



GIS..... Anywhere, Anytime , on Any Device!

Sharing Critical Infrastructure
Asset Data –
Office, Web, Cloud and Field



Introduction



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Town of Petawawa



Petawawa is a town located in the eastern portion of Southern Ontario. Situated on the shore of the Ottawa River, in the Ottawa Valley. With a population of 15,988. Petawawa is the most populous municipality in Renfrew County.



The mantra

What was
extra ordinary yesterday
is only
ordinary today

Municipal Benefits

- **Optimize Service Levels**
- * Minimum Maintenance Standard for Municipal Highways, Regulation 239/02
- * **Financial Information Return (FIR) requirements by Ministry of Municipal Affairs to report on Gap between funded and AMP - 2016**
- Dissemination / integration of municipal data
- On a date agreed upon by the Oversight Committee, provide a report to AMO, using performance measurement methodology approved by the Oversight Committee, demonstrating that AMP are being used to guide infrastructure planning and investment decisions and how GTF (gas tax fund) funding is being used to address priority projects.

Municipal Requirements

Inventory

Condition

Lifecycle

Forecasts

Visualization

Initial discussion

- * Project began in 2013 with a presentation and general discussion with David Unrau around Petawawa's requirements
- * Provided Town of Petawawa with a general project outline

The want

- * We will want information / demonstration on the following:
- * Demonstration of Road Patrol Software – Mr. Compliance
- * Demonstration of the Analysis Software – Asset Management
- * Level of Service / Metrics / Benchmarking – how does software report
- * Discuss arrangement between OGRA and DND
 - * Written documentation
 - * Nature and scope of agreement
 - * Local involvement
- * Discuss option for hosting – web-based or house on our server
- * How do you see your firm interacting with
 - * Engineers completing the Condition Assessment
 - * Financial Consulting completing the Financial Assessment portion of the Assessment Management Plan.
- * Depreciation of assets – how does the software handle this requirements – reports, monthly analysis
- * Buildings – demonstrate how software incorporates buildings as assets.

Hardware / software

- * Desktop computers
- * Rugged notebooks
- * Tablets
- * SQL database
- * Tax system
- * Asset data model
- * 2d gis
- * 3d visualization

What did I get myself into?

- * Excel files
- * Access database
- * DWG
- * Shp
- * Aerial photo
- * Pdf files
- * Engineering studies
- * Inventory reports
- * Road data
- * Parcel data
- * streetlight
- * sign
- * Water/sewer
- * buildings
- * Aerial photo
- * Google maps

Data transformation

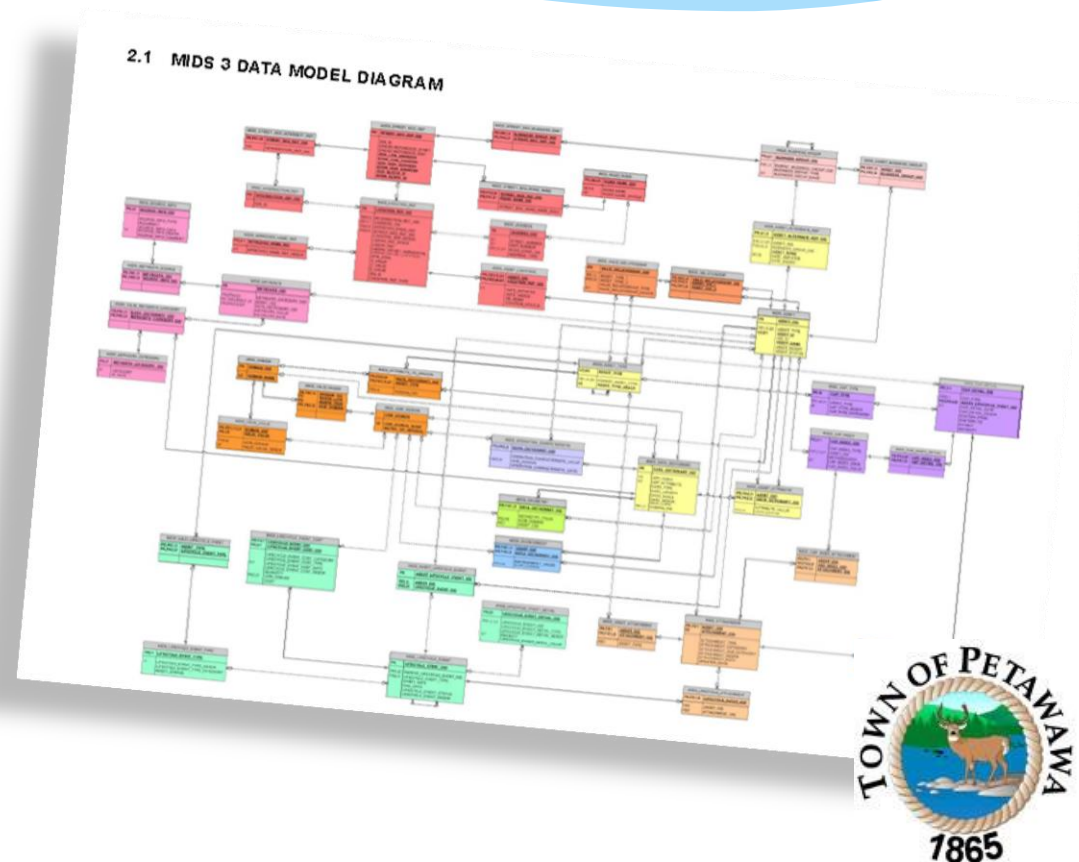
- * Gather the data
- * Clean the data
- * Validate the data

