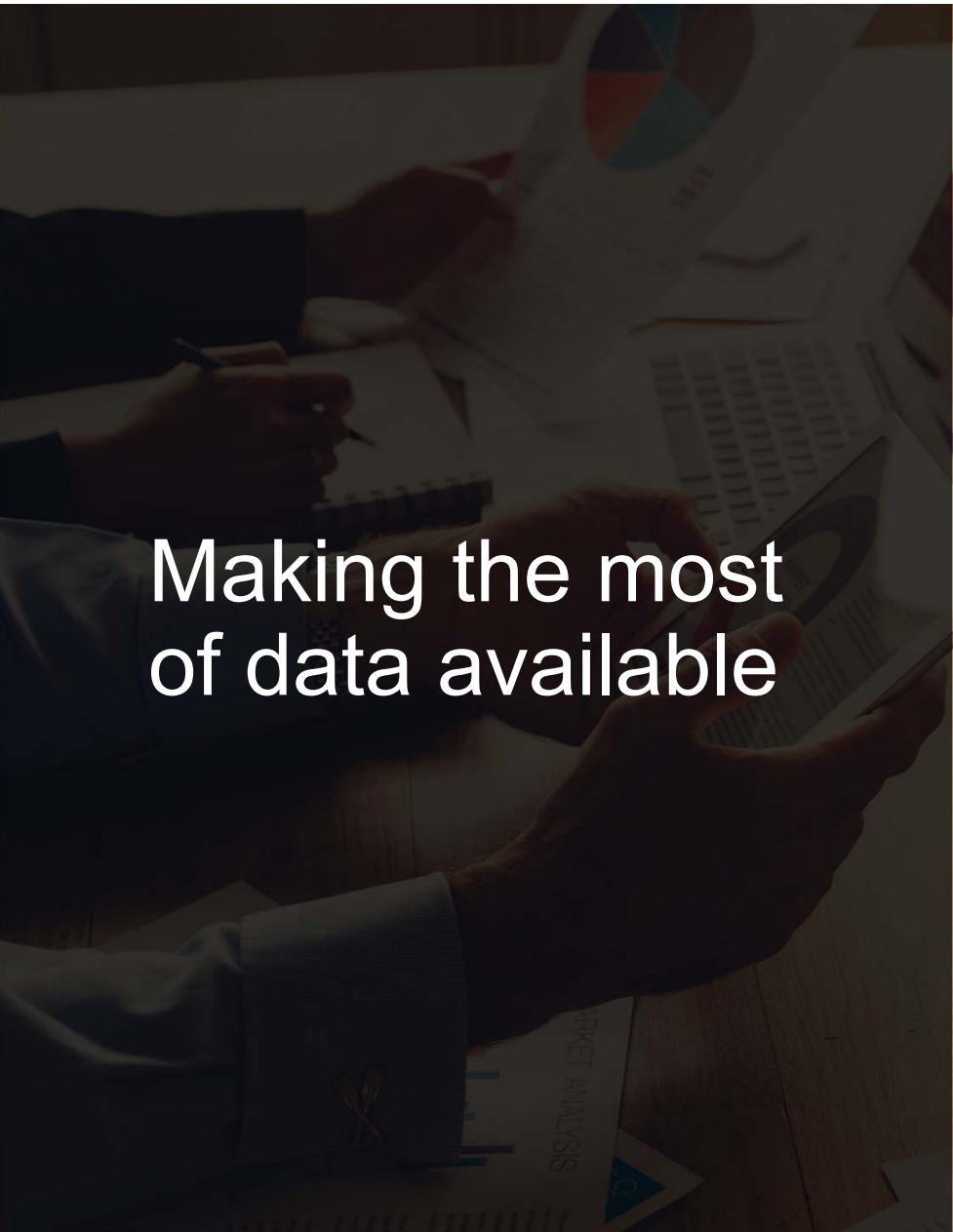


100% coverage of data population	Efficient auditing
Continuous audit coverage	Improved audit quality
Replacing sampling techniques	Better fraud detection capabilities
Early warnings or alerts to management	Customer service - delivering on ARIC needs/wants
Identify outliers that were previously undetected	Better understanding of subject matter and Council
Increase effectiveness of reporting (data visualization)	"High impact" reporting

