



THE NEXT GENERATION OF MARYLAND'S ENTERPRISE GIS

MD iMAP 2.0

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TOPICS

- MD iMAP Role in State Government
- MD iMAP 2.0
 - Complete Rebuild, Why?
 - 1.0 vs 2.0
 - Transition Questions
 - Goals & Options
 - Data & Services
 - Build, Migrate, Manage
 - Lessons Learned
 - Platform Initiatives
- Q&A

MD iMAP ROLE IN STATE GOVERNMENT

- Executive Order created Maryland Integrated Map (MD iMAP) in 2009
- Created a Statewide GIS to help coordinate programs and policy
- Collaborative effort between state, regional, county and municipal agencies and organizations
- New State Law ([SB644](#)/HB1260)
 - “DATA” are both alphanumeric and GEOSPATIAL
 - “IT IS THE POLICY OF THE STATE THAT OPEN DATA BE MACHINE READABLE AND RELEASED TO THE PUBLIC IN WAYS THAT MAKE THE DATA EASY TO FIND, ACCESSIBLE, AND USABLE, INCLUDING THROUGH THE USE OF OPEN DATA PORTALS.”

MD iMAP 2.0 – COMPLETE REBUILD, WHY?

- Additional functionality requests from end users
- Serving GIS content has changed since 2009
 - Composite Locator
- **MD iMAP is not just data. it's data PLUS**
 - Map Services
 - Portal
 - Imagery
 - ArcGIS Online
 - LiDAR
 - Dashboards
 - Open Data
 - Mobile

MD iMAP 1.0 vs MD iMAP 2.0

MD iMAP 1.0

- Built in 2009
- Purely physical environment
- ArcGIS Server 10.0
- 250+ Map Services
- Data served from SDE
- No Clustering Capability
- Limited Disaster Recovery

MD iMAP 2.0

- Built in 2014
- Virtualized environment
- ArcGIS Server 10.2.2
- 100+ Map Services
- Data served from GDB
- Clustered GIS Servers
- Multiple “Environments”
- Full Disaster Recovery

MD iMAP 2.0 – TRANSITION QUESTIONS

- Who are our users?
- What do our users need?
- How do we make this go smoothly?
- How does this new system impact existing users?
- How do we manage a system this large?

MD iMAP 2.0 – GOALS

- Have a Statewide Enterprise GIS that...
 - ...is highly available
 - ...has enhanced performance
 - ...has new capabilities
 - ...has authoritative data
 - ...is scalable
- Support more users and more data without sacrificing performance
- Provide a Central Platform for GIS
 - Agencies can share more and manage less
 - Not limiting agencies to maintaining their own GIS servers and services

MD iMAP 2.0 – OPTIONS

- Multiple Options for Hosting



Existing Contractor



Cloud Services



In-House Hosting

- DoIT selected for several reasons, including:
 - MD iMAP was one of the few State enterprise systems not hosted by the State
 - DoIT is moving many enterprise systems to a new data center at University of Maryland College Park

MD iMAP 2.0 – DATA & SERVICES

Back to the question...Who are our users?

State Agencies

- Maryland Department of Agriculture
- Maryland Department of Planning
- Maryland Department of Economic Development
- Maryland Coordination and Analysis Center
- Maryland Emergency Management Agency
- Maryland Higher Education Commission
- Maryland Department of Housing and Community Development
- Maryland Energy Administration
- Maryland Department of Public Safety and Corrections
- Maryland Department of the Environment
- Maryland Department of Budget and Management
- Maryland State Police
- Maryland Department of Natural Resources
- Maryland Department of Mental Health and Hygiene
- Maryland State Highway Administration
- Maryland Department of Transportation
- Maryland State Department of Education
- Maryland Transportation Administration
- Maryland Motor Vehicle Administration
- Maryland Environmental Service
- Maryland Department of Veterans Affairs
- Maryland State Archives

State Universities & Organizations

- Towson University
- University of Maryland
- Maryland Broadband Cooperative
- Salisbury University

County and Municipal contributions & Federal datasets too!

MD iMAP 2.0 – DATA & SERVICES

Back to the question...What do our users need?

