



Translating Facilities Data into Evidence for Action

Steve Lake, Business Intelligence Manager
Campus Services

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This Presentation covers:

- The evolution of FM at the UoM since 2006
- Our BI journey at Campus Services over the last 2 years
- Case Study: The 2018 Backlog Maintenance Review
- Dashboard Design Tips
- Challenges and Next Steps
- Summary of Benefits
- Questions

=> I hope you find it interesting!





My Journey at the UoM (since 2006):

- Initially engaged as an independent consultant (January, 2006)
- Employed as Business Improvement Manager (October, 2006)
- Asset Protection Manager (2010)
- Asset Performance Manager (2015)
- Business Intelligence Manager (2018)





Campus Services Responsibilities

- Property Portfolio: ~\$4B, ~400 buildings, ~1 million m² GFA.
- Provide all hard and soft FM services across 7 campuses in Victoria;

In **2005**, Maintenance Services were delivered as follows:

- \$7M budget: ~\$3.5M (staff) + ~\$3.5M (contract resources);
- ~90% of all work order requests were delivered by in house trade staff - mostly reactive / unscheduled;
- Engaged contractors for mechanical repairs, specialist services (i.e. glazing) and minor works;
- Only 2 long term service contracts in place.

=> It was essentially a Break / Fix Culture!



In **2006**, the business started to change:

- Awarded **4 new long term service contracts**;
- Introduced **Balanced Scorecards** for Contractor Performance; and,
- We commenced our **Backlog Maintenance** journey, estimating **\$172M** of liabilities.

=> The 'Contracted Out' strategy commenced.

In **2019**, the business looks like this:

- **~\$134M** budget;
- **~100%** of all requests are delivered via **28 long term service contracts**;
- Increased focus on **Data Quality & Analytics**;
- Improved **Asset Management** practices;
- dashboards for Contractor KPI's;
- Achieving **improved Customer Service outcomes**; and,
- reduced **Backlog Maintenance** liabilities from \$172M to **\$117M** in 2018.
- Workforce is more agile, offers 'higher value' capabilities, and adds greater value to the business.

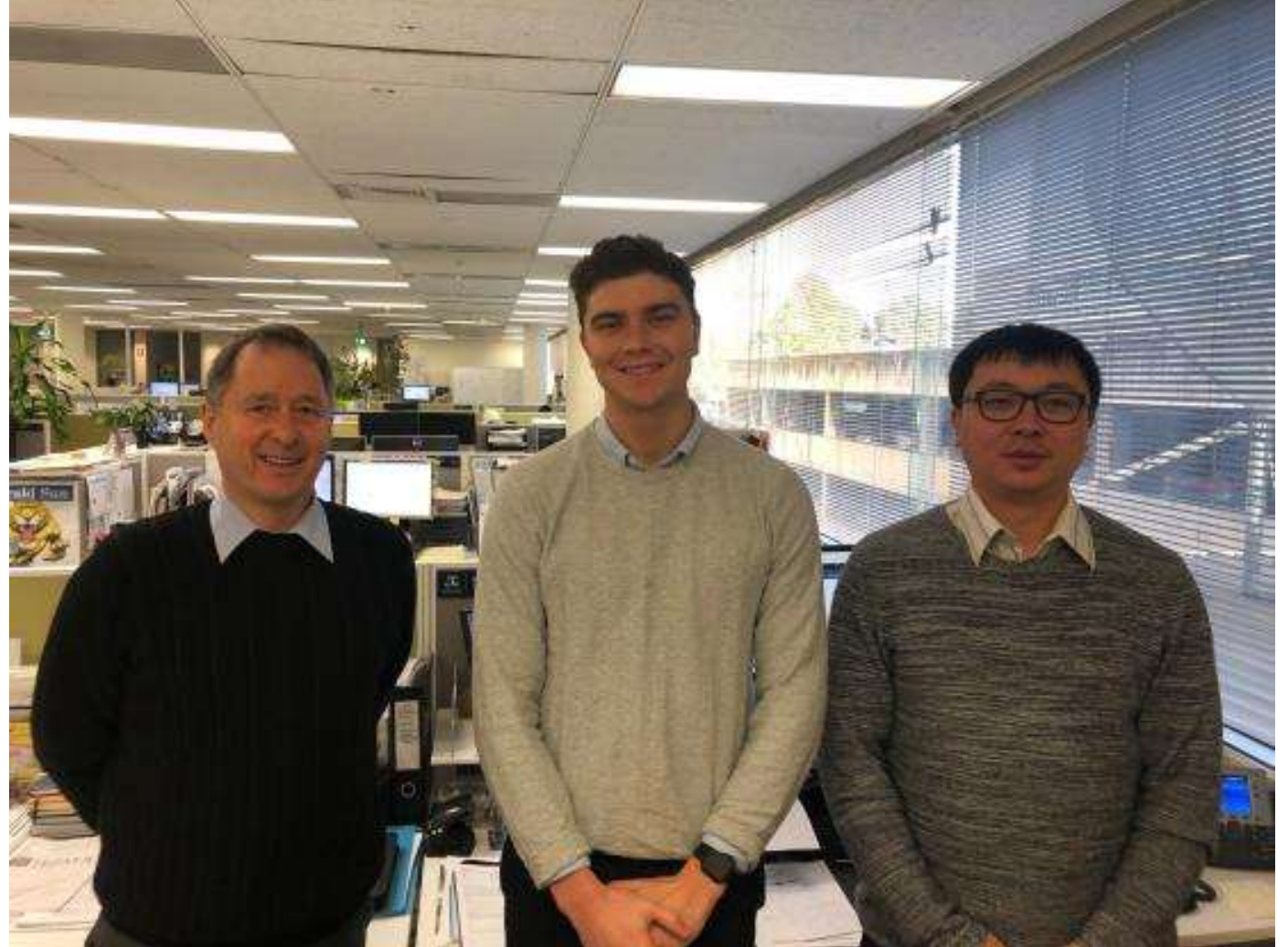
=> The 'Contracted Out' strategy has matured!



The Business Intelligence Team at Campus Services:

- 1x Data Analyst (Data Scientist)
- 1x Asset Analyst (Civil Engineer)
- 1x Masters Student (Casual)
- and me (the 'Translator')!

=> Our team comprises an interesting mix of skills, experiences, personalities and perspectives and a shared commitment to excellence!





The Analytics Translator:

'If there's one analytics role that can do the most to start unlocking value, it is the Analytics Translator. This sometimes overlooked but critical role is best filled by someone on the business side who can help leaders identify high-impact analytics use cases and then "translate" the business needs to data scientists, data engineers, and other tech experts so they can build an actionable analytics solution. Translators are also expected to be actively involved in scaling the solution across the organization and generating buy-in with business users. They possess a unique skill set to help them succeed in their role - a mix of business knowledge, general technical fluency, and project management excellence.'

Reference: McKinsey & Company

=> In essence, someone who can bridge the gap between:
(i) the needs of the business, and
(ii) the capabilities of the technology.

The Role of the Business Intelligence Team:

- **Data Curation:**
 - collect / receive (*'inputs'*), validate, cleanse, transform, manage, store, share and archive the data (*'add value'*).
- **Data Analysis:**
 - analyse the asset and service request data (*'value creation'*).
- **Data Insights:**
 - develop insights / dashboards (*'outputs'*), share them with stakeholders and provide them with *'Evidence for Action'* (***'VALUE REALISATION'***).

[illegible]



The Role of the Business Intelligence Team:

- **Requests for Data:**

We aim to provide a responsive service tailored to meet the needs of the requestors.

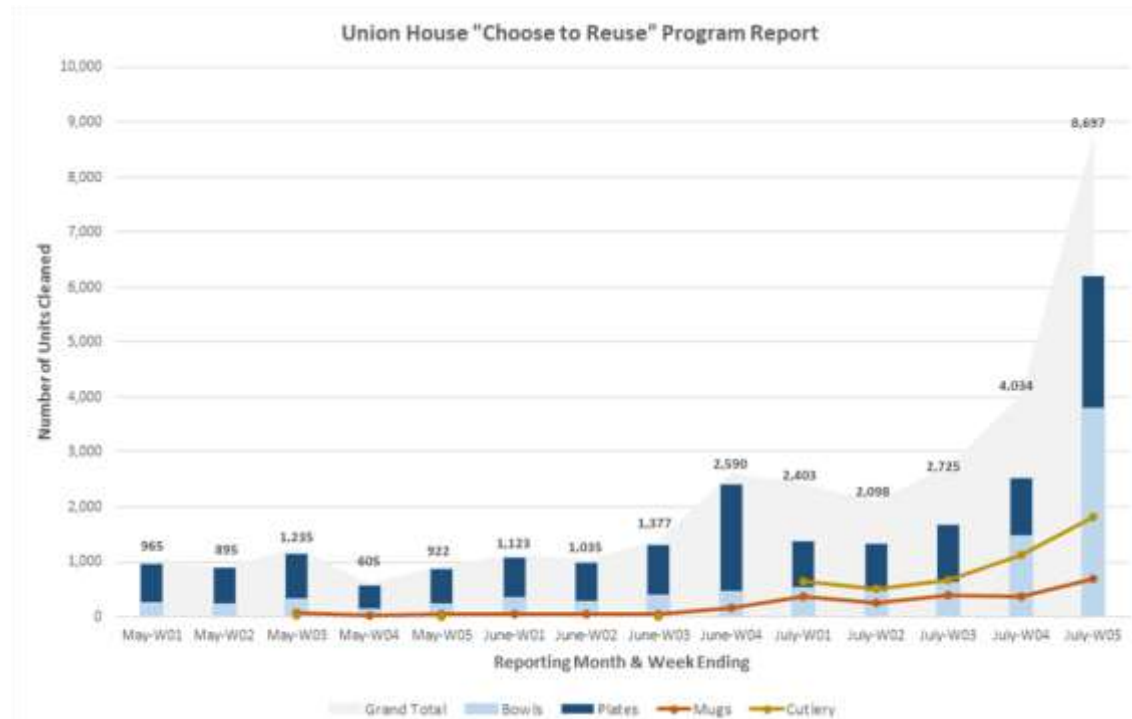
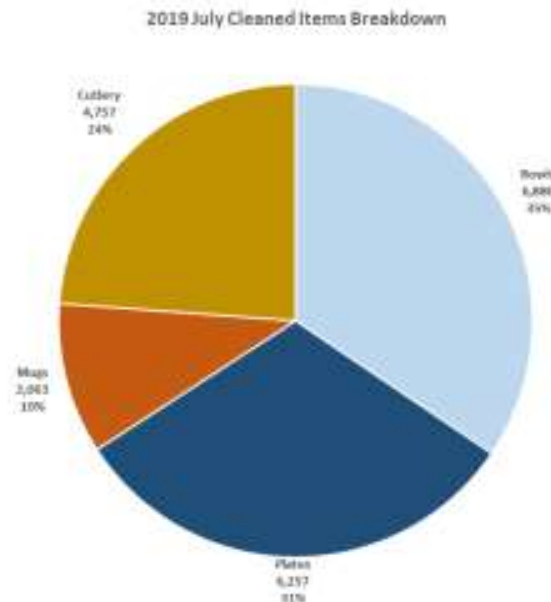
- But not all requests are created equal!

Example 1 - Simple Request: e.g. turn raw data into information, requiring little or no analysis.

Unformatted data
in email message



*Requestor Response:
"Fantastic. Thanks Lei, really
appreciate all your help".
(Sustainability Manager)*





The Role of the Business Intelligence Team:

Example 2 - Less Simple Requests: e.g. Email request to a Campus Services project officer for Backlog Maintenance data for multiple buildings from 'unfamiliar' UoM colleague from Major Projects.

After an introductory phone call, we arranged a meeting at our office and we explained what we do, what data and reports we hold relating to our built assets. We established what data they required, the purpose they needed the data for, timelines, and their preferred data format.

Requestor Response: "Thank you for your time yesterday, it was valuable."

We provided all the requested data in a timely fashion.

Requestor Response: "This is really thorough and very helpful. Much appreciated. Thanks again for the collaborative approach, I'll keep you updated on our scope of works and share the outputs with you."

We received a follow up request (by email) for additional Backlog Maintenance data for multiple buildings from same requestor as above. Response fulfilled within half a day.

Requestor Response: "Much appreciated. I'm finding this information really helpful. Thank you."

=> Every request for data is an opportunity to build a new or better relationship!

Introduction of Balanced Scorecard for Contractor Performance Monitoring (2006):

Scoring Legend

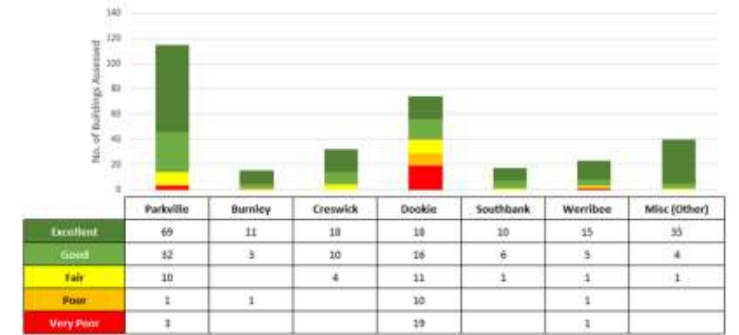
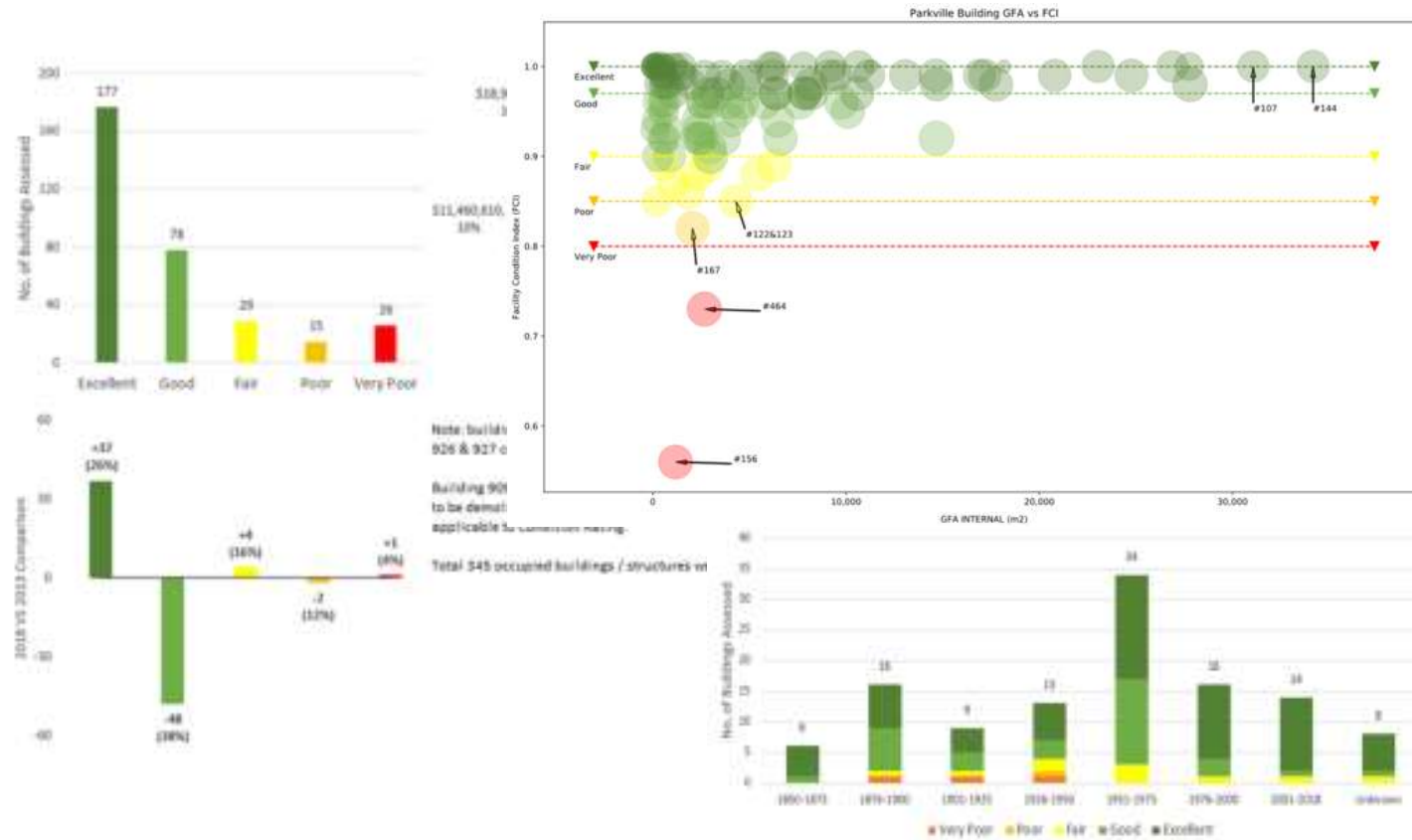
Very Good: Expectations Exceeded	5
Good: Expectations Achieved	4
Fair: Minor Improvement Required	3
Poor: Significant Improvement Required	2
Very Poor: Major Service Shortfall	1

