Ardent is
ALL IN

Technology. Ingenuity. Outcomes.

Ardent Capabilities

Ardent at a Glance

- Founded in 2006

- $252M + Active Contracts

- SBA Certified Small Business – HUBZone

- TS Facilities Clearance

- Offices in Arlington, VA (HQ), Washington, DC, Tulsa, OK and Maui, HI

- 140+ Full Time Employees

- History of utilizing both large and small companies as subcontractors to meet Public Sector needs

- Operate on all 3 Security Fabrics

- Scale to the "Speed of Mission"

- Develop & Deploy Mission Critical Systems

- Support to Multiple Award Winning Enterprise Systems

- Cloud Agnostic Solutions Provider to Commercial & Government

- Early Agile successes where world events impact mission
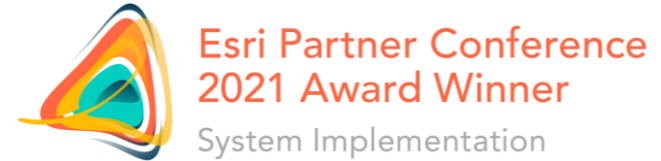
Ardent Business Lines

- Digital Transformation
  - Hybrid Cloud
  - DevSecOps & Microservices
  - Architectural Modernization
  - Human Centered Design
  - MS O365 Management & Sharepoint
- Data Science + Analytics
  - Data Visualization
  - Actionable Insights
  - Data Exploration & Management
  - AI/ML Solutions
- Location Intelligence
  - Policy, Consulting, and Training
  - Incident Management/Situational Awareness
  - Cloud GIS
  - Geospatial Analysts
  - IOT & Sensor Integration
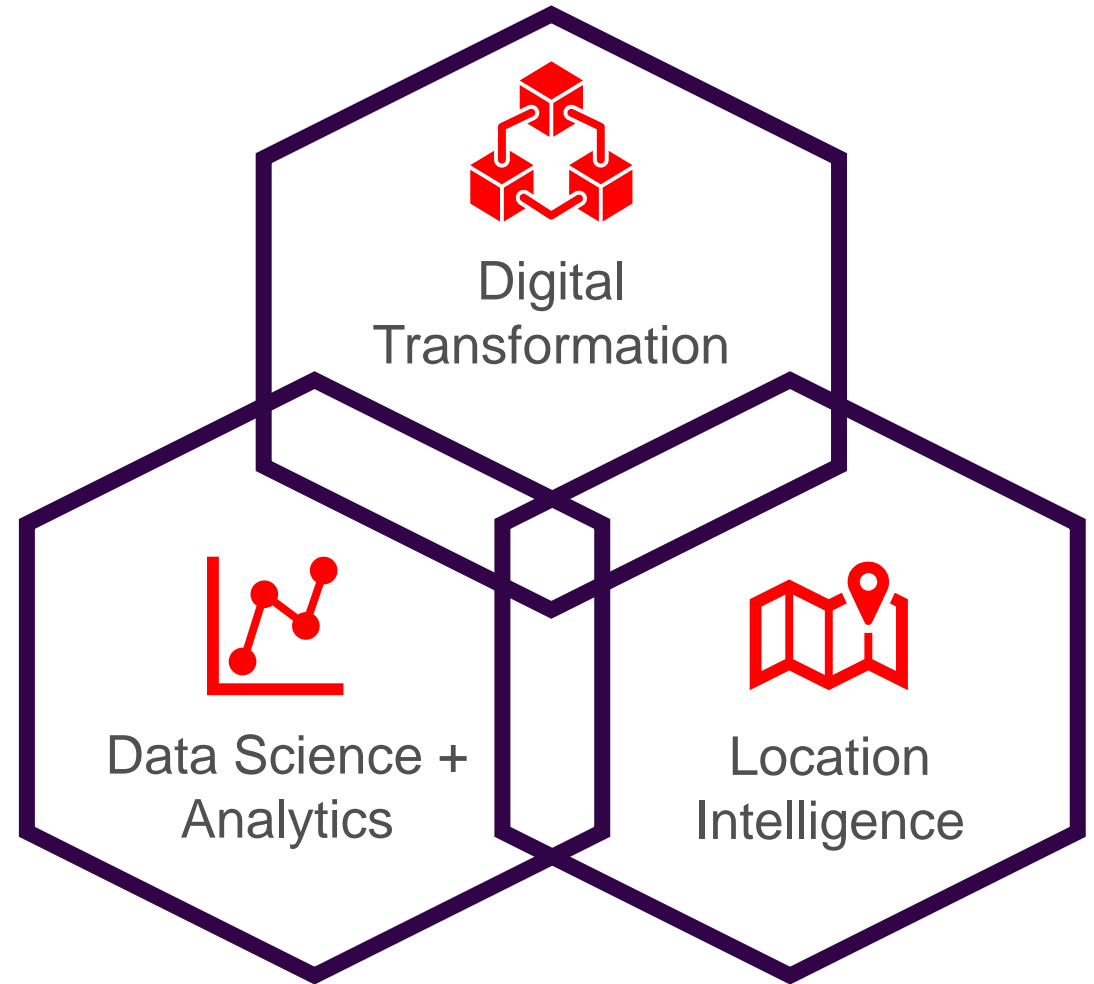
Federal Prime Contract Customers