- #1 Most Requested Feature
- All Public Data is Downloadable
- Available as...
 - ...Feature Classes through WFS Services in Desktop
 - ...Shapefiles through REST endpoint
 - ...Shapefiles through GIS Data Catalog
- Compatibility...
 - Open Source as WMS Services
 - Google Earth as KML Services
- Secure Services

DOWNLOAD



MD iMAP 2.0 – BUILD, MIGRATE, MANAGE

MD iMap 2.0

Multiple Environment Architecture



MD iMap Portal



Desktop Users



Mobile Users



Web Applications

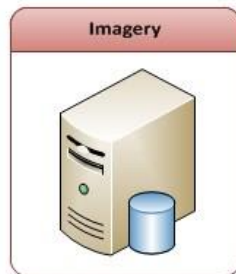


ArcGIS Online



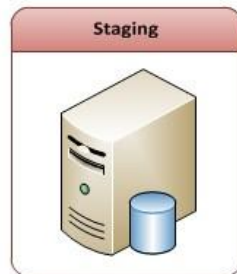
Geospatial
Open Data

Providing Content



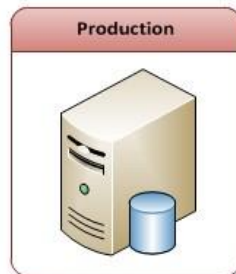
Imagery

- Past Years Imagery
- Special Imagery
- Flight Points
- Flight Grids



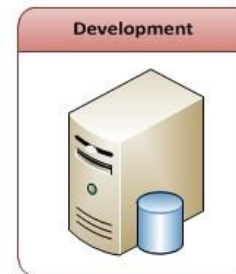
Staging

- Review Environment
- Data, Services and Applications



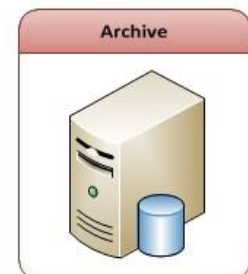
Production

- Public Data & Services
- Application Specific Data & Services
- Most Recent Imagery
- Web Applications



