esri Canada
Exploring the Value of Adopting GIS Solutions for Campus Operations
Prepared for OCFMA
June 14, 2021
CANADA BEST MANAGED COMPANIES
Platinum member

Introductions

Iain Greensmith
Esri Canada

Samuel Adanyi
Fanshawe College

Agenda

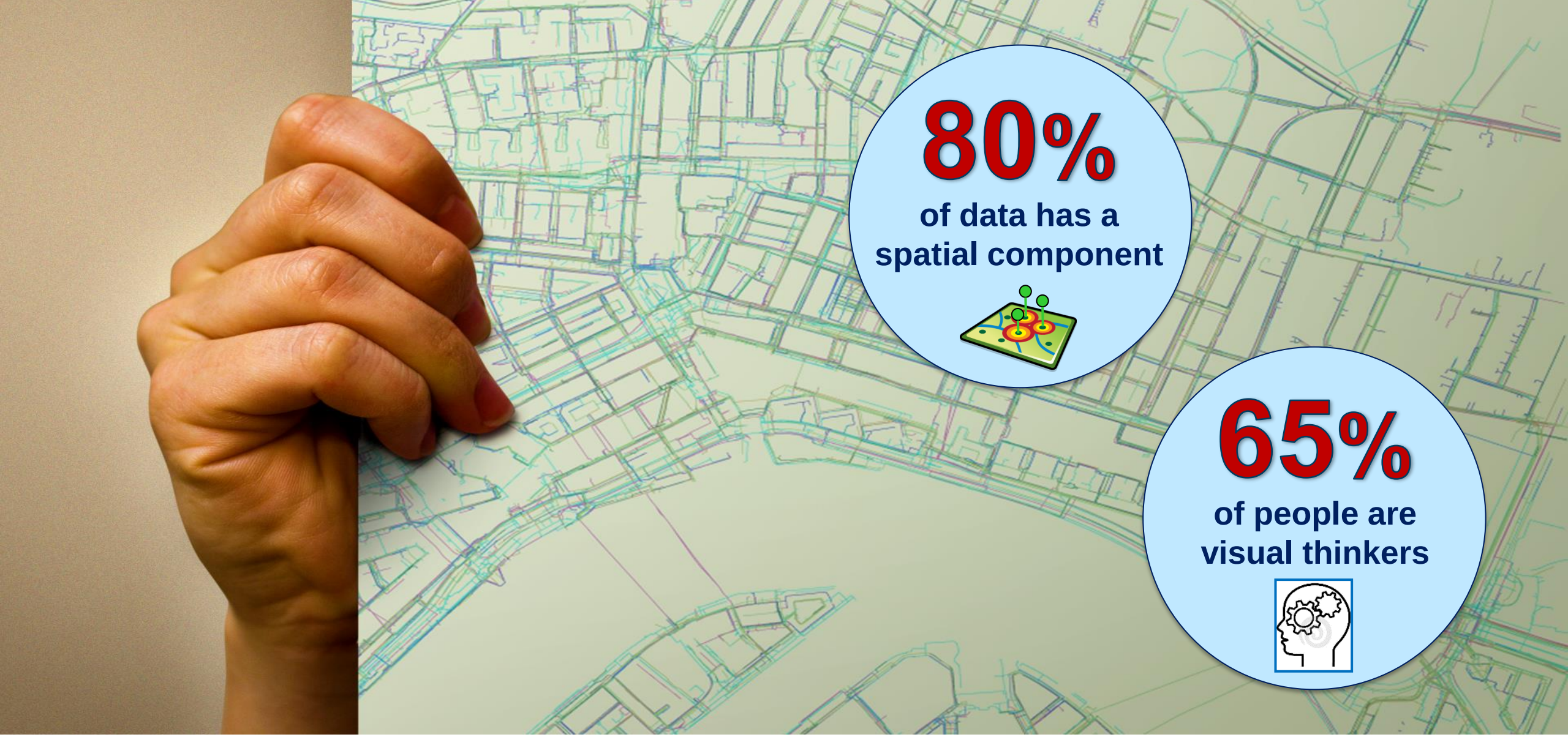
- Value Proposition for GIS on campus
- GIS Use Cases for Campus Operations
- Case Study: Fanshawe College

Key takeaways from video

- **GIS is the common glue to bring together multiple business systems and remove data silos**
  - **Access to data by all staff**
  - **Configurable apps that can be redeployed for different uses**
    - **Field data collection**
    - **Work order coordination**

“At the heart of all of this decision making...is data that we can manage, report, visualize, and manipulate through GIS"

Brian Swanson – AVP and CFO, University Services, University of Minnesota



Why GIS?

Spatial + Visual

GIS: *The foundation of a Digital Twin*

- The ability to structure and organize data that allows us to create a scale model of the real world
- A GIS maps this scale model to help understand assets
- Provides a historical record / baseline
- Operational performance monitoring
- Test against and plan for future outcomes with analytics