Contractor Performance Scorecard:														Cont
Performance Indicator	Performance Target	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	
1. Policies & Procedures	Measure: based on non-compliance incidents.													
(a) Administration	100% compliance.	2	2	4	4	4	2	3	2	3.5	3.5	3	4	
(b) OHS	100% compliance.	3	4	3	4	4	1	4	4	4	3	4	4	
(c) Environment	100% compliance.	4	4	4	4	4	4	2	2	4	4	4	4	
Sub-Totals:		9	10	11	12	12	7	9	8	11.5	10.5	11	12	
2. Contracted Services	Measure: with reference to contracted service schedules, complaints received, service shortfalls, etc.													
(i) Quality of Services:														
(a) Essential Services Maint.	Refer to contract schedule 4.2.2	4	4	4	4	4	4	4	4	4	4	4	4	
(b) RCD Testing	Refer to contract schedule 4.2.3	4	4	4	3	4	4	4	4	3	4	4	4	
(c) Emergency Evacuation Light	Refer to contract schedule 4.2.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
(d) Infrared Testing	Refer to contract schedule 4.2.5	4	4	4	n/a	4	4	4	4	4	n/a	n/a	n/a	
(e) Lead & Appliance Testing	Refer to contract schedule 4.2.6	2	3	4	4	4	3	3	3	3	2	3	4	
(f) Lamp Disposal	Refer to contract schedule 4.2.7	4	4	4	4	4	4	4	4	4	4	4	4	
(g) Power Operated Doors	Refer to contract schedule 4.2.8	3	4	4	4	4	3	3	3	3	4	4	4	
(h) Emergency Generators & UP	Refer to contract schedule 4.2.9	4	4	4	4	4	3	4	4	3	4	3.5	4	
(i) Re-Lamping	Refer to contract schedule 4.2.10	4	4	4	4	4	3	4	4	4	4	3	4	
(j) Other	Refer to contract schedule 4	3	2	2	2	1	4	3	3	2.5	4	4	4	
Sub-Totals:		32	33	34	29	33	32	33	33	30.5	30	29.5	32	
(ii) Timeliness:														
(a) Scheduled Activities	Consistent with contract schedules.	2	2	2	4	3	4	3	3	3	3	4	4	
(b) Reactive Activities	Refer to agreed response times.	4	3	3	4	2	3.5	4	4	2	2	3	3	
Sub-Totals:		6	5	5	8	5	7.5	7	7	5	5	7	7	
(iii) Communication:														
(a) Monthly Reporting	Submitted in a timely and comprehensive form.	4	4	4	4	4	3	4	4	1	4	4	4	
(b) Records Management	Activities performed, chemical usage, etc.	4	3	3	4	3	3	3	3	3	3.5	3	2	
(c) Notifications	Faults, problems and risks identified.	3	4	4	4	4	3	4	4	3	4	4	3	
Sub-Totals:		11	11	11	12	11	9	11	11	7	11.5	11	9	
(iv) Geographic Coverage:														
(a) Parkville	Refer to contract schedule.	4	4	4	4	3	4	4	3	4	4	4	4	
(b) Other	Refer to contract schedule.	3	3	3	4	2	4	4	4	4	4	4	4	
Sub-Totals:		7	7	7	8	5	8	8	7	8	8	8	8	
3. Stakeholder Feedback:	Measure: based on stakeholder survey form responses.													
(a) Appearance	Clear ID and suitable attire.	4	5	4.5	4.5	3	4.5	3	4	4	n/a	4	4	
(b) Behaviour	To behave in a professional manner.	4	5	3	4.5	4	5	4.5	3.5	5	n/a	4	5	
(c) Local Requirements	100% compliance.	4	5	2.5	4.5	4	5	5	4.5	4	n/a	4.5	5	
(d) Quality of Service	To meet stakeholder expectations.	3.5	4.5	2.5	4.5	3	5	5	3.5	5	n/a	3	5	
(e) Health of Relationship	To foster good working relationships.	4.5	5	3	4.5	4	4.5	5	3.5	5	n/a	4	5	
Sub-Totals:		20	24.5	15.5	22.5	18	24	22.5	19	23	0	19.5	24	

=> Instinctively, most people interpret green as 'Good' and red as 'Bad'!



Backlog Maintenance Review (2018):



Note: building 800-899 combined as 1 building.



=> We are consistent with how we use colours to support our stories!



Case Study:

Campus Services 2018 Backlog Maintenance Review

***=> Our Vision: "To create something that we (the BI Team)
would be proud of!"***



The Backlog Maintenance Audit Team:

- 2x Project Officers (Internal Elements)
- 1x Project Officer (External Elements)
- 4x Students (Casual - Data Entry)

Internal Subject Matter Experts:

- Engineering & Infrastructure Team
- Security Team
- Other internal Teams

External Subject Matter Experts:

- Structural Consultants
- Long Term Service Providers

=> Our approach cost \$100k and saved \$200k-\$400k!



The Backlog Maintenance Audit App:

=> *It started as a Vision!*

- Internally developed (by our Data Analyst) using MS *Power Apps* following 'Agile Principles';
- Runs on an *iPad*;
- Imports space data on the fly (from *Archibus*);
- Input TEFMA Ratings;
- Built in Schedules of Rates to estimate Backlog Maintenance (\$);
- Add Auditor Comments; and,
- Data saved to the Cloud in background (MS *Azure SQL database*)

416 - WERRIBEE PATHOLOGY BUILDING

00:00:05 Total 0.00 Queue 0.00 Upd 0.00 Verif 0.00 Connected

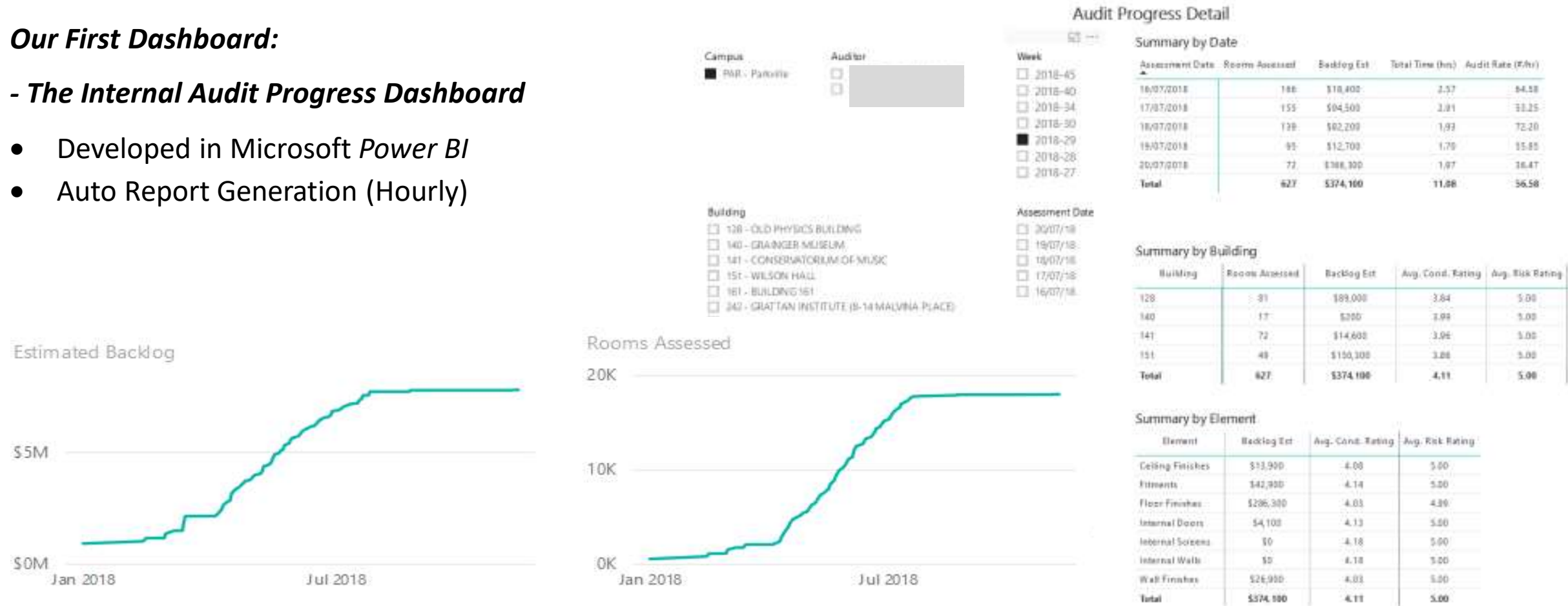
Rooms							Floors	Room Detail and Assessment									
101	101.0	101.0	102	102.0	102.0	103	0.1	1	2	0	Room Area: 12.13 m3	Room Information: Office Academic Miscellaneous					
103.0	1	104	104.0	104.0	105	105.0	106	Importance Rating		Comments	Functionality Rating	Comments					
106.0	1	106.0	106.0	106.0	107	107.0	108	Low	★ ★ ★ ★ ★	Comments...	Low	★ ★ ★ ★ ★					
109	110	111	112	112.0	112.0	112.0	116	Element Assessment									
113	114	115	115.0	115.0	115.0	116	119	Condition Rating		Risk Rating	Backlog Estimate	Comments					
117	117.0	117.0	117.0	118	118.0	119	122	Very Poor	Poor	Fair	Good	Excellent	Catastrophic	Moderate	Insignificant	Backlog \$...	Comments...
119.0	1	120	120.0	121	121.0	122	124	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
122.0	1	122.0	122.0	122.0	123	123.0	124	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
124.0	1	125	125.0	126	126.0	127	129	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
128	128.0	128.0	128.0	129A	129F	129N	134	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
130	130.0	131	132	133	133.0	134	137	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
134.0	1	135	135.0	135.0	136	137	138.0	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
137.0	1	137.0	137.0	138	138.0	138.0	143	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
138.0	4	139	139.0	139.0	139.0	139.0	143	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
140	141	141.0	141.0	141.0	142	143	146.0	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
143.0	1	143.0	143.0	144	145	146	151	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
146.0	2	146.0	147	148	149	150	151	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
152	152A	153	154	155	155A	156	163	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
157	158	159	160	161	162	163	167	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
164	165	166	166A	166B	166C	167	167	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	
168	C101	C102	C103	C104	C105	S101	5102	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	Backlog \$...	Comments...	

Clear Form Save Preset Load Previous Assessments? ☐ Off Load Preset Save Assessment

Our First Dashboard:

- The Internal Audit Progress Dashboard

- Developed in Microsoft *Power BI*
- Auto Report Generation (Hourly)



=> The App was so efficient that we completed the internal audits 3 months ahead of our schedule! Having collected the data, we then focused on analysing the data and creating visual insights for our various stakeholders!



To create meaningful insights, first we have to understand what questions our stakeholders wish to answer, such as:

- What is the condition of the property portfolio and the individual campuses?
- What is the extent of our backlog maintenance liabilities?
- Which buildings are in the worst condition?
- How does this compare to 5 or 10 years ago?
- Are we spending enough on backlog maintenance?
- Are we “catching up”, “keeping up”, or “losing the battle”?
- Which asset classes (elements) are in the poorest condition and should be replaced or rehabilitated?
- Which buildings should be demolished, refurbished or disposed of?

=> A great way to do this is to consult and engage with them!

An American Psychologist, Dr Aaron Beck, found that ‘we all have a way of seeing data, facts and information that is different from each other’.


=> Make stakeholders the centre of the solution!

Campus Services 2018 Backlog Maintenance Review

*- Initially published as a
90 page report.*

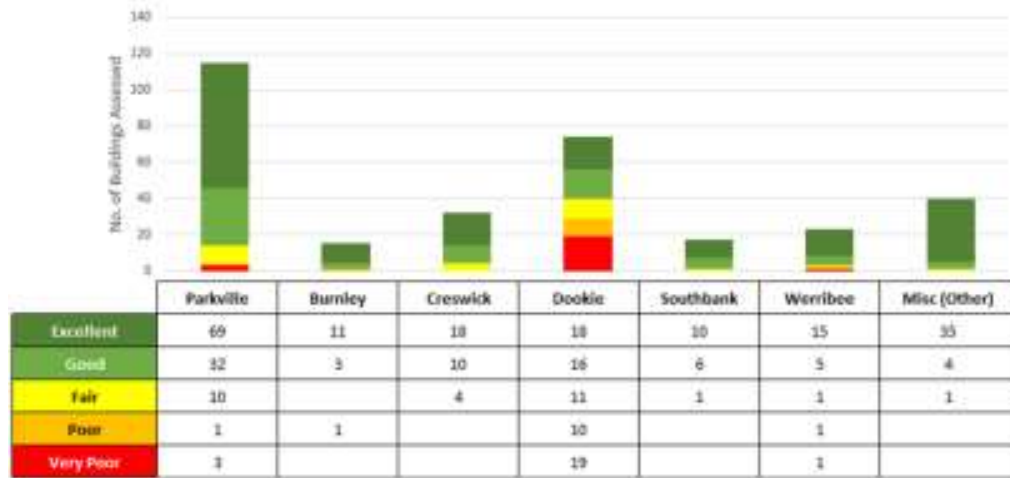
*=> Stakeholder
Feedback: “the 2018
BLM Audit and Review is
an outstanding
document.” (Director,
Campus Services)*

*=> Now available as 3
separate interactive
digital dashboards
(‘self-service analytics’)!*

Campus Services 2018 Backlog Maintenance Review			
Estate Summary	Campus Summary	Building Summary	Notes
		<p>Purpose</p> <p>The 2018 Backlog Maintenance Assessment Report aims to provide a comprehensive and interactive review of the condition of the University's portfolio of buildings and grounds, together with an estimate of the extent of the backlog maintenance liabilities (also known as deferred maintenance).</p> <p>Backlog Maintenance (BM) is essentially an assessment of the cost to bring the estate back to the desired condition standard. (Ref. TEFMA Facilities Audit Guideline, 2010).</p> <p>This report allows users to explore the extent of the backlog maintenance liabilities from a range of different perspectives (i.e. by campus, by building, by element, by condition, etc.).</p>	
<p>This dashboard has been created by Business Intelligence Campus Services and is the property of The University of Melbourne.</p>			

The Published Report (November 2018):

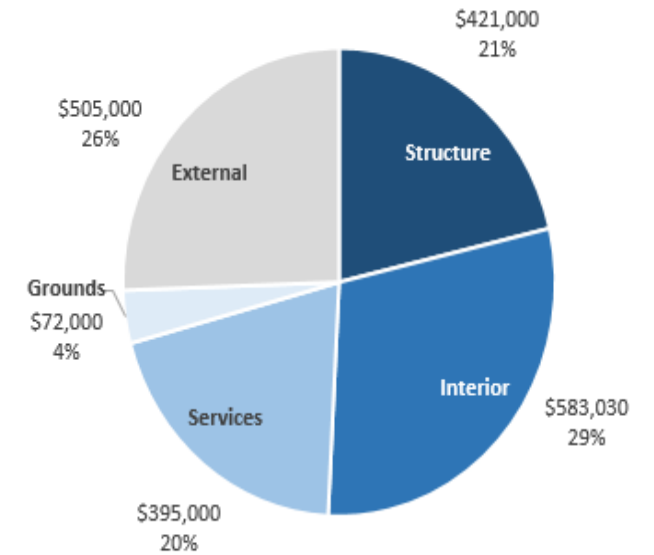
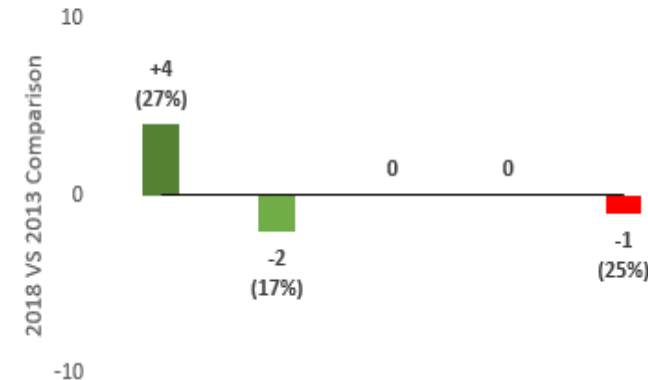
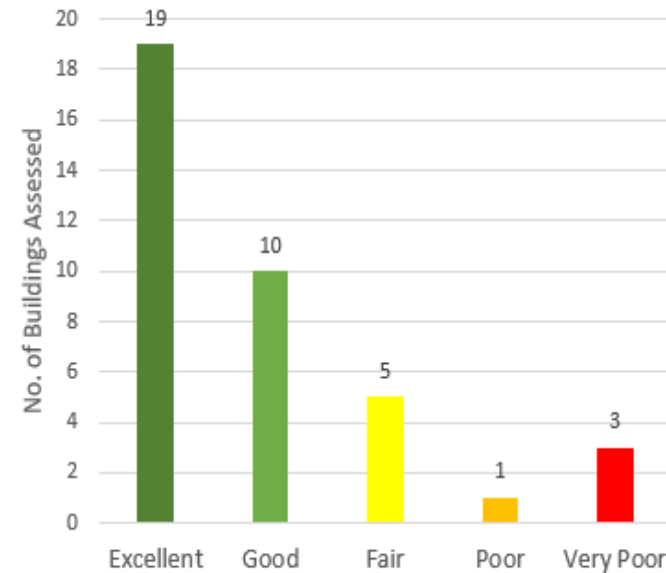
- Visualisations at the Portfolio Level



Note: building 893-899 combined as 1 building.

