AGM Open Core™

Vision, Design Principles and Functions Overview

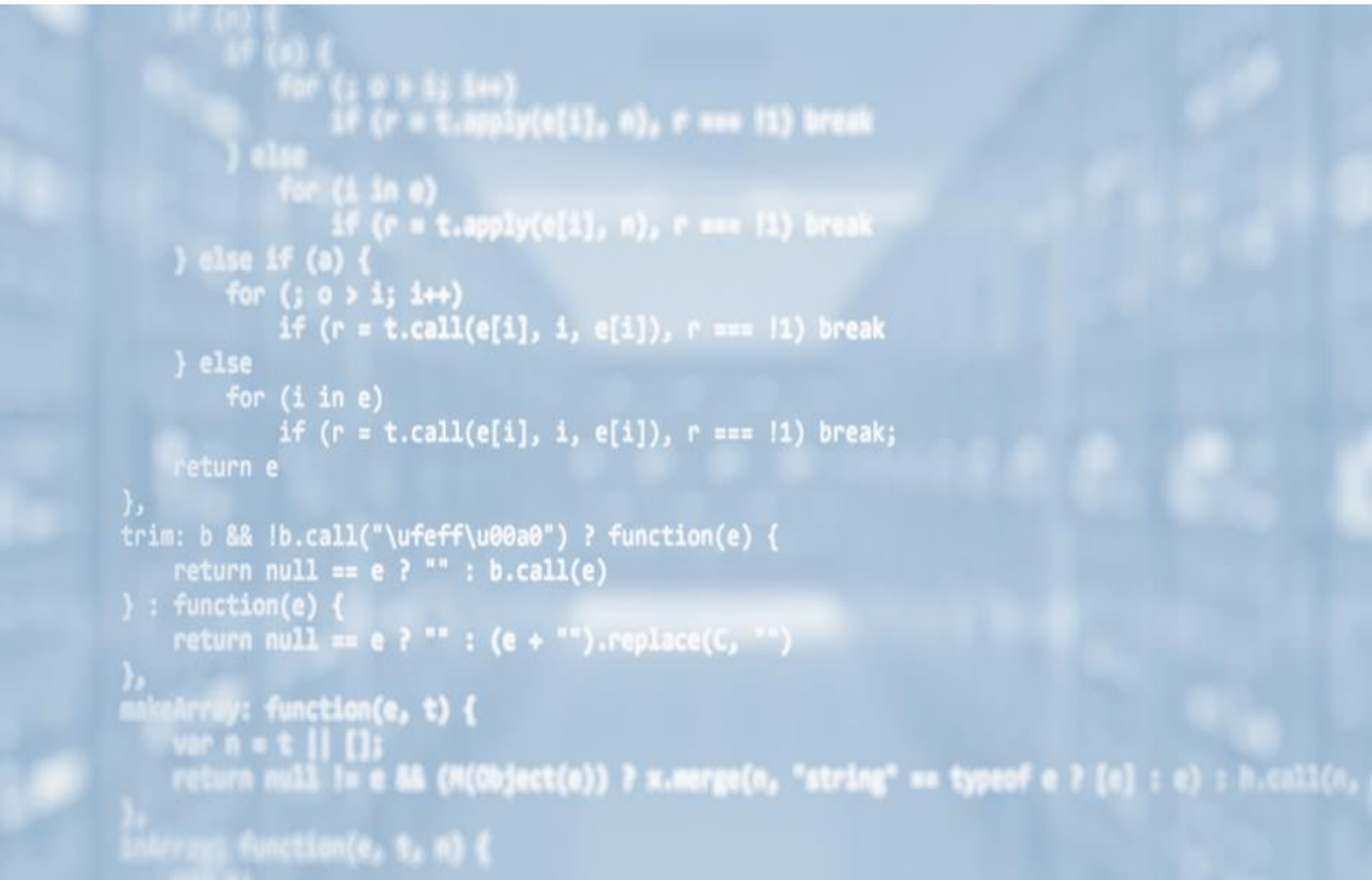

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Table of Contents

AGM Vision – "Work in the Open"

Adopting open-source practices as a public organization means moving an organization's culture away from one of proprietary holdings and closed ownership, and towards collaboration and working in the open. We designed AGM Open Core Digital Framework to meet the needs of complex organizations. Public administrations seek refined access control, auditability, complex deployment scenarios, and specific service level agreements to support their operations.