Sustainability

Asset Inventory

Transportation networks

Vehicle locations

Return to Campus

Utility networks modeling

Space planning

Shut-off valves

Sanitation

Locates

Work Management

Emergency Management

Capital projects

Building Floor plans

Geo-enabled Document management

Campus Safety

Sensors / IoT

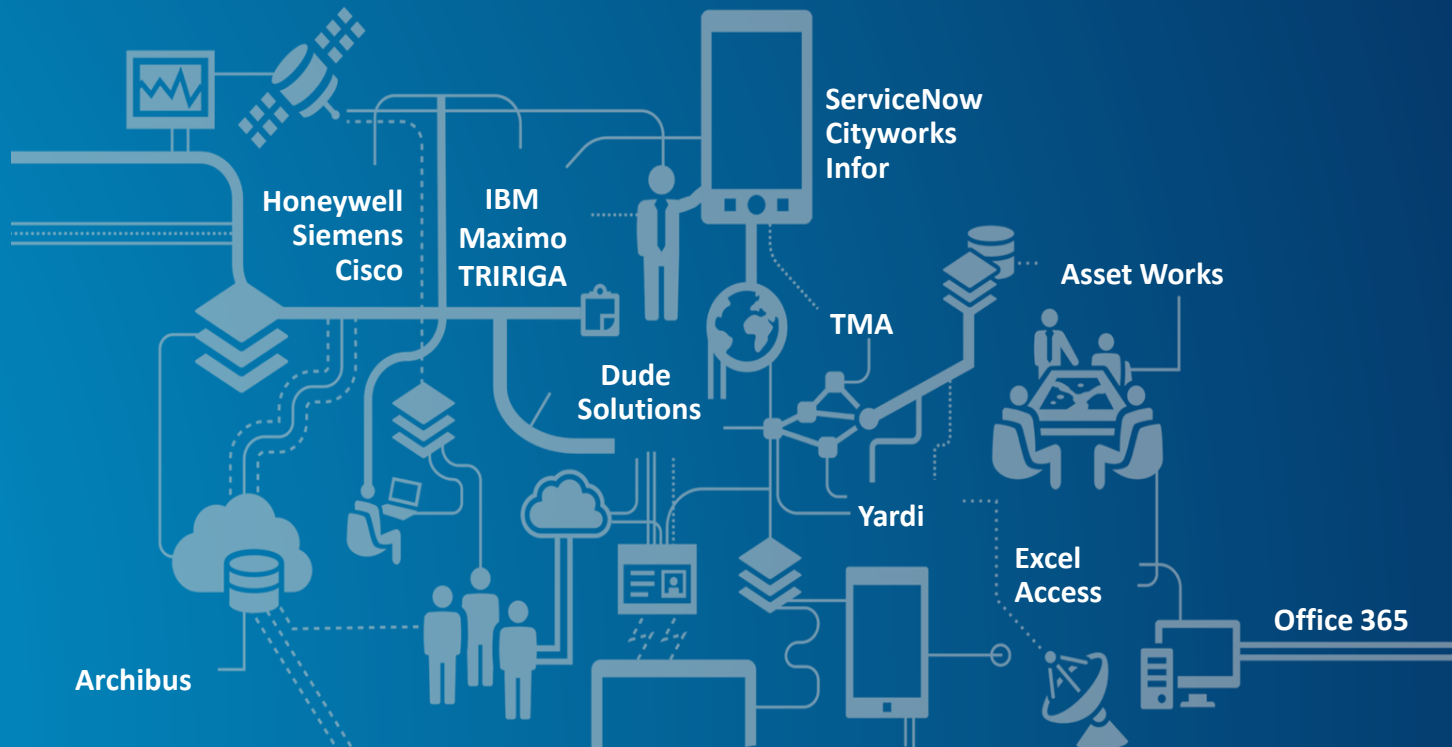
Campus trees

Integrate Existing Systems

Extend the benefits of current campus systems

Types of data with our platform and existing systems

- AVL
- IoT
- Work orders
- CAD
- BIM
- Imagery



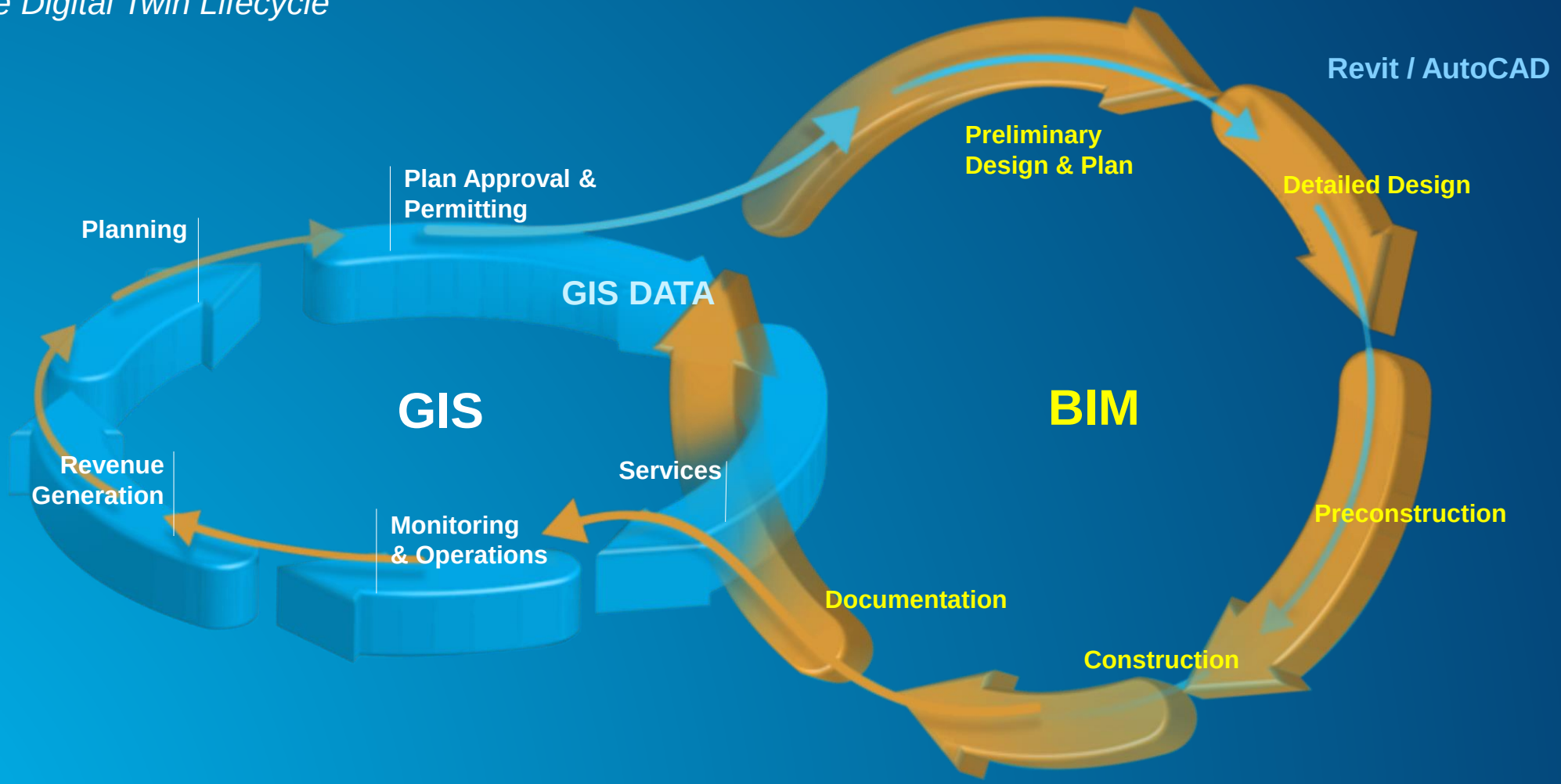
GIS Applications Are Transforming Infrastructure Management

Supporting Specialized Design and Engineering Workflows

Leveraging the Power of GIS . . .
. . . Data, Analytics and Visualization

Integrating GIS & BIM Workflow

Complete Digital Twin Lifecycle



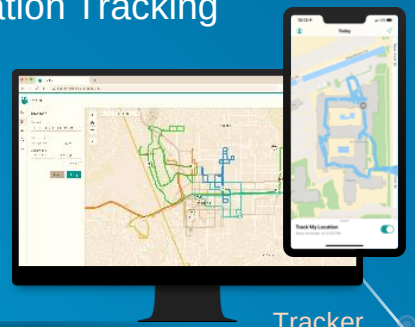
Built Environment

Capital Projects

Integrated Field Operations

Location-Enabling All Aspects of Field Work

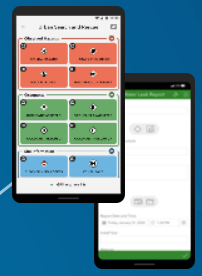
Location Tracking



Enterprise and Online

Tracker

Data Capture, Inspections & Surveys



QuickCapture

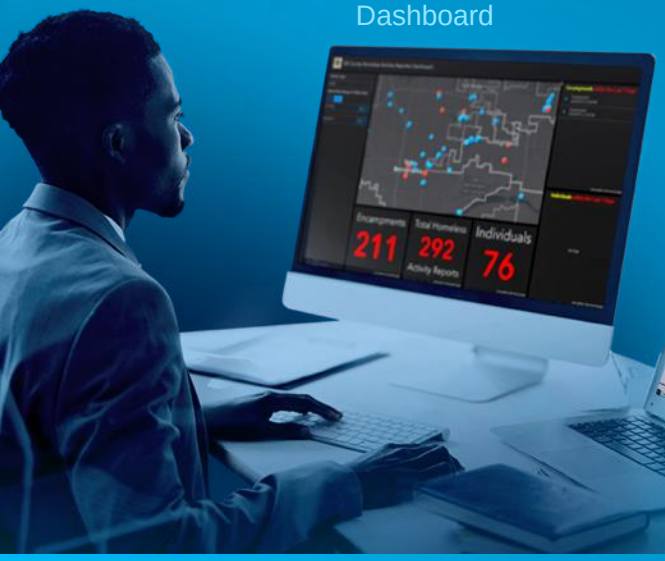
Lines & Polygons

Survey123

Integrated App

Operational Awareness

Dashboard



Plan & Manage

Workforce

ArcGIS Field Maps

View | Collect | Track

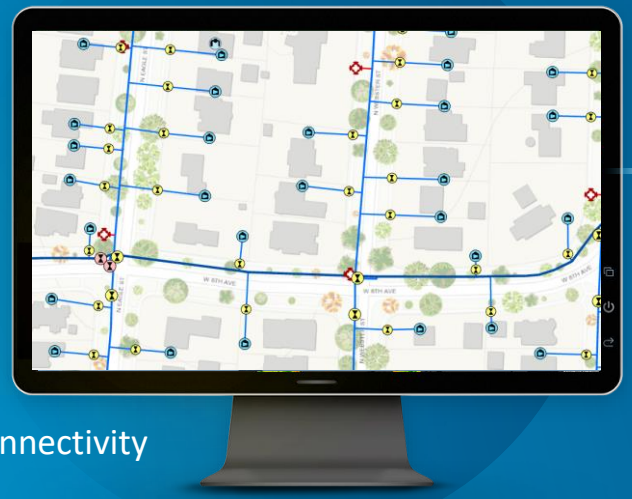
Connecting & Transforming Mobile Workflows . . . in Every Industry