Building 537, 5094 & 402 are assumed to be demolished, only demolition costs were assessed, not applicable to Condition Rating.

Total 325 occupied buildings / structures were assessed.



Note: Total 38 buildings / structures were assessed.

=> The visuals must be easy to interpret the relevant insights!

=> We want to identify trends, highlights and outliers!

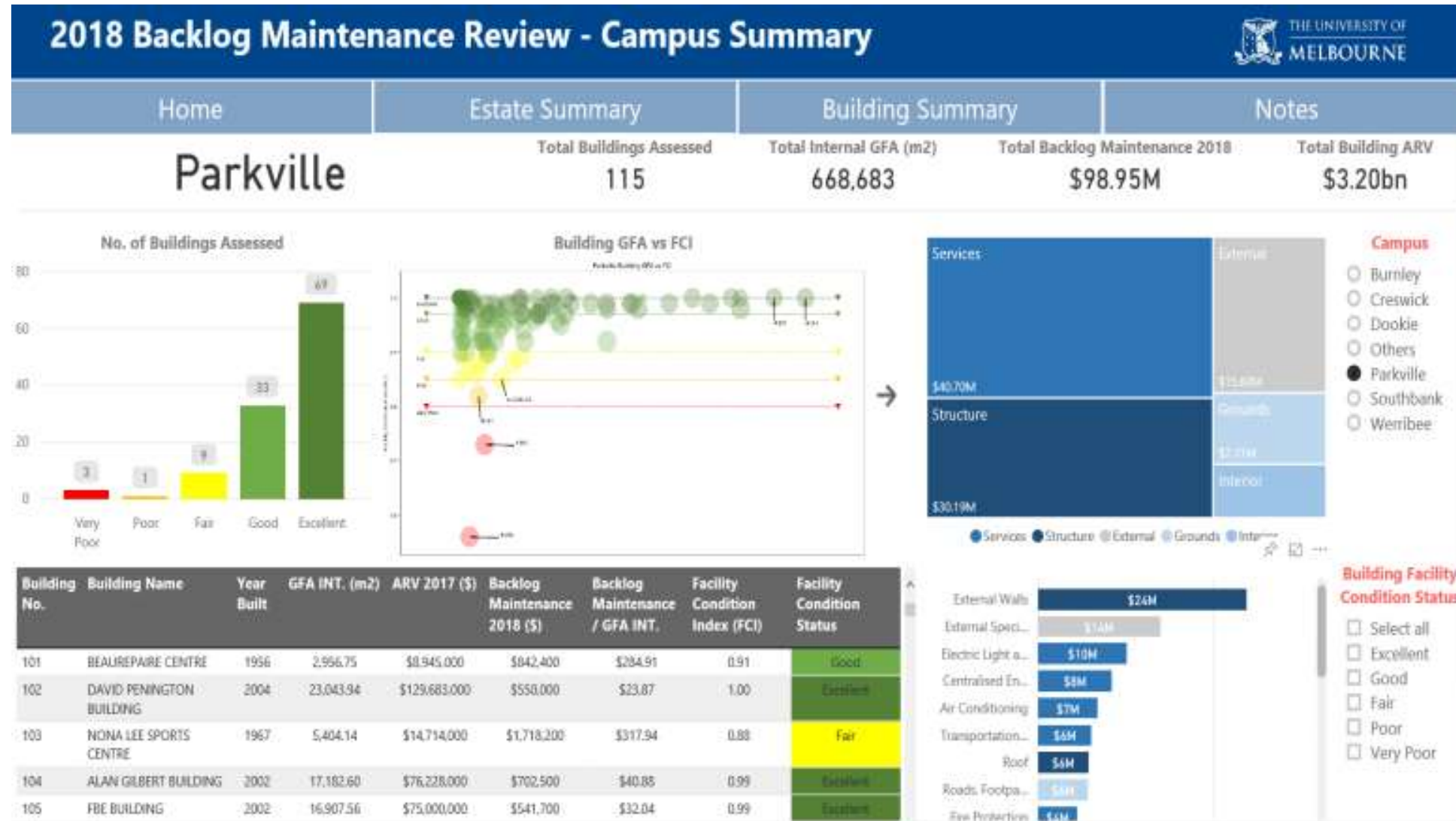
At the Portfolio Level:



=> Explore the Estate data!

=> Compare individual campuses!

At the Campus Level:



=> Explore individual Campus data!

=> Compare individual buildings!



At the Campus Level:

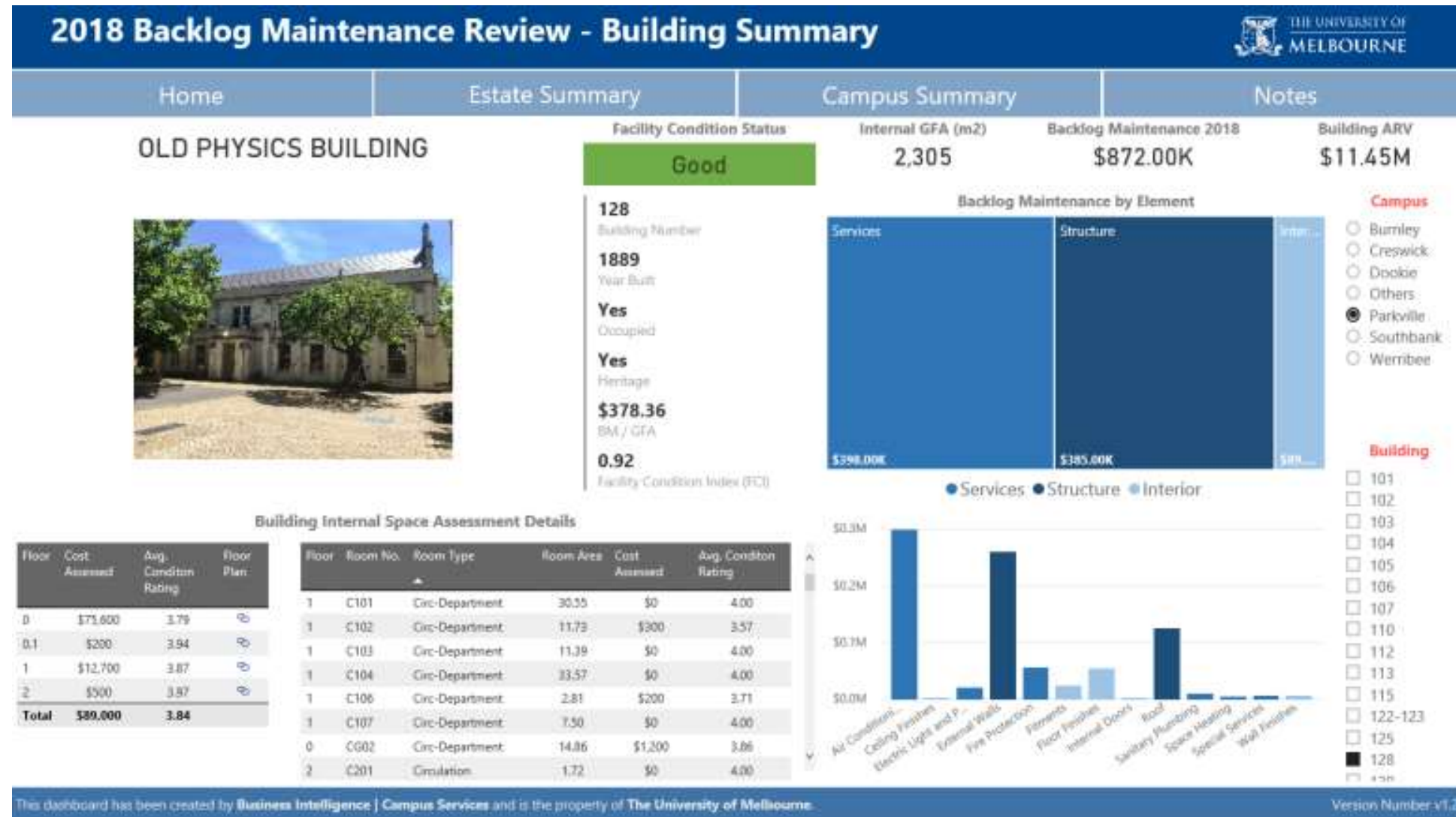
2018 Backlog Maintenance Review - Campus Map



=> View a thematic map of the campus for improved spatial context!

At the Building Level:

=> These insights are aimed at the Facility Manager, Project Manager or Faculty Executive!



Guidance Notes:

=> **Assumptions & Exclusions!**

=> **Known Issues & Limitations!**

=> **Data Sources!**

=> **Suggestions & Feedback!**

2018 Backlog Maintenance Review - Notes

[Home](#)[Estate Summary](#)[Campus Summary](#)[Building Summary](#)

Assumptions & Exclusions

For the purposes of this review, the following exclusions have been applied:

- buildings <5 years old;
- recently refurbished buildings / spaces;
- buildings planned for imminent capital works or demolition / disposal in the next 5 years;
- leased buildings that are not owned by the University;
- spaces we were unable to access to conduct an inspection;
- spaces where the tenant is responsible for upkeep;
- Functionality and Environmental assessment;
- statutory / legislative compliance backlog (i.e. DDA, BCA, etc.);
- the replacement of ACP / EPS (aluminium composite / encapsulated polystyrene) panels;
- hazardous materials removal (unless directly associated with backlog maintenance works);
- loose furniture, soft furnishings, and faculty owned / controlled equipment; and,
- service upgrades and items of scheduled maintenance.

Known Issues & Limitations

Some images not displayed properly in Microsoft Edge and Mozilla Firefox browsers. Google Chrome and Microsoft Internet Explorer browsers are recommended.

Data Sources

Asset element condition and backlog maintenance data used in this report was mostly assessed in 2018 by a range of resources including Campus Services subject matter experts, specialised consultants, and contracted service providers. The data collected was based on information and access available at the time and its currency cannot be warranted. Specialist advice should be obtained, as appropriate, for interpretation / utilisation of the data.

All space related data has been extracted from the University's *Archibus* system, managed by Space Management. If the 'Floor Plan' link is selected on the Building Summary page, you will be directed to the University's *SiSFM* system and you will be required to log in for the first time.

Suggestions & Feedback

We value your suggestions and feedback. It can help us improve our service.

Please contact Steve Lake at srlake@unimelb.edu.au for suggestions and feedback.

Please contact Lei Huang at lei.huang1@unimelb.edu.au for technical queries.

[Download Published Report](#)


‘Subject Matter Experts’, are more interested in individual asset types, such as:

- Facades
- Roofs
- Lifts
- HVAC
- Roads & Footpaths
- Landscapes
- Walls & Fences

**=> So we created data insights based on Asset Element Classes:
(i) in the published report and
(ii) as a second interactive digital dashboard!**

2018 Backlog Maintenance Assessment - Asset Element Report

Asset Summary	Parkville Roofs	Building Facades	Lifts	Parkville Grounds	External	Notes
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Purpose

The 2018 Backlog Maintenance Assessment - Asset Element Report reports on the condition assessment of individual buildings and grounds elements based on an asset classification system defined in The Australian Institute of Quantity Surveyors 'Australian Cost Management Manual, Volume 2 - Elemental and Sub-elemental Definitions' publication. Specific internal and external subject matter experts were engaged to inspect relevant classes of assets and provided the data to us using the TEFMA condition rating parameters, as previously described.

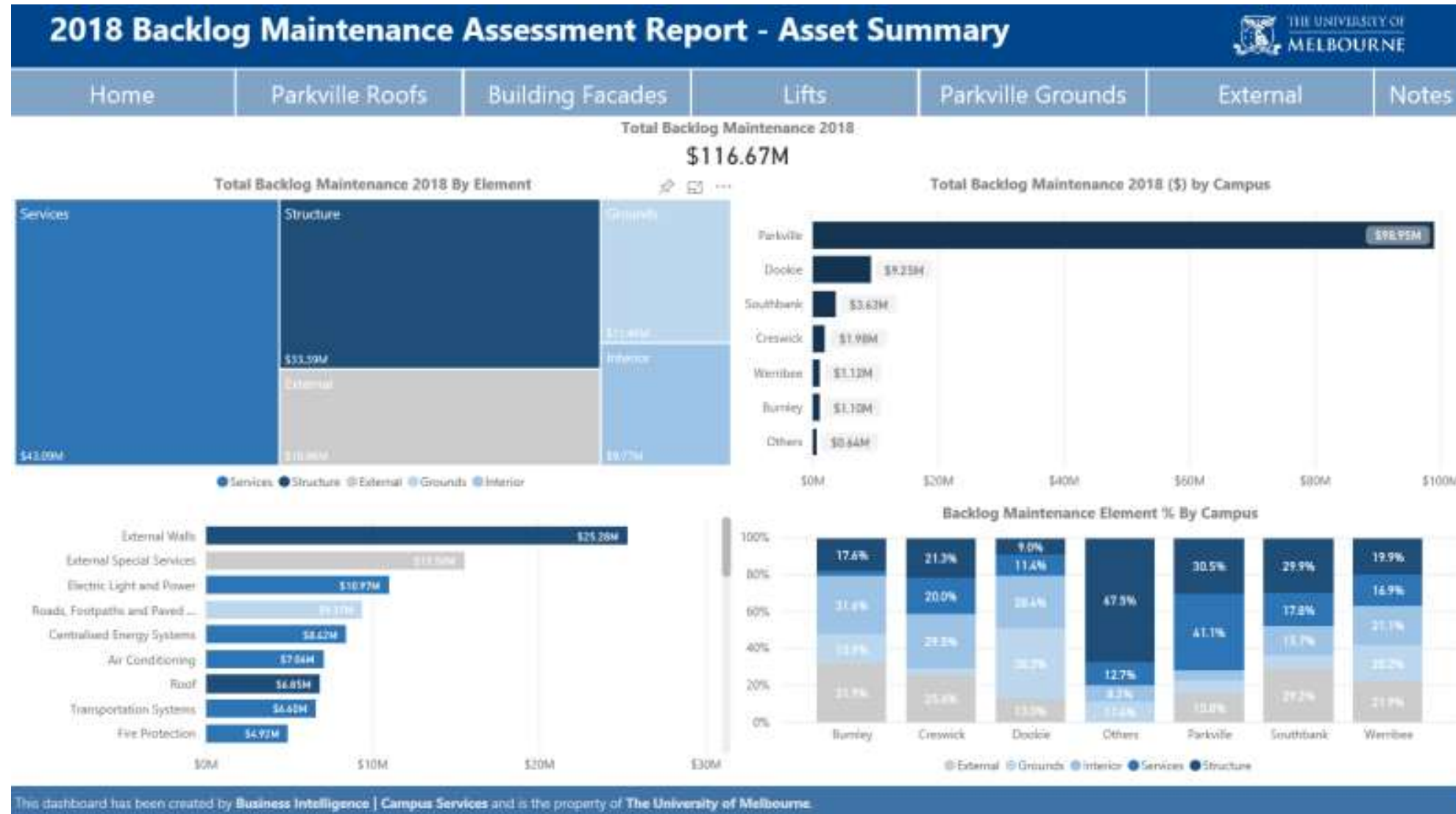
Backlog Maintenance (BM) is essentially an assessment of the cost to bring the estate back to the desired condition standard. [Ref. TEFMA Facilities Audit Guideline, 2010].

This report allows users to explore the extent of the backlog maintenance liabilities from a range of different perspectives (i.e. by campus, by building, by element, by condition, etc.).

This dashboard has been created by Business Intelligence | Campus Services and is the property of The University of Melbourne.

