SDI Services Implementation

Spatio-temporal Evolution of Covid-19 in Canada

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Contents

Project Purpose 3

Project Approach 4

Implementation

- Database 5
- Metadata 7
- Services 9

Validation & Result 10

Discussion 11

Project Purpose

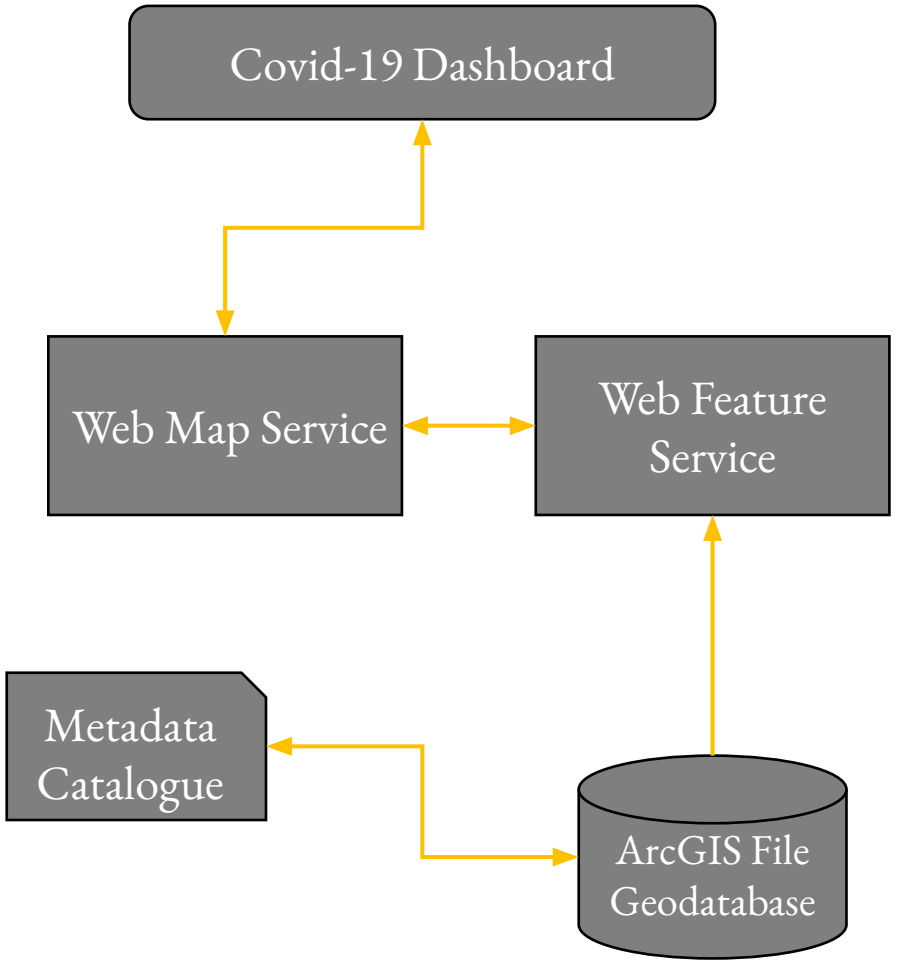
The general purpose of providing Dashboard is demonstrating a phenomenon by different related indicators. We aimed to visualize the statistical tracked data from main related resources for better understanding the condition of each Canadian province not only in a definite time but for also discovering the flow of changes and the peaks, and the correlation among the provided indicators. The mentioned Dashboard could be accompanied by the policies and specified rules decided by government over time, to understand the influence of them on the indicators to evaluate the efficiency of related policies. Therefore, The Dashboard could inform provincial authorities, communities and all the interested population.

Project Approach

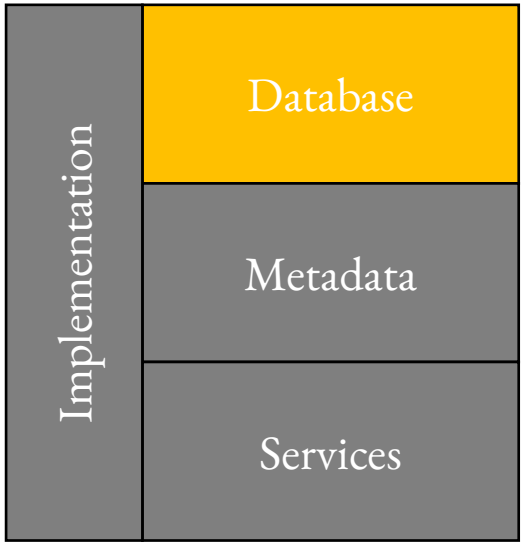
In order to provide the mentioned Dashboard, the general demonstrated architecture has been applied.