Utility Network Modeling

Creating an Accurate Representation to Address Real-World Modeling

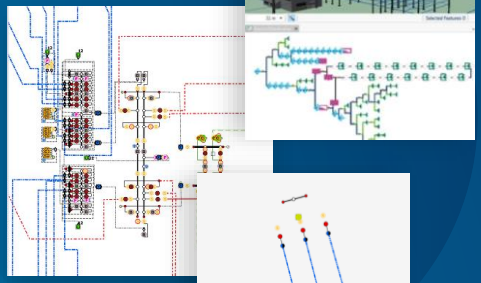
Distribution, Collection, & Conveyance

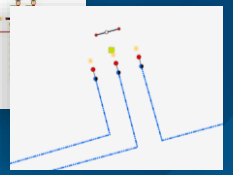
Network Controllers



Connectivity

Containment





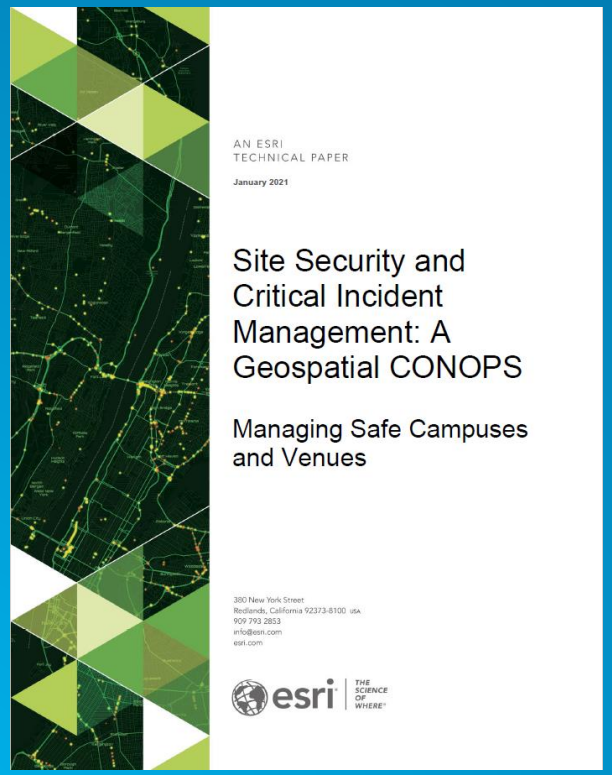
Devices

Water, Electrical, Gas, and Telecom

Model connectivity of assets and business logic

Campus and Community Safety

Geo-enabled solutions for incident management and program planning



Indoors

An Enterprise Mapping System for Operations and Mobility

GIS for Asset, Space and Building Management . . .
. . . In a Single System

Operations

Safety & Security
Emergency Management
Problem Reporting
Asset Management

Wayfinding

Employee Routing
Indoor Positioning
Public Kiosk
Tracking

Portfolio Management

Buildings
Infrastructure

Data Management

System of Record
CAD / BIM
Floor Plan Integration

Stakeholders

- Business Owners
- Operators
- Employees
- Visitors

Floor Plans

3D Maps

Indoor Positioning

Wayfinding

Location Sharing

Workplace Analytics

Fanshawe College

Case Study

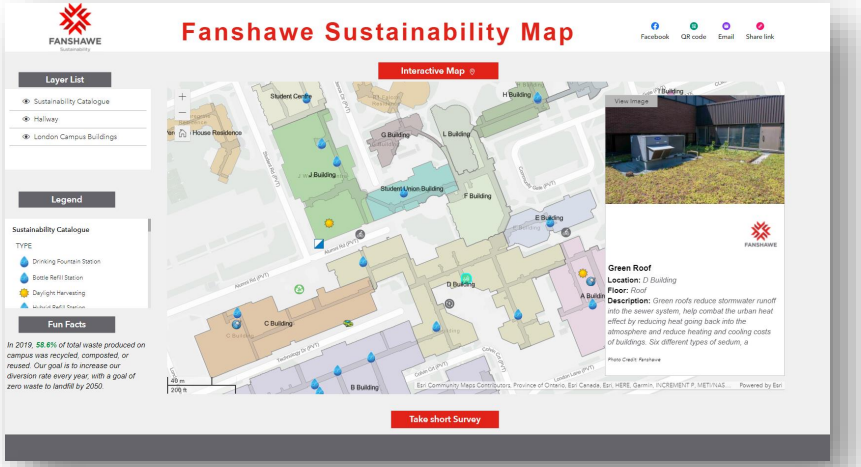
Agenda

- Fanshawe GIS Use cases
- General background
- Demo

Fanshawe Use Cases

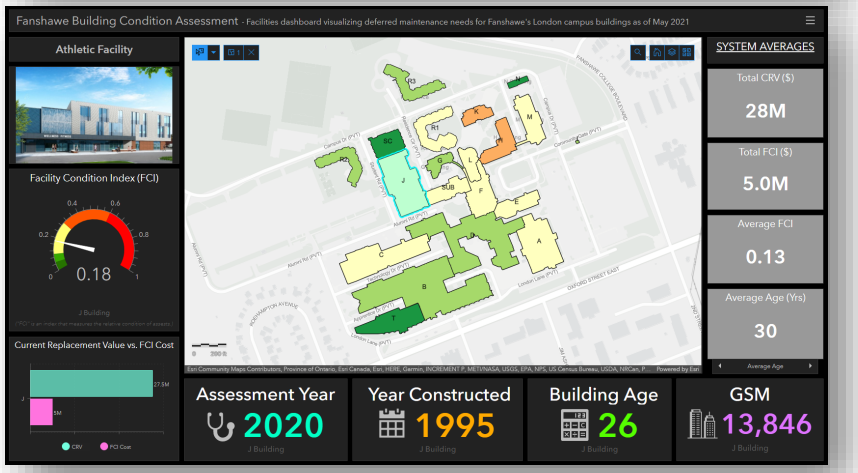
- **Fanshawe Sustainability App**

An ArcGIS web map designed to showcase sustainability features located on campus



- **Deferred Maintenance Dashboard**

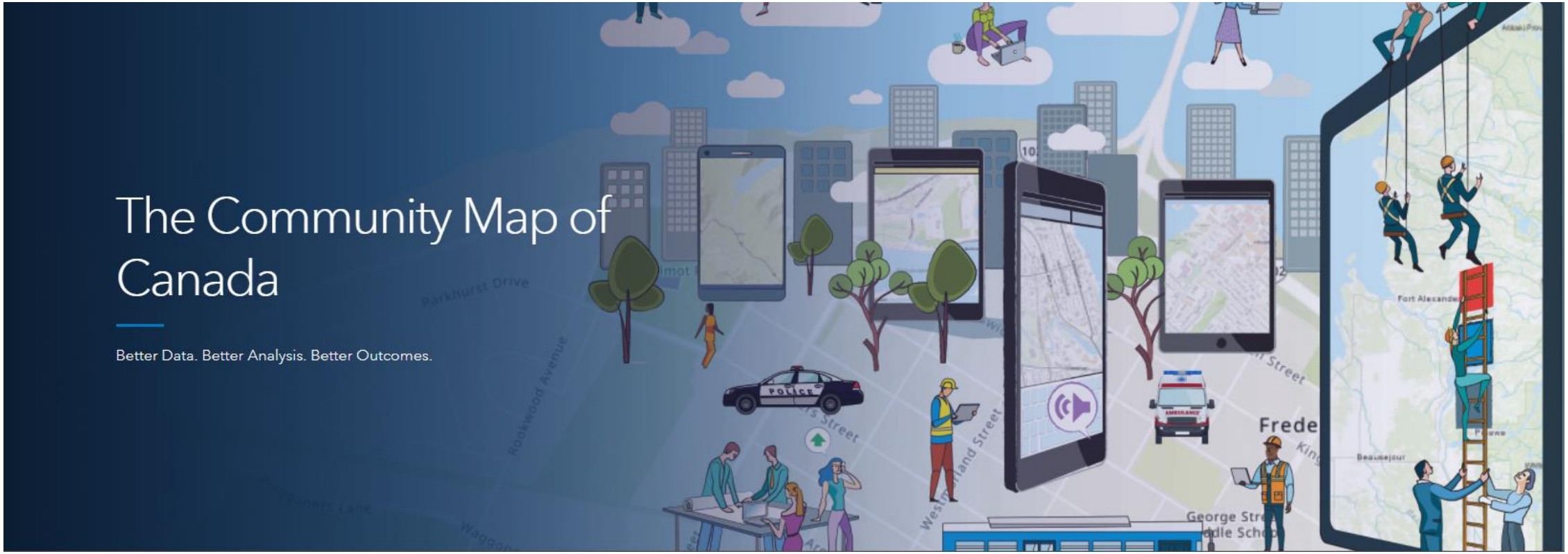
A Facilities dashboard visualizing deferred maintenance needs for Fanshawe's London campus buildings



FANSHAWE

General Background

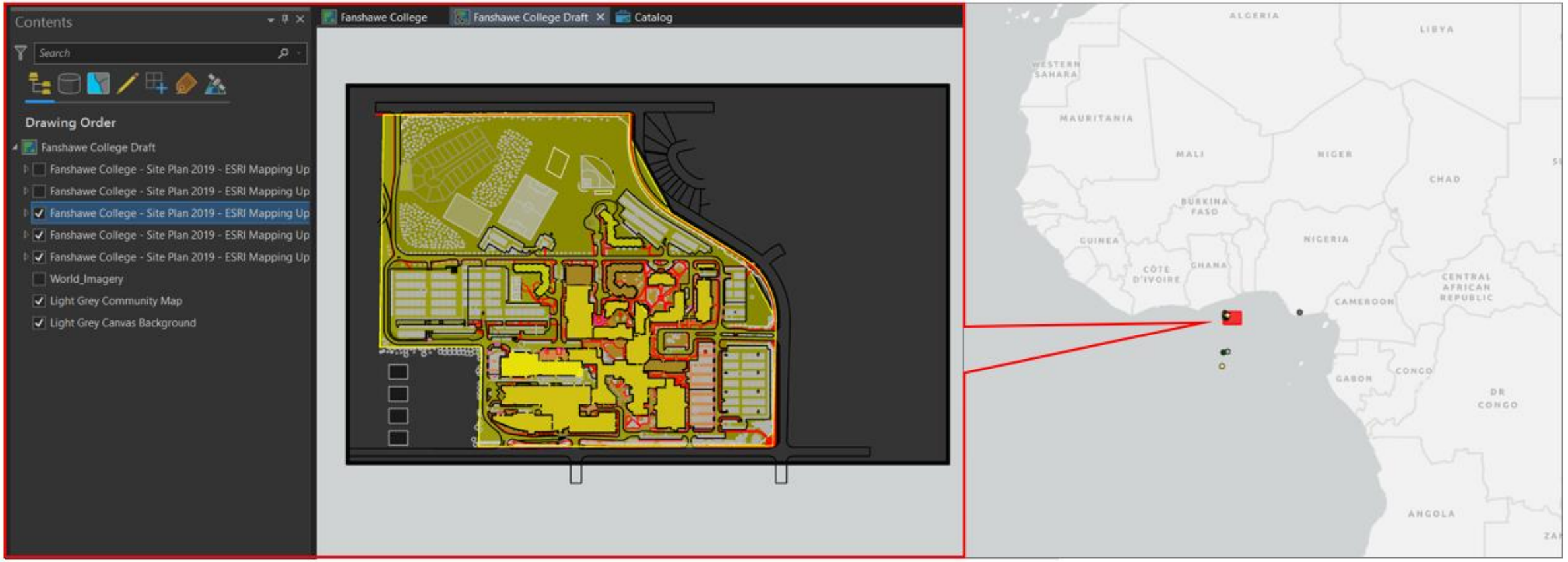
- Community Maps of Canada
  - *A community driven basemap from authoritative sources*



https://www.esri.ca/en-ca/products/data/the-community-map-of-canada

General Background

- Leveraging Existing CAD files
  - *AutoCAD layers were used to generate shapefiles*



- *CAD Data Before Georeferencing*

General Background

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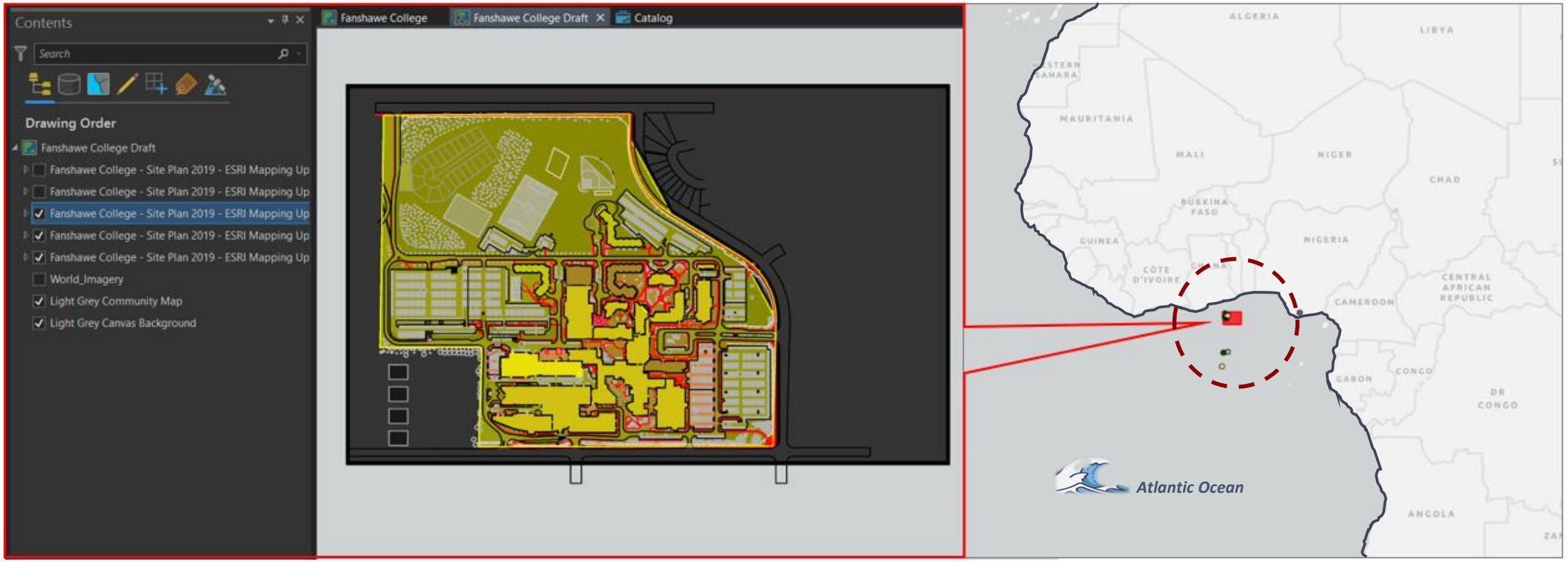