- Department of Homeland Security

- HQ OCIO Geospatial Management Office

- National Protection and Programs Directorate

- U.S. Immigration and Customs Enforcement

- FEMA Response and Recovery

- Office of Operations Coordination

- Office of Intelligence and Analysis

- S&T First Responders Group

- Domestic Nuclear Detection Office

- Transportation Security Agency (TSA)

- U.S. Customs and Border Protection

- US Secret Service

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# Ardent's Mission Oriented Management Approach

Ardent AIM Approach

- Agile Integrated Management Approach (AIM)
  - Initiate – Program Kickoff, Resources/EODs, and Communications Plans, Requirements Processes
  - Plan –Sprint Planning, Deployment Epics, Cloud Migration
  - Execute/Monitor & Control –Geo Tradecraft Production, Performance Monitoring, Partner SLAs, Training Materials, Surge Procedures for NSSE events, SELC configuration Management
  - Closeout – Sprint Retrospectives, AARs

- Successfully managed 40+ geospatial projects (22 GTSS Task Orders) within the DHS HQ and components since 2006

CPAR: *"Key Personnel Staff are high caliber SMEs in project management and geospatial IT."* (HSHQDC15F00189)

- GITEC Awards Excellence in Program Management
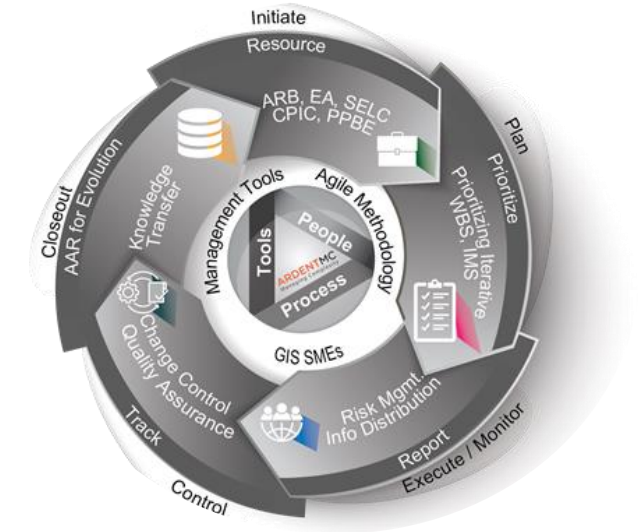
With a Focus on Information Security	**With a Focus on Systems & Network Architectures**	**With a Focus on Data Center/Cloud Operations**
• Program/Project Managers navigate and integrate USDA security as well as privacy within their project management lifecycles • TIC Auth, AppAuth and identity federation • C&A and ATOs for Systems on A-LAN, HSDN, and C-LAN • ISSOs on GII/COP/RFI – Pen Testing Results 2019	• ATO support for tenant cloud systems • Processes and procedures for working with TIC • Troubleshooting networking issues such as proxy routing, unannounced firewall rule changes and Trusted Internet Connection (TIC) configuration issues for systems	• Roadmap and Planning Documents for Cloud Migration • Datacenter SOPs for CCB Boards & ICCB • Management of all lower environments in AWS or Azure and deployment procedures for production – maintaining 99.99% availability

Ardent uses our proven management approach to deliver 110+ secure and successful deployments to DHS production environments since 2013, reducing risk to the mission.

Ardent Geospatial Expertise

ArdentMC Geospatial Practice Focus Areas:

Agile DevOps			Data		Core Lines of Service Delivery Visualization Mapping, Modeling, I Analytical		
Application Development	Solution Design	Cloud GIS	Database Design Modeling		Consequence Modeling & Geo Data Science	Portfolio Management & Damage Assessment	2D/3D Mapping & Web Visualization
Application Development	Operation & Maintenance	Operations Dashboards	IOT Integration	Data Collection	Geo & Tradecraft Training	Technical Advisory & Consulting	Staff Augmentation Services

CMMIDEV/3

- **Existing TS Facilities Clearance – CAGE CODE: 4H0Q6**

- **13+ Years Geospatial Prime Contracts**

- Demonstrated Expertise with **Esri ArcGIS Server/Portal (version 10.6.1)**

- Custodian/Prime Contractor for the Homeland Security Infrastructure Program (HSIP) Data

