

Bridging Multi-Cloud Environments - Spatial and Business Systems



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City of Virginia Beach

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Profile

About the City

- Community Virginia Beach Metropolitan Statistical Area (MSA) is the 38th largest in the United States
- Virginia Beach is the most populous city in Virginia
 - VIRGINIA BEACH
 - Population **447,215**
 - MSA Population **1,714,475**
- City encompasses 307 square miles
 - Land - 248 square miles
 - Water - 59 square miles, 80 miles of Scenic Waterways
 - Beaches – 38+ miles
 - Elevation – 12' above sea level
 - *Community Profile* -
<https://www.yesvirginiabeach.com/media/Pages/publications.aspx>



Fun Stuff...

Six years as a Systems Analyst...Department of Communications and Information Technology (ComIT)

- Welcoming Discovery Space Shuttle
 - <http://airandspace.si.edu/explore-and-learn/topics/discovery/>
- LADEE Launch
 - https://www.nasa.gov/mission_pages/ladee/launch/#.V0iUzXarTcs
- Ride Across America
 - <http://www.heartsupranch.com/hearts-up-fundraiser/>
- Science and Engineering Festival 2016
 - <http://www.usasciencefestival.org/>
- Battleship – Theodore Roosevelt
 - <http://www.discovermwr.com/fleetfest/>
- Farmers Markets in Pungo



ArcGIS Online...GIS Cloud Computing...

ArcGIS Online - Self-Service Mapping

- **ESRI ArcWatch** – The New Age of Cloud Computing and GIS...January 2010
- ESRI became an **early adopter** of Cloud Computing concept...Great Move...
- **Self-Service Mapping** was delivered to the enterprise very early on by ESRI...2010
- City has released ESRI app with **all layers of the City** (Except Water and Sewer) to the public in the first quarter of 2013
- We presented ESRI's ArcGIS Online to **3rd Graders** and the Class Teacher on April 2014
- Esri Pledges **\$1B** in Cloud-Based STEM Software to White House ConnectED Initiative on May 27, 2014

ArcGIS Online at the City...

Early Adoption...Maturity...

- Adoption was early, but **slowed down** after the initial release
- ArcGIS Online **User Management** was an issue
- Term “**Service Credits**” was new to everybody and it was hard to convince
- As time went by, several releases have been made across the platform, and **gained maturity** of the system, started minimizing those concerns
- Maturity of AGOL has taught us **valuable lessons** and contributed to our current knowledge of Cloud Computing
- This process has brought us better understanding of Cloud Computing and made it **second nature**
- This understanding will help in building **integrated spatial and analytics** within an organization easier

ArcGIS Online at the City (Cont.)...

Current State...

- Center for Geospatial Information Services (CGIS) plays a key role in managing and delivering ArcGIS Online to the departments through **functional teams**.
- Functional Team leads meet with departments **on a monthly basis** to develop requirements, and provide solutions
- ArcGIS Online – Active users of AGOL from 2012 and released city data to the public using ESRI Apps. Web Map Services started at **9.3.1**, currently at **10.22** and will be **10.4** soon.
- Current Use Environment – Mostly **Hybrid**
- Current User Base – **109 of 126** Accounts (Active)
- City ESRI Licensing – Currently reviewing to pursue **ELA**

Strengthening City's Data...

Standardizing Addresses...Across Business Systems...

Master Address Repository (MAR)

- Addresses play a key role in all business systems in the city and is vital for **several business processes** within these systems
- MAR uses Microsoft SQL Server **Master Data Services (MDS)**
- **Standardizes addresses and other data** across business systems and provides quality control mechanisms to manage addresses in the future
- Initially, current addresses in the spatial systems have been corrected to **NENA standard using MDS**
- Several business system addresses will be ingested in the near future and similar QA/QC processes will be used to **adhere/convert** to single address standard

Address Standardization and Other...

Helps Business System Processes...