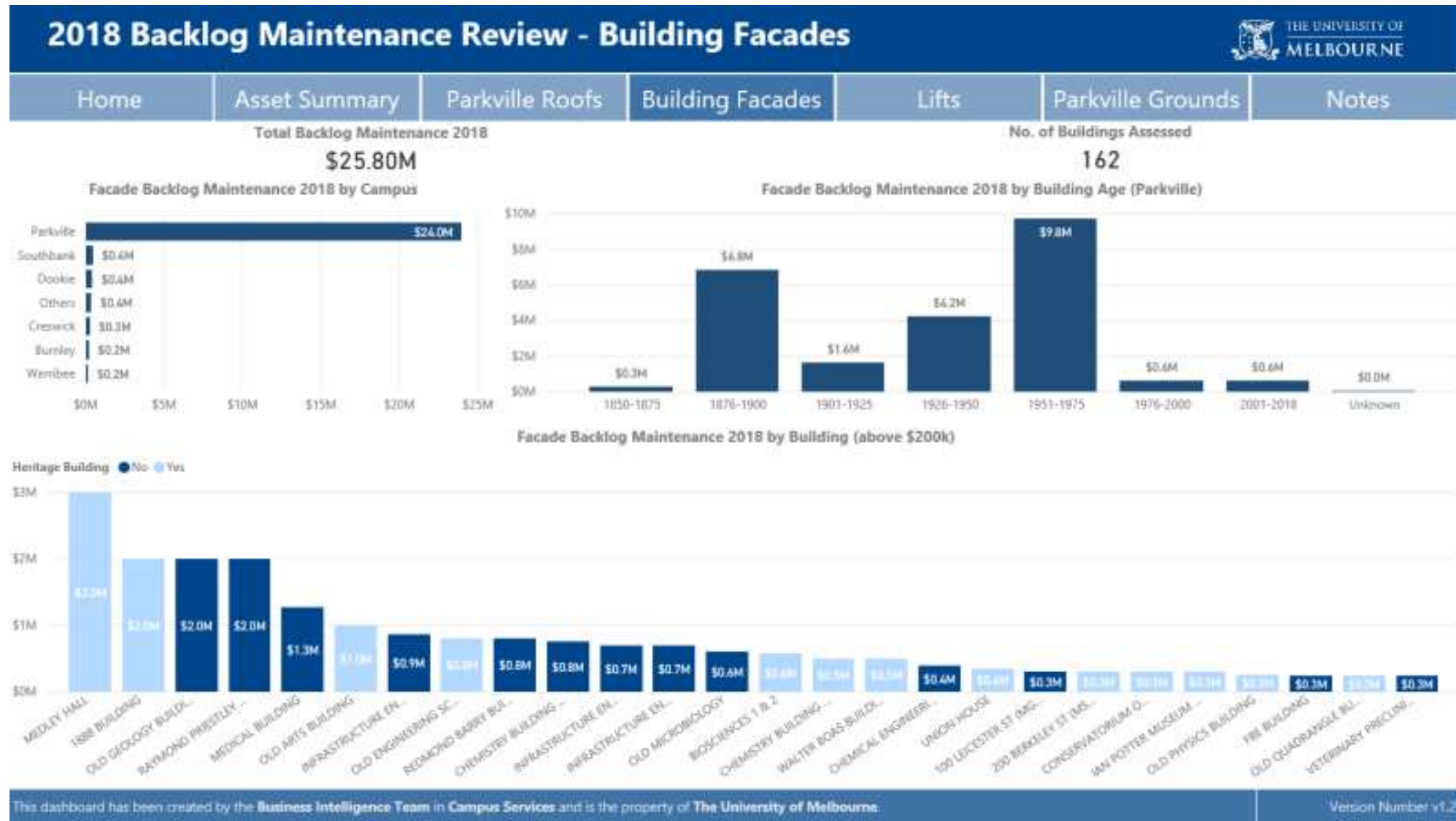
*The Asset Manager,
Program Manager or
FM Executive can view
individual Asset
Element types:*

*=> ... and then
explore and
compare liabilities
across different
element classes!*



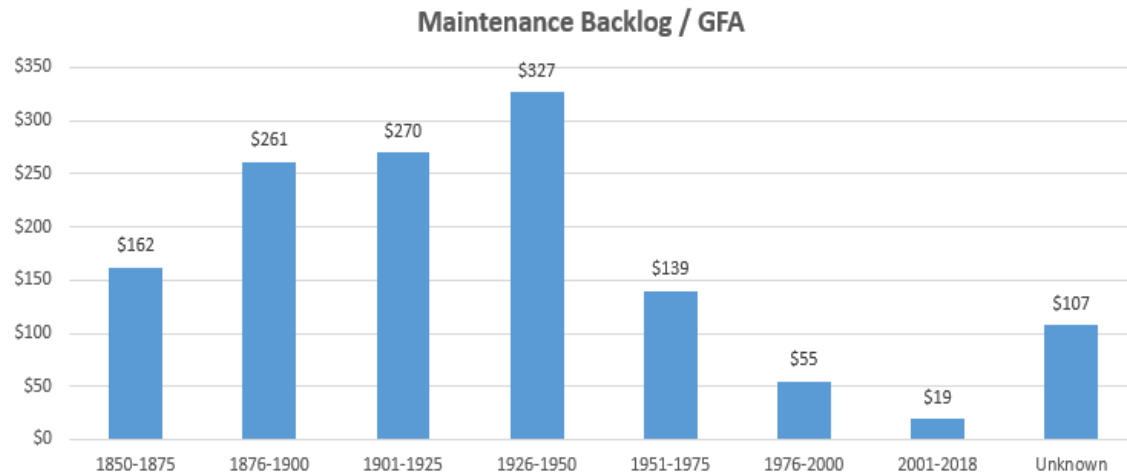
Facades:

=> The Program Manager can look at which buildings have the highest liabilities and prioritise accordingly!



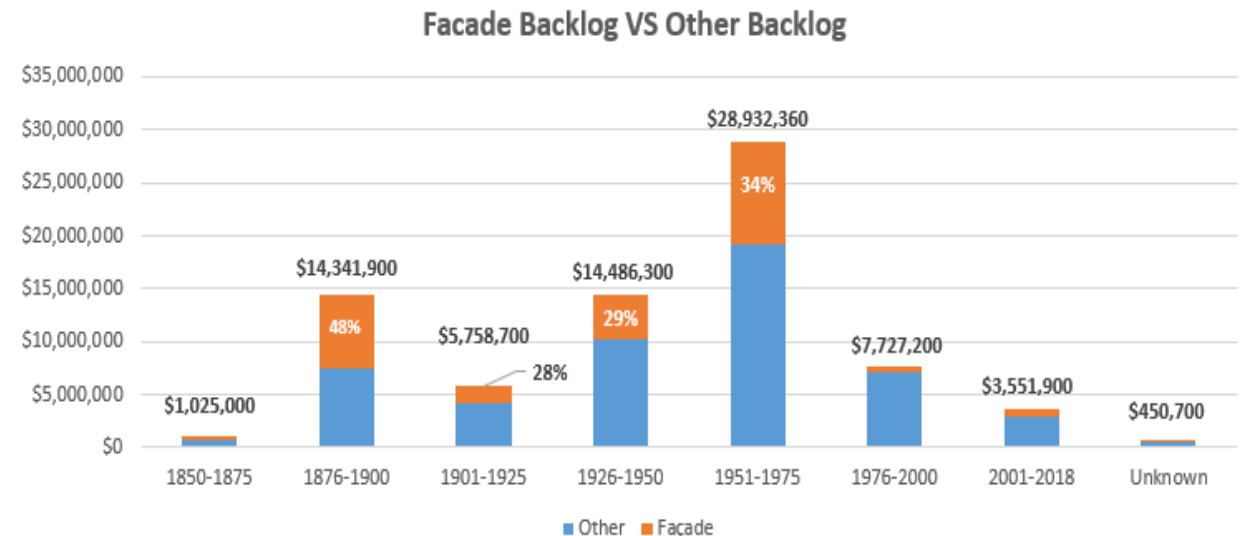
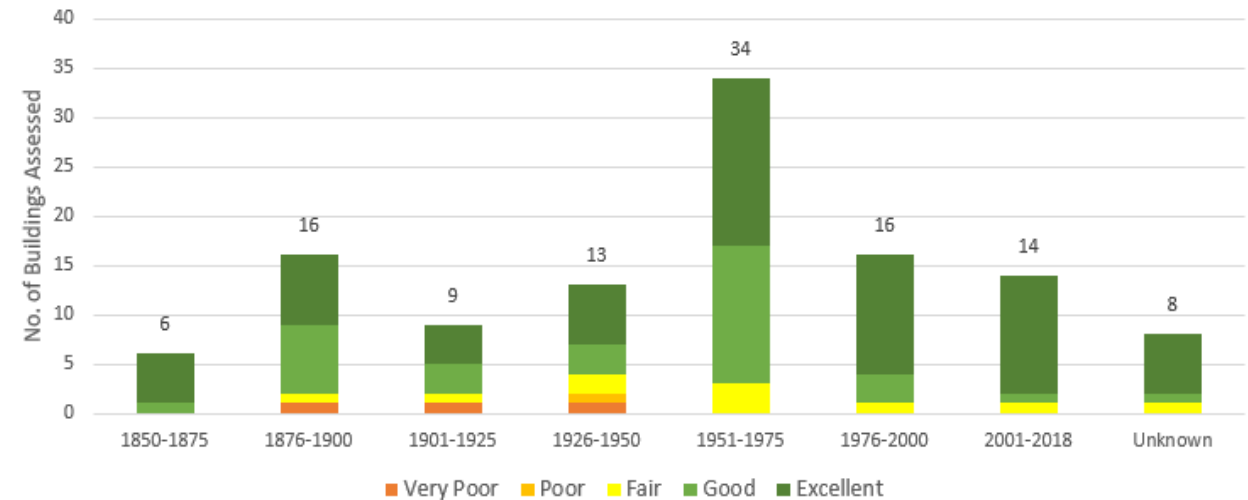


More data insights – by Building Age:



Note: Building 234 - GRAND STAND (MU SPORT) doesn't have GFA (within 1901-1925)

=> Whilst the 'period of construction' is a constant parameter of each visual, by changing the other parameter, we can gain different insights!





Roofs:

=> by 3
different types
of roofing
materials!

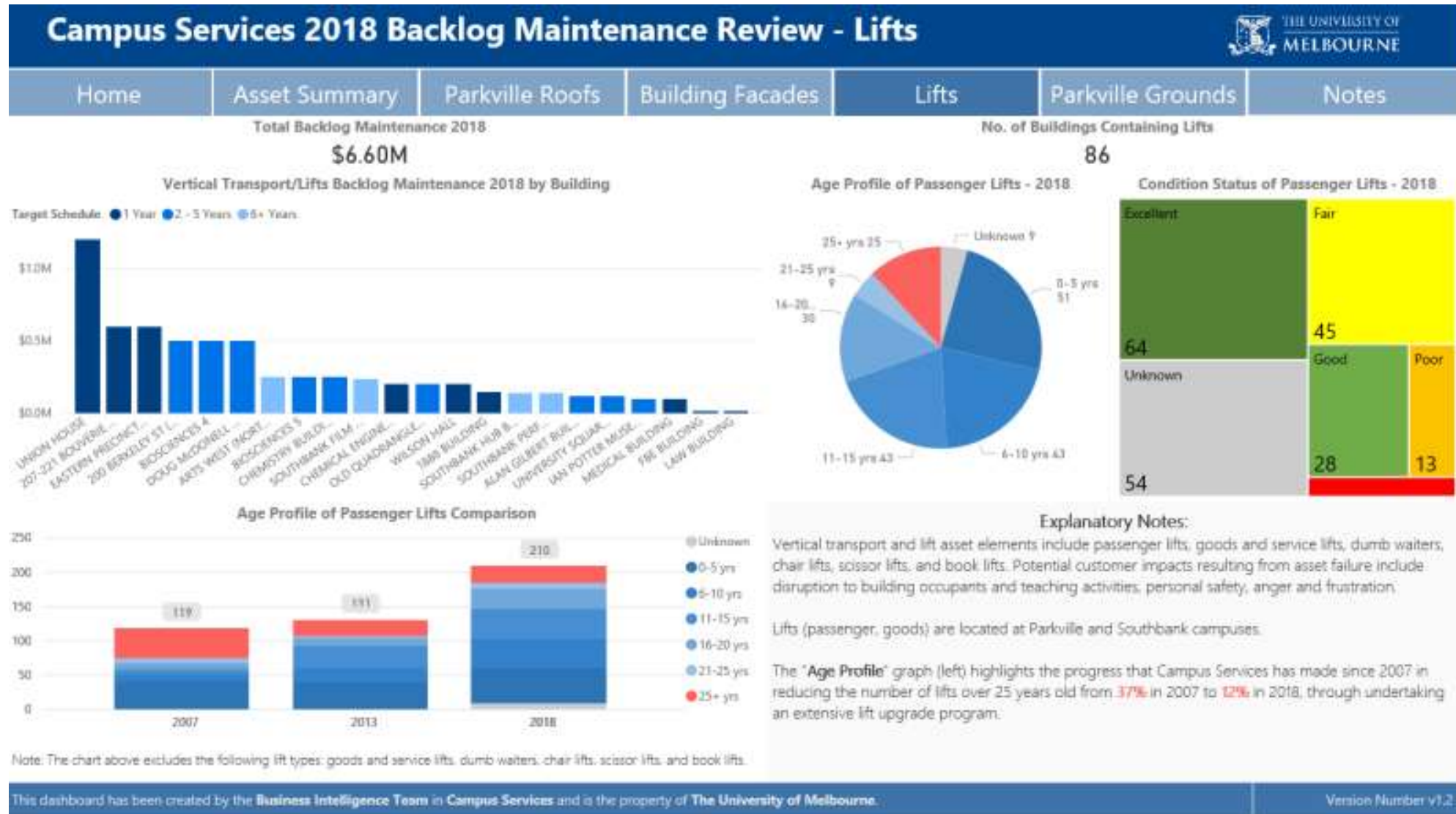
- Membrane
- Metal
- Tiled



Lifts:

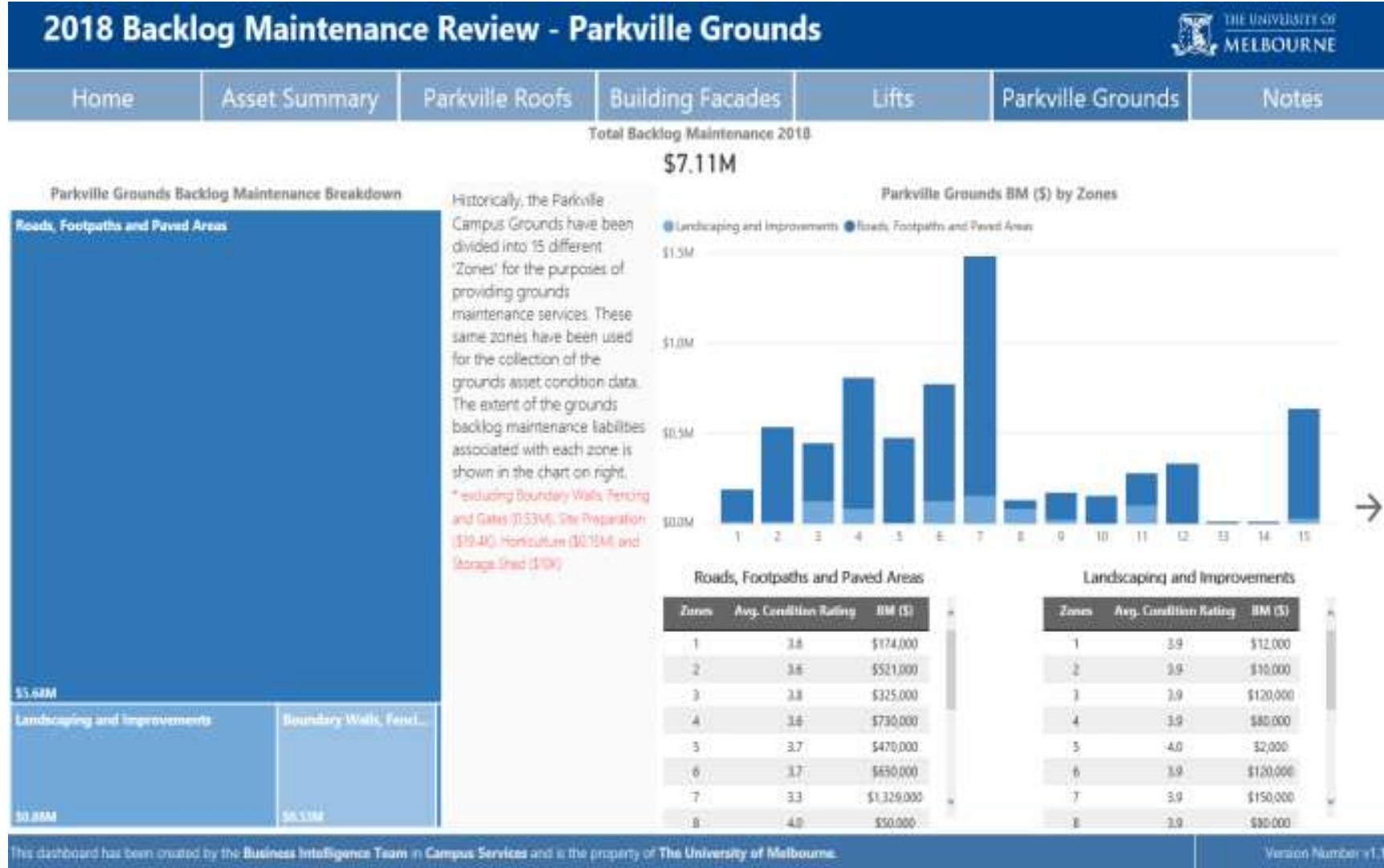
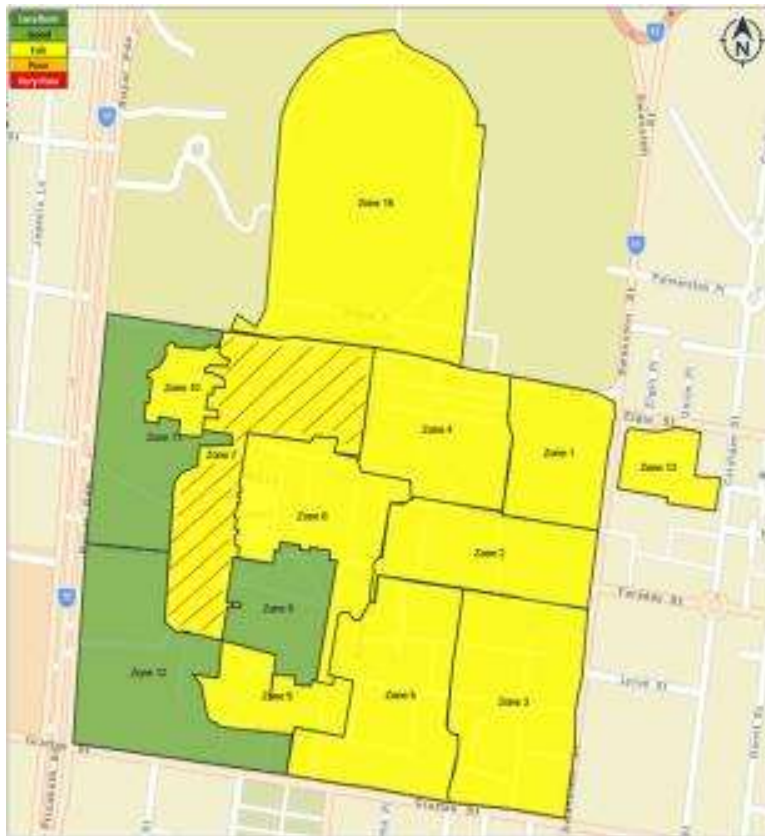
=> includes longitudinal analysis showing comparisons for 2007, 2013 and 2018!