- **2018 Esri Federal Small Business Partner of the Year (Ardent)**

- **AWS Advanced Consulting Partner (1 of only 6 in Public Sector) (Ardent)**
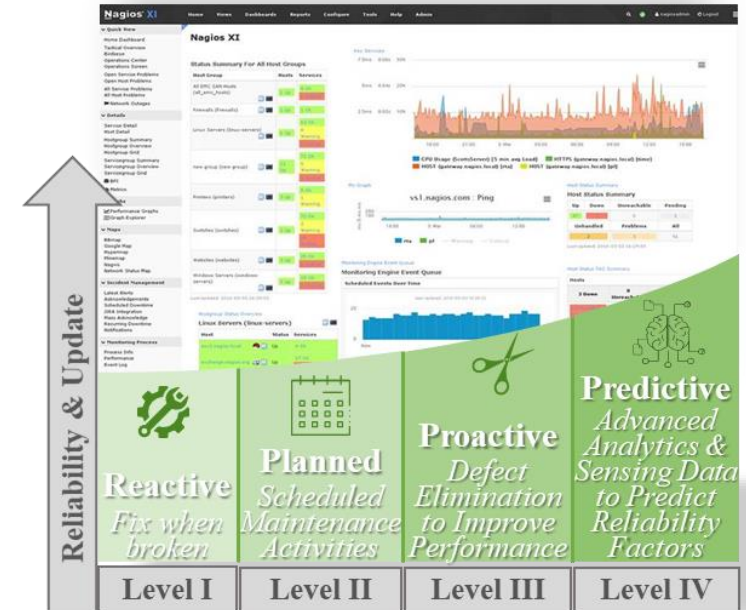
- **Microsoft Azure Partner**

Ardent's trusted expertise in sustaining GIS using modern technologies delivers a low-risk approach to sustainment, maintenance, and operations.
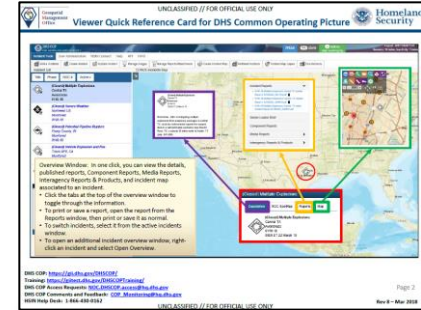
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# Ardent O&M of Geospatial Information Systems

- **Reactive**
  - Emergency fixes, unplanned outages
  - Help desk support with initial troubleshooting steps, escalation criteria, and communications plan
  - POAM identification, remediation, and closure

- **Planned**
  - Deployment and post implementation testing of monthly patches and COTS releases, develop and maintain all required ATO artifacts
  - Change control support and coordination

- **Proactive**
  - Develop and maintain information sharing and interconnectivity agreements with mission partners
  - POAM identification, remediation, and closure

- **Predictive**
  - Compile and report usage metrics for USDA to include user activity, frequency of use, and data inventory reports to better inform future support

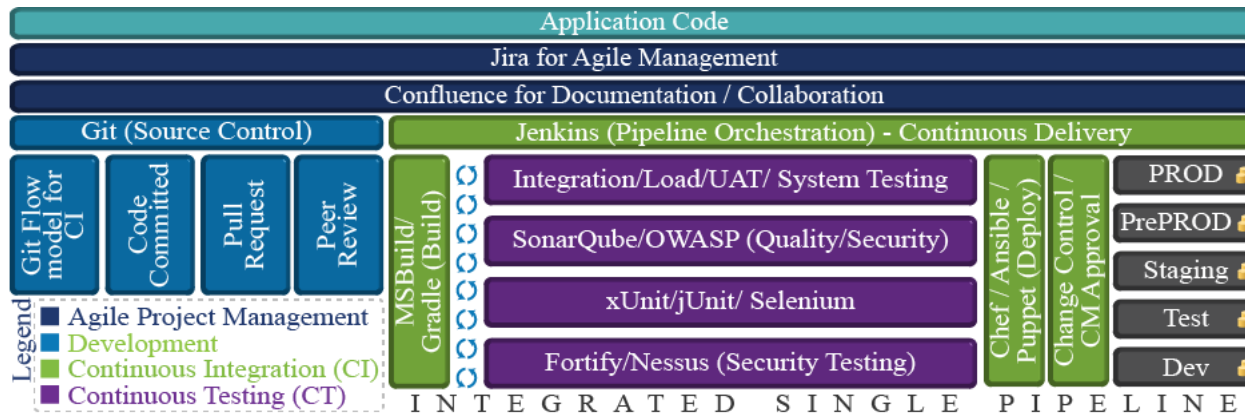| Methodologies, Resources & Tools	Benefits of Our Approach	Future Plans & Innovations
• DevOps Methodology • System network and server side monitoring (i.e. Nagios) • Cloud Managed Services • HR: Geo PMs, GEO DBAs, Architects, Application Developers, GIS Scientists	• Continuity and agility of systems • Ability to make O&M changes with lowest risk • Speed to support mission changes, challenges, and surges	• Engineers are always evolving our geospatial technology tradecraft. • Continue to enhance feature technologies into our system and application design