Helps in

- **Historic data corrections** and QA/QC process
- Will provide addresses and other data... for all **business systems** in the city from a single source
- Addresses are spatially enabled, and can be used to **map across** the Multi-Cloud environments **seamlessly**
- Provides quality data for performing **business intelligence and analytics** with spatial context, and lead to potential savings

City's Master Technology Plan

FY15 – FY19

- The Virginia Beach **Master Technology Plan** is the result of nearly a year of collaborative work by city leaders, staff and consultants. Gartner, Inc., a leading information technology research and advisory company, worked with the city's senior leaders and staff members to understand their needs, evaluate business processes and identify opportunities.
- This plan includes **Gartner's** key findings and recommendations, and serves as the city's Chief Information Officer's plan for achieving the goals of increased efficiencies, quality service delivery and information security that the Virginia Beach Department of Communications and Information Technology (ComIT) delivers to Virginia Beach residents, visitors and city departments.
- **Master Technology Plan -**
<https://www.vbgov.com/government/departments/communication-s-info-tech/master-tech-plan/Pages/default.aspx>

City's Master Technology Plan

Spatial and IT...

Strategic Initiatives

- Transforming Service Delivery
- Building Better Business Solutions
 - *Departmental Analysis and Strategic Initiative*
 - Assess opportunities to leverage GIS to meet preliminary requirements
 - *Build Interfaces Strategic Initiative*
 - Between Accela and GIS web services (to help automate city planning business processes)
- Strengthening Governance
- Improving Infrastructure and Operations
- **Arc User Spring 2015** – “Developing Apps and Relationships”

Microsoft Cloud Services – Office 365 – Self-Service Reporting

Self-Service Business Analytics and Reporting

- Recent trends and rapid changes in business system data delivery, Big Data and **Self-Service business analytics and reporting** is showing great promise to find trends in city data and create effective solutions to solve critical issues
- Microsoft has been developing and showcasing its rapid development strategies with **Office 365, Power BI and SQL Server** recently
 - Power BI Updates - February 2015 – April 2016
- City is currently working on deploying **Office 365** enterprise wide

Bridging Multi-Cloud Environments...

Cloud computing becoming mainstream...

- Leveraging the multi-cloud environments is key to bringing spatial and business data together
 - ArcGIS Online - Self-Service Mapping
 - Office 365, Power BI, SQL Server– Self-Service Reporting
- Bridging these environments is a great opportunity for GIS community (Self-Serving Mapping and Self-Service Reporting)
- Leveraging their ability to use and incorporate spatial data across the multi-cloud environments will greatly increase the number of users making informed decisions with spatial context
- Self-Service analytics by subject matter experts will provide efficient summary views for department managers and citizens

Benefits of Multi-Cloud Environments

Leverage Spatial Data with Business Systems...

- Embracing **cloud computing** by ESRI early on has made **GIS users very proficient** in learning, adapting and using ArcGIS Online in the past three years
- From the past two years, business systems are rapidly **adopting cloud computing**, and enhancing ways data can be used, to provide intelligent decision making and finding trends using analytics
- Bridging the cloud environments, as well as integrating spatial data will have **an exponential increase** in the user base at the city.
- These **synergies** between spatial and information technologies will enhance the ability of users city wide to **solve problems**, help find inconsistencies, and will enable management to view data analytically and make informed decisions.
- **Voice recognition mapping, predictive analytics, machine learning** are in the initial stages and will help in the future ...

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Paper Title: Bridging Multi-Cloud Environments - Spatial and Business Systems

Session Title: Smart Communities-Enterprise Wide, Part 3

Abstract

City of Virginia Beach is actively reviewing to bridge multiple-cloud environments, working on concepts to strengthen spatial infrastructure using ArcGIS and combine business intelligence to rapidly enhance the ability of enterprise-wide workforce, to quickly adapt and embrace both worlds for future decision-making, that will empower the visualization as well as presentation of spatial datasets in unique ways within the local government to strengthen data analytics environment into the future for the departments and its citizens.

Thanks for attending my presentation. I hope some ideas that were presented here are worth taking back with you. Your feedback is welcomed and it may help me think of new approaches

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