=> demonstrates effective long term program outcomes!



Grounds:

- Roads, Footpaths & Paved Areas
- Landscaped Areas

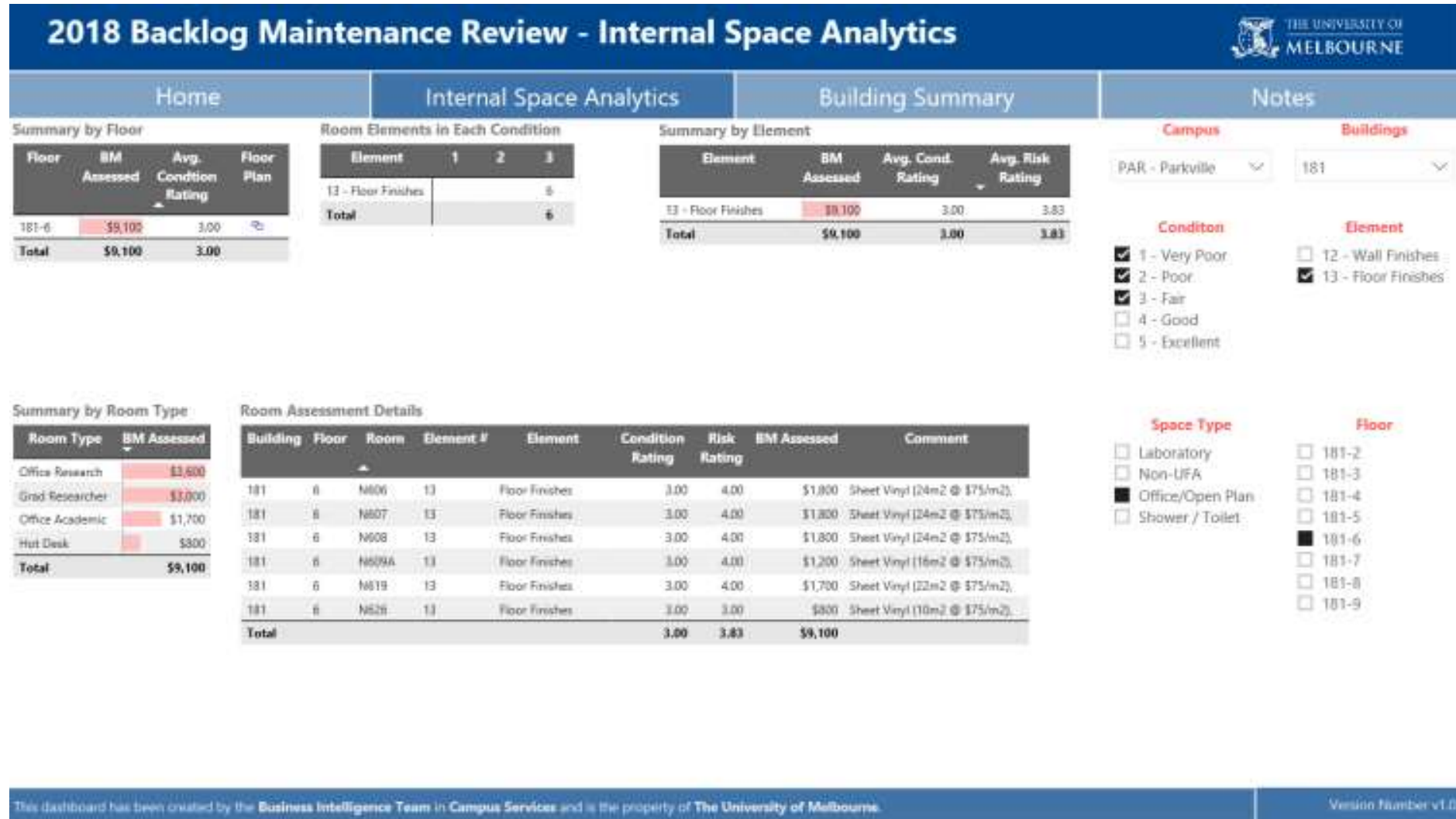


Building Interiors:

=> We created a third interactive dashboard for Internal Space Analysis

- data for >18,000 spaces
- 7 internal elements
- 11 space types

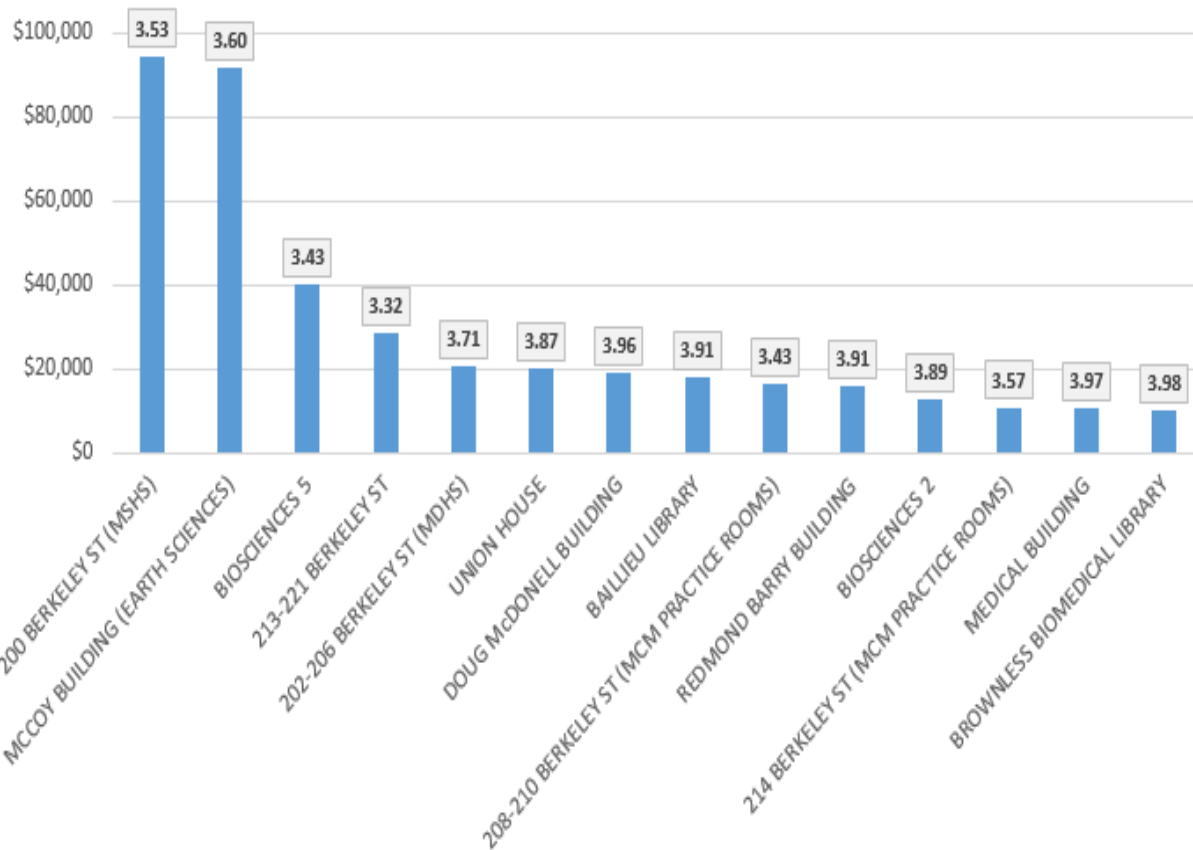
=> Our Maintenance Teams can target their works and create small projects covering multiple spaces ('clustering') to create focused remediation and better value cost outcomes!
=> We couldn't do this previously (>1.4M permutations)!





Prioritising Action – Worst Condition Toilets:

Buildings with Toilet Backlog Maintenance Greater Than \$10,000



Building Number	Building Name	Room Number	Condition	Backlog Maintenance
207	202-206 BERKELEY ST (MDHS)	G07	3.29	\$20,000
200	MCCOY BUILDING (EARTH SCIENCES)	133	3.57	\$15,900
260	200 BERKELEY ST (MSHS)	110	3.29	\$15,600
260	200 BERKELEY ST (MSHS)	112	3.29	\$15,600
260	200 BERKELEY ST (MSHS)	213	3.29	\$15,600
260	200 BERKELEY ST (MSHS)	214	3.29	\$15,600
260	200 BERKELEY ST (MSHS)	G76	3.29	\$15,600
260	200 BERKELEY ST (MSHS)	G77	3.29	\$15,600
168	DOUG McDONELL BUILDING	118	3.71	\$14,900
225	213-221 BERKELEY ST	106	3.71	\$12,200
200	MCCOY BUILDING (EARTH SCIENCES)	208	3.57	\$11,600
200	MCCOY BUILDING (EARTH SCIENCES)	211	3.57	\$11,600
200	MCCOY BUILDING (EARTH SCIENCES)	306	3.43	\$11,500
200	MCCOY BUILDING (EARTH SCIENCES)	309	3.43	\$11,500
200	MCCOY BUILDING (EARTH SCIENCES)	418	3.43	\$11,500
200	MCCOY BUILDING (EARTH SCIENCES)	414	3.43	\$11,000
204	208-210 BERKELEY ST (MCM PRACTICE ROOMS)	G05	3.29	\$10,800
177	BAILLIEU LIBRARY	312A	3.00	\$10,000
182	BROWNLESS BIOMEDICAL LIBRARY	211	3.57	\$10,000
194	BIOSCIENCES 5	121	3.29	\$10,000
194	BIOSCIENCES 5	122	3.29	\$10,000
194	BIOSCIENCES 5	G13	3.29	\$10,000
194	BIOSCIENCES 5	G14	3.29	\$10,000



To create more meaningful insights, we have to identify questions our stakeholders may not have considered, such as:

- What is the relationship between building condition and building size?
- Which buildings have the highest level of 'backlog maintenance intensity'?
- What is the relationship between building age and extent of the backlog maintenance liabilities?
- Are we spending (or planning to spend) our capital budgets on the right buildings / assets?
- Where can we make the biggest impact on our students?

=> If we can answer these types of questions, perhaps we can create a more 'strategic asset management' focused dialogue (i.e. decision making framework) at the Executive level of our Institutions!

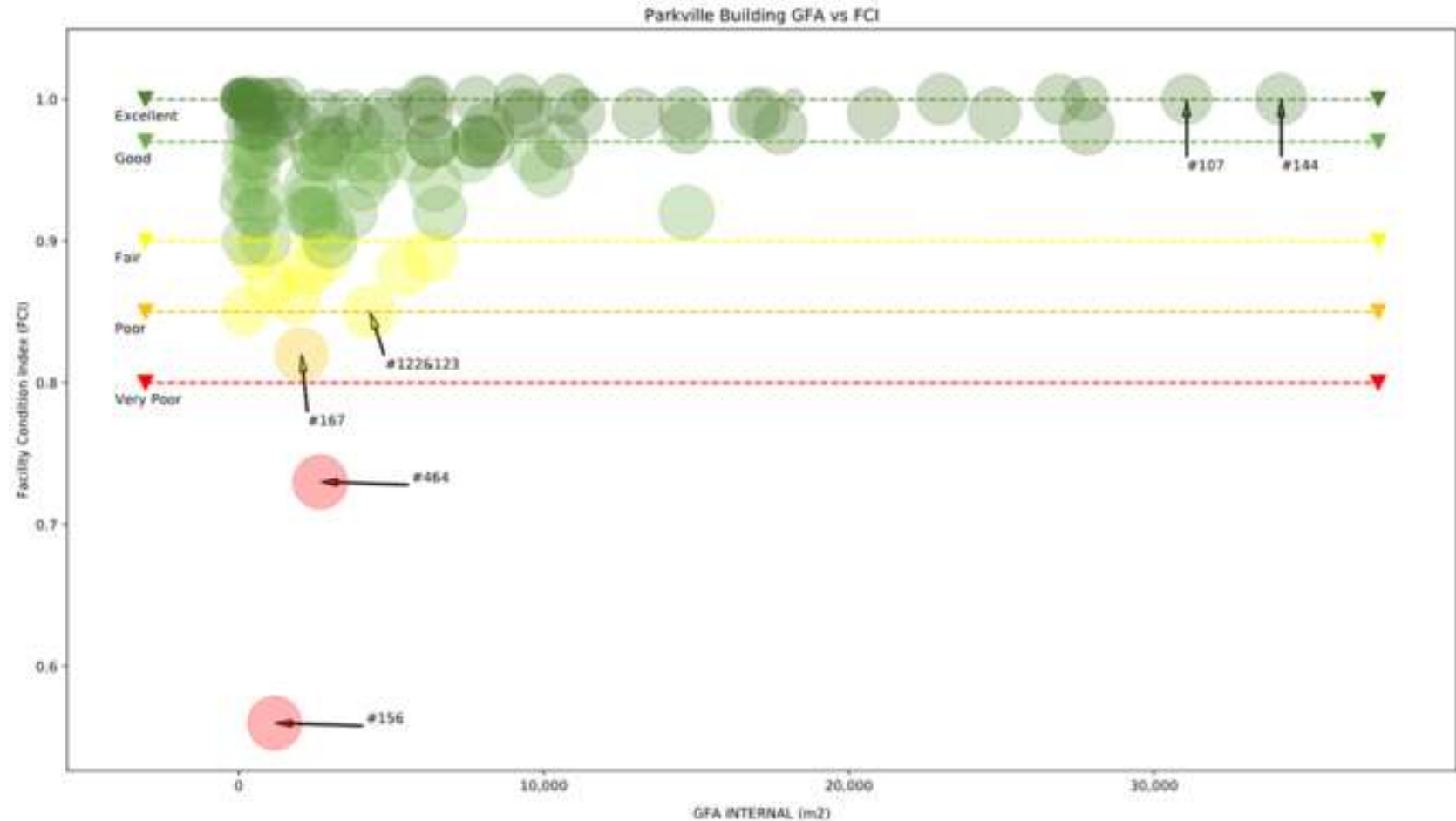
Translating Facilities Data into Evidence for Action

Multi-Parameter Visualisation:

- The relationship between building condition (colour), backlog maintenance liabilities (dot size) and building internal GFA (dot position):

- bigger buildings on the right
- better condition at the top
- low backlog liabilities (small dot)
- dot size is non-linear (to provide a more even distribution of dots).

=> This provides a more valuable perspective, especially on the outliers!



