SDI for Increased Data Interoperability for Cumulative Effects CDS

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Modernizing SDI Workshop
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The world's leading and comprehensive community of experts making location information:

- **F**indable
- **A**ccessible
- **I**nteroperable
- **R**eusable

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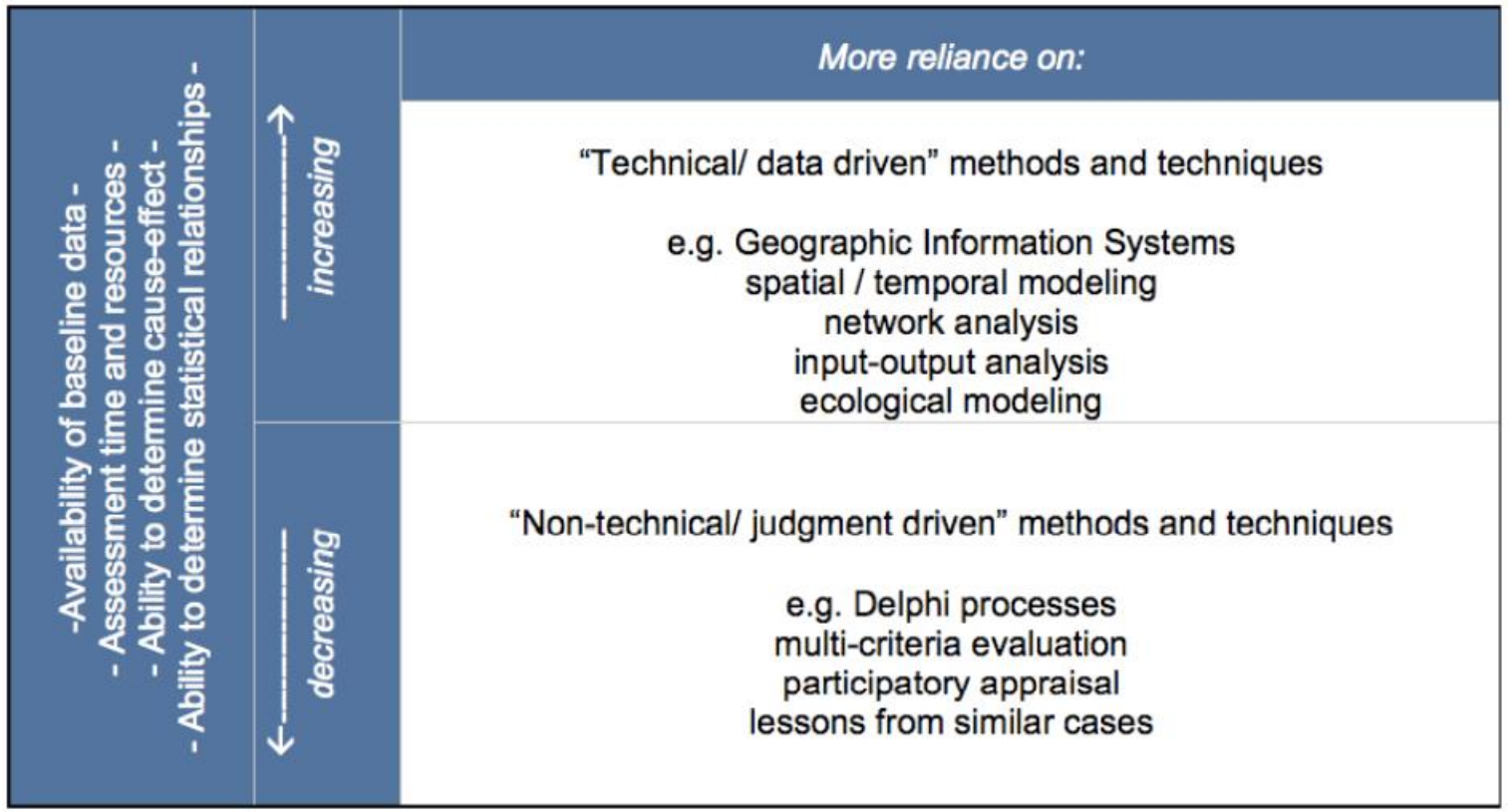
Slide 2 - Topics