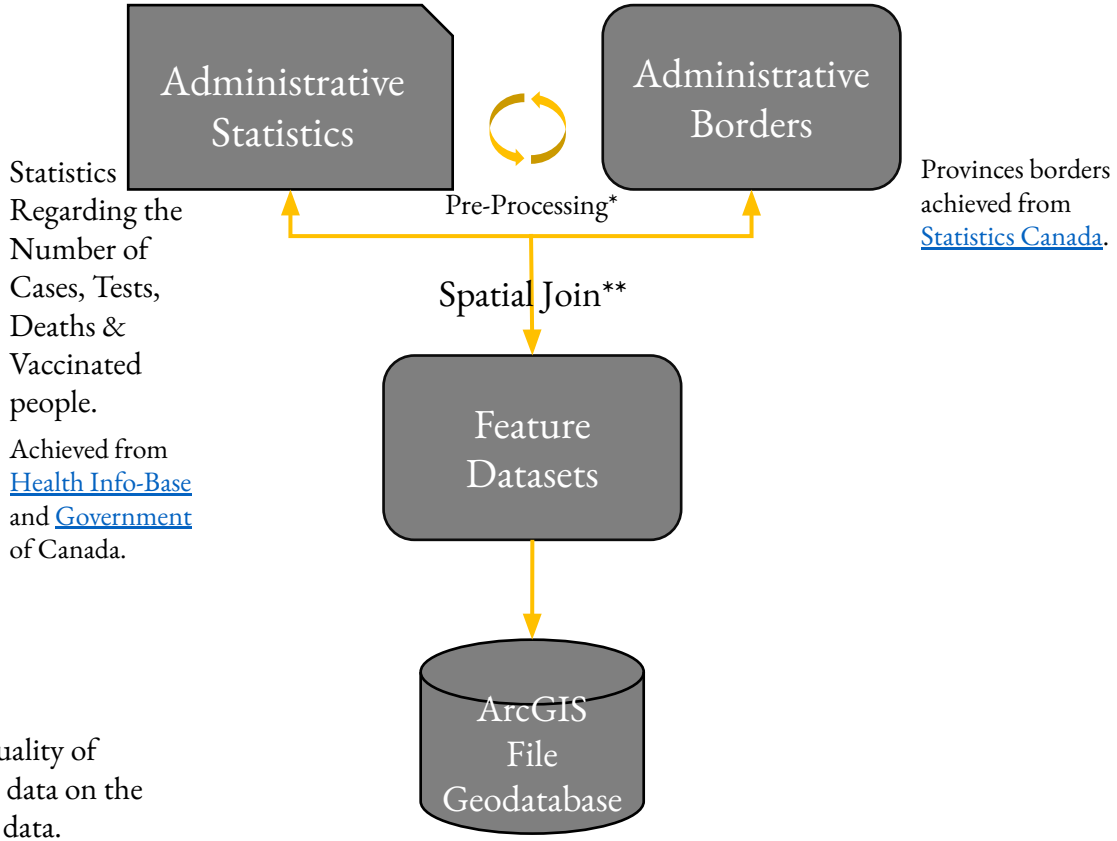
The Database, Metadata and WMS have been created and published from ArcGIS Pro environment. WMS has been saved through ArcGIS Online.

The Final Dashboard has been provided by ArcGIS Operation Dashboard to demonstrate the geographical interactive visualizations in Canadian provinces in the monthly basis.



Implementation

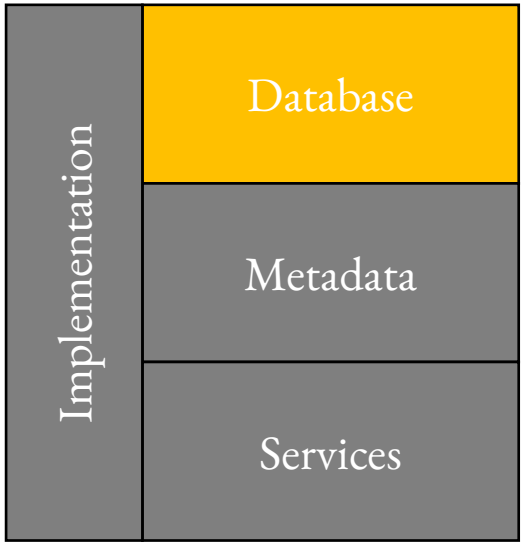




*Pre-Processing was based on determining the quality of data, data cleansing and ordering, classifying the data on the monthly basis, plus defining long and lat for the data.