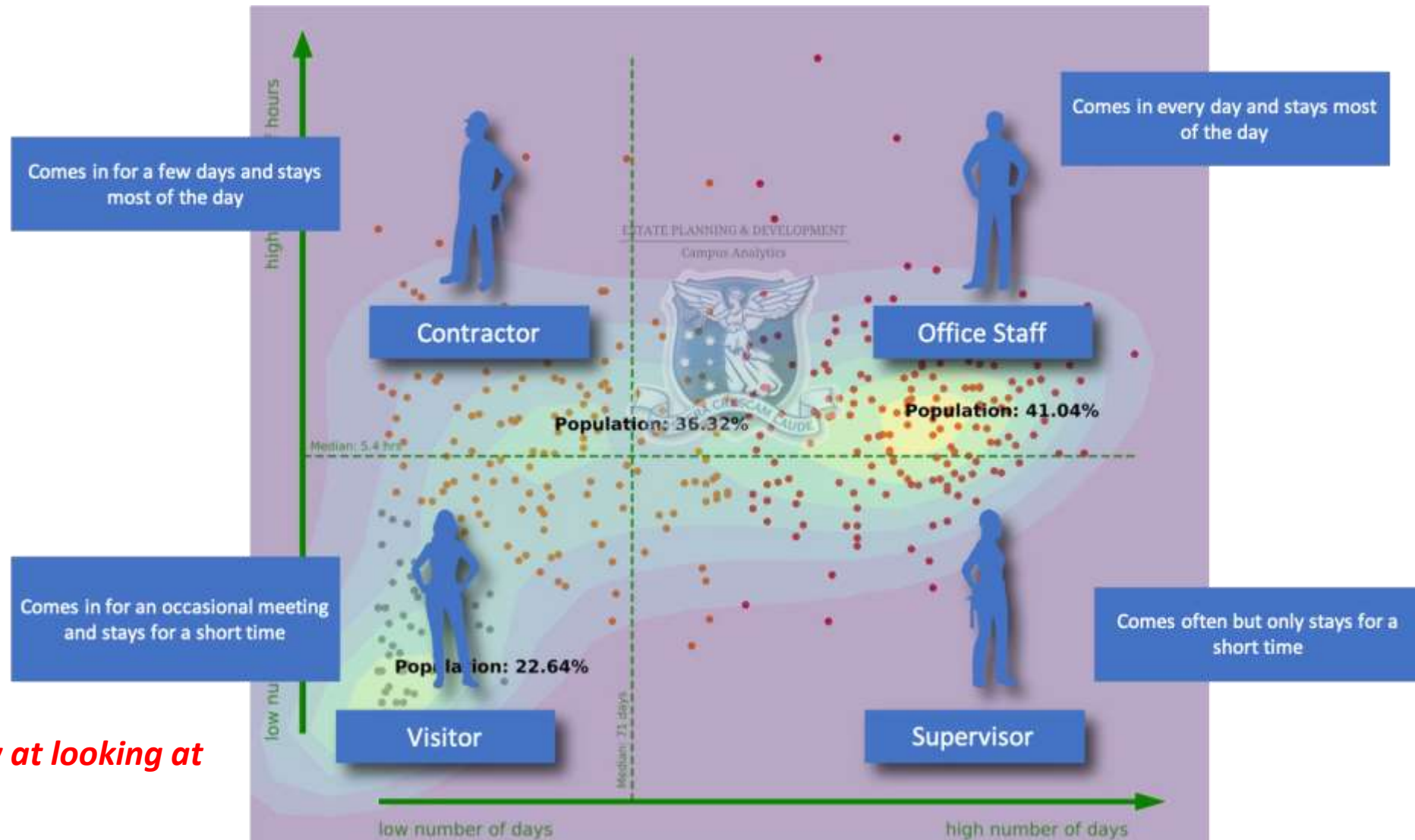
=> Stakeholder Feedback: "This is great – I want to congratulate you for this piece of work. I especially like the “heat map” plans – this is a brilliant communication tool for our senior stakeholders.” (Executive Director, Property & Sustainability)

Translating Facilities Data into Evidence for Action

My colleague, Dr Jan Dethlefs, and his team are developing interesting insights into who visits a building and when:

- Establishing visitation patterns
- Creating 'building fingerprints'

=> A new and interesting way at looking at how a building utilisation!



And if we share our FM datasets with our colleagues in other parts of the University:

=> Data from multiple sources can be presented in the one application / portal to support strategic decision making!

=> Data courtesy of my colleague, Dr Jan Dethlefs, and his team.

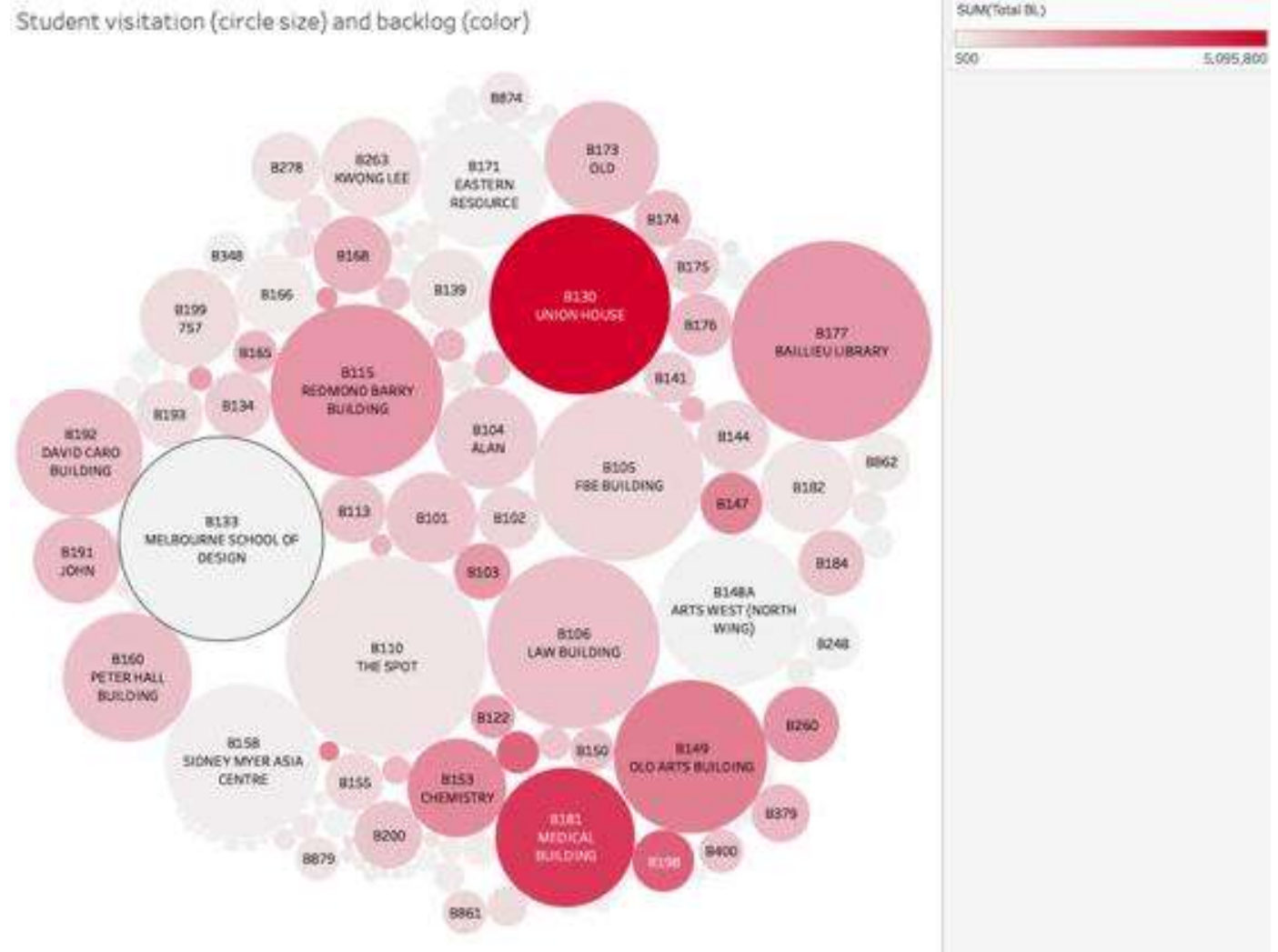


Translating Facilities Data into Evidence for Action

When we introduce other non-FM datasets into the analysis, such as:

- *Student Visitation*

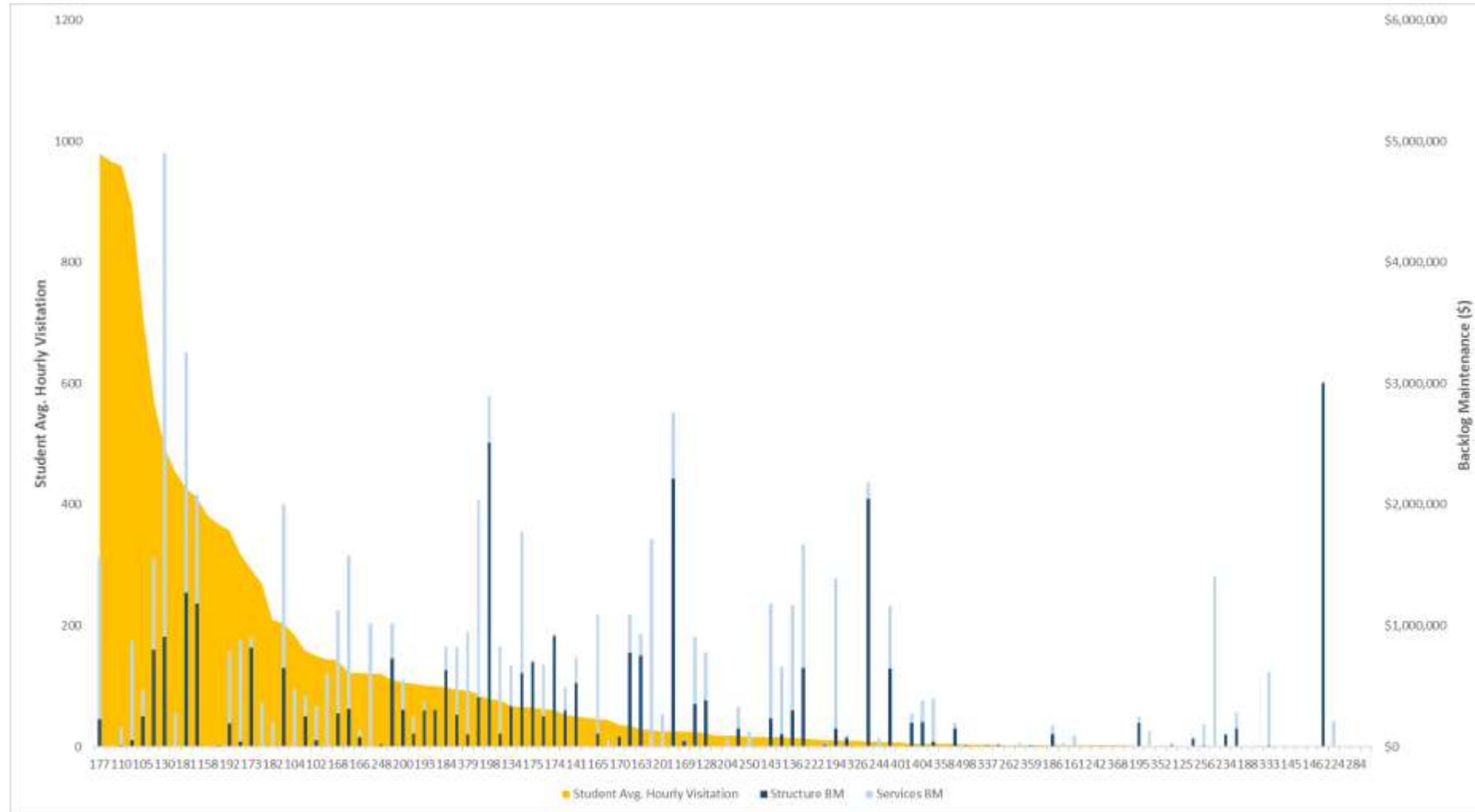
=> Now we can see where a building's backlog liabilities potentially impact the most students!



When we introduce other non-FM datasets into the analysis, such as:

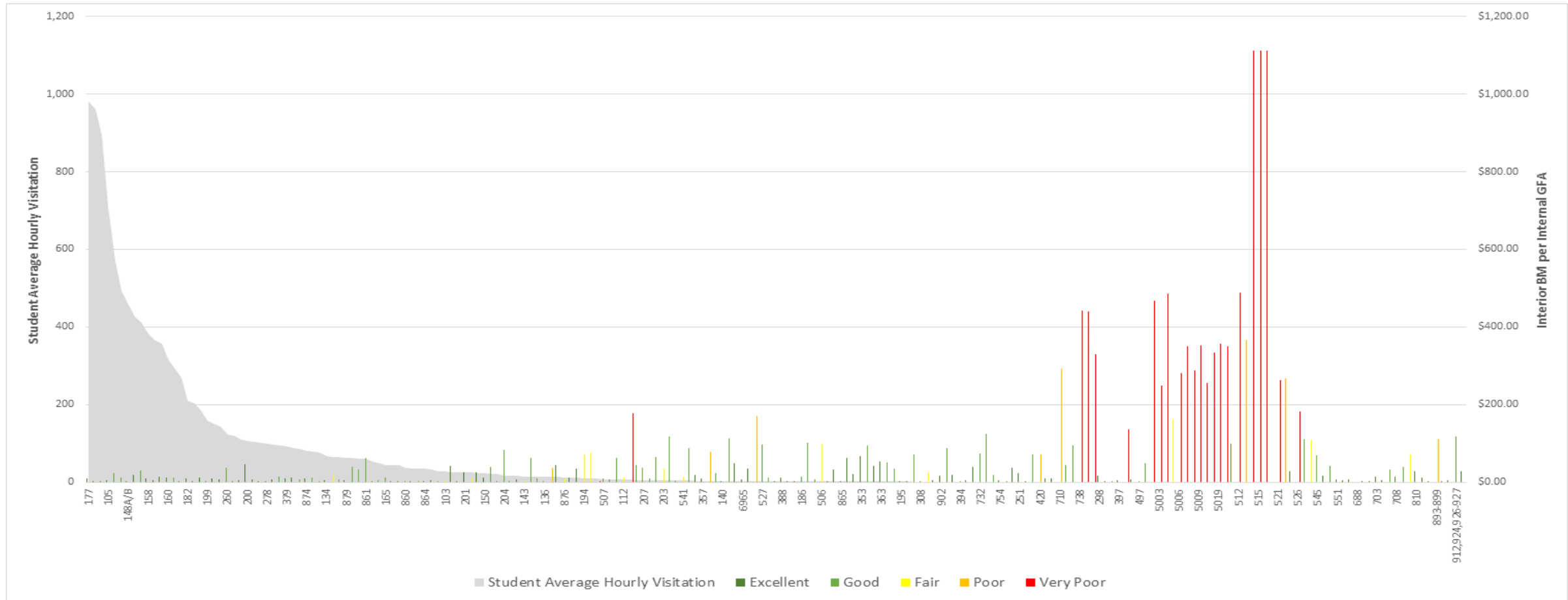
- *Student Visitation*

=> Same dataset as previous slide but different type of visual! Which visual resonates most with stakeholders? Ask them!