- Cumulative Effects Assessments - the concept and problem
- SDI and Open Science Overview
- SDI for Cumulative Effects Assessments
- SDI Components
- Summary

Slide 3 - Cumulative Effects Assessments

- Cumulative Effects Assessments are moving towards science-based decision making → Open Science



- Availability of data
- Assessment time and resources
- Ability to determine cause-effect
- Ability to determine statistical relationships

Canadian Council of Ministers of the Environment - Regional Strategic Environmental Assessment in Canada, Principles and Guidance, https://www.ccme.ca/files/Resources/enviro_assessment/rsea_principles_guidance_e.pdf

Slide 4 – The Problem Posed by NRCan

Cumulative Effects Assessments – the problem posed by NRCan

- How can an ocean of environmental, foundational/framework, biological, socio-economic, and other data from multiple sources, collected over time and with varying levels of standardization be readily consumed and integrated by scientists and citizens alike [for information, consultation and consensus forming]?

Slide 5 - Environmental Monitoring Web Site

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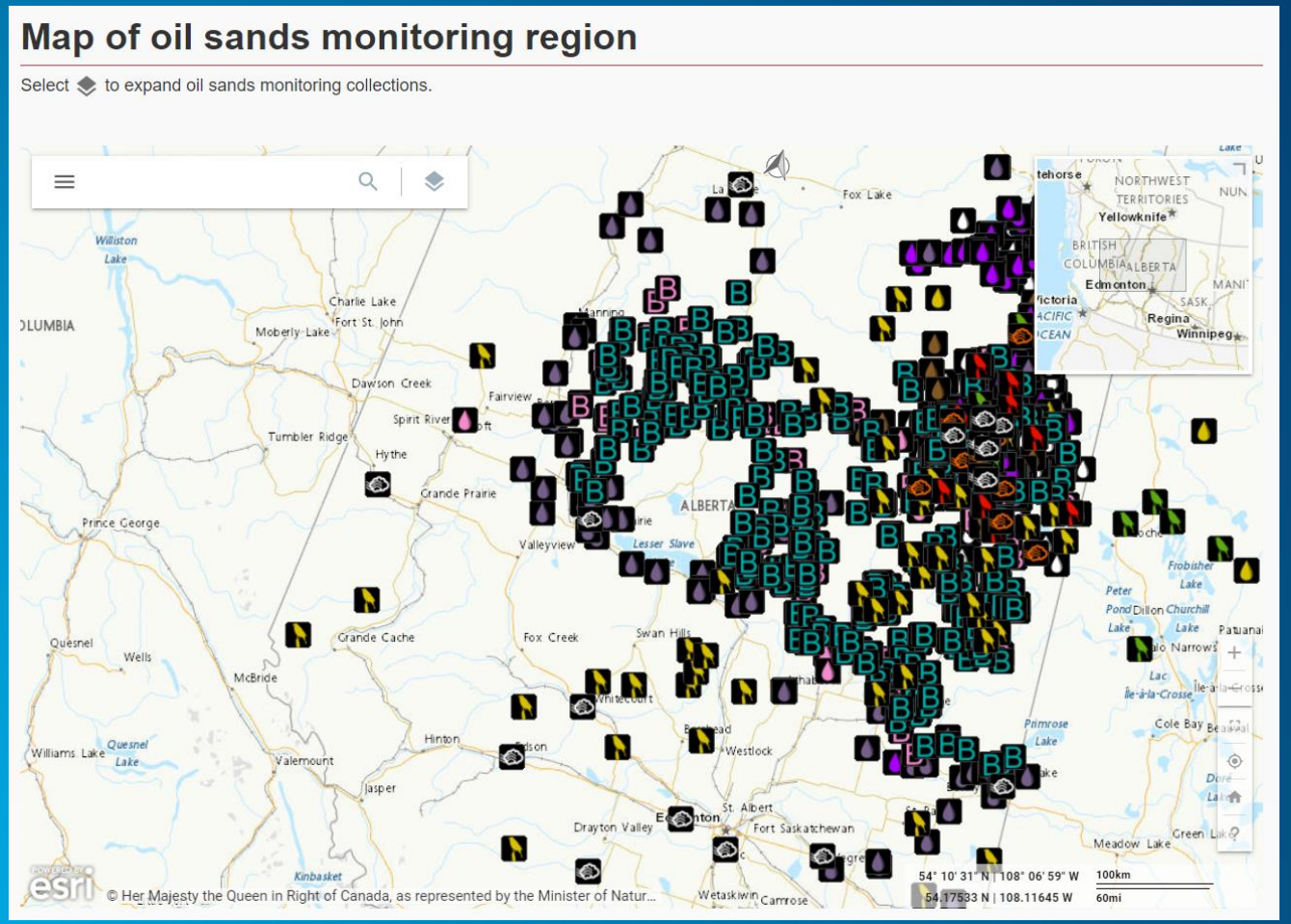
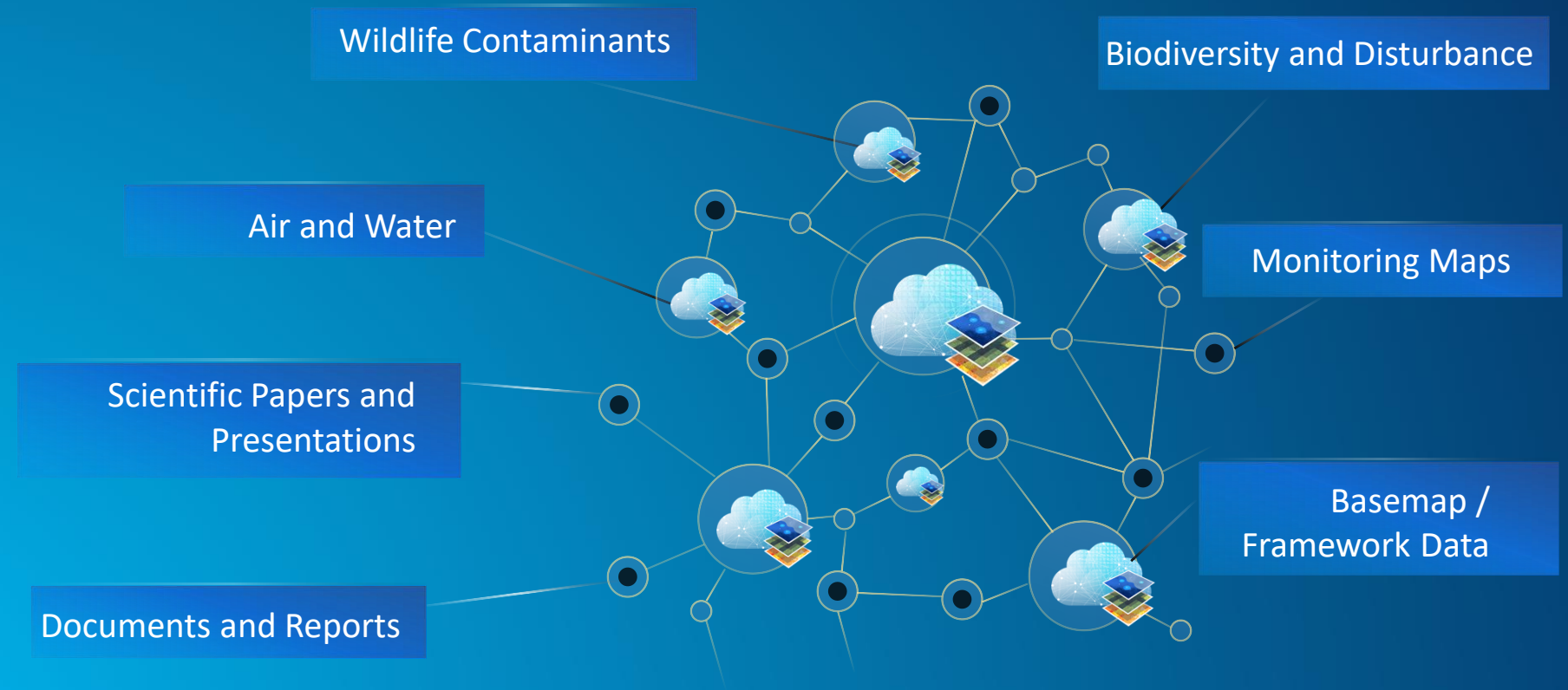
Canada-Alberta Oil Sands Environmental Monitoring Site