The collaboration

- * Collaboration within town departments
- * Collaboration with engineering consultant
- * Collaboration with upper tier government
- * Collaboration with OGRA (infrastructure)
- * Collaboration with ORFA (facilities/ buildings)

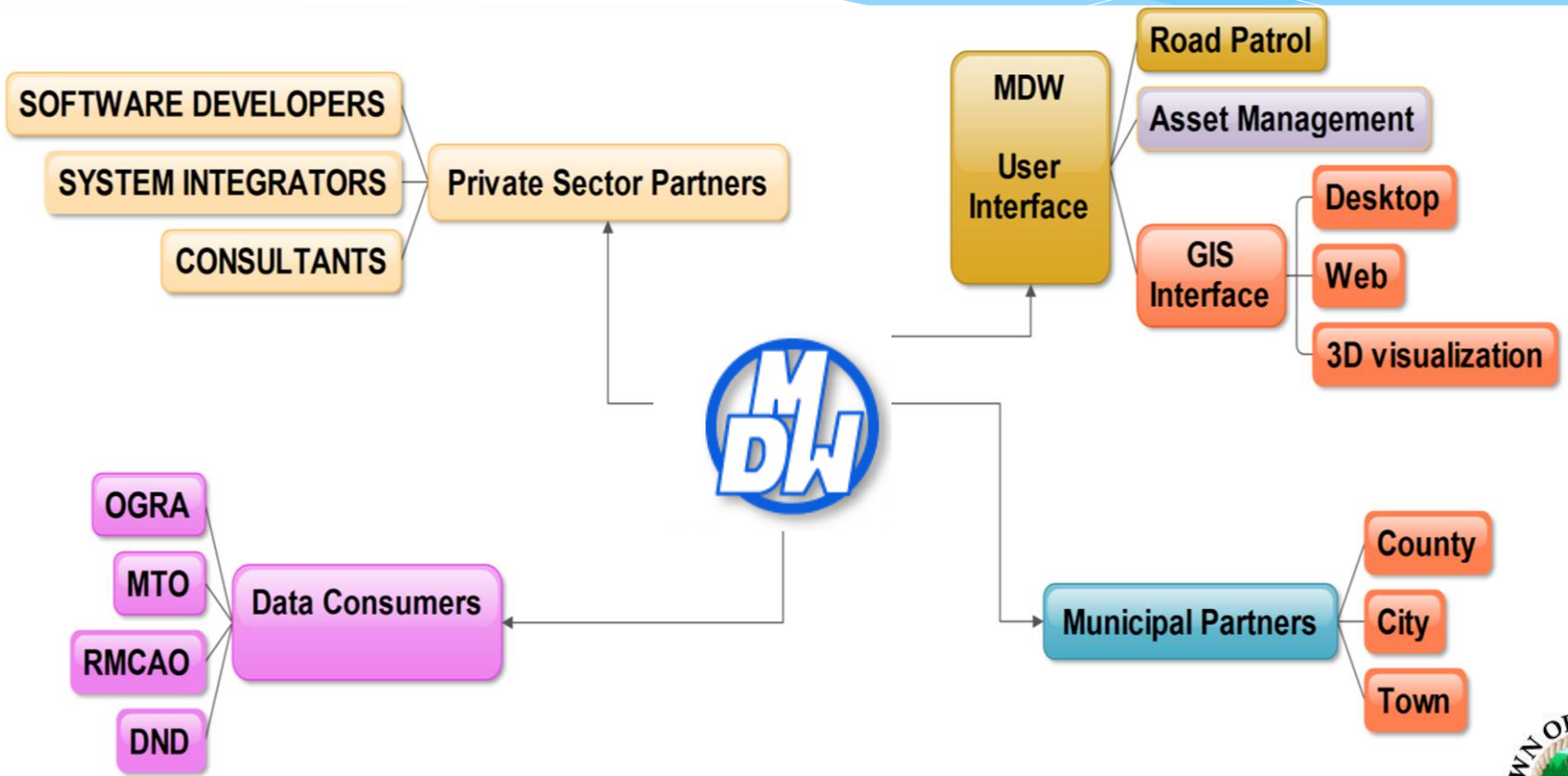
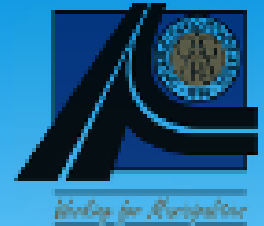
Adopting a Data Standards