Development

- Application Development
- Testing New Software

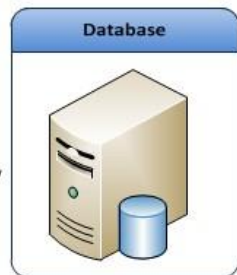


Archive

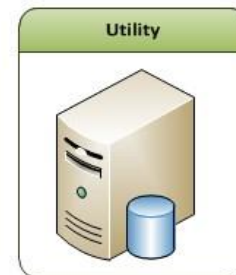
- Past Years Vector Data

GIS Tier

- SQL Server
- Real Time Apps
- SDE Data Repository



Database

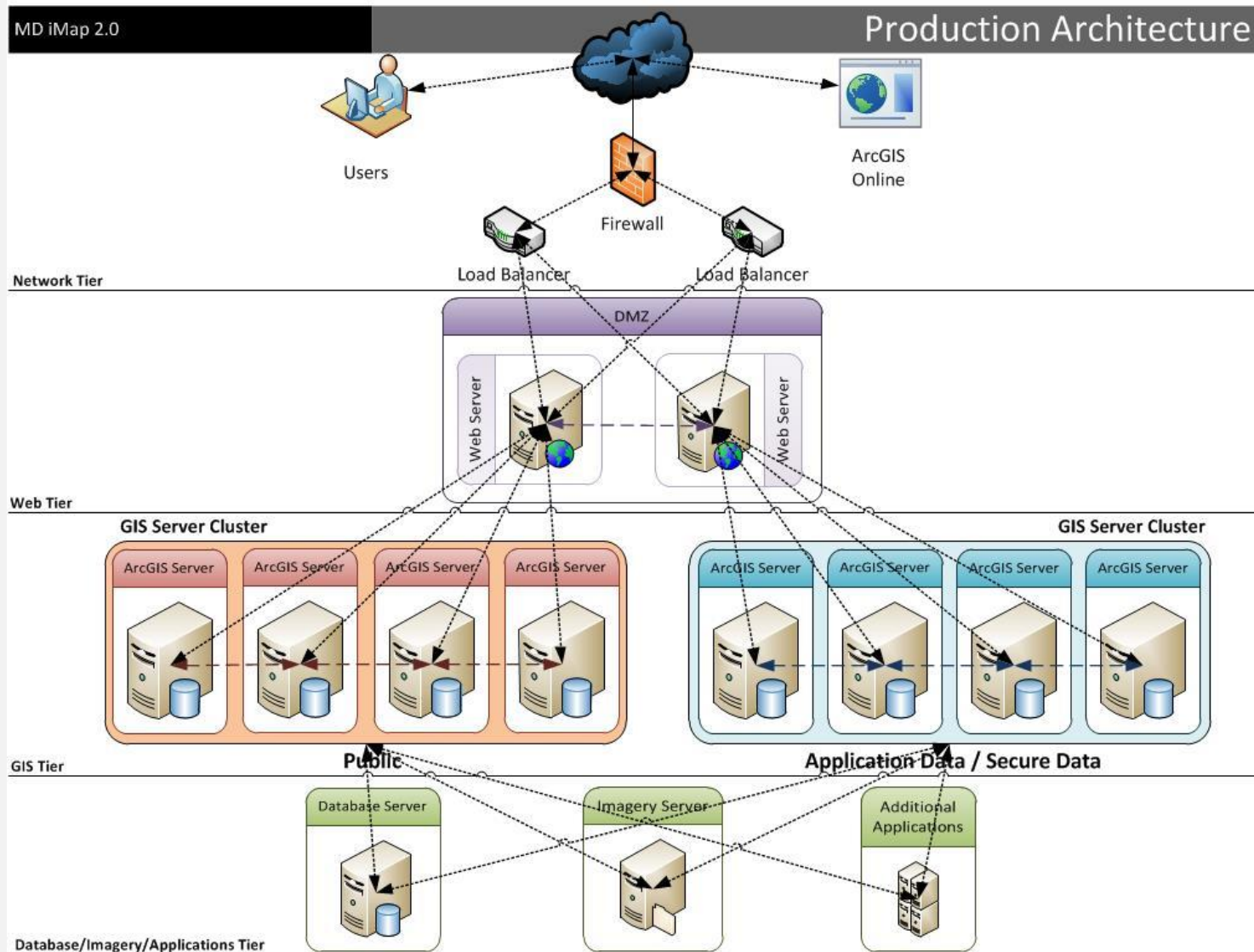


Utility

- Service Monitoring
- Imagery Extraction

Supporting Applications Tier

MD iMAP 2.0 – BUILD, MIGRATE, MANAGE



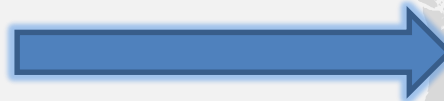
MD iMAP 2.0 – BUILD, MIGRATE, MANAGE

Back to the question...How do we make this go smoothly?

- Consolidation is key
- Apps, Data & Services are located in many places



No Central Management



Agencies are the content providers

DoIT manages and provides the technology



Centralized Management

MD iMAP 2.0 – BUILD, MIGRATE, MANAGE

- Map Services
 - Catalog Existing
 - Determine Categories
 - Determine Where Services Belong
- Data
 - Determine Data Owners
 - Refresh Data
 - Set Scheduled Update Frequency
 - Add Metadata
- Applications
 - Move and Update to function on new servers
 - Out of Flex, into JavaScript

**THIS CONSUMES
MORE TIME THAN
ANY OTHER PART OF
BUILDING THIS
SYSTEM!!!**

MD iMAP 2.0 – BUILD, MIGRATE, MANAGE

Back to the question...How does this new system impact existing users?

- Are you using MD iMAP 1.0 services in...
 - ArcGIS Desktop?
 - ArcGIS Online?
 - Other Applications?

mdimap.us: 2009 – April 2014

mdimap.us : April 2014 – **December 31, 2014**
geodata.md.gov: April 2014 – Present

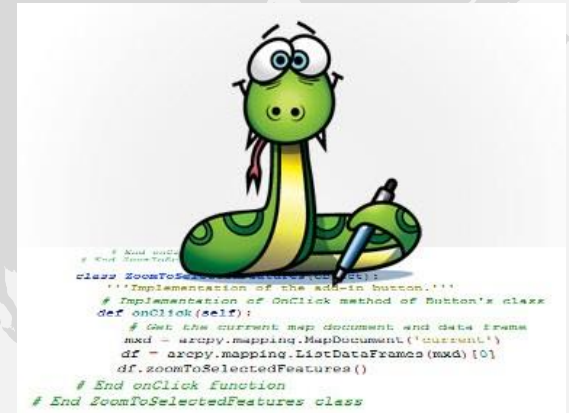
geodata.md.gov: **January 1, 2015**

MD iMAP 1.0 will be **retired** on **December 31, 2014**
Transition to MD iMAP 2.0 NOW!