**Spatial join proceed in "one to many" option, using Province column as the join attribute column between statistics points and administrative shapefile.

Implementation



Tests

Field: Add Calculate | Selection: Select By Attributes Switch Clear Delete Copy

	OBJECTID *	Shape *	ID	Province	DateT	Tests	Shape_Length	Shape_Area
112	112	Polygon	200	Quebec	4/1/2021	8688012	51970743.347052	77123082.752441
113	113	Polygon	213	Quebec	5/1/2021	9585430	51970743.347052	77123082.752441
114	114	Polygon	226	Quebec	6/1/2021	10191535	51970743.347052	77123082.752441
115	115	Polygon	239	Quebec	7/1/2021	10651378	51970743.347052	77123082.752441
116	116	Polygon	252	Quebec	8/1/2021	10922693	51970743.347052	77123082.752441
117	117	Polygon	265	Quebec	9/1/2021	11967738	51970743.347052	77123082.752441
118	118	Polygon	278	Quebec	10/1/2021	12782998	51970743.347052	77123082.752441
119	119	Polygon	291	Quebec	11/1/2021	13601272	51970743.347052	77123082.752441
120	120	Polygon	304	Quebec	12/1/2021	14868979	51970743.347052	77123082.752441
121	121	Polygon	6	Ontario	1/1/2020	0	36738979.813035	96155086.088867
122	122	Polygon	19	Ontario	2/1/2020	0	36738979.813035	96155086.088867
123	123	Polygon	32	Ontario	3/1/2020	51629	36738979.813035	96155086.088867
124	124	Polygon	45	Ontario	4/1/2020	277522	36738979.813035	96155086.088867
125	125	Polygon	58	Ontario	5/1/2020	718341	36738979.813035	96155086.088867
126	126	Polygon	71	Ontario	6/1/2020	1407325	36738979.813035	96155086.088867
127	127	Polygon	84	Ontario	7/1/2020	2171972	36738979.813035	96155086.088867
		Polygon	97	Ontario	8/1/2020	2966343	36738979.813035	96155086.088867
		Polygon	110	Ontario	9/1/2020	3923465	36738979.813035	96155086.088867

0 of 312 selected | 119%

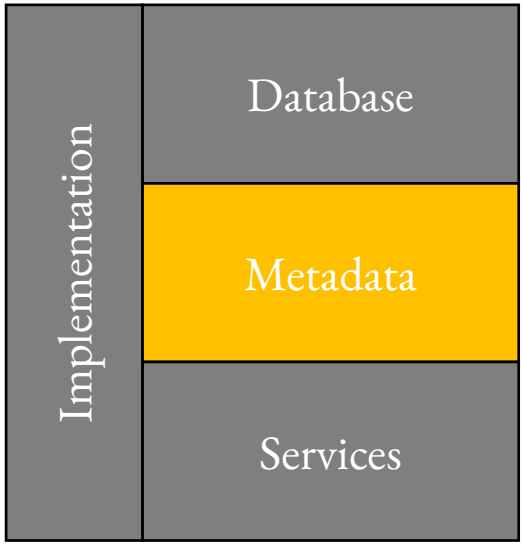
Tests | Fields: Tests

Current Layer: Data Source

Field Name	Alias	Data Type	Allow NULL	Domain	Default	Length
OBJECTID		Object ID				
Shape		Geometry	✓			
ID	ID	Long	✓			
Province	Province	Text	✓			254
DateT	DateT	Date	✓			
Tests	Tests	Long	✓			
Shape_Length		Double	✓			
Shape_Area		Double	✓			