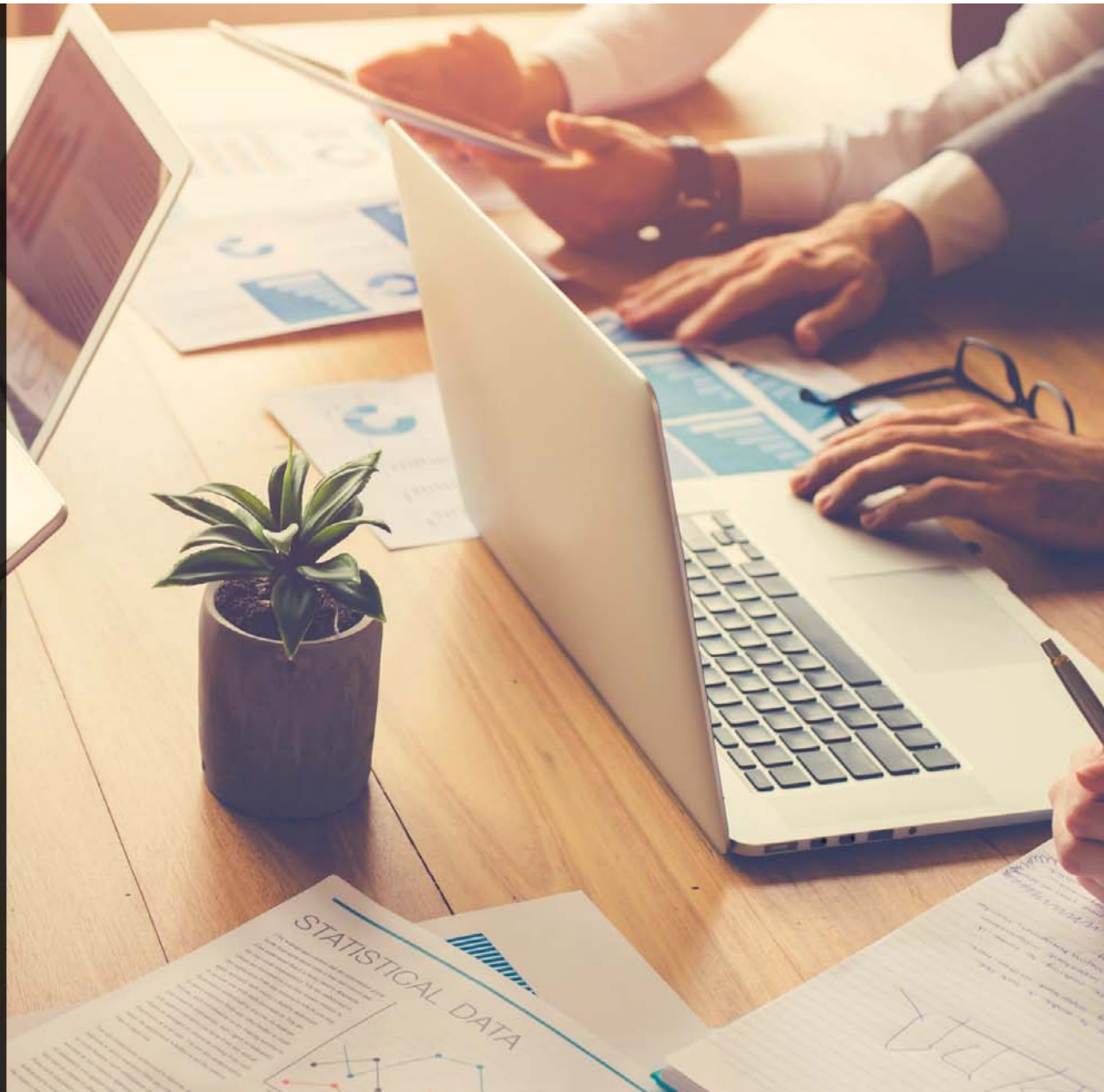
Challenges



Inadequate analytical know-how	Council systems not mature enough to use data analytics
Inadequate technical know-how	Data quality
Data privacy concerns	Technical problems
Cost	Too much data, where to start?
Lack of compelling business case (cost-benefit)	Lack of support (executive, ARIC, others)
Inability to integrate data analytics into decision-making	Data analysis limitations
Combining multiple data sets	Other organizational priorities



Making the most
of data available



What data is available?



