VERMONT
AGENCY OF DIGITAL SERVICES

Vermont Open Geodata Portal
State of Vermont - Agency of Digital Services

CATEGORY:
Information Communications Technology Innovations

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INITIATION DATE:
Dec. 2016

END DATE:
Spring 2018
Ongoing Releases Planned

geodata.vermont.gov

Q Search for data

The Vermont Open Geodata Portal is open for public use at geodata.vermont.gov.

EXECUTIVE SUMMARY

Twenty-five years ago, Vermont's geospatial data fit on twelve 1.44 MB floppy disks, and a staff technician spent 10 hours a week filling a handful of data requests for Vermont Center for Geographic Information's 107 customers. At the time, it was estimated that demand for geospatial data over the next couple of decades would grow at a rate of 2%-10% annually, which (at the high end) would result in just under 1300 users. These forecasts were off. In 2018, VCGI saw more than 80,000 users and 150 million server map requests, surpassing all predictions — including our estimates from the previous year.

Much of that growth has been realized in the past year and a half, and can be largely attributed to the development and roll out of Vermont's Open Geodata Portal, which replaced the nearly 20 year old Data Warehouse and now allows casual users to stream data online without the need for any specialized software.

Successful implementation of Vermont's Open Geodata Portal (Portal) meant more than standing up another bin where agencies drop-off some data to check the 'open data' box and get back to what they were doing. We needed to make sure the Portal became the authoritative source for Vermont's geospatial data, that publishers were using the data and APIs in their own applications ('eating our own dog food'), with a user-centric and accessible interface to a wide variety of users with different skills and backgrounds.

Development of the Portal was accomplished with the leadership and vision of the inter-agency Enterprise GIS Consortium and Agency of Digital Services staff at VCGI. The group used an agile project management approach and leveraged existing infrastructure and cloud services to speed up the project timeline and focus on priority user requests, followed by an outreach campaign with traditional and non-traditional activities.

Reaching out beyond those already comfortable with geospatial technology was key to raising awareness of the Portal and inspire new ways more people could leverage this government service. Following an initial release and traditional webinars and trainings for core users, the team focused on new audiences with events and activities including: a hackathon, radio interviews, maker-space events, blog posts, and non-IT presentations that focused on using data in the Portal to help address state priorities related to economic development and affordability.

The Vermont Open Geodata Portal has fundamentally changed the way that the State of Vermont delivers geospatial data to the public, as well as the coordination and relationship of its data publishers and stewards. All has been for the better, as shown by the Portal's growing usage and continuing stream of novel applications.

CONCEPT
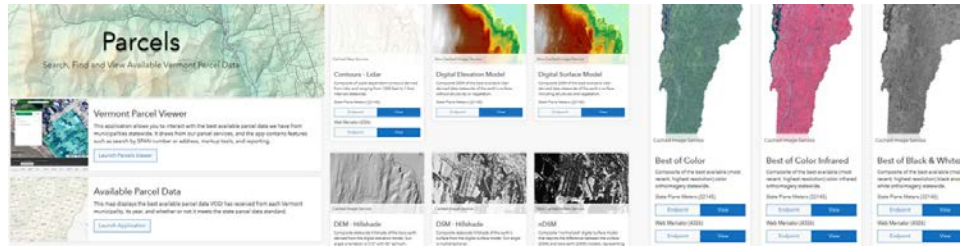
The Portal hosts statewide geospatial datasets, services, and applications across a variety of topics stewarded by multiple publishers.

In 1998, the Vermont Center for Geographic Information (VCGI), now a division of the Agency of Digital Services, released its first online open data portal (VGIS Data Warehouse), improving access to Vermont's geospatial data assets by eliminating the need to fill out paper forms, and mail floppy disks. While this solution had served the state well, nearly two decades later – the system was largely the same and became clear that the limitations of this homegrown system would no longer meet the needs of the State and its stakeholders. Data updates were increasing in frequency, file sizes were growing exponentially, and the information technology landscape had evolved by leaps and bounds along with user expectations. State and regional agencies began to rollout their own data portals instead of sending data to the warehouse for updating, and it became increasingly challenging for users to find what they were looking for and be confident they had the authoritative source. Users also expected a more modern and interactive experience, one which allowed them visualize datasets and stream them directly into their desktop and web applications. The old Data Warehouse was built with late 90's technology, making such enhancements impossible.