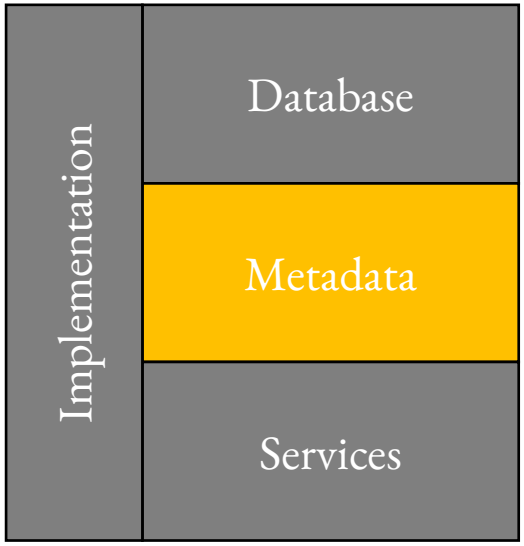
SDI Implementation

ISO 19139 Metadata Implementation Specification GML3.2



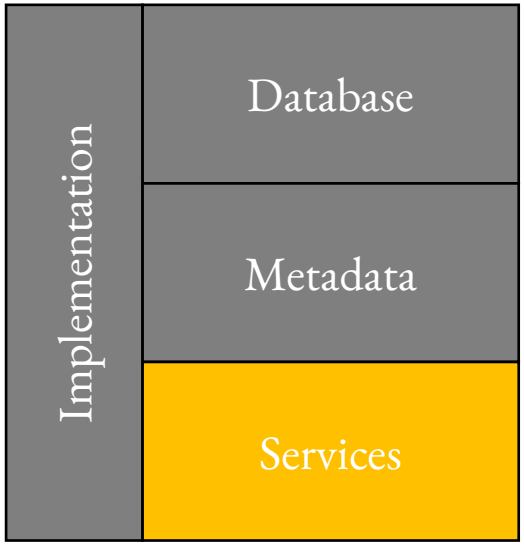
Overview	Metadata	Resource
Item Description	Details	Details
Topics & Keyboards	Contacts	Extents
Citation	Maintenance	Points of Contact
Citation Contacts	Constraints	Maintenance
Contacts Manager		Constraints
Locales		Spatial Reference
		Spatial Data Representation
		Content
		Quality
		Lineage
		Distribution
		Fields
		References
		Geoprocessing History