CIVICA
technology**one**

Financial systems (general ledger, payroll, rates, A/R, A/P)

Asset management systems and GIS

IT system logs

Point of sale systems for retail

Integrated Planning and Reporting (IP&R) framework

Security systems (swipe cards)

Almost every business unit's operating system (childcare, waste collection, planning approvals, customer service)

Big data - census data, other publicly available ABS data

Questions to ask about data



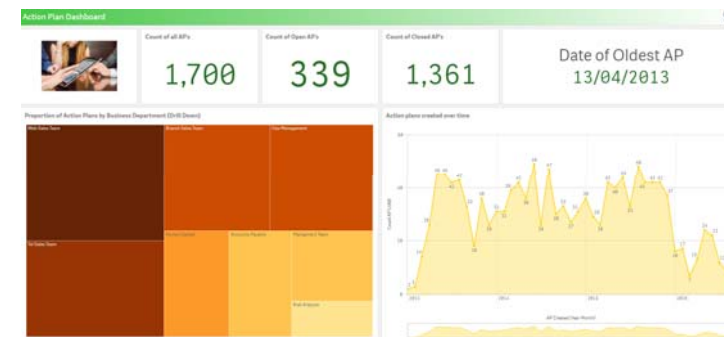
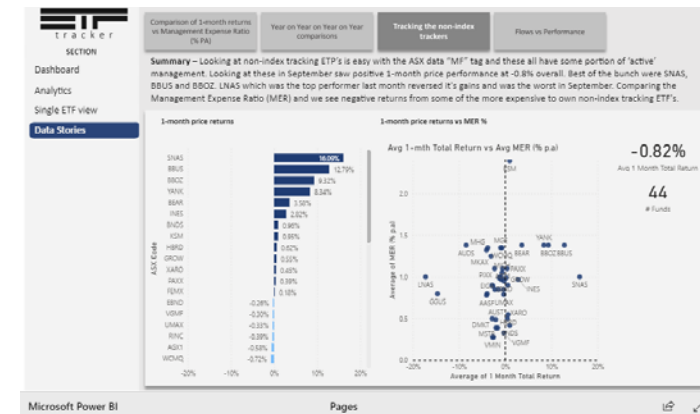
1. Data quality – consider internal controls (data entry and review), previous audits
2. Data tidy up – what data do I want vs. what is actually in the data set
3. Extractable vs. manual – how to start automating analysis of manual processes
4. Outlier analysis – how we can set up our dashboards to show us insights quickly

Example: table vs graphical

Purchase ID	Last name	First name	Birthday	Country	Date of purchase	Amount of purchase
1	Davidson	Michael	04/03/1986	United States	10/12/2016	37
2	Vito	Jim	09/01/1994	United Kingdom	02/02/2016	85
3	Johnson	Tom	23/08/1972	France	02/11/2016	83
4	Lewis	Peter	18/10/1979	Germany	22/11/2016	27
5	Koenig	Edward	13/05/1983	Argentina	26/03/2015	43
6	Preston	Jack	16/06/1991	United States	06/11/2016	77
7	Smith	David	11/03/1965	Canada	15/11/2016	23
8	Brown	Luis	03/09/1997	Australia	03/07/2015	74
9	Miller	Thomas	07/01/1980	Germany	07/11/2016	13
10	Williams	Bill	26/07/1960	United States	20/11/2015	80
11	Gemini	Alexia	12/09/1995	Canada	11/03/2017	35
12	Bond	James	25/02/1975	United Kingdom	12/08/2017	40
13	Burgle	Patricia	01/12/1990	United States	18/01/2015	55