MD iMAP 2.0 – BUILD, MIGRATE, MANAGE

Back to the question...How do we manage a system this large?

- Lots of Monitoring & Alerting
 - System Level
 - Disk Space, Memory, CPU
 - GIS Level
 - ArcGIS Servers
 - Map Services
- Automate, Automate, Automate
 - Data Updates
 - Map Service Updates



MD iMAP 2.0 – LESSONS LEARNED

- People do not like change
- New ideas are cool, but buggy
- You cannot make everyone happy...but you can try
- You will not think of everything the first time around
- Be flexible

MD iMAP 2.0 – INITIATIVES

- MD iMap Portal – <http://imap.maryland.gov>
 - Latest News & Alerts
 - Maps & Dashboards
 - Data
 - Initiatives
 - Innovate
 - Support
 - Partners
 - GIO Office

MD iMap
Maryland's Mapping & GIS Data Portal

News & Alerts

Quick Link | How to Connect to MD iMap Services?

Find instructions on how to add MD iMap services to Desktop, geocode, build your first ArcGIS Online application and more...

MD iMap 2.0 Server Maintenance Schedule
Regular maintenance of the MD iMap 2.0 servers will occur on the 3rd Tuesday and Wednesday of each month from 7PM to 11PM

Tweets

MD iMap @MDiMap 5h
MD iMap 1.0 Template Availability | Unavailable 11/17/14 9 AM to 5 PM | Officially Retired 12/5/14 | Read More: tinyurl.com/le6rdpg

MD iMap @MDiMap 31 Oct
REMINDER - MD iMap 1.0 will be temporarily unavailable today from 12 - 5PM. Contact the GIO Office at gjo.doit@maryland.gov for more info.

Tweet to @MDiMap

Martin O'Malley
Governor
Anthony G. Brown
Lt. Governor

do it
GIO Office
Dedicated to improving the quality of GIS data and services in Maryland.

Support
Answers to your licensing, software and training questions.

MD iMAP 2.0 – INITIATIVES

- GIS Data Catalog – <http://data.imap.maryland.gov>
 - Built on Esri's Open Data Platform
 - Search on All Available MD iMap Datasets
 - Download in Multiple Formats or Access via APIs

The screenshot shows the MD iMAP homepage with a search bar and a grid of GIS Data Categories. The categories include Agriculture, Arts, Boundaries, Business Economy, Demographics, Elevation, Environment, Geographic, Health, History, Hydrology, Imagery, Location, Planning Cadastre, Public Safety, Society, Structure, Transportation, Utility, and Weather.

The screenshot shows search results for 'Planning Cadastre'. It displays a map of Maryland with a blue overlay indicating the search area. Below the map, there are 8 results. The first result is 'LULUC County Boundary (from Maryland GIS Data Catalog: Planning Cadastre)' with 33 attributes and 24 rows. The second result is 'Land Use Land Cover 2010 (from Maryland GIS Data Catalog: Planning Cadastre)' with 7 attributes and 127926 rows.

The screenshot shows search results for 'Land Use Land Cover 2010'. It displays a table with 11 rows and 6 columns. The table is filtered to show 127926 rows. The columns are: GIS Object ID, Land Use Code, County Abbrev., Land Use Descr., GIS Shape Length, and GIS Shape Area. The table is sorted by GIS Shape Area in descending order.