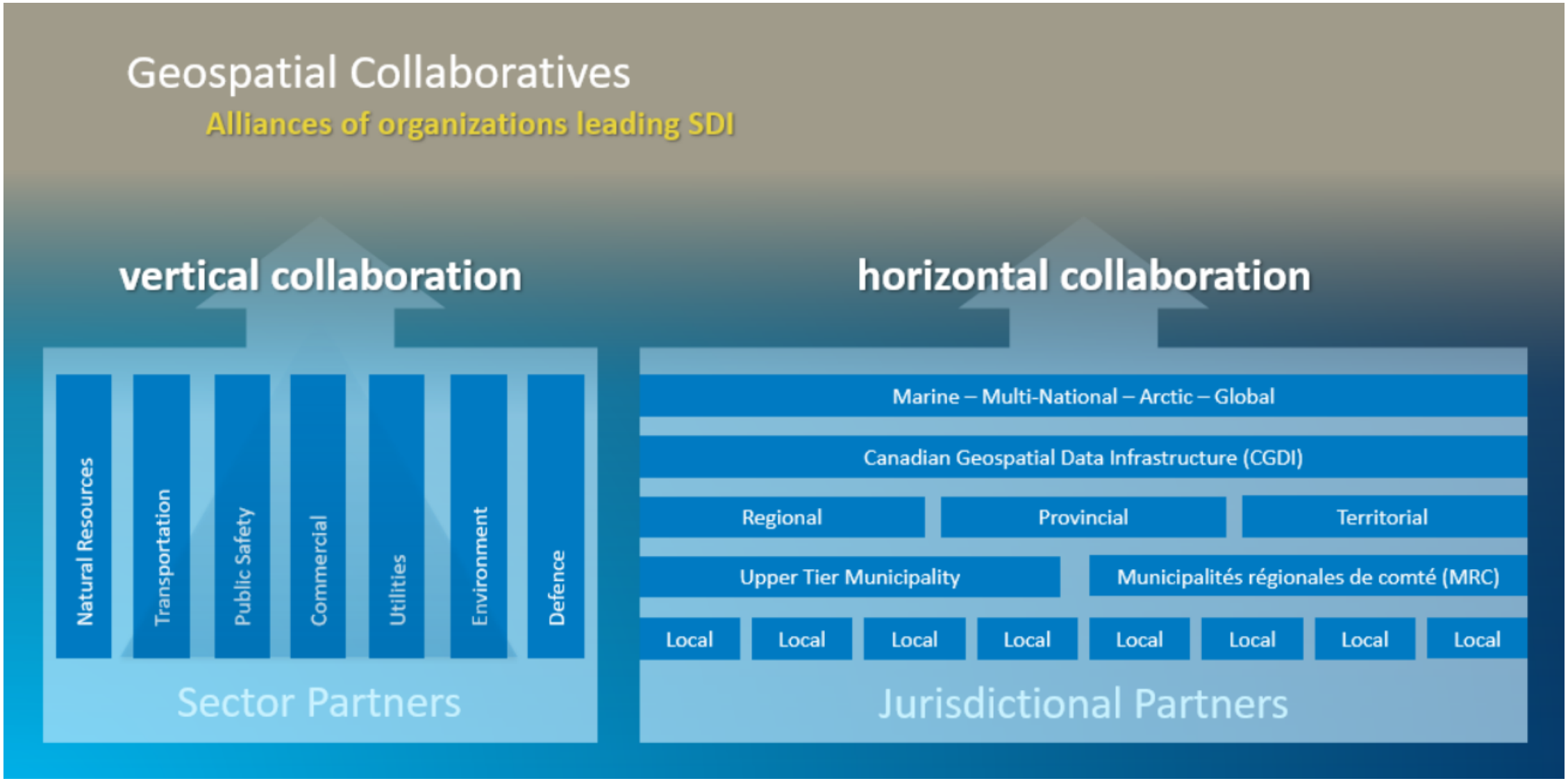
Slide 6 - Environmental Monitoring Data

Canada-Alberta oil sands environmental monitoring – Data



Slide 7 – Where SDIs Obtain Data

Slide 8 – Geospatial Collaboratives

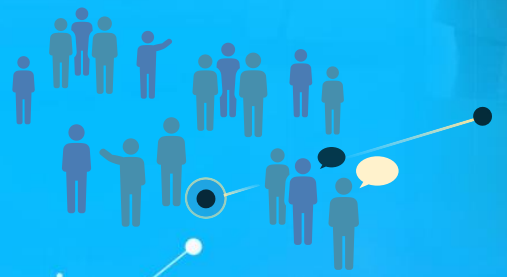


GIS Provides the Platform for Cumulative Effects Assessments

SDI Provides the Infrastructure for Open Science