Continent	Country	City	Hotel	Stars	Date	End date	Price
Europe	Portugal	Lisbon	Erignia Hotel & Spa	4	09.06.2017	19.06.2017	1580
South America	Ecuador	Quito	Curiosity Hotel	2	09.06.2017	19.06.2017	330
Europe	Greece	Thessaloniki	White Coast Resort & Spa	5	10.06.2017	20.06.2017	1400
Asia	United Arab Emirates	Abu Dhabi	Chateau Hotel	2	11.06.2017	21.06.2017	350
Europe	Netherlands	Amsterdam	Noble Obelisk Hotel	5	12.06.2017	23.06.2017	1050
North America	Costa Rica	Jaramicho	Summer Isle Hotel	2	26.06.2017	06.07.2017	310
North America	Jamaica	Kingston	Grandiose Renaissance Resort	3	09.07.2017	19.07.2017	620
Australia	Papua New Guinea	Laja	Crown Beaton Hotel	5	11.07.2017	21.07.2017	1400
Australia	Australia	Melbourne	Comfort Hotel & Spa	2	13.07.2017	23.07.2017	300
Australia	Fiji	Suva	Crescent Resort	3	14.07.2017	24.07.2017	640
Africa	Tunisia	Sousse	Rose Jungle Resort & Spa	4	15.07.2017	25.07.2017	960
Asia	Maldives	Magoodhoo	Emerald Oyster Resort	3	17.07.2017	27.07.2017	720
Asia	Philippines	Cagayan de Oro	Quiet Dawn Hotel	2	19.07.2017	29.07.2017	360
North America	Barbados	Bridgetown	Cinnamon Hotel & Spa	4	25.07.2017	04.08.2017	980
South America	Argentina	Buenos Aires	Revelation Resort	4	26.07.2017	05.08.2017	1020
Asia	Qatar	Doha	Excursion Resort	5	27.07.2017	06.08.2017	1400
Asia	Philippines	Davao	Pinnacle Hotel	4	29.07.2017	08.08.2017	1100
North America	Mexico	Mexico City	Parallel Tower Resort	2	30.07.2017	09.08.2017	290
Africa	Sierra Leone	Freetown	Royal Tide Resort	2	02.08.2017	12.08.2017	250
North America	Dominican Republic	Santo Domingo	Elite Ocean Resort	2	02.08.2017	12.08.2017	270
Europe	Italy	Florence	Mirror Resort	4	06.08.2017	16.08.2017	1100
South America	Venezuela	Maracaibo	Aquamarine Pier Hotel	1	06.08.2017	16.08.2017	350
North America	Dominican Republic	Punta Cana	Obsidian Estate Hotel	3	07.08.2017	17.08.2017	540
Europe	Greece	Chania	Iceberg Hotel	5	11.08.2017	21.08.2017	1300
North America	Jamaica	Kingston	Kingston Shree Hotel	4	17.08.2017	27.08.2017	1220

VERSUS



Reporting techniques



1. Traffic lights and dashboarding
2. Data visualization – a picture is worth a thousand words
3. Data first, then description (if necessary)
4. Keep it short - tell the story
5. Set the scene

Data analytics options



Bespoke

- Flexible
- Greater level of data skills required
- Lower cost (to begin)
- More maintenance required
- E.g. Power BI, Qlik, Tableau

System powered

- Recent improvements
- Less data scientist skills required
- Less flexible
- Cost-benefit analysis required
- E.g. Mindbridge