Here we combine 'Student Visitation' + 'Internal Backlog Maintenance Intensity' + 'Building Condition Status':

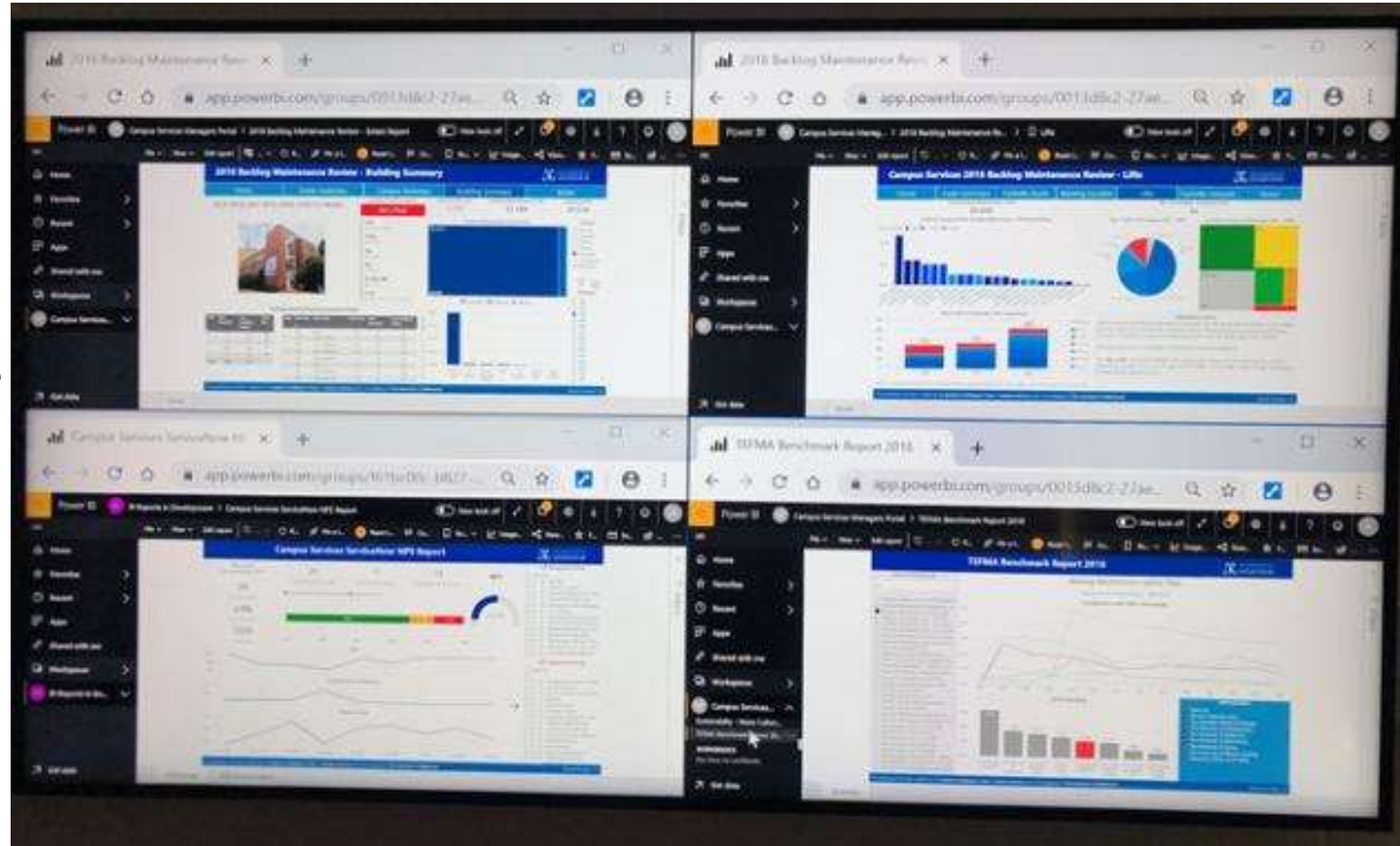


=> So if you want to impact 'student experience' make sure you understand where the students spend their time!

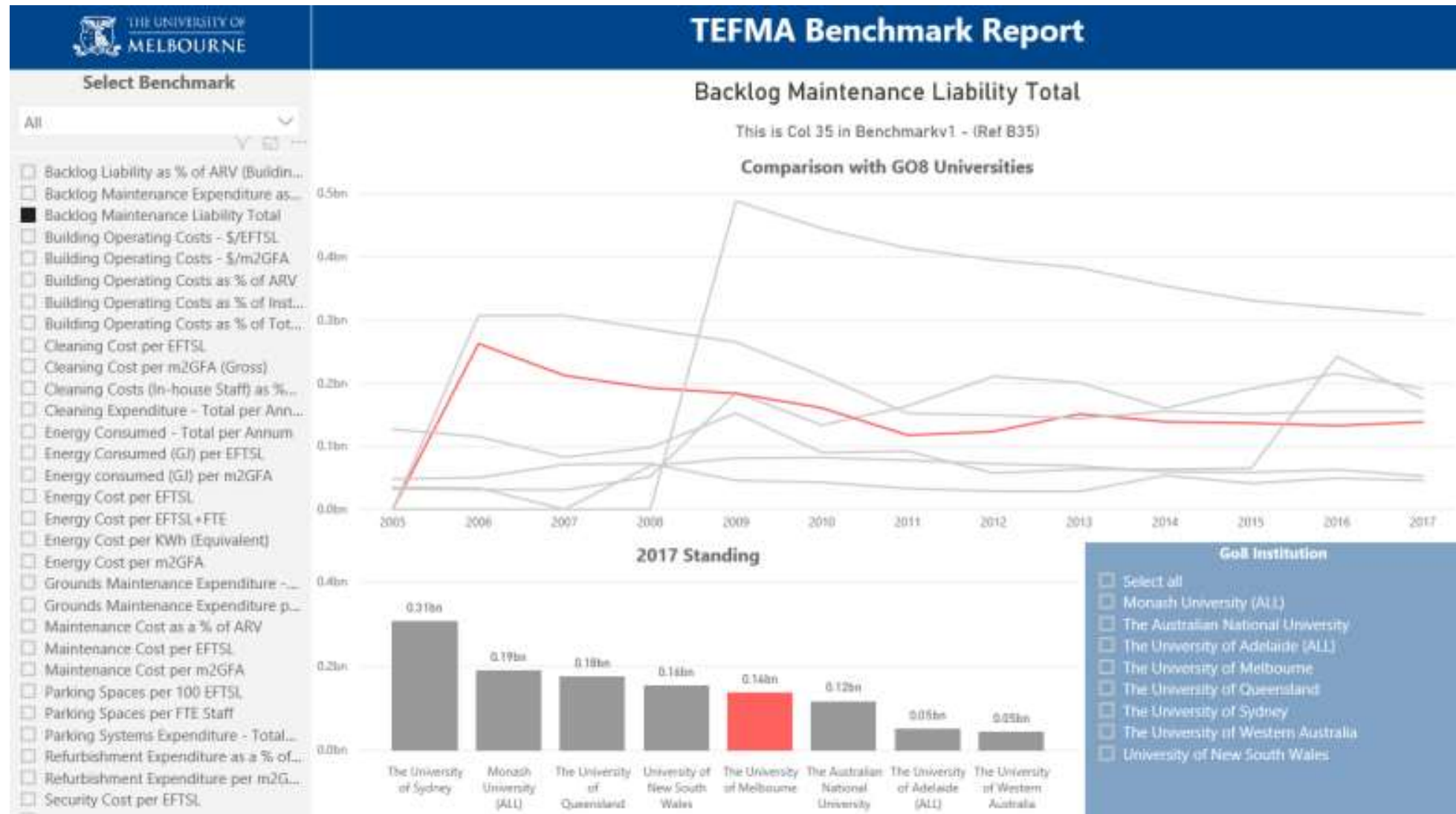
Other interactive Data Dashboards we have developed for Campus Services teams include:

- TEFMA Benchmarking
- Waste Management
- DDA Compliance
- Flammable Cladding (ACP & EPS)
- Energy Consumption & Billing
- Energy Forecasting
- Campus Services Budgets & Expenditure
- NPS (Net Promoter Score) Ratings
 - Customer Service

=> Establishing 'Style Guidelines' has resulted in a consistent look and feel – and a sense of familiarity!

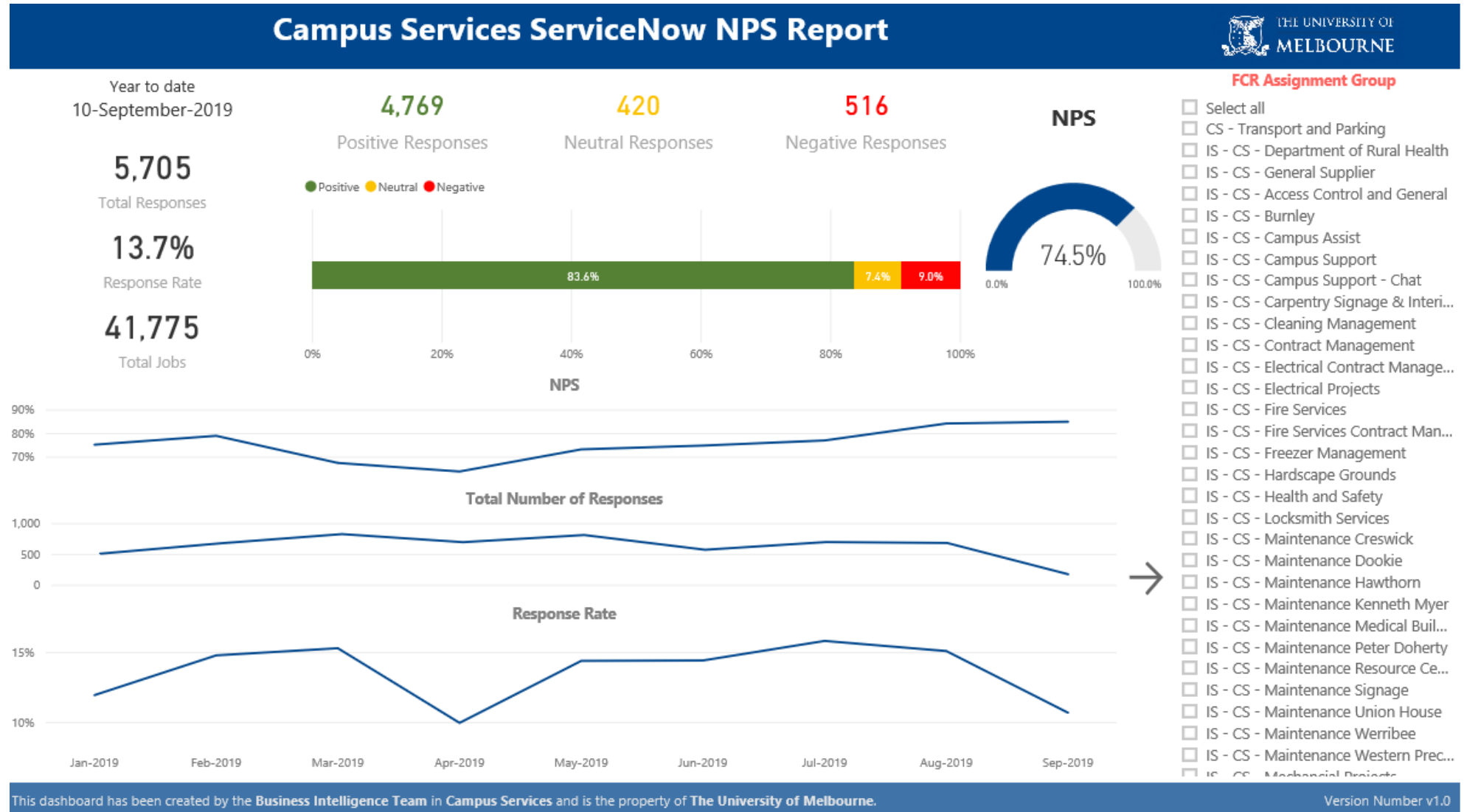


TEFMA / Go8 Benchmarking:





Customer Service Ratings (NPS):



Waste Analysis:



=> The Contractor provides the data - Campus Services develops the data insights!

DDA Compliance Audit:

=> The Consultant
provided the data -
Campus Services
developed the data
insights!



Energy:

- Consumption & Trend Analysis

=> Used to support
Progressive Power
Purchasing!

Campus Services Energy Forecasting

Home

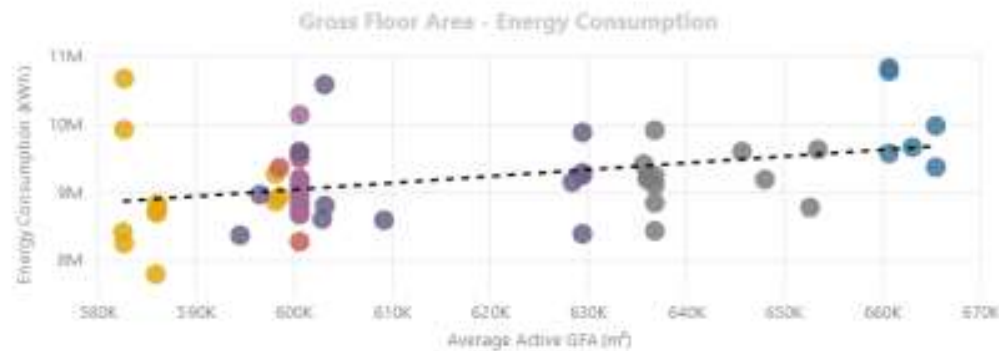
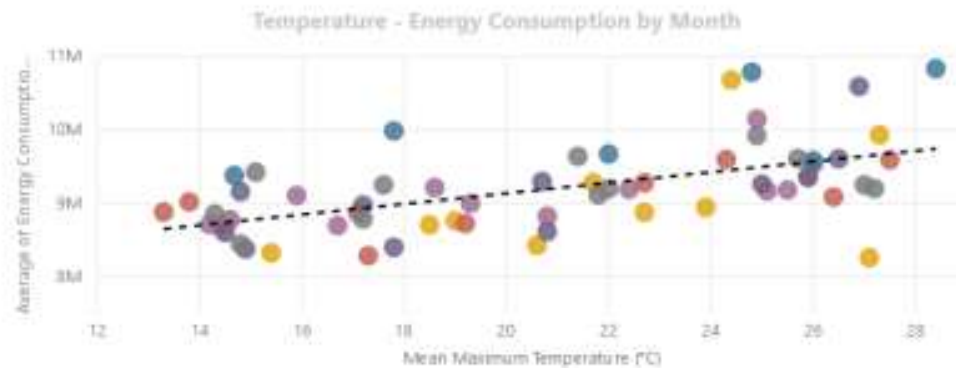
Forecast

Consumption Trends

Correlations

Forecasting Accuracy

Notes



Year

- ☐ 2013
- ☒ 2014
- ☒ 2015
- ☒ 2016
- ☒ 2017
- ☒ 2018
- ☒ 2019
- ☐ 2020
- ☐ 2021
- ☐ 2022

Our BI Product Experiences:

- Microsoft *Power BI*: low cost, straightforward to acquire (annual licence), good functionality, easy to use, and broadly used across the UoM (established UoM user community).
- *Tableau*: higher cost (annual licence), scalable, excellent functionality and data prep tools, and a reasonable distribution of licences across the UoM (courtesy of Space Management).
- *QlikView / QlikSense*: much higher cost (perpetual licensing model), excellent functionality, easy to use, not widely used at UoM.

=> Consider functional requirements, licensing model, cost, and likely stakeholder take up!

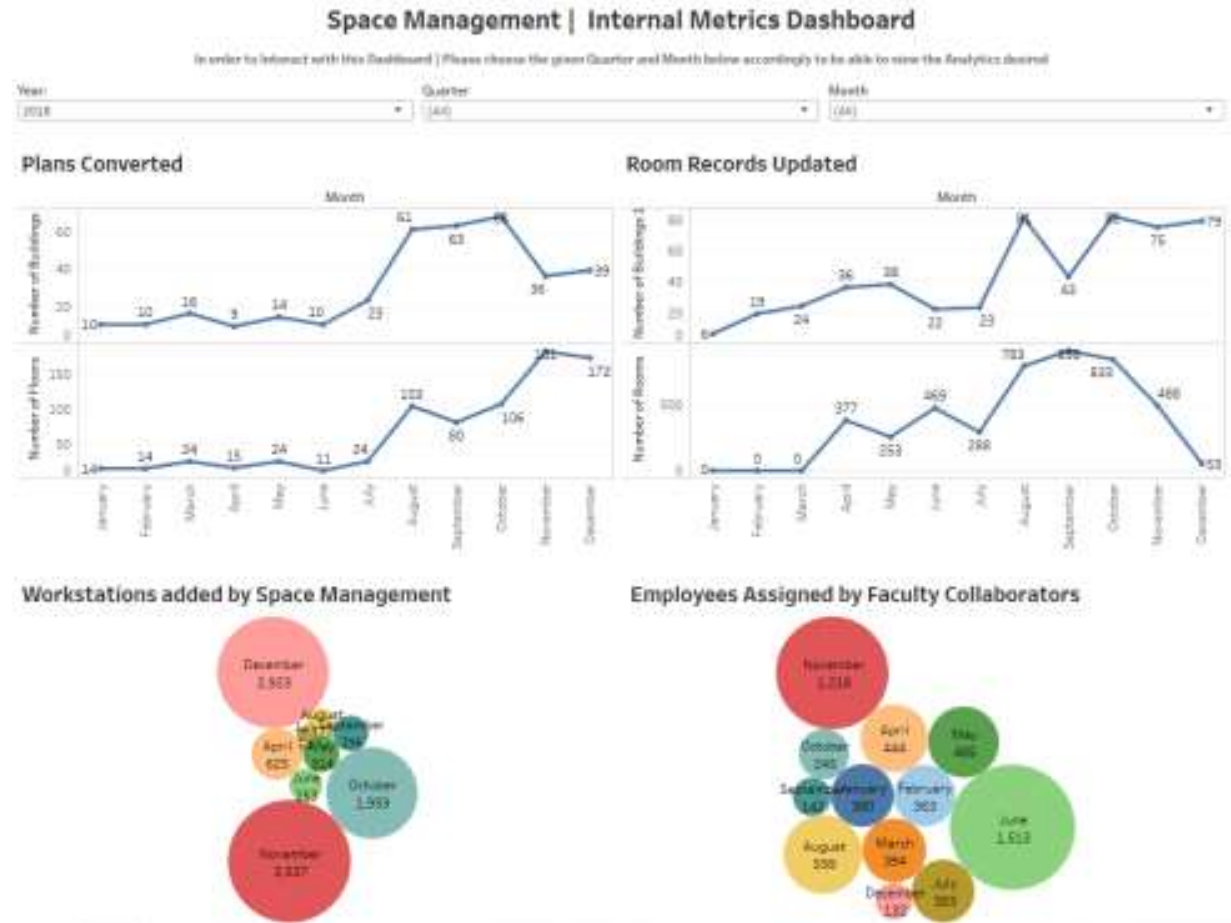


Tableau Dashboard developed by UoM Space Management

Tableau Functional Benefits:

- Bubble Charts
- Embedded Videos
- Interactive Mapping
- Data Preparation Tools
- Better Quality Visuals
- and more!