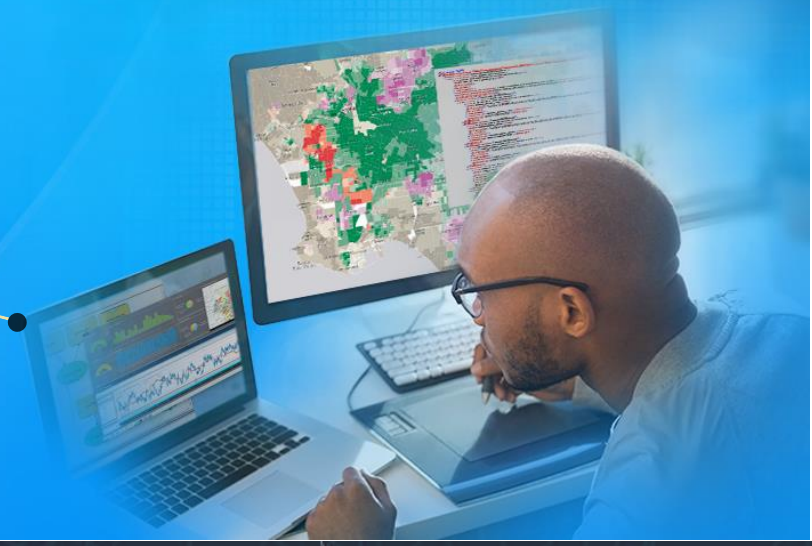
Integrate spatial and non-spatial data
Support users from public to experts
and Provide maps and apps for analysis

System of Engagement



System of Record

System of Insight



Slide 10 – Modern Environmental Monitoring SDI

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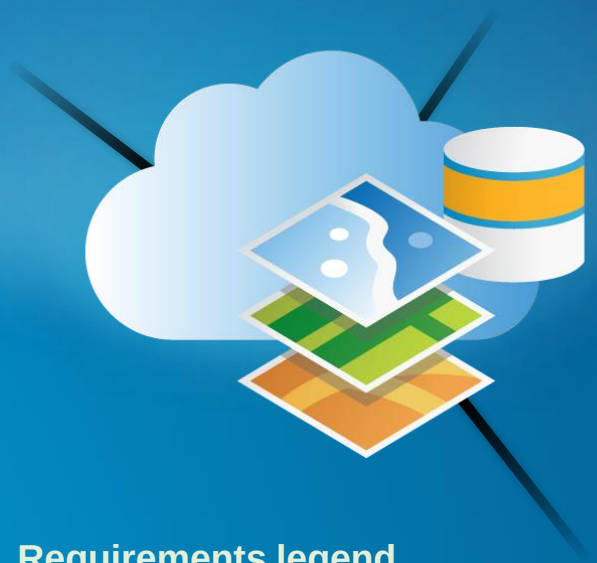
Modern Environmental Monitoring SDI