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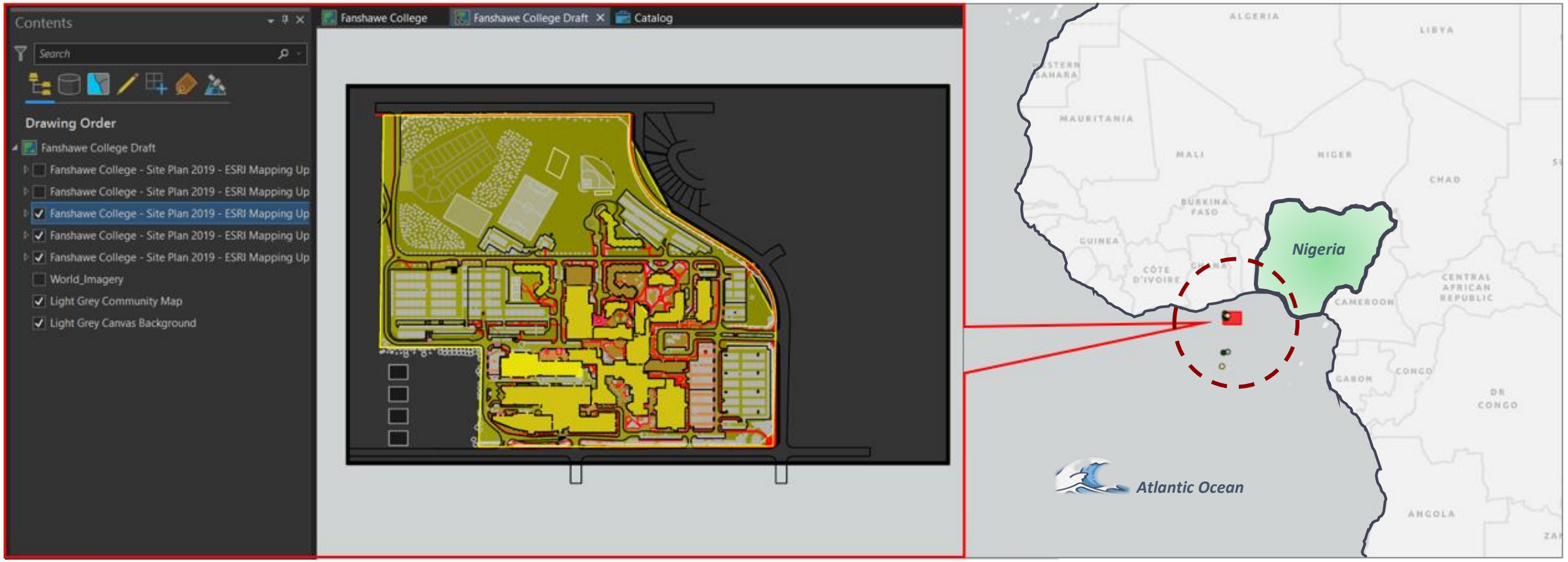

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General Background

- Leveraging Existing CAD files
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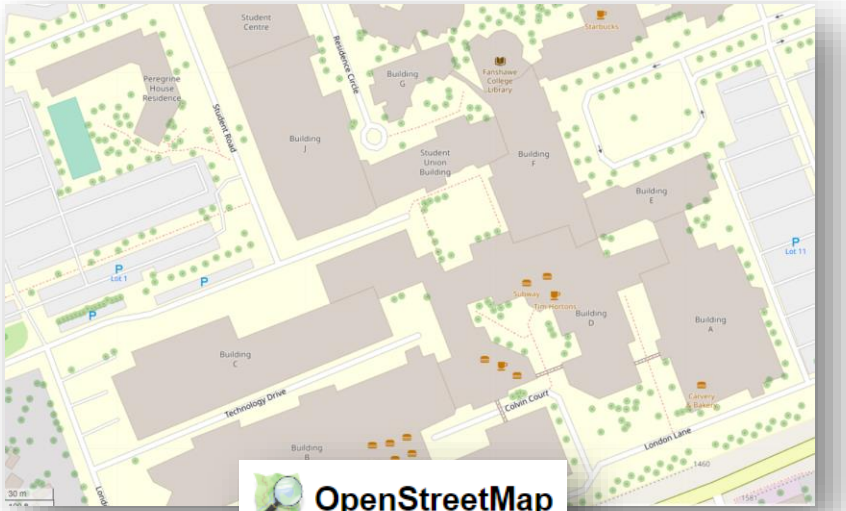
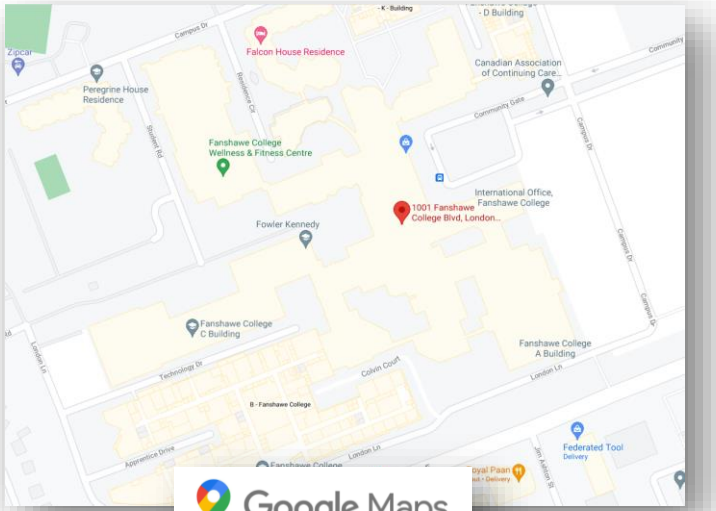
General Background

- Advantages and Benefits?
  - *Accurate campus Basemap*





- *Basemaps*

General Background

- Advantages and Benefits?
  - *Geospatial File format*

- *Fanshawe college – ArcGIS Pro*

Fanshawe Use Cases

- **Fanshawe Sustainability App**

An ArcGIS web map designed to showcase sustainability features located on campus

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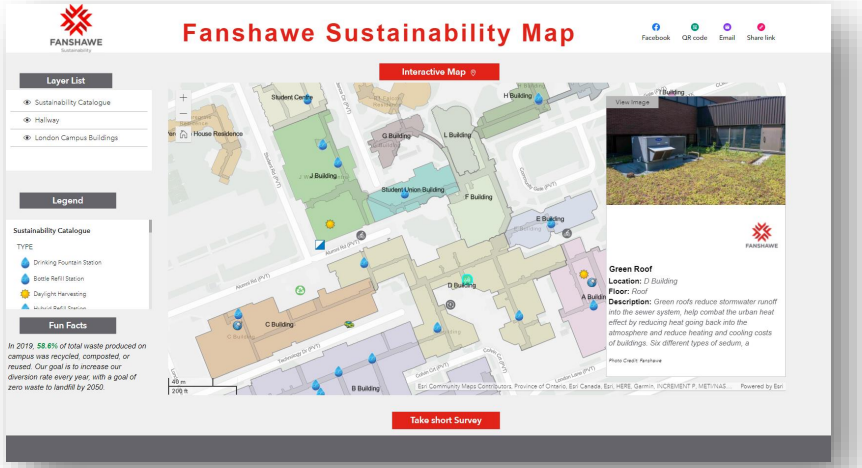

FANSHAWE

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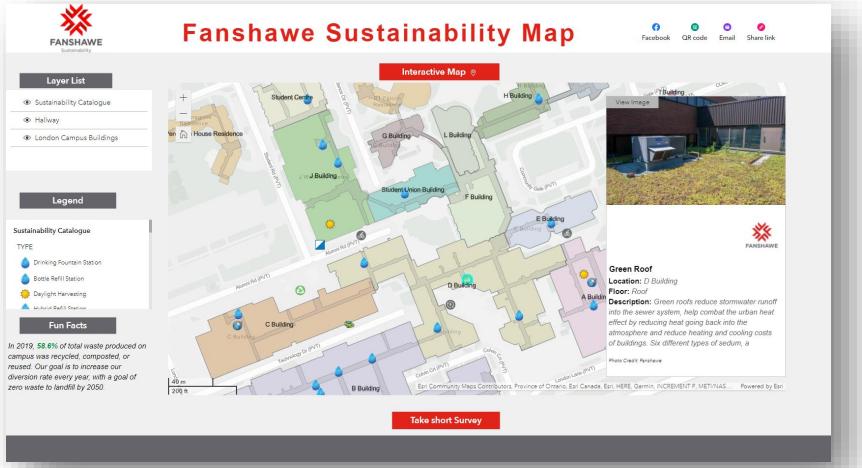

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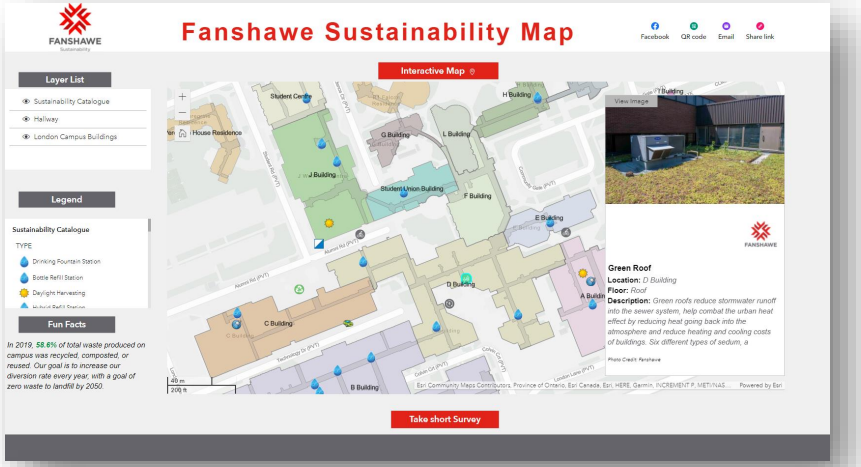