ITERATIVE DEVELOPMENT & PROJECT MANAGEMENT APPROACH

VCGI and the State's Enterprise GIS Consortium (EGC) identified the need to develop a centralized solution that would replace the VGIS Data Warehouse and established the inter-agency Open Data Workgroup, tasked with refining the concept and initiating the project. A Project Manager was brought on board and hybrid project management model was used,

starting with a traditional "waterfall" approach and transitioning to agile/scrum methods at the build and release phases of the project, beginning in December 2016. This was one of the first multi-agency projects to leverage a more agile approach to software development, presenting opportunities and challenges for the project team. Ultimately the agile approach proved invaluable, allowing the team to adapt quickly to the results of our usability testing. This approach invovled:

- 69 "user stories"
- 19 scrums
- A 2-week release cycle

ARCHITECTURE

One common theme kept repeating itself when the project team reviewed the top-ranking requirements ("user stories"). Publishers wanted to manage their own open data items using technology they could plug into existing technology stacks and federate across multiple agencies. The project team evaluated and scored commercial and open source platforms, ranking them against each requirement. The State chose to proceed with a Software-As-A-Service (SaaS) solution, ESRI's ArcGIS Open Data, which leveraged existing State and regional software licenses. This approach reduced costs and streamlined the ability of the State to federate across multiple data nodes. The plan was accepted by the State's Enterprise GIS Consortium (EGC), providing the collective support necessary for the success of this shared architecture.

ACCESSIBILITY, SECURITY, OVERSIGHT

The adoption of a SaaS solution allowed the State to focus on other important elements of the project,

STATE OF VT STRATEGIC PLAN

- **GROW THE ECONOMY**
- **PROTECT THE VULNERABLE**
- **MAKE VT MORE AFFORDABLE**
- **MODERNIZE & IMPROVE GOV'T**
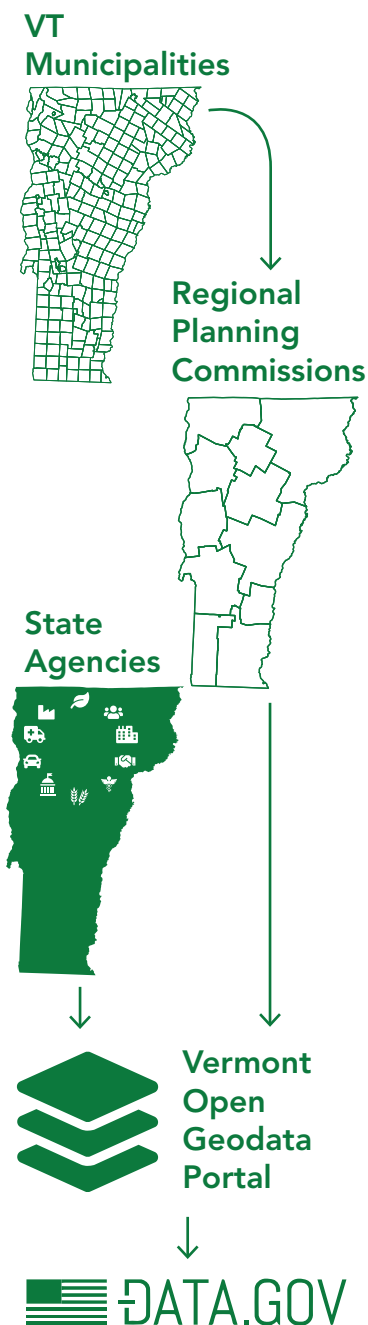
ADS PATH FORWARD

ENTERPRISE GIS CONSORTIUM (EGC) STRATEGIC PLAN

Vermont Open Geodata Portal

The portal is one example of larger state government initiatives coming to fruition.

VT Municipalities

Regional Planning Commissions

State Agencies

Vermont Open Geodata Portal

↓

DATA.GOV

The Portal enables geospatial data coordination, publishing, and stewardship across scales and jurisdictions.

including accessibility, consistency, and long-term oversight. The EGC's Open Data Workgroup crafted standards and guidelines to help ensure consistency across all federated nodes. An open geodata policy was established with VCGI providing long-term management and oversite of the Portal and its content.