System of Record

- Basemap
- FGP
- Air / water
- Scientific Papers and Presentations
- Wildlife Contaminants
- Biodiversity and Disturbance
- Monitoring Maps
- Documents and Reports
- Sensor Networks
- +others
- Custom WS input
- Regular system update
- Data conditioning
- Data QA/QC



System of Engagement

- User input
- Visualize data and results
- 3d web enabled
- Common look and feel
- Bilingual
- Fast and efficient

Requirements legend

- Data
- App/software
- Nonfunctional

System of Insight

- Apps and tools
- Environmental Monitoring
- Risk assessment
- Emergency Response
- +others

Slide 11 – Working With all Types of Data

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SDI Simplifies Working With All Types of Data

Using standards-based interoperability

Slide 12 - GFX Total Primary Features as of 2019

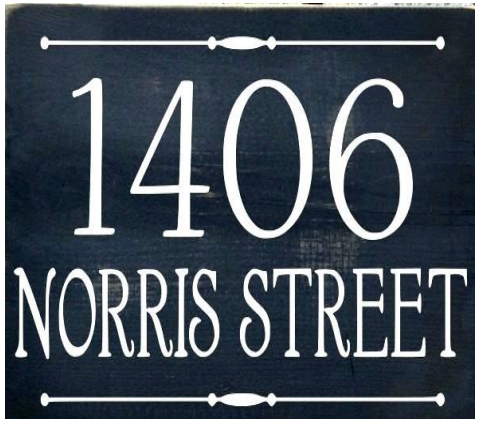
GFX Contributors:
226 municipal
13 provincial
1 federal
+ others

Total: 240+

GFX Features:
202,400,000+ features

6,737,169†

2,352,923



10,075,861

8,279,526 ††

27,445,479

*Municipal and provincial data - no duplicates
† Municipal only
†† Assessment and legal