=> We are replicating the
2018 Backlog Maintenance
Review dashboard in
Tableau.

=> Some Space
Management dashboards
include our BM Condition
Data.

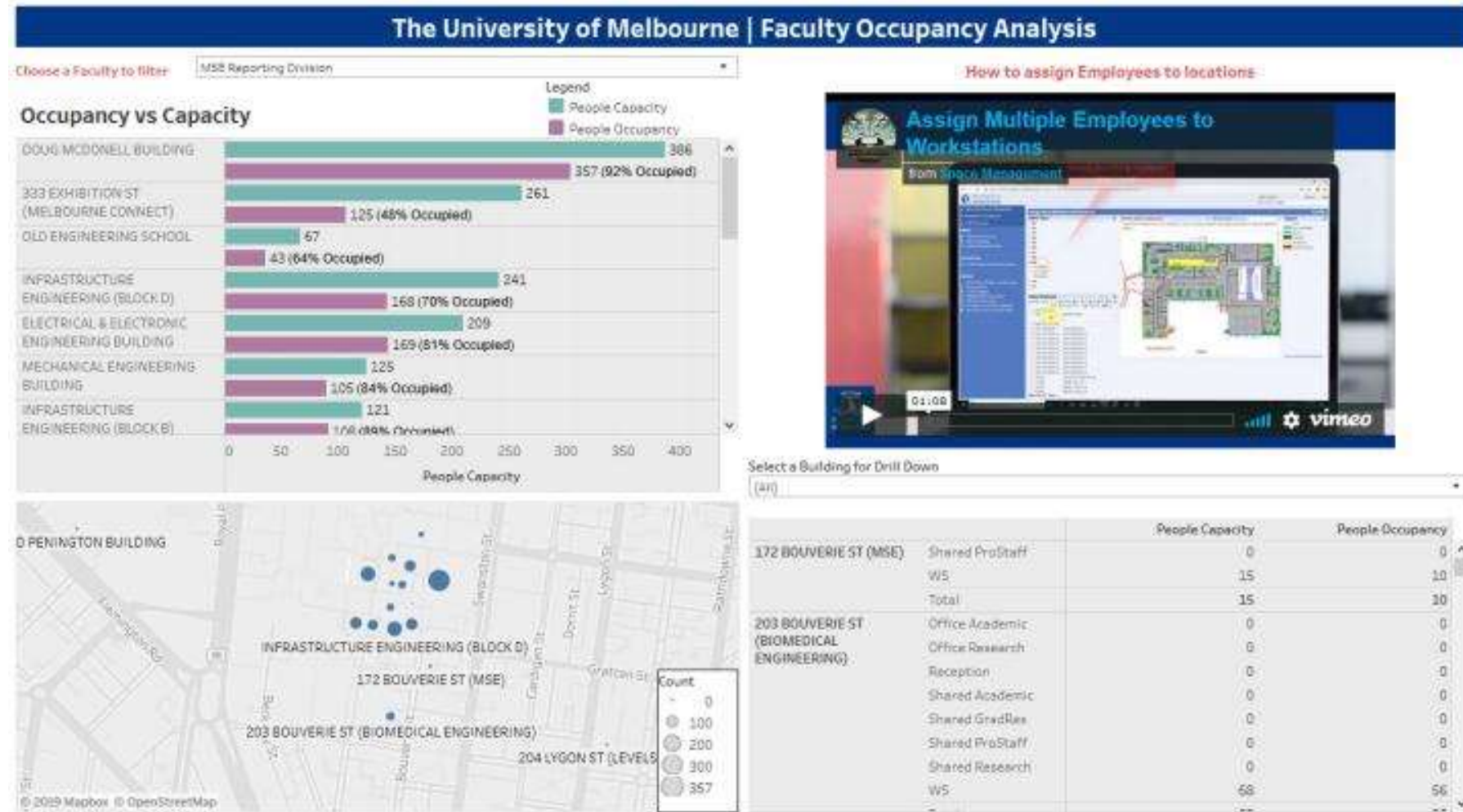


Tableau Dashboard developed by UoM Space Management

Dashboard Tips:

- Treat dashboards as ‘digital products’ - supported by ‘Product Data Sheets’ (purpose, audience, benefits, effort, etc.);
- Turn the data into knowledge and wisdom;
- Must be easy to use and consume content;
- Must encourage exploration and satisfy curiosity;
- Select visuals with audience in mind – they must resonate!
- Be consistent with the use of colour;
- Develop ‘style guidelines’ (templates) for a consistent look and feel (provides familiarity);
- Consider currency of content (i.e. live, static or need for regular data refresh / update) – aim to create longevity;
- Is the insight in the outliers, the trend, the majority, or something else?
- Include ‘Guidance Notes’ (i.e. assumptions, exclusions, limitations, metadata, source, data quality, currency, etc.);
- Seek suggestions and feedback;
- Develop in an ‘Agile’ manner (i.e. innovate, iterate, test, refine, improve, etc.);
- Consider access control / restrictions (i.e. content sensitivity, widespread, role-based groups, by invitation, etc.);
- Select the right technology platforms (functionality, licencing model, cost, security, existing usage, etc.).

=> Design and develop with care and consideration!



Challenges to consider:

'Becoming a data-driven organisation requires effort and coordination across a variety of stakeholder groups. It requires executive advocacy, alignment, participation and buy-in, supported by the development of new skills, behaviours and practices. This is not easy to achieve and takes time, persistence and patience.'

Be prepared to address:

- lack of *Data Literacy* and the importance of *Data Governance*;
- self-preservation instincts / holding on to data;
- breaking down the silos;
- bringing everyone on the journey (including contractors, internal and external stakeholders);
- maintaining focus on the outcomes not the technology;
- blending the right skills, capabilities, experience and different perspectives;
- and the need for an '*Analytics Translator*'.

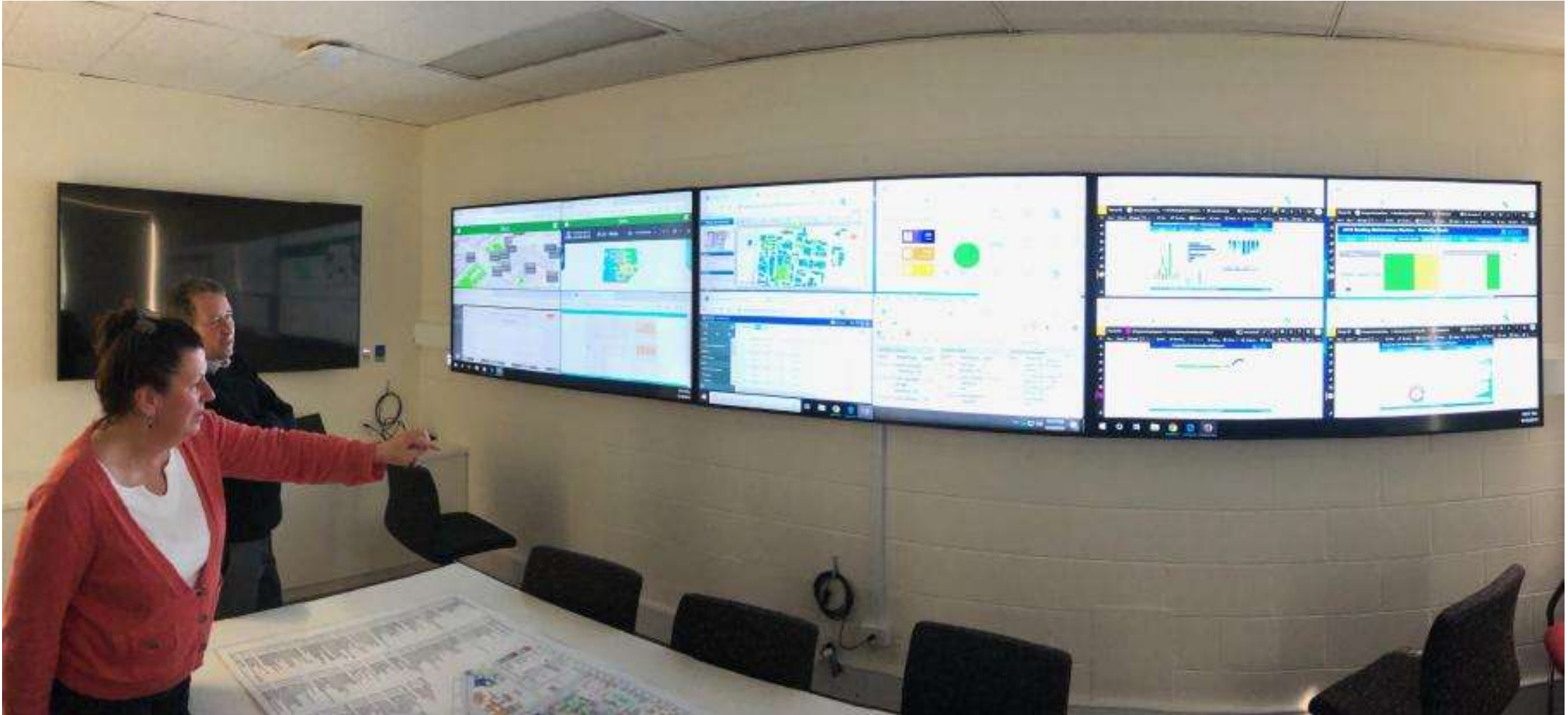
=> It doesn't happen overnight!

What's Next?

- Continue to establish sound business intelligence and reporting practices (*'traditional analytics'*);
- Publicise the availability of the dashboards to a wider audience;
- Broaden access to our existing dashboards (internal and external to Campus Services);
- Improve data sharing practices with our key service providers;
- Develop new dashboards for other parts of the business;
- Develop more 'shared data' dashboards with other UoM stakeholders (e.g. Space Management);
- Develop insights for recently collected 'Grounds Asset' Data;
- Operationalise our new **'Smart Campus Data Operations Room'**;
- Trial predictive and prescriptive practices (*'advanced analytics'*) – IoT / Smart Campus initiative.

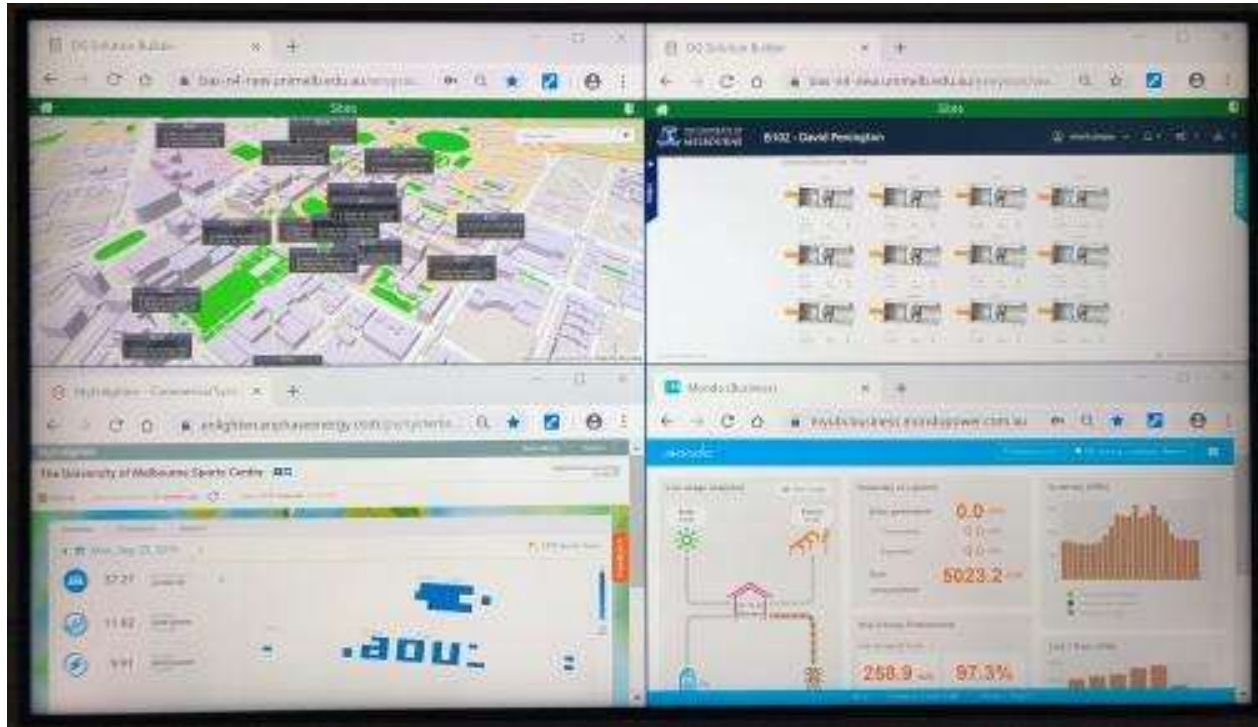
=> It is an exciting journey!

The Smart Campus Data Operations Room:

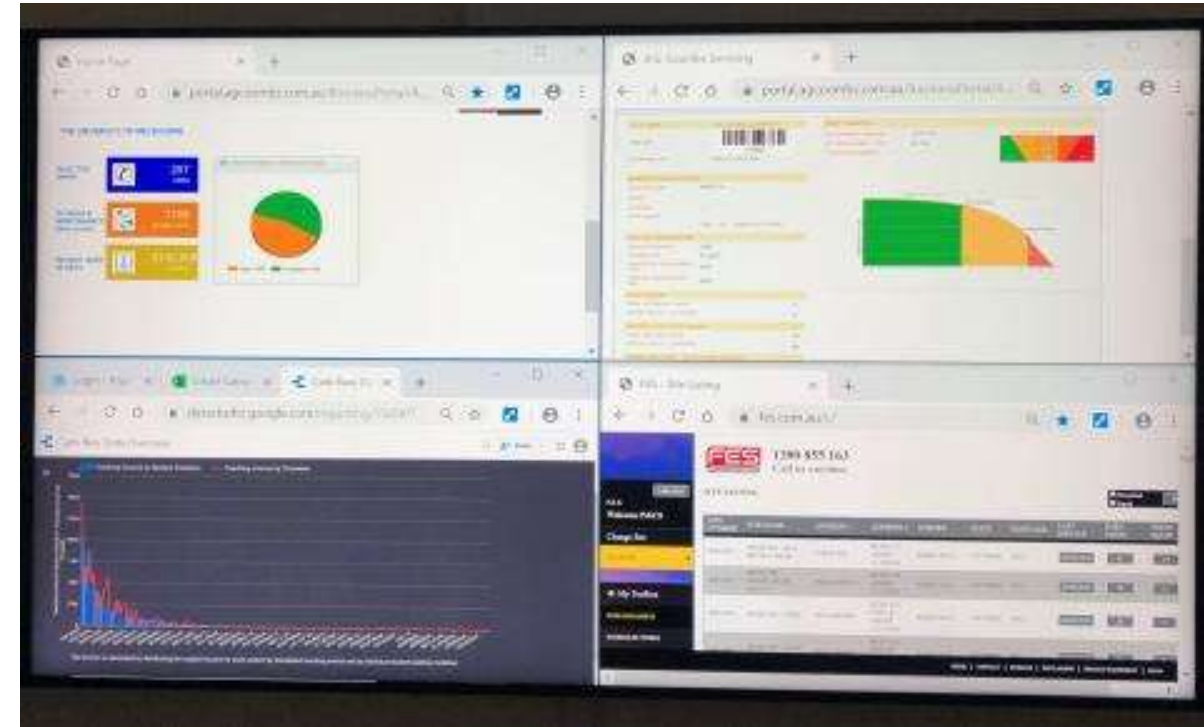


The Smart Campus Data Operations Room:

Live Data Streams



External Portals



=> Bringing all the 'evidence for action' into one place to enable informed decision making!

Summary of Key Benefits:

Well designed dashboards add value by:

- Telling stories (turning data into information);
- Establishing insights;
- Highlighting trends;
- Identifying 'outliers' and 'issues';
- Raising curiosity and encouraging questions;
- Answering questions;
- Encouraging meaningful discussion and debate across the organisation;
- Supporting stakeholder alignment (shared context) and requests for funding;
- Creating 'evidence for action' and a focus on 'high pay off actions'; and,
- Assisting works prioritisation.



=> Resulting in better outcomes (better service, increased reliability, cost savings, increased client satisfaction, better facilities, etc.) and

=> Assisting stakeholders in making more informed 'smarter' decisions (i.e. 'value realisation')!



Be prepared to weather the storm, there's gold at the end of the rainbow!

Thank You!