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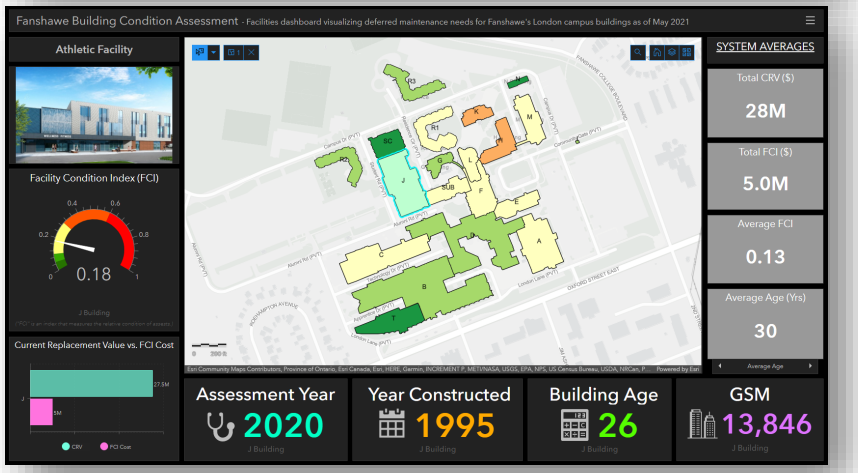

FANSHAWE

Use case 1

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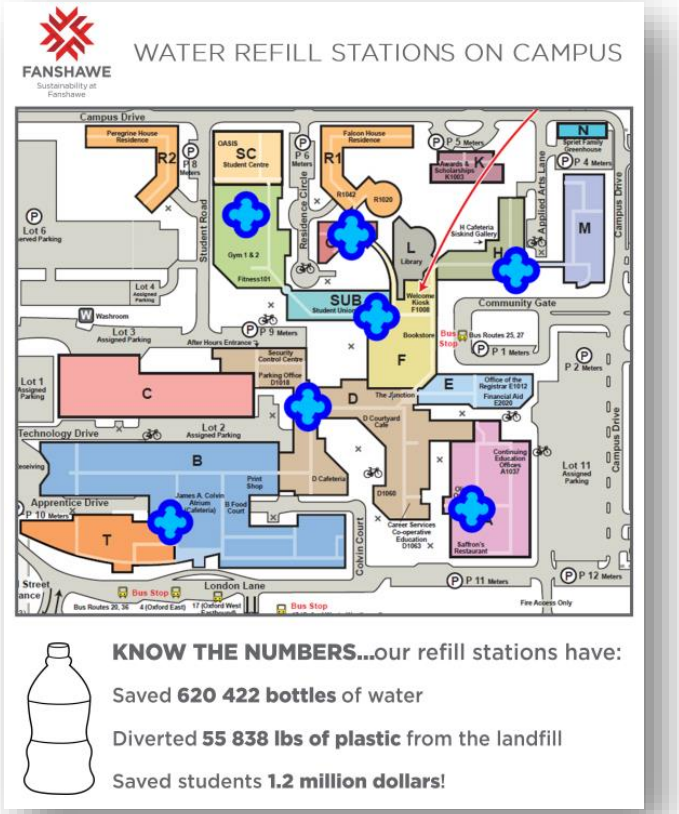
  - *An ArcGIS web map designed to showcase sustainability features located on campus*



- *The Journey*

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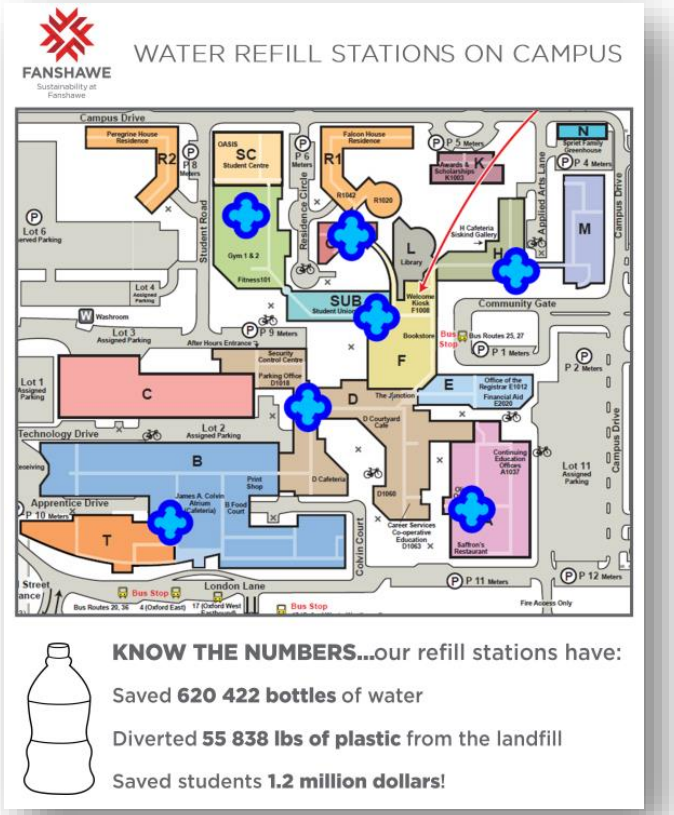

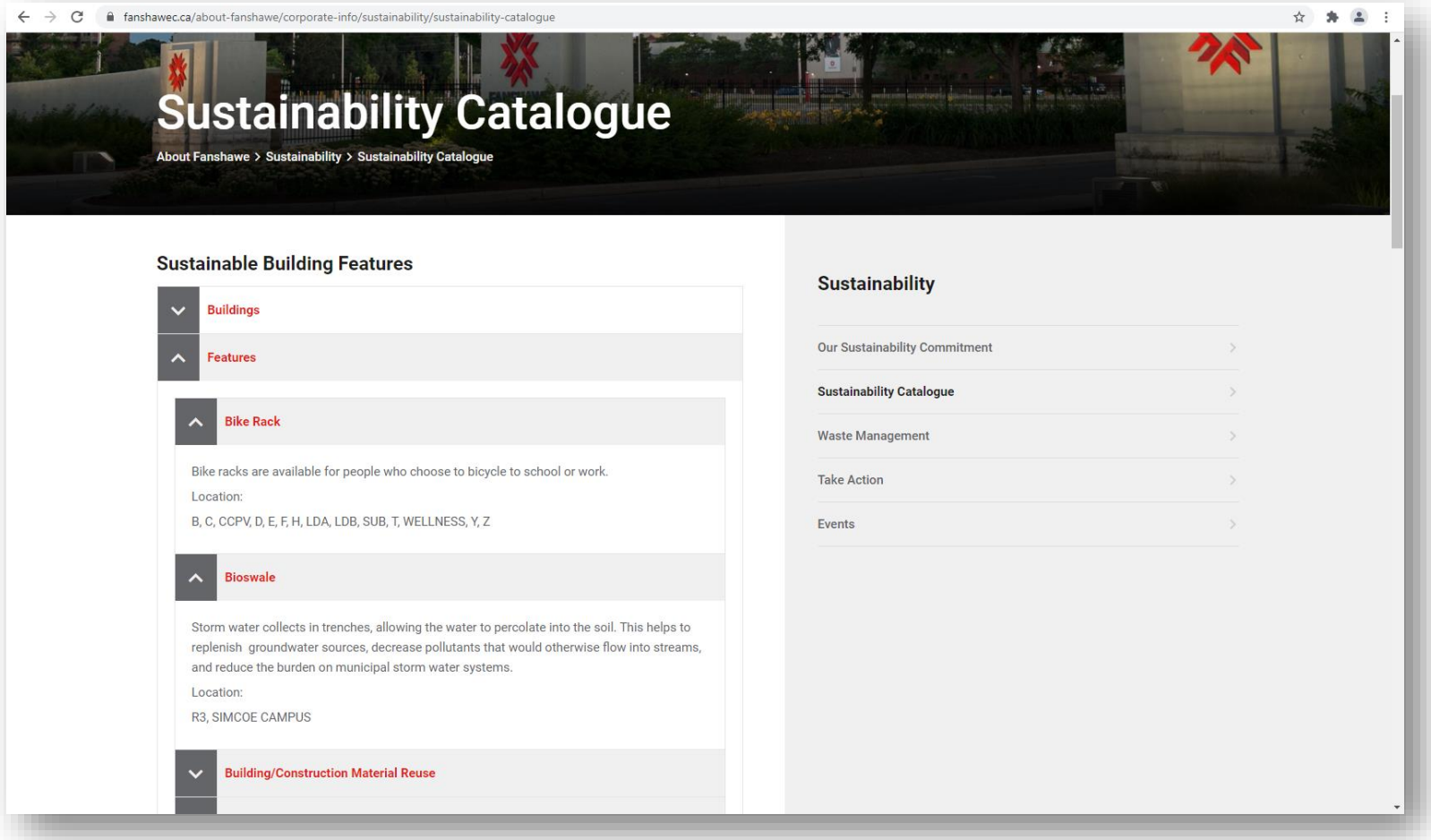

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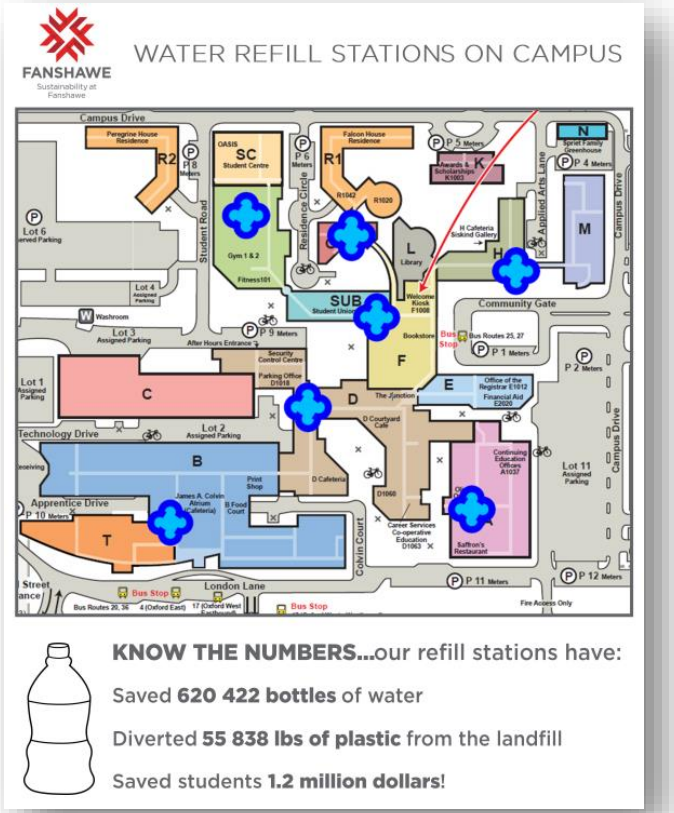