Slide 13 - System of Engagement

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Share Open Data

Create Unlimited Websites

Organize Communities

Provide Status Dashboards

Enable Collaboration

Provide Maps

Provide Apps

Provide Story Maps

Provide Feedback and VGI

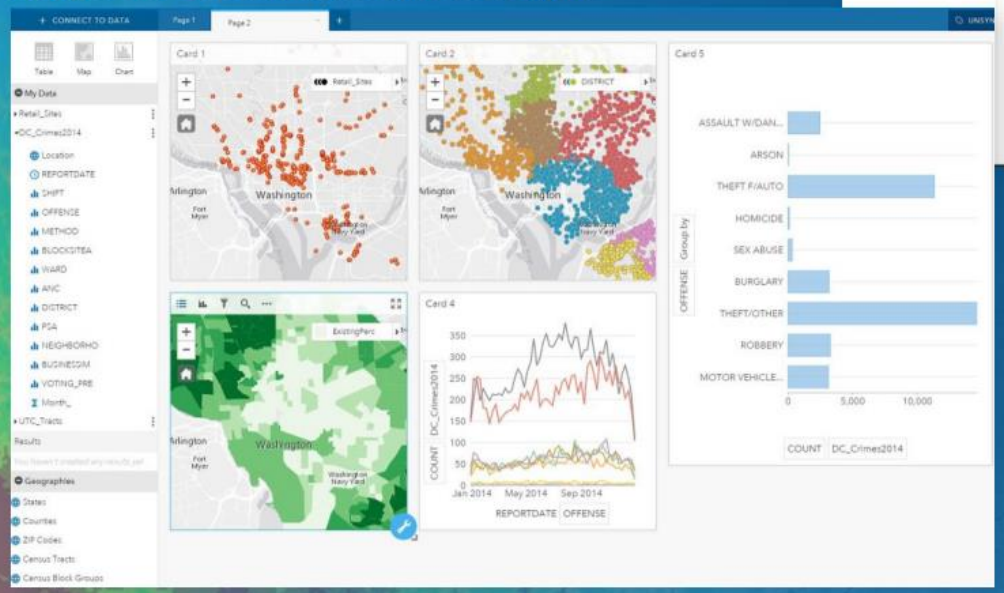
Form Concensus

Access Scientific Documents

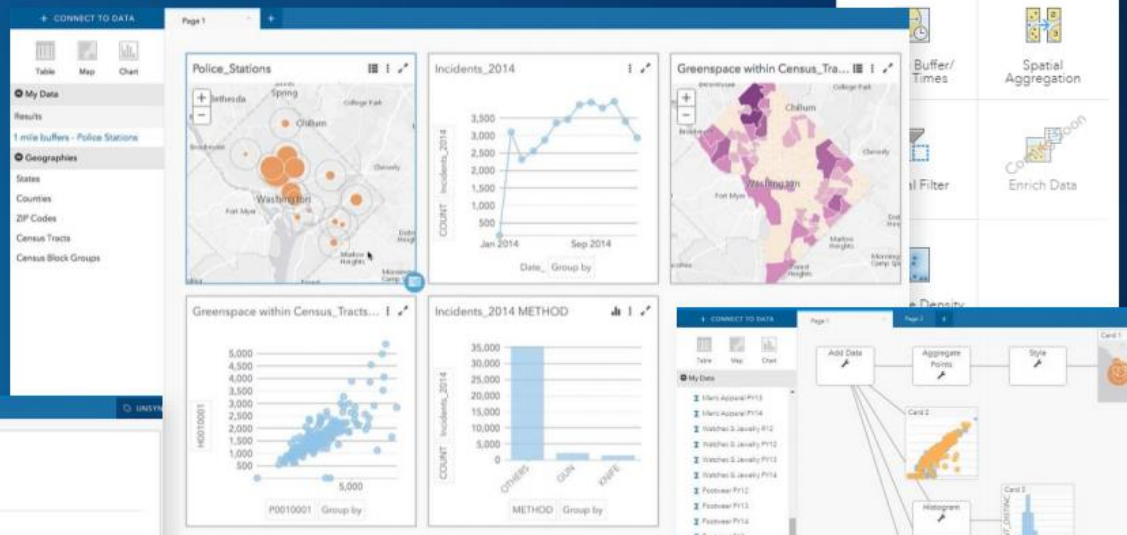
Provide Development Tools

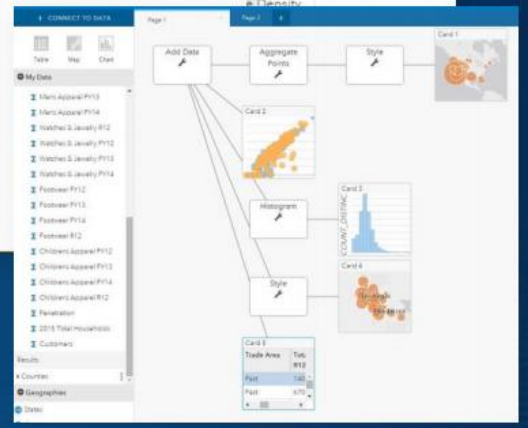
Slide 14 – System of Insight

Integrated Spatial and Tabular Analysis



Linked and Responsive Charts and Maps





On-the-Fly Visual Models

Slide 15 - Summary

- Environmental assessments require voluminous and diverse data.
- An SDI will help significantly improve FAIR data interoperability.
- Split the problem into components - systems of record, engagement and insight.
- Use standards for data interoperability.

Additional Links and Contact Information

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Thank you

- Gordon Plunkett
- Esri Canada
- gplunkett@esri.ca
- Monthly SDI blog https://resources.esri.ca/authors/gordon-plunkett

Backup Slides

Backup slide

- Backup slide content…