Comprehensive O&M process tailored for systems and geospatial software components that align to structured CM for software quality and security.

Ardent CI/CD Pipeline
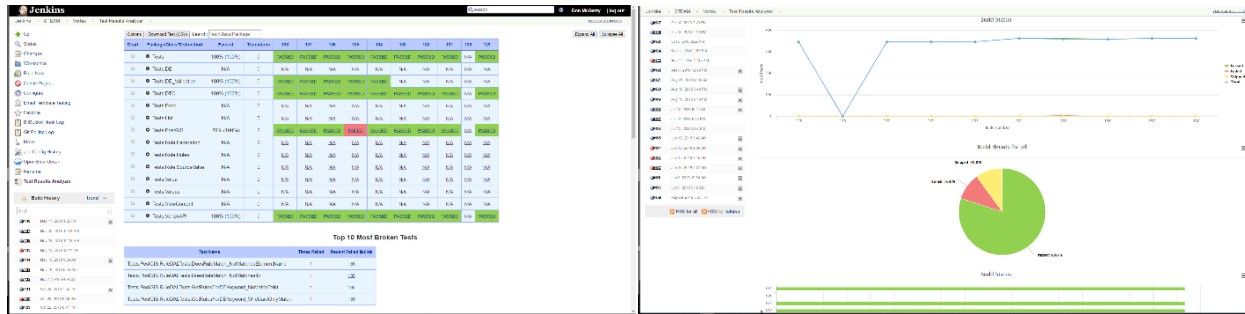
Automated testing required in all pipelines Failed tests = Failed build and alerts

Preconfigured reports for tracking testing and build results over time

| Application Code |
| Jira for Agile Management |
| Confluence for Documentation / Collaboration |

| Git (Source Control) | Jenkins (Pipeline Orchestration) - Continuous Delivery |

- Git Flow model for CI
- Code Committed
- Pull Request
- Peer Review

MSBuild/ Gradle (Build)

- Integration/Load/UAT/ System Testing
- SonarQube/OWASP (Quality/Security)
- xUnit/jUnit/ Selenium
- Fortify/Nessus (Security Testing)

- Chef / Ansible / Puppet (Deploy)
- Change Control / CM Approval

- PROD
- PrePROD
- Staging
- Test
- Dev

Legend
- Agile Project Management
- Development
- Continuous Integration (CI)
- Continuous Testing (CT)

I N T E G R A T E D S I N G L E P I P E L I N E

- ✓ Build features iteratively
- ✓ Operate as one-team with a shared mindset
- ✓ Integrated Single Pipeline
- ✓ Manage risk decisions through standardized building blocks, templates, and processes
- ✓ Write tests for full coverage and run tests as often as possible
- ✓ Provide direct feedback to developers from automation
- ✓ Integrate and deliver continuously

Ardent delivers an Integrated Pipeline to Improve Code and Deployment Quality, enabling our clients to meet migration goals

Ardent Rapid Cloud Migration Approach

- Maintaining production systems, whether on prem hosted or commercial cloud, requires expertise in monitoring performance, network design, security, maintenance/patching and the policy gates to implement any changes

- Managed Services Location

- Ardent has worked to employ new tools in DHS environments that provide performance visibility. These include Nessus, Nagios, WebInspect and SolarWind. These tools span the three networks at DHS to include cross domain solutions

- From these reporting and diagnostic tools, we are able to create alerts to inform our operations team of any issues and respond within reasonable timeframes