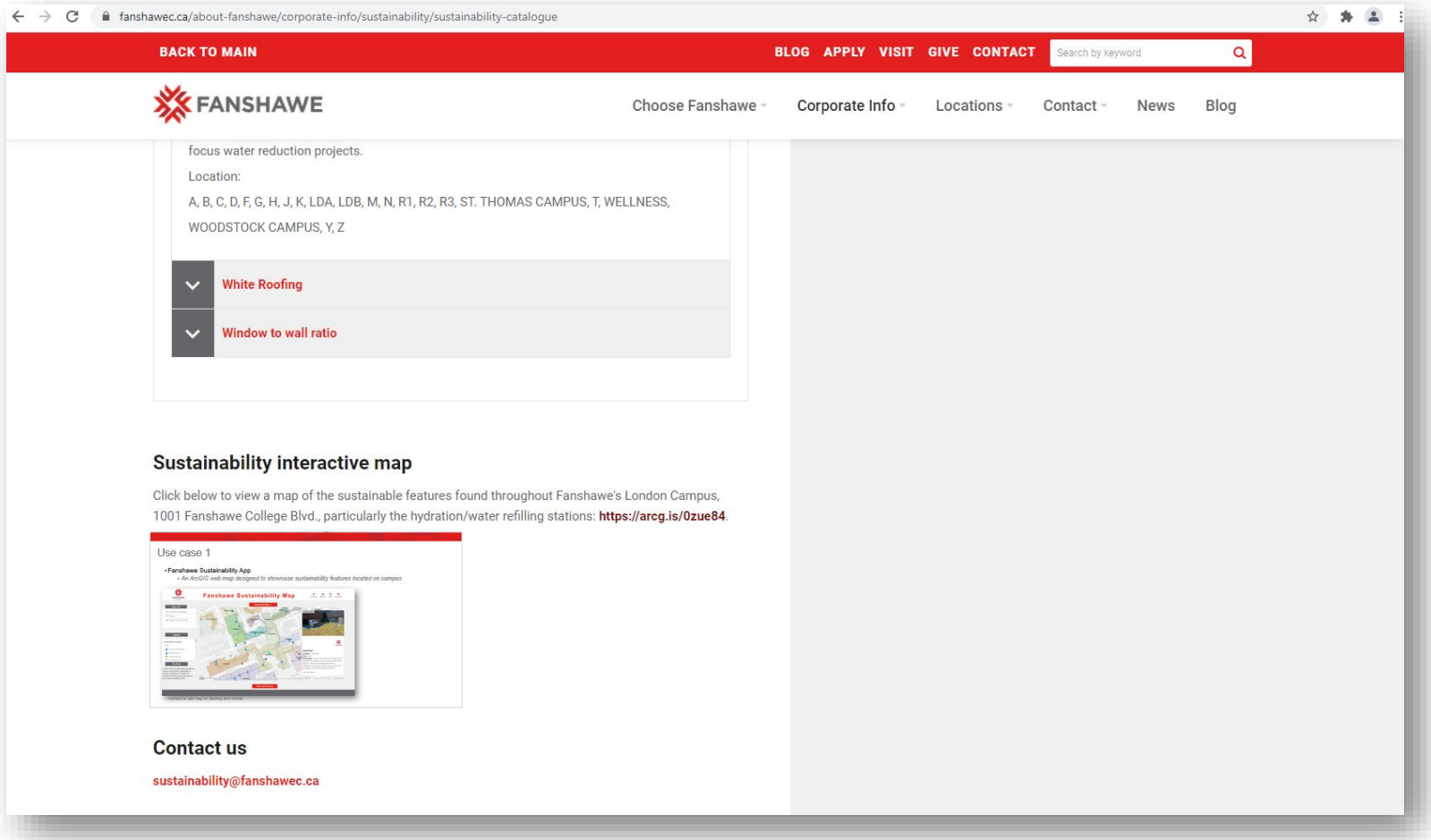

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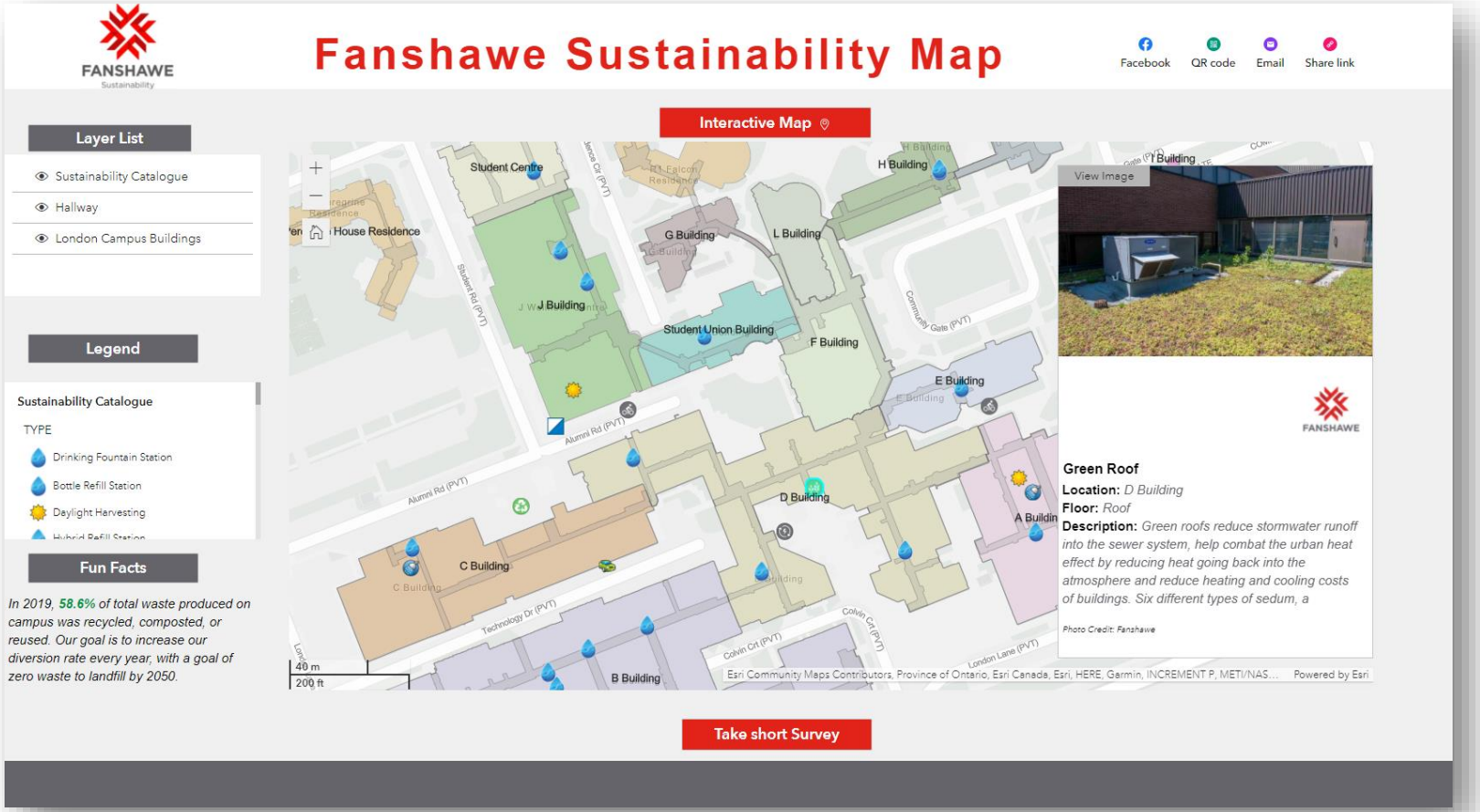