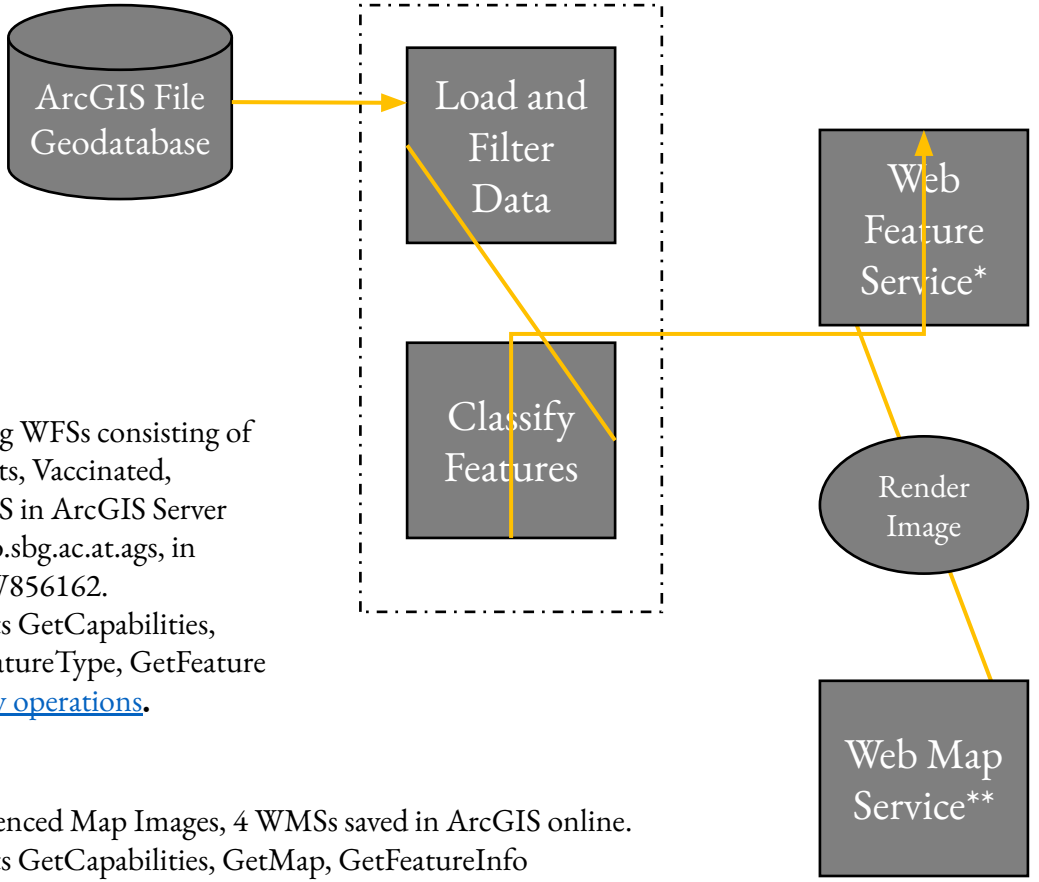
SDI Implementation



4 XML and PDF files regarding the num. of tests, vaccination, cases and deaths available in Gitlab.

SDI Implementation

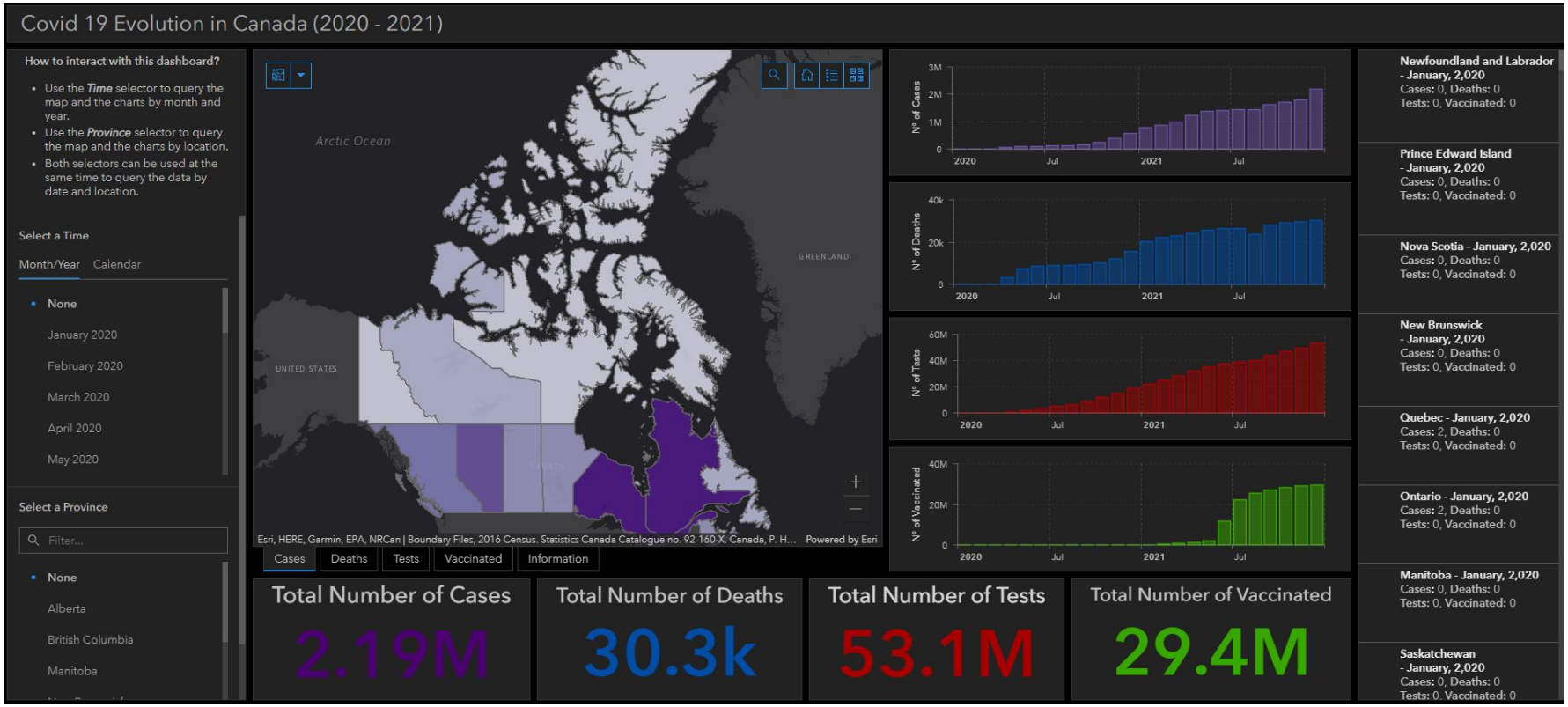




* Publishing WFSs consisting of (Cases, Tests, Vaccinated, Deaths)_KS in ArcGIS Server zgis188.geo.sbg.ac.at.ags, in Folder 21W856162. Implements GetCapabilities, describeFeatureType, GetFeature as discovery operations.

**Georeferenced Map Images, 4 WMSs saved in ArcGIS online. Implements GetCapabilities, GetMap, GetFeatureInfo operations.

Validation and Result



The link to access the Dashboard is available Here.

Discussion

The presented work was an attempt to show the Covid-19 trends with different aspects in each Canadian province and also among them through different times of the year in monthly basis. The main approach to demonstrate the changes was to apply Timeline tool, which is available in ArcGIS Pro, was not possible to proceed at the end. Therefore, we focused on providing a clear and categorized dashboard to reflect the flows of changes in an interactive classified way in different categories, by selecting desired month and province or visualizing the accumulative numbers in the whole country.