- A database standard describes the relationship between the various components of an asset and provides for consistent inputs and outputs





MDW Lighthouse Initiative



Integration to tabular data

The screenshot shows a web application interface for 'Petawawa FieldCrew'. The browser address bar displays 'www.marmak.ca/demos/Petawawa/FIELDCREW/STREETLIGHT_MASTER/Show-STREETLIGHT-MASTER-Table.aspx'. The page title is 'Petawawa FieldCrew' and the user is logged in as 'Hello marmak'. The interface includes a navigation menu with 'Lookups', 'Streetlights', 'Street Light Repair Logs', 'Assets', 'Road Sections', and 'Work Orders'. Below the navigation is a search bar and a table of streetlights. Each row in the table represents a streetlight asset, with columns for 'Community', 'Pole #', 'Asset Number', 'Date Installed', 'Date Retired', 'Area', 'Township', 'Pole Type', 'Pole Owner', 'Pole Height', 'Fuse', 'Bar Code', 'Type', 'OH/UG', 'Transformer', 'Watts', 'Road Class', 'Road Width', 'Road Setback', 'Location', 'GIS Map Link', and 'View Map'. To the right of each row is a map showing the location of the streetlight. The table contains three entries:

Community	Pole #	Asset Number	Date Installed	Date Retired	Area	Township
Petawawa	T268	T268	1/8/2015			
	T267	T267	1/8/2015			
	T266	T266	1/8/2015			

Public Works / Operations

mr COMPLIANCE

ROUTINE PATROL - STOPPED

Road Section
To: N/A
From: N/A
Class: 0 Asset No: N/A

Odometer:

Timer: 00:00

Map Overview Deficiencies Sign Reflectivity

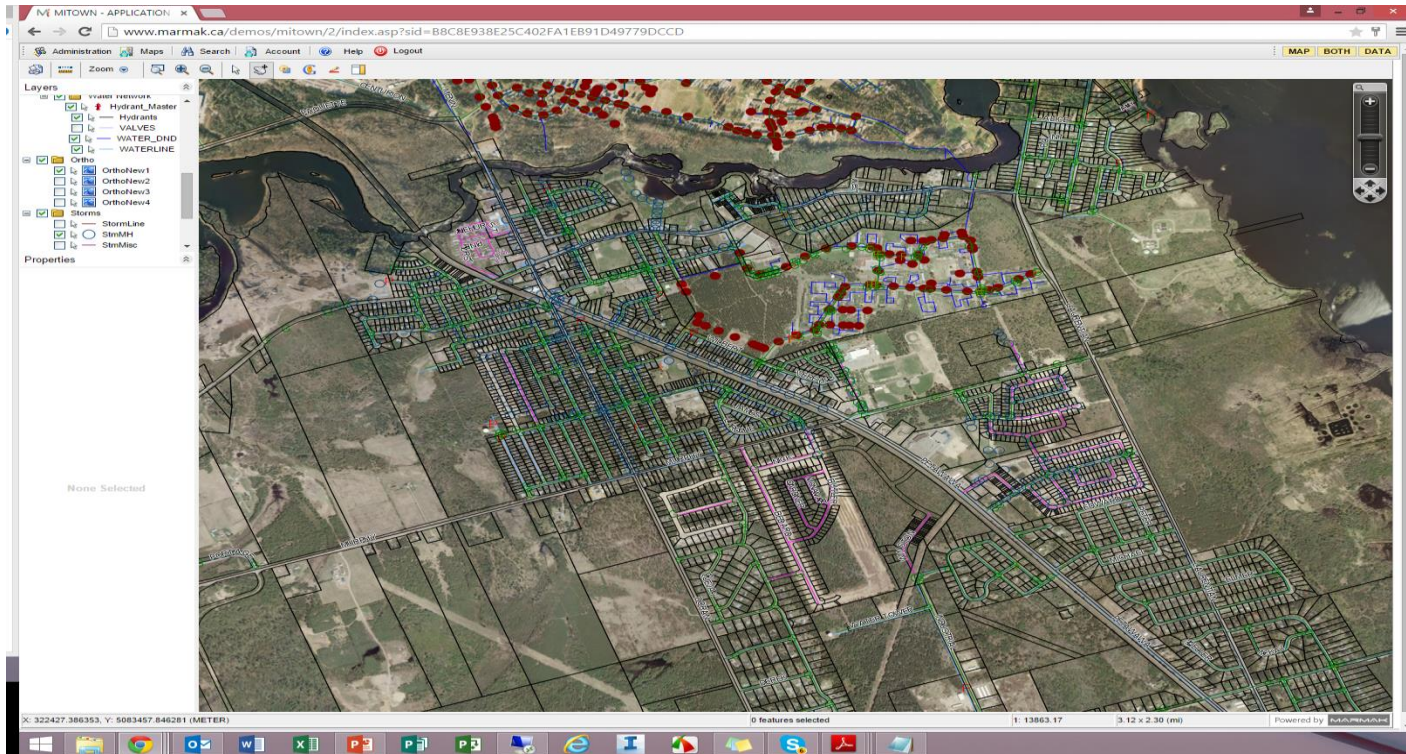
By Class Select Assets to Display

- Information Sign
- Regulatory Sign
- Street Name Sign
- Warning Sign
- Bridge
- Culvert
- Luminaire
- Safety Device
- Sidewalk
- Streetlights
- Traffic Control Signal

GPS Status: Meets Precision:
Lat: 44.4353767
Long: -81.3888352
Error (m): 6.0
HDOP: Ideal 1.0000

PATROL
REPORTS
ADMIN
LOG
O. REG. 23/10
HELP
HOME
ABOUT
EXIT

2D GIS

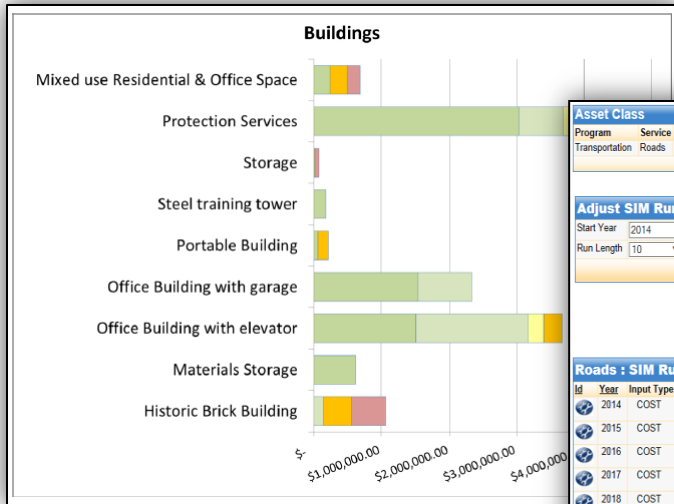


3D visualization



The benefits

* Prioritize needs



* What if scenarios

Id	Year	Input Type	Input Value	Budget Carryover	Additional Budget Required	Budget Applied
2014	2014	COST	0.00	\$9,045,485.00	\$0.00	\$0.00
2015	2015	COST	0.00	\$9,045,485.00	\$0.00	\$0.00
2016	2016	COST	0.00	\$9,045,485.00	\$0.00	\$0.00
2017	2017	COST	0.00	\$9,045,485.00	\$0.00	\$260,362.29
2018	2018	COST	0.00	\$8,785,122.71	\$0.00	\$5,077,775.47
2019	2019	COST	1,000,000.00	\$3,707,347.24	\$1,351,293.42	\$5,058,640.66
2020	2020	COST	0.00	\$0.00	\$0.00	\$0.00
2021	2021	RISK	0.00	\$0.00	\$88,487,578.20	\$88,487,578.20
2022	2022	RISK	0.00	\$0.00	\$40,510,919.05	\$40,510,919.05
2023	2023	COST	0.00	\$0.00	\$0.00	\$0.00

* Risk modeling

Risk Matrix		Consequence of Failure (COF)					
		1	2	3	4	5	
Probability of Failure (POF)	5	Almost Certain	High	High	Very High	Very High	Very High
	4	Highly Likely	Moderate	Moderate	High	High	Very High
	3	Likely	Low	Low	Moderate	High	High
	2	Unlikely	Very Low	Low	Low	Moderate	Moderate
	1	Almost Certainly Not	Very Low	Very Low	Very Low	Low	Low

2015 and beyond

- * Launch of Snowman GIS tracking system
- * MDW – transfer all linear assets to MDW and validation
- * MIAMMI Project – Municipal Infrastructure Asset Management Initiative - Pilot
 - * Model linear capital asset infrastructure in 3D in Infraworks
 - * Link asset objects in Infraworks to the MDW database for asset reporting
 - * Information available via web and mobile devices
- * Incorporate Building Information Modelling (BIM) data in the information transferred from consultant

Building the Future Demo

GIS.....

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Anytime , on Any
Device!



Building the Future Demo