- *Interactive web map on desktop and Mobile*

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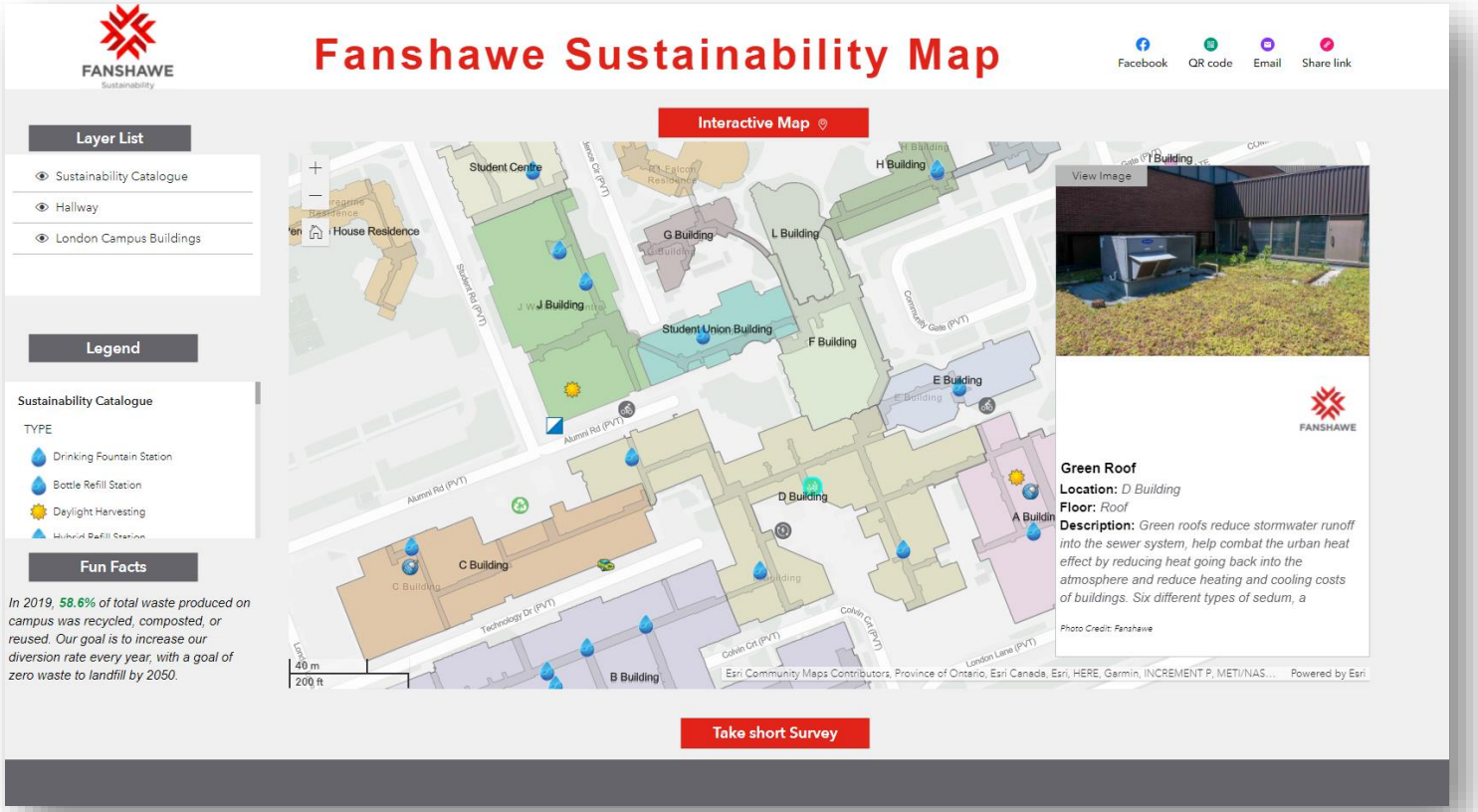

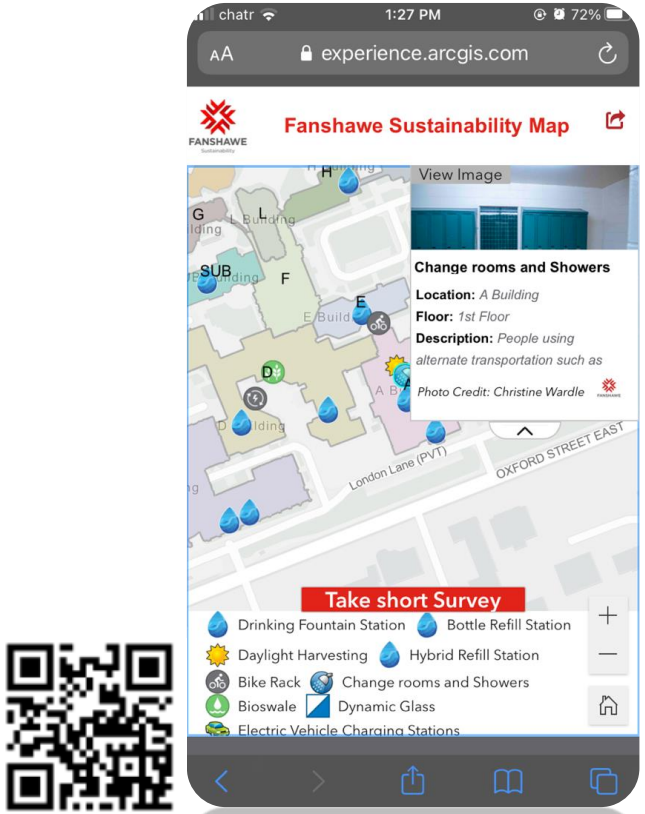

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Use case 2

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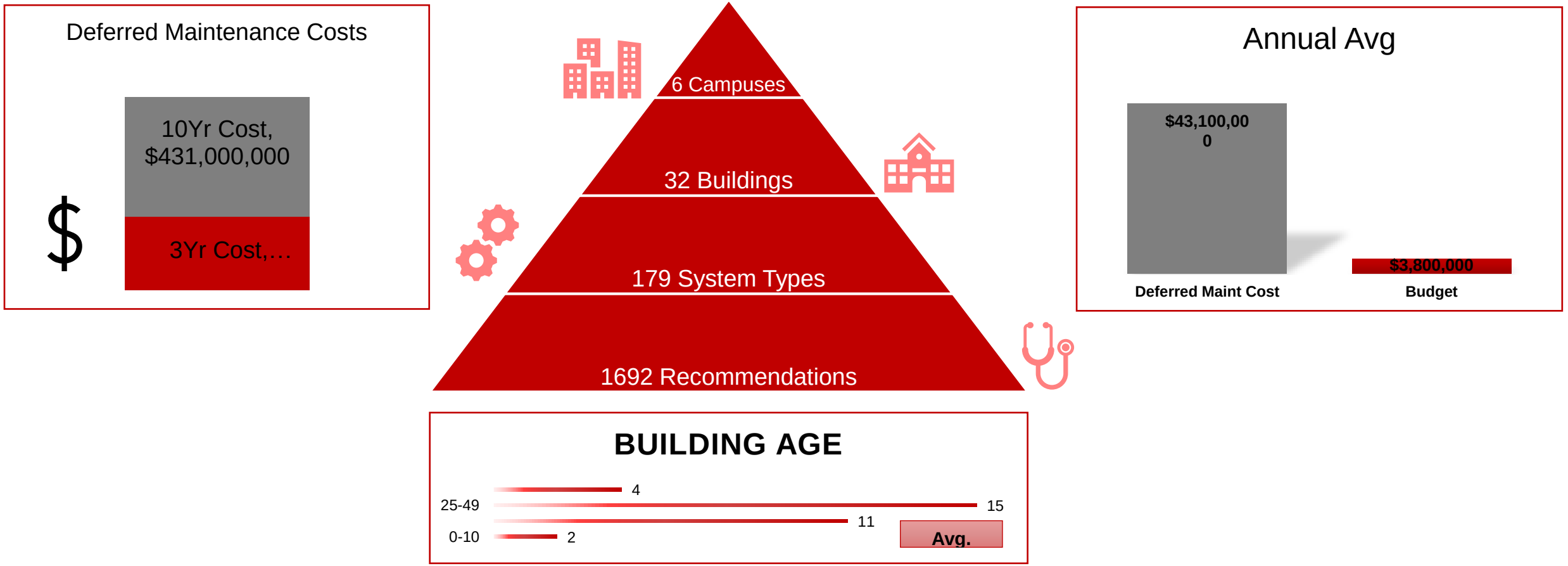

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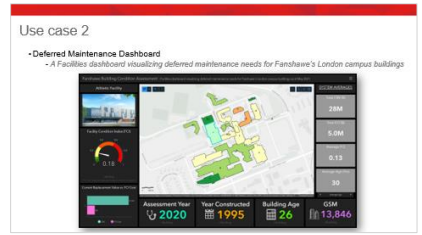
Action Year	Location	SLAM ID	VFA ID	System	Recommendation Name	Project Type	PID	Est. Cost	Rec. Spend	Comments	Priority Matrix Score	Green Action	Accessibility	Like-Like/ Improvement	Complexity/ Scale	High Traffic Area	Rating Team Score	Priority Score	SYr Plan	Cumm Spend	Building Type	SLAM Plan/ Budget
2021	E	12887	REQ-364680	D3 - Heating Auxiliary Equipment	Study: Mechanical Assessment	1P	20-073	$120,000	$55,330	Create tender-ready drawings for work to be completed Summer 2022. May require additional space.	9	0	0	0	0	0	40	13	2021/22	$3,712,684	Academic	FANS FRG2021
2021	E	NEW	NEW	TBC	Repair Cooling System	1P	22-034	$100,000	$100,000	Repair or replace cooling system for Network Room E2036. Catastrophic failures since Jan/Feb 2021	12	0	0	0	0	0	10	13	2021/22	$3,812,684	Academic	
2021	E	12873	REQ-77782	D3 - Air Distribution Systems	HVAC Ductwork Distribution System Renewal	1P	20-073	$384,606	$374,870	Move to Summer 2022. VR Report. Central AHU, Exhaust & Renewal of Piping	1	0	0	0	0	0	110	12	2022/23	$1,493,150	Academic	
2021	E	12889	REQ-364658	D3 - Central AHU	Central AHU - Const Volume - Older Renewal	1P	20-073	$186,479	$183,565	Move to Summer 2022. VR Report. Central AHU, Exhaust & Renewal of Piping	6	1	0	0	0	0	59	12	2022/23	$1,676,715	Academic	
2021	E	12872	REQ-77284	D3 - Heat Pumps	Heat Pump - Water Source - Newer Renewal	1P	20-073	$470,831	$470,831	VR Report. Start w/ tender-ready drawings. Possible to coordinate during academic year.	1	0	0	0	0	0	110	12	2022/23	$2,147,546	Academic	
2021	E	12888	REQ-197221	D3 - Heating Auxiliary Equipment	Heat Exchanger - HW/HW - Shell and Tube Renewal	1P	20-073	$123,201	$113,367	Move to Summer 2022. VR Report. Central AHU, Exhaust & Renewal of Piping	2	1	0	0	0	0	99	12	2022/23	$2,260,913	Academic	
2021	E	12876	REQ-77344	D3 - Kitchen Exhaust Systems	Exhaust System - Kitchen Renewal	1P	20-073	$39,759	$83,181	Move to Summer 2022. VR Report. Central AHU, Exhaust & Renewal of Piping	6	0	0	0	0	0	60	12	2022/23	$2,344,094	Academic	
2021	E	12764	REQ-310950	C3 - Carpet Floor	Carpeting - Aged & Worn 2nd floor	2A	new	$27,053	$30,301	-	8	0	0	0	0	0	15	9.5	2023/24	$2,403,953	Academic	
2023	E	12505	REQ-303599	C1 - Communal Washroom Refurbishment	Washroom Refurbishment - E1008 Renewal	5W	new	$42,491	$42,491	-	8	0	0	0	0	0	0	8	2024/25	$1,815,000	Academic	
2024	E	12502	REQ-303596	C1 - Universal / Gender Neutral Washroom Upgrade / Refurbishment	Washroom Refurbishment - E2012 Renewal	5W	new	$87,191	$87,191	-	8	0	0	0	0	0	0	8	2024/25	$1,902,191	Academic	
2024	E	12501	REQ-303595	C1 - Communal Washroom Refurbishment	Washroom Refurbishment - E2016 Renewal	5W	new	$43,595	$43,595	-	7	0	0	0	0	0	0	7	2025/26	$1,612,008	Academic	
2024	E	12503	REQ-303597	C1 - Communal Washroom Refurbishment	Washroom Refurbishment - E2017 Renewal	5W	new	$42,491	$42,491	-	7	0	0	0	0	0	0	7	2025/26	$1,654,499	Academic	
				C1 - Communal	Washroom Refurbishment - E1006																	