✓ **Maintain 99% availability**

✓ **24x7 monitoring all three classification networks**
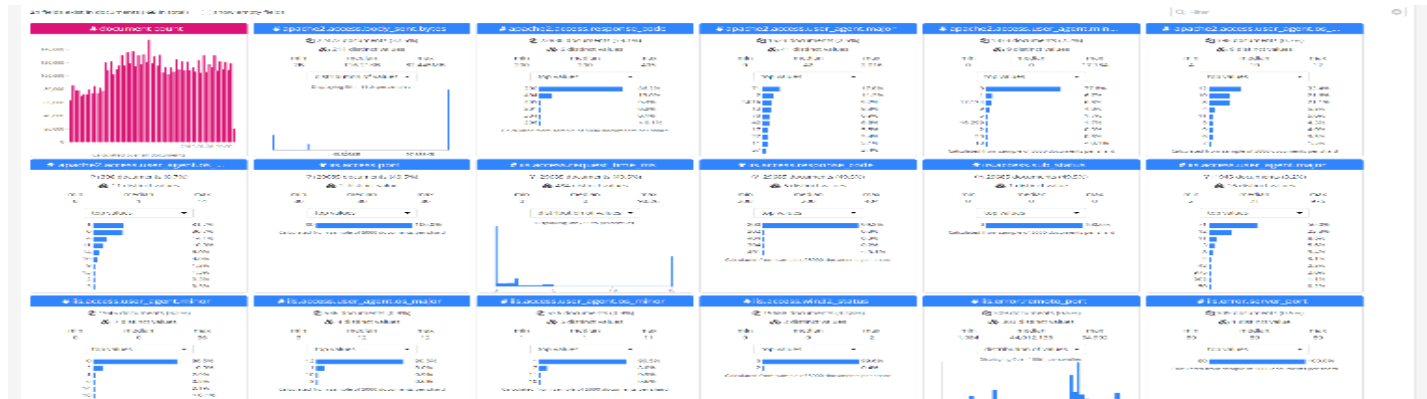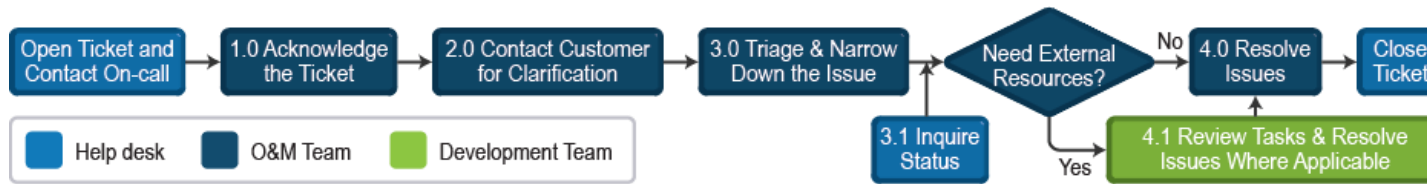
Customized cloud log and monitoring data

Ardent O&M capabilities include Configuration Management and Quality Assurance for System Sustainment including operating 24x7x365 and 99% availability

Ardent Rapid Cloud Migration Approach

Ardent RAPID® Approach

Readiness Assessment
Assess & Onboard Workload

Architect for the Cloud
Design System Through Reuse & Best Practices

Perform Migration
Move to the Cloud Landing Zone

Integrate Services
Refactor/Integrate Core Services & Processes

Deliver Operations
Manage Cloud Workloads

Methodologies, Resources & Tools	Benefits of Our Approach
• AWS Dev & Test Environments • Esri WebGIS DR, Portal Python, Chef cookbooks (for Esri builds) • Jira, Bitbucket, Confluence • HR: Architects, Systems Engineers, Application Developers, DBAs	• Agile approach to systems engineering that aligns with TRANSCOM change control/SELC • Know how to navigate security while planning cloud migration efforts

Comprehensive O&M process tailored for systems and geospatial software components that align to structured CM for software quality and security.

Applying Ardent's RAPID Cloud Migration Process

Readiness Assessment
- Align architecture to mission
- Cloud education and outreach
- App discover & assessment
- Security analysis
- TOO detail review
- Portfolio prioritization