OUTREACH AND COMMUNICATION

VCGI created a Data Innovation Fellowship position to assist with implementing a significant outreach and communications strategy that went beyond targeting traditional GIS Professionals. Once the Portal moved out of beta and following traditional webinars and trainings for core users, the team focused on outreach to new audiences – highlighting potential uses of the data that would make progress towards state goals related to economic development and affordability.

STATE OF DATA STEWARDSHIP PRIOR TO PORTAL

⊖ **AGENCY CENTRIC**

⊖ **LIMITED GOVERNANCE**

⊖ **SOFTWARE DEPENDENT**

⊖ **UNEVEN ACCESS**

VISION OF DATA STEWARDSHIP WITH PORTAL

✓ **CUSTOMER CENTRIC**

✓ **SINGLE AUTHORITATIVE SOURCE**

✓ **DATA AS A SERVICE**

✓ **ACCESSIBLE TO ALL**

SIGNIFICANCE

Successful implementation of Vermont's Open GeoData Portal (Portal) meant more than standing up another bin where agencies drop-off some data to check the 'open data' box and get back to what they were doing. We needed to make sure the Portal became the authoritative source for Vermont's geospatial data, that publishers were using the data and APIs in their own applications ('eating our own dog food'), with a user-centric and accessible interface to a wide variety of users with different skills and backgrounds.

The Portal furthers the State of Vermont's Strategic Plan, the Agency of Digital Services 'Path Forward', and serves as a cornerstone to the 2017-2020 Enterprise GIS Consortium Strategic Plan. Governance of the site is managed by Vermont's Enterprise GIS Consortium (EGC), which adopted publishing guidelines and metadata standards that aim to strike the balance between overly burdensome and insufficient to serve as a quality data source. The Portal is managed by the Vermont Center for Geographic Information to ensure standards are adhered to, included compliance with Project Open Metadata schema, which allows for a data catalog output that federates with data.gov. Site usage is published and analyzed along with user feedback to help prioritize updates and future data publishing.

The Portal's federated architecture promotes data access as close to the source as possible and creates a single destination for access to data, services, and applications across government agencies at state and local levels. Making data available for direct download, as a web service, and as part of online applications gives users a variety of options for accessing data.

EVERYBODY IS A CARTOGRAPHER

Reaching out beyond those already comfortable with geospatial technology was key to raising

IMPACT

awareness of the Portal and expanding the ways data is used to solve problems. The team engaged in a variety of non-traditional outreach activities to help promote the Portal and inspire new ways more people could leverage this government service. Activities included: partnering with state's largest annual hackathon, radio interviews, maker-space events, blog posts, and non-technical conference presentations that focused on using the Portal and geospatial data to help tackle issues related to economic development and affordability.

As we said good bye to our old friend, the Data Warehouse, the team had high hopes that this new solution would serve as a catalyst for new and innovative uses of geospatial data that weren't previously feasible. With strong buy-in from a core team of publishers, user-centric design, and creative outreach it did not take long to see meaningful results.

The growth in Portal users over its relatively short existence has far exceeded expectations for a state with a mere population of 630,000. Over this time, the number of publishers would also expand from 4 to 16 - including every Regional Planning Commission, which has now published the zoning map data for every municipality in the state that has regulations.

Server metrics have also confirmed that people are embracing 'data-as-a-service' as 2018 saw over 150 million map requests from services accessible in the GeoData Portal. (It turns out that with the right ingredients and preparation, 'eating our own dog food' isn't that bad?)

While a growing number of clicks does provide a certain level of validation, it's certainly not as satisfying as listening to users share their stories of how open data has helped them solve problems or made their jobs easier. From preparing for the next big storm event, ensuring a complete census count, monitoring the West Nile virus, to improving water quality, understanding Paleoindian lifeways, and assessing solar suitability – we never cease to be amazed at how making data public and accessible helps solve problems we never knew existed. An office saying arose:
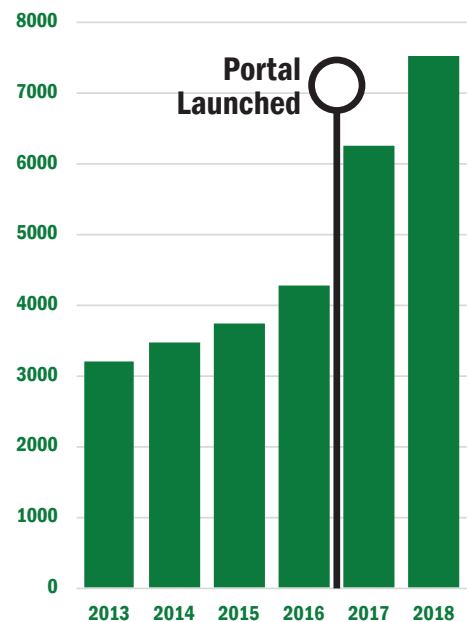
"What do a nun, 10 year-old, and ski resort operator have in common? They all called the office with questions about the Portal last month."