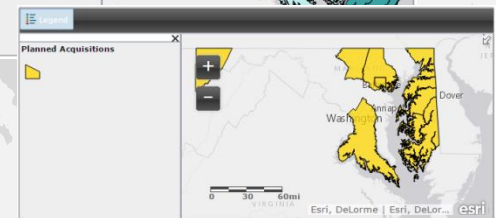
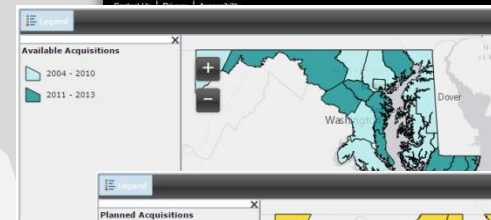
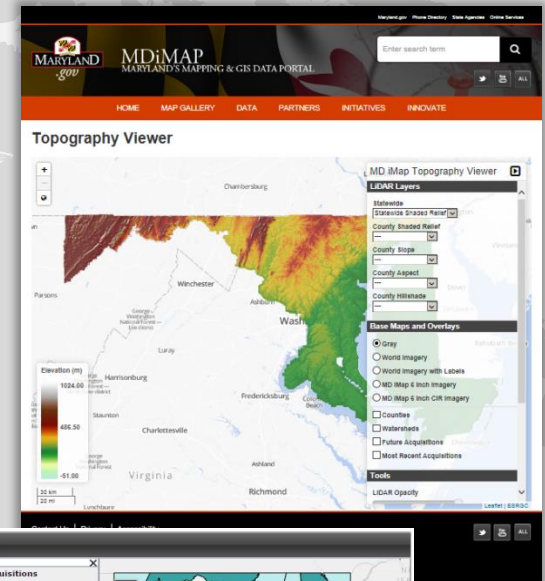
GIS Object ID	Land Use Code	County Abbrev.	Land Use Descr.	GIS Shape Length	GIS Shape Area
1	11	ALLE	Low Density Res.	1063.27738351	52584.38623118
2	11	ALLE	Low Density Res.	1396.03320480	82597.56326419
3	11	ALLE	Low Density Res.	1515.56168005	113100.5242429
4	11	ALLE	Low Density Res.	651.026902262	12195.76203382
5	11	ALLE	Low Density Res.	5245.40110243	453918.5817098
6	11	ALLE	Low Density Res.	1019.64809484	53433.27813714
7	11	ALLE	Low Density Res.	2280.66687419	117743.2557568
8	11	ALLE	Low Density Res.	11488.96203956	967963.4170073
9	11	ALLE	Low Density Res.	1415.30990936	76229.4506466
10	11	ALLE	Low Density Res.	2020.075116467	88915.76880324
11	11	ALLE	Low Density Res.	1454.833657725	84442.81191705

MD iMAP 2.0 – INITIATIVES

- Imagery
 - Statewide Six Inch High Resolution Aerial Photos
 - Some Three Inch Resolution Aerial Photos Also Available
 - Managed by GIO and MDP on Behalf of MD Emergency Number System Board and Local PSAPs
 - Buy-Up Options for Locals
 - Oblique Imagery
 - Planimetrics
 - LiDAR
 - Land Use/Land Cover
 - Three Inch Resolution Imagery

MD iMAP 2.0 – INITIATIVES

- LiDAR – Collaborative Effort with ESRGC
 - REST Services of Derivative Products
 - Aspect
 - Shaded Relief
 - DEM (Meters & Feet)
 - Hillshade
 - Slope
 - Topography Viewer (JavaScript)
 - Web Maps of Derivative Products
 - Statewide
 - Individual Counties
 - Raw Data Extraction Available



MD iMAP 2.0 – INITIATIVES

- Statewide Composite Locator
 - Includes:
 - Local Address Points, MDPV Parcel Points
 - Road Centerlines, Mile Markers, Intersections, Highway Exits
 - ZIP Codes
 - Points of Interest (POI), Geographic Names Info System (GNIS)
 - Many Options:
 - Composite Locator
 - Composite Locator with ZIP Code Centroids
 - Composite Locator with Esri (World Locator)
 - Individual Component Locators Available
 - Future
 - Integrating Delaware Address Data
 - Regional Geocode Service w/ MD, DC, VA, DE Data

MD iMAP 2.0 – INITIATIVES

- Statewide Addressing
 - Collaborative Effort Between Local, State, Federal Organizations For Standardizing Address Data
 - Phase 1 – Centerline Collection
 - Phase 2 – Address Point Collection
 - Achieved 100% Participation from County Jurisdictions!!!
 - Future Phases
 - Data Improvement
 - Integration with One Maryland One Centerline Project

MD iMAP 2.0 – INITIATIVES

- MD iMAP Template
 - Customizable JavaScript/HTML5 Template
 - Works with ArcGIS Online Web Maps or REST Services
 - Available Deployment Options
 - Host Through Maryland’s ArcGIS Online Organization
 - Download and Deploy to Local Web Server
 - Features
 - Customize Look and Feel
 - Customize Geocoder
 - Query Tools, Draw Tools, Data Interoperability
 - Find it at GitHub – <https://github.com/mdgio>
 - Fork the Code and Customize
 - Post Updates, Bugs, and Other Issues

Questions?



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