Architect for the Cloud
- Architecture for future state
- Determine migration pattern
- Migration tool selection
- Architect CI/CD pipeline
- Review with stakeholders
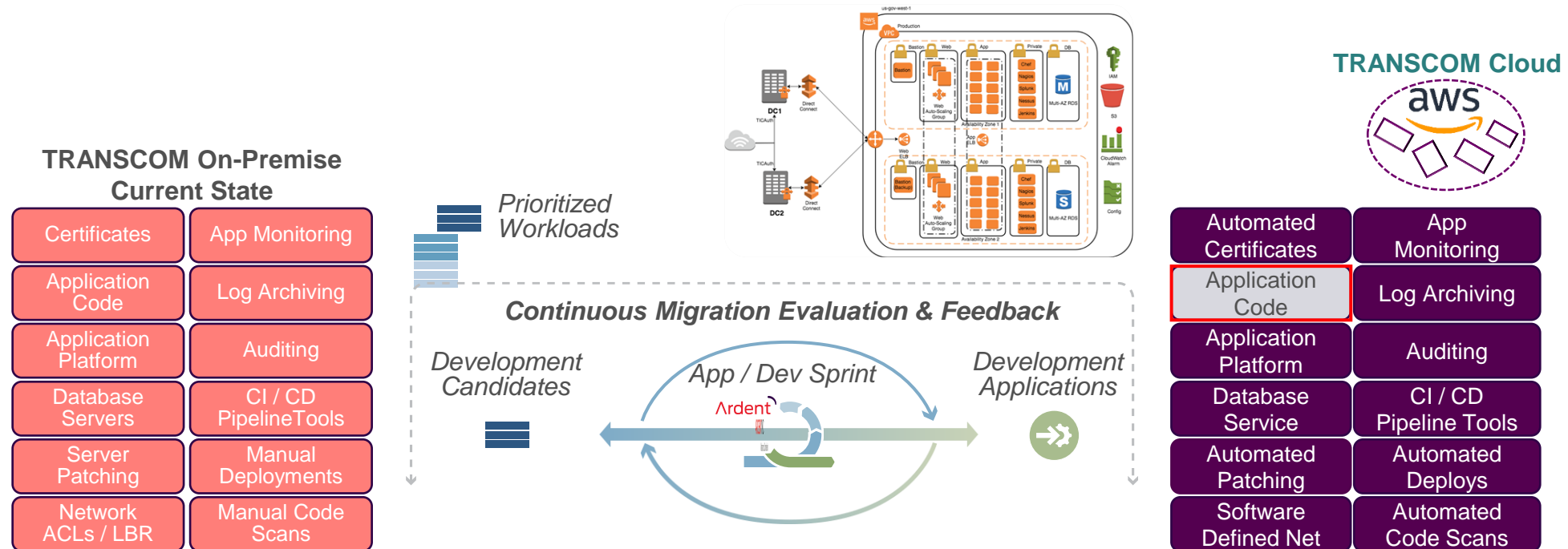- Cloud security review

Perform Migration
- Tailor scripts/configurations
- Deploy target infrastructure
- Initial migration POC
- Migration readiness review
- Coordinate with stakeholders
- Data migration

Integrate Services
- Functional testing
- Security control assessment
- Load & performance testing
- CI/CD pipeline testing
- Data validation
- User acceptance test

Deliver Operations
- Support transition
- Service Management
- Enable/test monitoring
- Security review
- Governance review
- Post migration evaluation

TRANSCOM On-Premise Current State

Certificates	App Monitoring
Application Code	Log Archiving
Application Platform	Auditing
Database Servers	CI / CD PipelineTools
Server Patching	Manual Deployments
Network ACLs / LBR	Manual Code Scans

Prioritized Workloads

TRANSCOM Cloud
aws

Automated Certificates	App Monitoring
Application Code	Log Archiving
Application Platform	Auditing
Database Service	CI / CD Pipeline Tools
Automated Patching	Automated Deploys
Software Defined Net	Automated Code Scans

Continuous Migration Evaluation & Feedback

Development Candidates — *App / Dev Sprint* — *Development Applications*

RAPID Allows teams to focus on enabling the agency & delivering value repeatedly and consistently with speed increasing workload migration by 48%.