Real-time
information

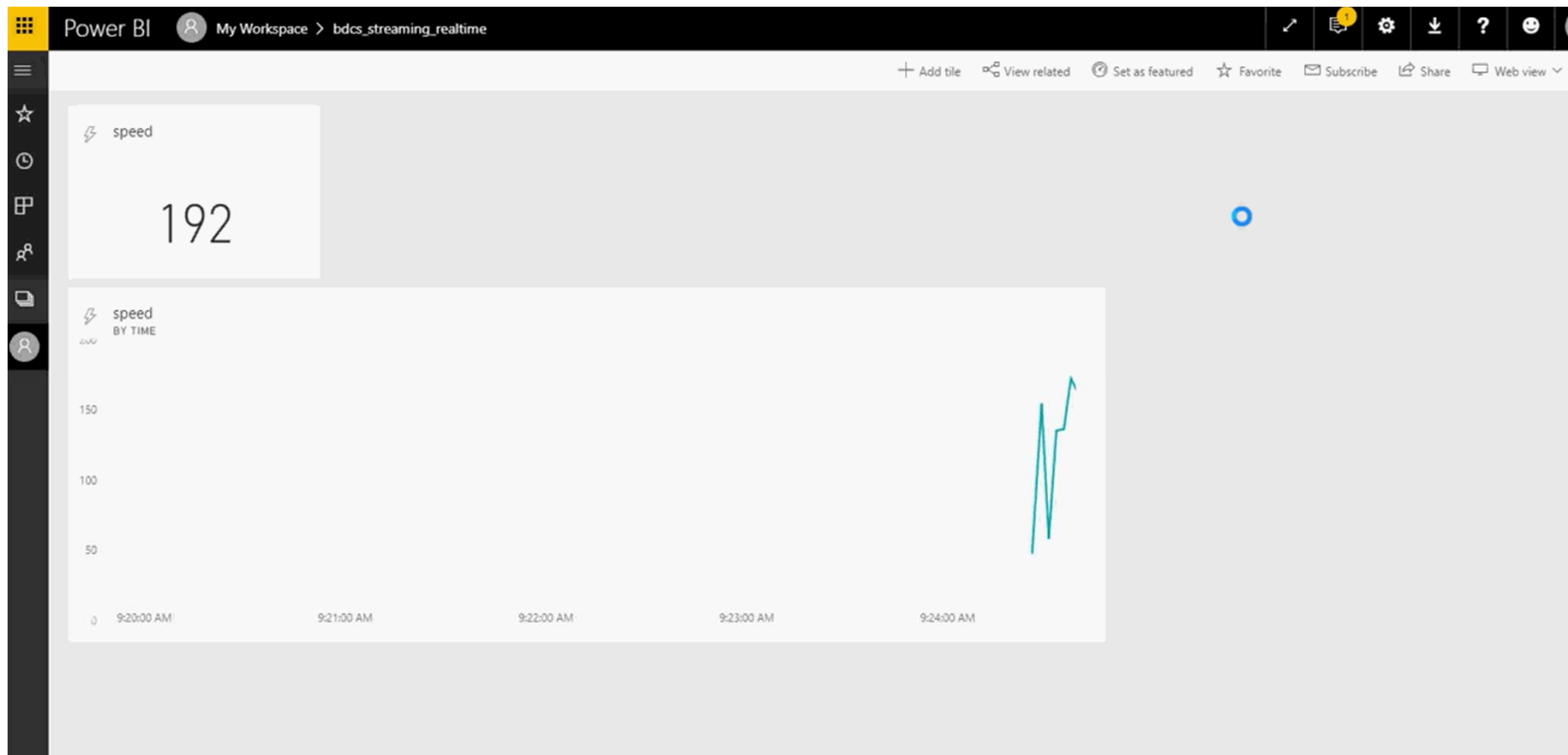


Real-time or Live

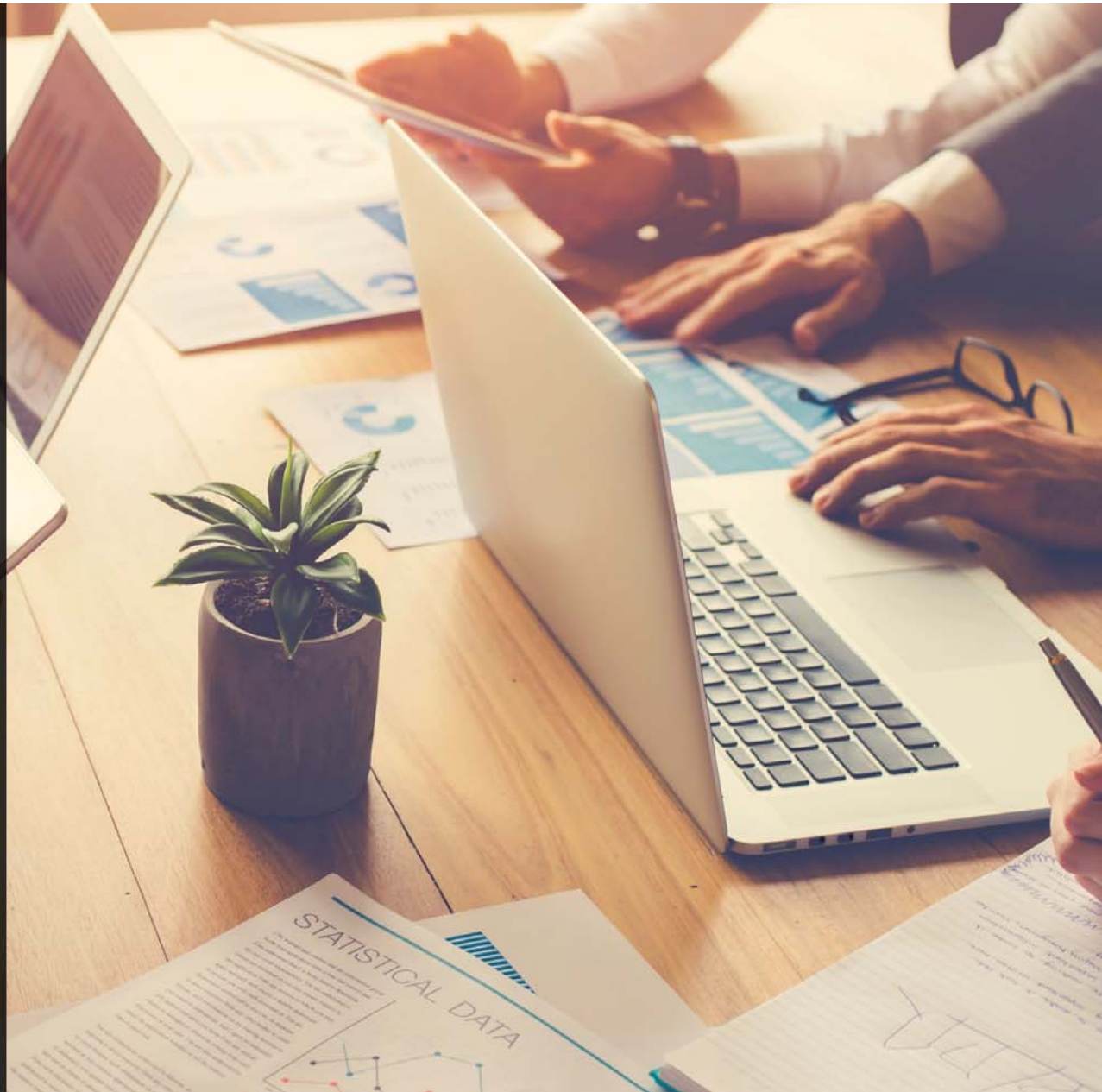


- Typically, real-time in Data Analytics world means streaming data LIVE
- In some cases, improving from getting old data (hours old, days old) to something faster is good enough
- Best examples are being able to see snapshots of data across all of your systems in one spot – e.g. Management Dashboard
- Single app dashboard vs Multi-App
- Example