Requests for legislative committee testimony have gone from budget

VT OPEN GEODATA PORTAL & NASCIO TOP PRIORITIES

- ✓ CLOUD SERVICES
- ✓ CONSOLIDATION / OPTIMIZATION
- ✓ DIGITAL GOVERNMENT
- ✓ BUDGET, COST CONTROL FISCAL MGMT.
- ✓ CUSTOMER RELATIONSHIP MGMT.
- ✓ DATA MGMT. & ANALYTICS
- ✓ ENTERPRISE IT GOVERNANCE
- ✓ IDENTITY AND ACCESS MGMT.

"This is incredible. Who knew that the decisions we need to make around data could be so clearly presented visually in this way."

Average Number of Monthly Users

Portal Launched

Year	Average Monthly Users (approx.)
2013	3200
2014	3500
2015	3750
2016	4300
2017	6250
2018	7500

708,303 PAGEVIEWS

150 MILLION MAP REQUESTS

1034 DATASETS

16 PUBLISHERS

reviews to tutorials on how to access data and questions on what they can learn about everything from water quality and land use, to broadband and jobs.

SUMMARY

The Vermont Open Geodata Portal has fundamentally changed the way that the State of Vermont delivers geospatial data to the public, as well as the coordination and relationship of its data publishers and stewards; both for the better. These improvements represent innovations in information communication technologies that seek to transform government while promoting economic development, interopability, and improvements in the quality of life for Vermonters now and in the years ahead.

"Having all this information in one place makes it easier for us to efficiently map out criteria so we can target investments that will yield highest return and benefit those most in need."

- Joan Goldstein, Commissioner of Economic Development (Comments referring to the Opportunity Zones Designation Process, highlighted by the Brookings Institute as one of four States meeting the four dimensions of inclusivity and transparency in "Maximizing the impact of new Opportunity Zones requires transparency and citizen engagement", by Anthony Pipa, Brookings Institute, April 16, 2018

"What would have taken months of e-mails, MOUs, and data wrangling now takes minutes thanks to the Geodata Portal. It's hard to understate the value this seemingly wonky government service provides."

- Chris Cochran, Director, Housing and Community Development, State of Vermont
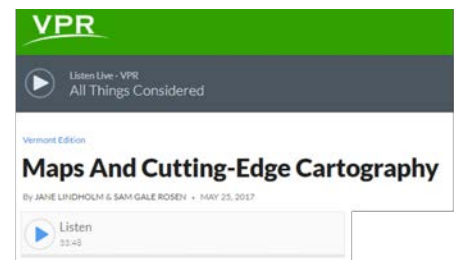
Maps have come a long way. We've gone from "here be dragons" on parchment scrolls to an age of satellites, plane-mounted lasers, and democratization - everyone can now be his or her own cartographer. We're diving deep into the latest on what maps are, what they might become, and what we can learn from them.

Outreach for the geodata portal included non-traditional venues to reach audeinces not typically considered by government.
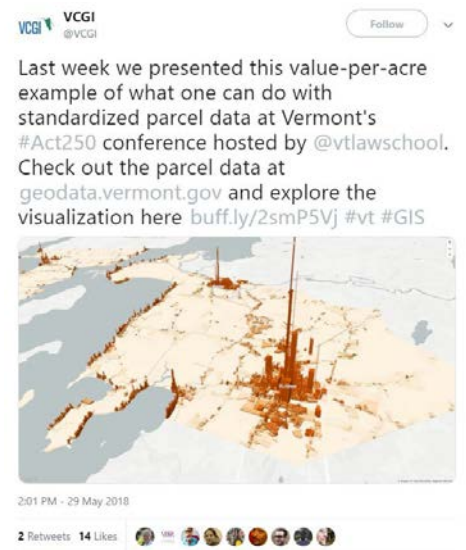
Novel uses of data hosted at the geodata portal continue to arise.