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12

Federal Prime Contract Customers
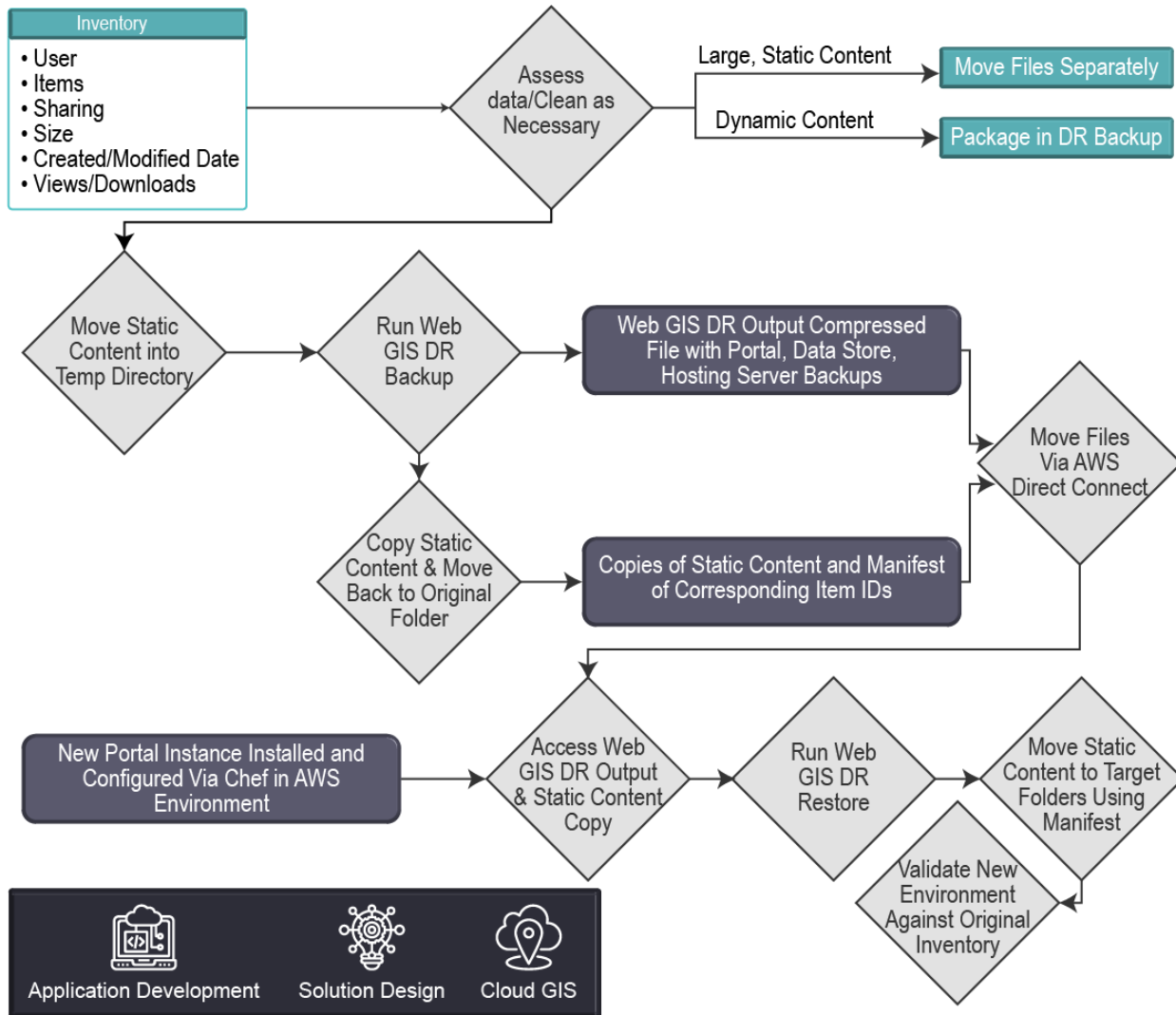
- Ardent is currently in the process of migrating one of the largest Esri Portal's (~600GB of data and 22,000 named users) in the Federal sector from an on-prem hosting platform to a commercial cloud

- Ardent is using a combination of Esri tools and custom scripts to enhance tools such as the WebGIS DR (Disaster Recovery tools from Esri)

- Ardent has been asked by the Esri product team for both Portal and WebGIS DR, to provide our experience and results as well as recommendations for future product enhancements

- We are architecting a new environment in AWS GovCloud for FEMA

- This new environment will consist of a migration effort from FEMA's current AWS public region to GovCloud

- In both projects, the primary challenge is data migration when dealing with legacy data products, operational data (no down time) and validation of migration to the new environment

Ardent's success in moving applications from on-premise data centers to the Cloud provides the foundation for our secure, tailored CI/CD pipeline approach, keeping America's agriculture growing.

Digital Transformation Examples

DHS ISB

Enterprise Identity Solution for DHS
- ✓Operational Support Tier II & Tier III
- ✓Integrated DevSecOps in Azure
- ✓Delivered innovation – Automated Pipeline as Code

FEMA Disaster Assessment

PDA and DSA conduct assessments for post-disaster recovery needs.

First FEMA Mission System within AWS GovCloud
- ✓Operational Support   Tier II and Tier III
- ✓Automated and consistent builds
- ✓Changed what was a manual, days-long process into minutes
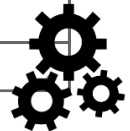- ✓Ardent took DevSecOps leadership, and now FEMA is repeating this approach on other projects

eProcessing

- ✓Microservices Template
- ✓Kong upgrade
- ✓Kong / Circuit Breaker
- ✓Interface - ESB CPMS SS

DHS COP

Fully automated pipeline with compile – test – security scan
- ✓ Operational Support Tier II and Tier III
- ✓ Fully Deployed within AWS GovCloud
- ✓ 100% FISMA Green Score
- ✓ 24x7x365 DevSecOps