Real-time in Power BI

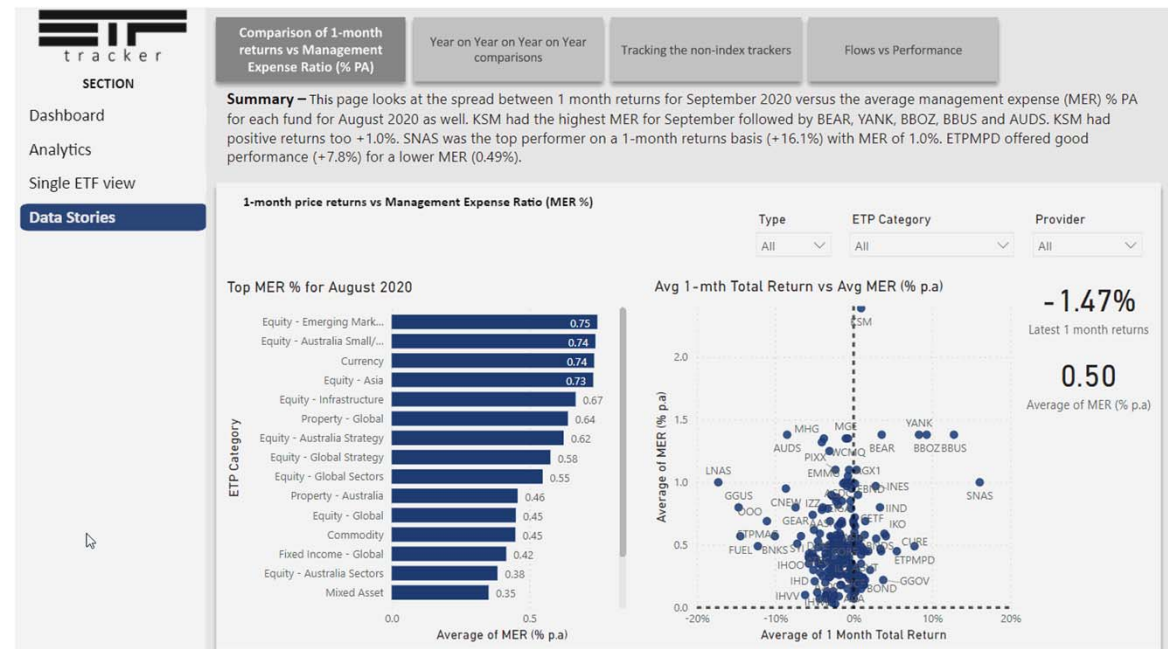


Telling the story

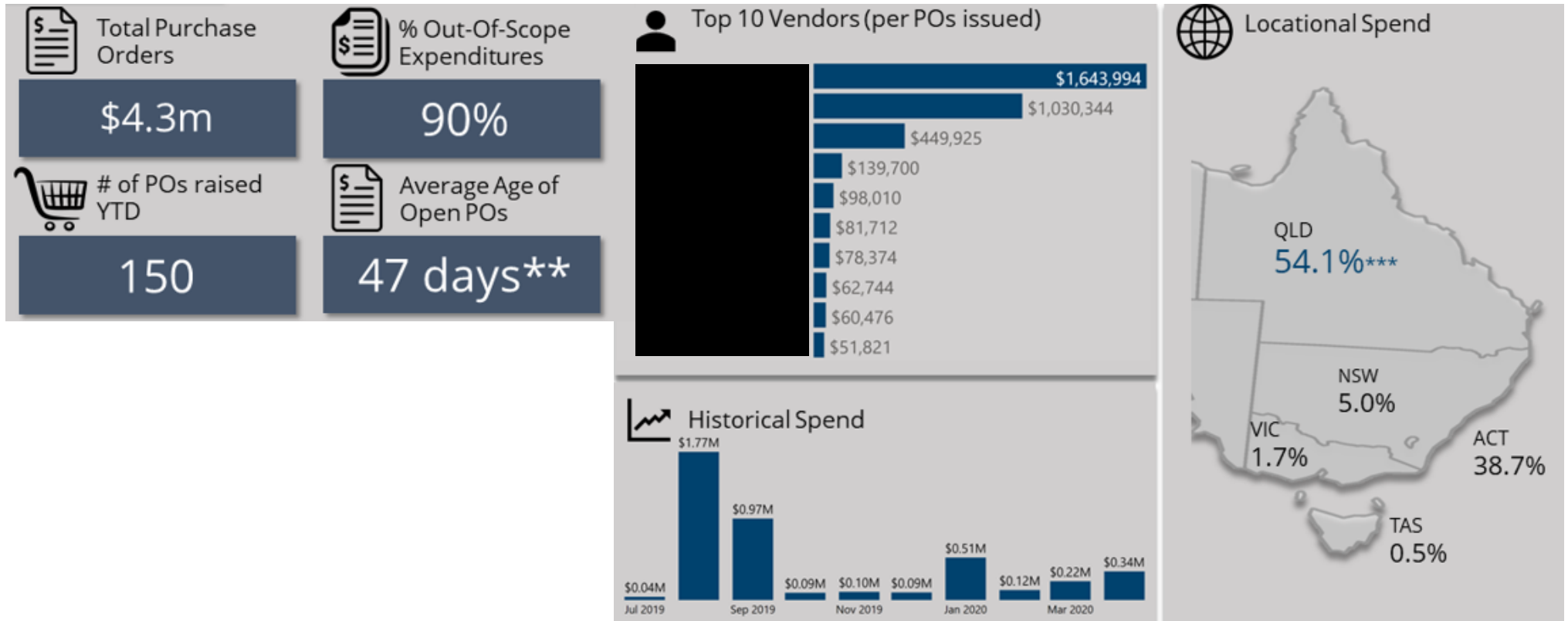


Data Storytelling

- Analytics can be more than dashboards
- Can use mix of graphics and text to tell data-driven stories (in this example we're using Power BI)
- Can also auto-generate content using NLG software (e.g. Arria NLG)



What story does this tell?



Case studies:

- system
- bespoke



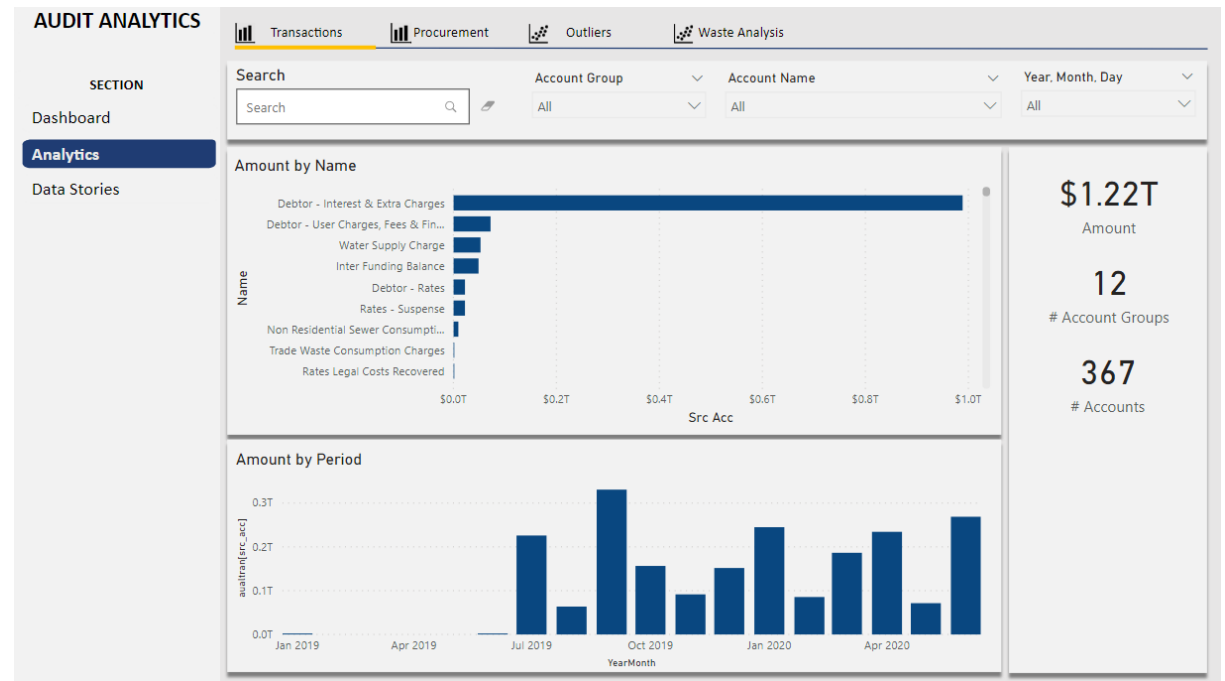
Mindbridge case study



Power BI for Councils



- Example showcasing Power BI on example Local Government dataset
- User has ability to search across accounts using filters
- Charts are completely interactive showcasing top spend categories across time periods



Q & A



Thank you

Note: this presentation is to raise awareness of general opportunities but should not be relied upon as specific advice. You should seek tailored advice before implementing any of the matters raised herein.

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