- *Spreadsheets, Tables*



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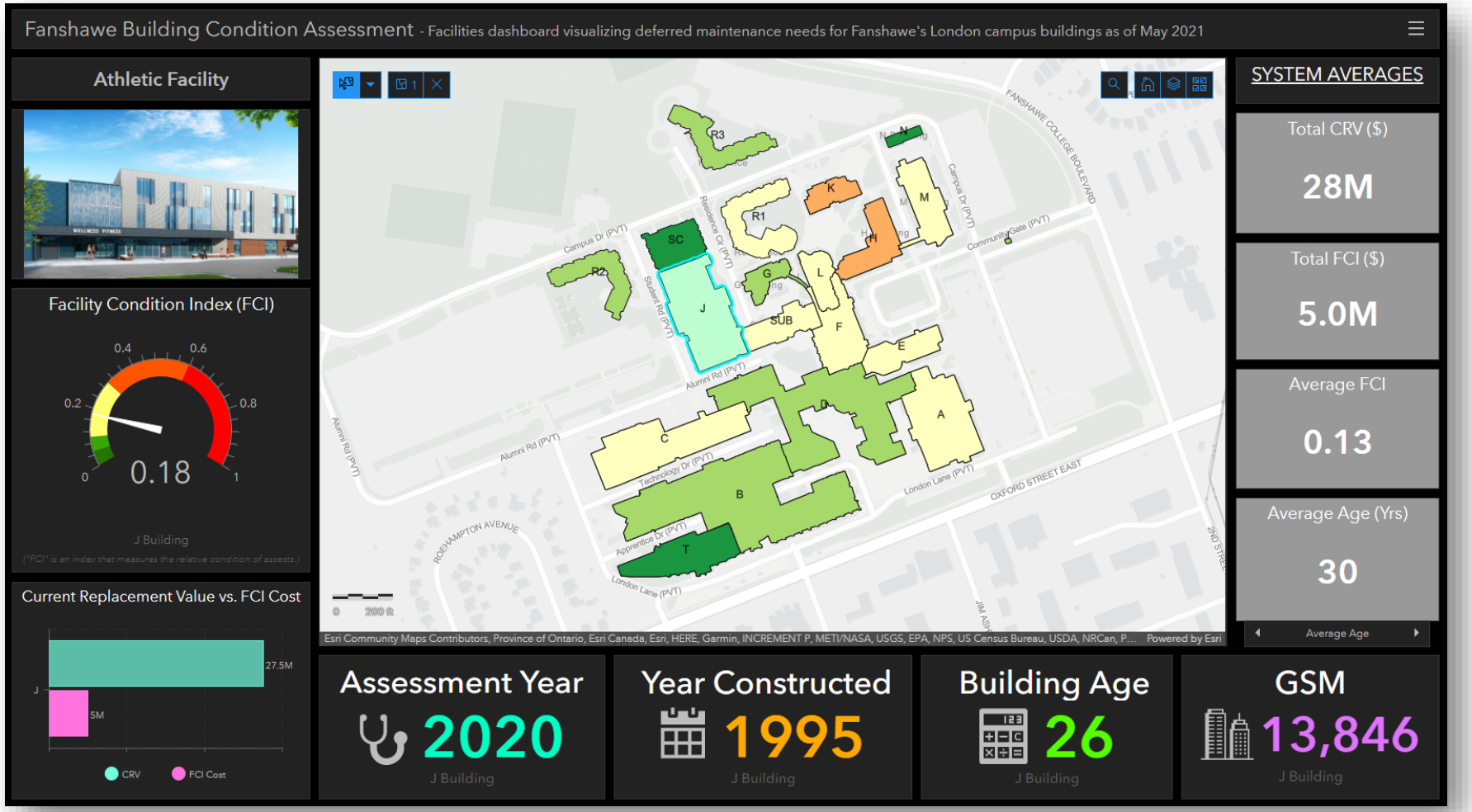


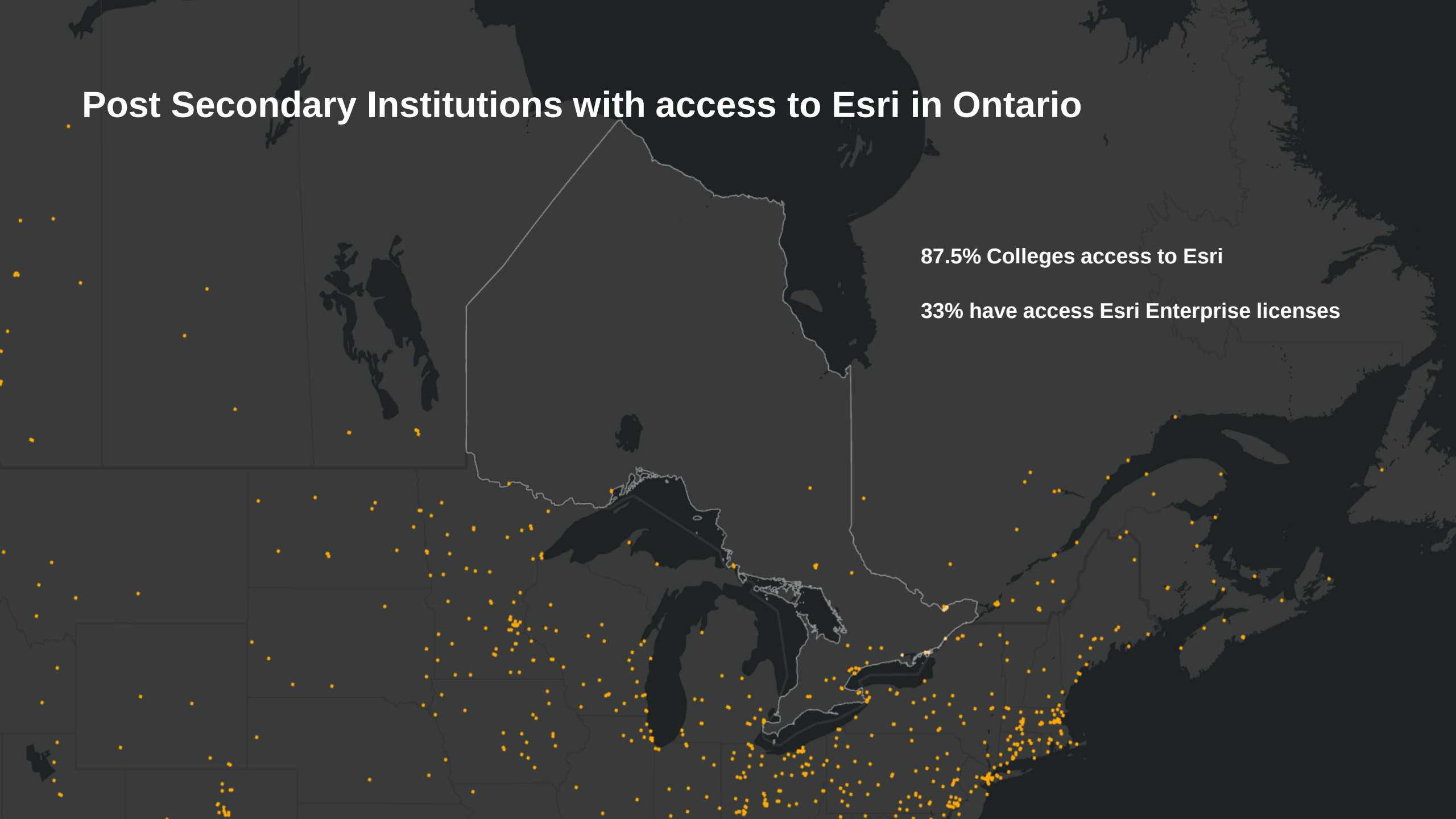
- DEMO

“How do I get started?”

1. Get in touch!
2. Community Maps
3. Build a geospatial strategy / road map
4. Focus on high-value, quick wins
5. Leverage existing licenses

Post Secondary Institutions with access to Esri

Post Secondary Institutions with access to Esri in Ontario



87.5% Colleges access to Esri

33% have access Esri Enterprise licenses

ArcGIS for Campus Operations Resources

- **Getting Started***: Build Your Geospatial Foundation*
- **Bringing GIS Indoors***: Space Planning and Optimization*
- **Building a Mobile Workforce***: Getting Decision Support into the Field*
- **Optimizing Utilities***: Digitally Transforming Network Management*
- **From CAD to GIS***: The value of spatially enabling utility and facility information*
- **Configuring Solutions***: Building information and decision-making tools*
- **Smart Campus Operations***: Integrating GIS with facility, utility, and space management systems*

https://community.esri.com/t5/education-blog/campus-operations-in-higher-education-webinar-series/ba-p/885194

“How do I get started?”

1. Get in touch!
2. Community Maps
3. Build a geospatial strategy / road map
4. Focus on high-value, quick wins
5. Leverage existing licenses

Thanks, OCFMA!!

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