Federal Security - eVerify

Developed Automated Processes for DevSecOps to improve security
- ✓ Operational Support Tier II and Tier III
- ✓ Cloud migration/security readiness assessment
- ✓ DevSecOps tooling/architecture for security automation
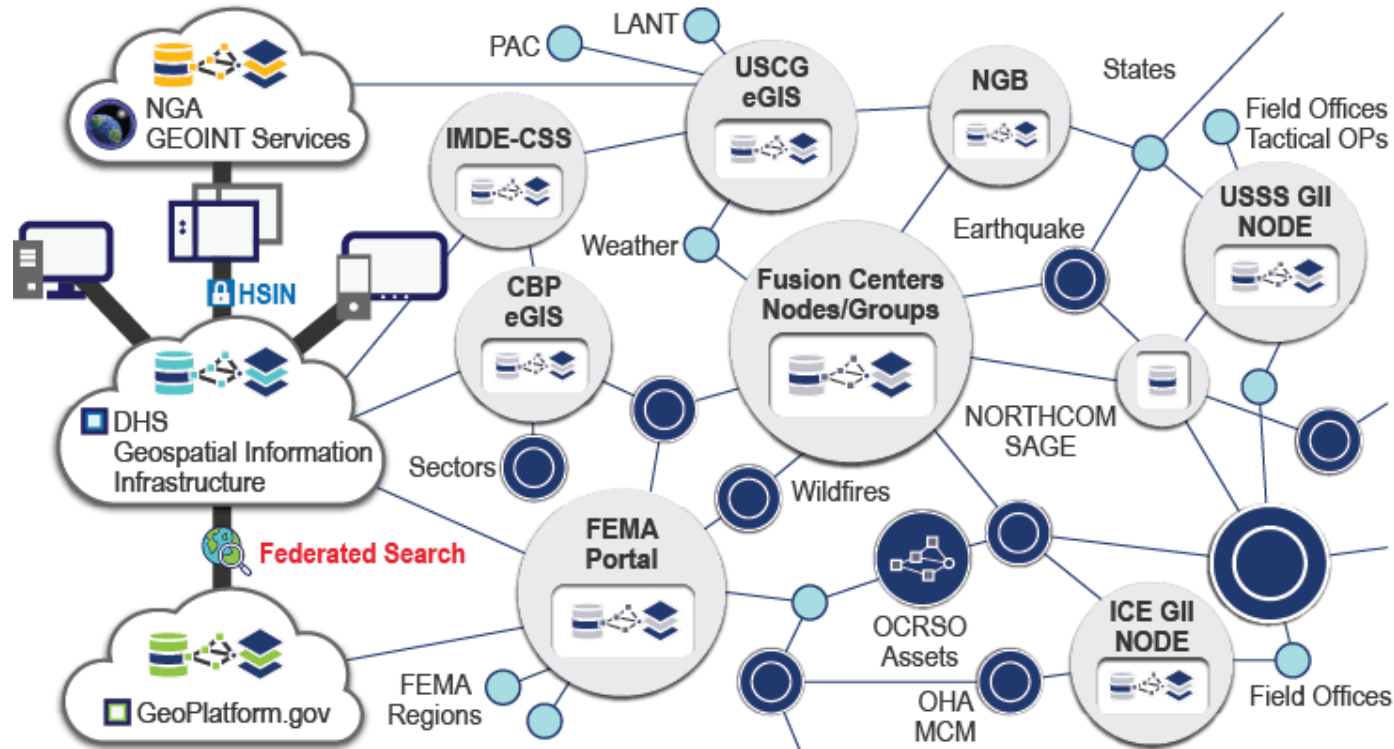- ✓ Tailored DevSecOps tooling/CI/CD pipeline

UNGA NYC

- ✓Identity Extraction

Ardent – Integrating Business Intelligence

Data Interfaces/Data Share Portal Capabilities Homeland Security Enterprise

✓ Ardent has been leading the development and integration of spatial capabilities serving the homeland security enterprise

Ardent provides an understanding of available data, response operating environments, available information sharing toolsets, and tradecraft/staff development.

Client Accolades from a Recent Email

"I cannot stress enough how much time and money CMI has saved us. We are developing microservices in 10 minutes (minus the business code). This tool is amazing. Also, Ardent implemented every single change that we requested in no time."

Common Microservices Initializer (CMI)

"Ardent provided a whole lot of support on our Lambda effort."

Lambda support

"Ardent provided us guidance in the beginning that was quite beneficial to us. We also got the rules from them"

Code quality and code coverage

"This tool is still our one stop shop for all things microservices. Time to showcase and take this tool to other DHS and federal agencies (I am serious)."

Microservices Registry

"Hey, we became the first program to finally utilize the contract testing framework that Emerging Technology developed. We have made a lot more customization on the framework on our side, but this gave us a head start we absolutely needed to do all containerized testing work."

Contract/Containerized testing framework

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Relentlessly "all-in" to operationalize innovative technology and human ingenuity, operationalizing GIS and agile to deliver enterprise-scalable systems that deliver mission results.