The world is now mobile and connected, and citizens now expect public agencies to digitize processes and lower the burden of compliance. However, many agencies still use business processes that were originally envisioned in the last century as paper-based processes. As systems become more interconnected between government agencies, the private sector, and international agencies, it's becoming increasingly possible to reimagine business processes as natural processes in the digital economy.

This opportunity to reimagine tax administration processes is outlined by the OECD as Tax Administration 3.0 models. This outlines the opportunity for tax and revenue authorities to transform their business and operational processes, with data and automation, to simplify business processes for businesses and individuals. The future of tax and revenue administration requires a platform that is intelligent, adaptable, real-time, and enriched with data to simplify and transform processes. A solution that responds and adapt to the current, evolving, and future needs of Eritrean citizens.

Our proposed Integrated Tax Administration System is based on an Open-Source foundation which constitutes an accelerator for the design and deployment of revenue management solutions. Adopting open core solutions is not only about saving money, but also about promoting innovation, improving quality, deploying faster, and meeting widely shared technical standards with a solution requiring less hardware power.

Our proposal features the AGM Open Core framework

- A true Commercial Off-The-Shelf (COTS) application with support and ongoing releases of new features and functions. Our Open Core approach includes full transfer of source code ownership. This allows public organizations to have minimal dependency and complete flexibility to fuel their digital transformation.
- Specifically designed and built to help government authorities achieve objectives such as simplifying and automating business processes, improving citizen service, enhancing collection capabilities, and providing flexibility to adapt quickly to legislation and policy changes.
- Built with out-of-the-box processing and business rules across key business process areas such as Filling, Payments, Accounting, and Collections.
- A flexible, extensible data model and configurable integration and workflow capabilities that can seamlessly adopt new and evolving business processes.

- Embedded BI because you need a reporting and analytics platform you can make your own.

Our embedded analytics software is the most flexible, customizable, and developer-friendly business intelligence platform in the Open-Source world.

- Collect data anywhere with our embedded offline smart field experience. Our solution lets you build powerful forms to collect the data you need wherever it is. It enables users to fill out forms offline and send form data to a server when a connection is found.

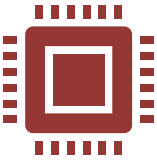
Solution Design Guiding Principles

Our solution design approach is aligned with OECD Tax Administration 3.0 broad principles as listed below:

- Complete set of functions and features
- Responsive, User-Centered Design User Experience (UX)
- Data Integration and Ecosystem Interoperability
- Business Workflow Digitalization and Automation
- Reliable, Scalable and Maintainable
- Strategy, governance and new skills

Open-Source in mission critical systems

Open-source software (OSS) is a very valuable resource. Several innovative and cutting-edge technologies are developed in open source. Although not yet a widely accepted core element of an Integrated Tax Administration System (ITAS) architecture, open-source software remains a cost-effective alternative to commercial software and can increasingly outperform commercial competitors in terms of functionality, performance, longevity and/or quality.



Data Friendly

Tax administration is a data processing operation that depends heavily on the availability and quality of data. With increasing digitalization, more tax data from taxpayers and third parties will be collected and used to improve the efficiency and speed of tax administration processes. The AGM Open Core digital architecture captures and provides access to data across its entire architecture in real time.

End-User Centricity

Digital revenue management applications extend to the end user (citizens/other agencies/end-users), raising the bar for instant usability, visual design, and all aspects of user experience. Expectations are gauged by leading web companies and users expect similar quality. AGM Open Core User Experience design extends business process automation to interactions that occur with the user. Its

wizard-like user interface provides an alternative to standard ad hoc views enabling even inexperienced authority's users to navigate through complex business processes quickly and intuitively.

Secure

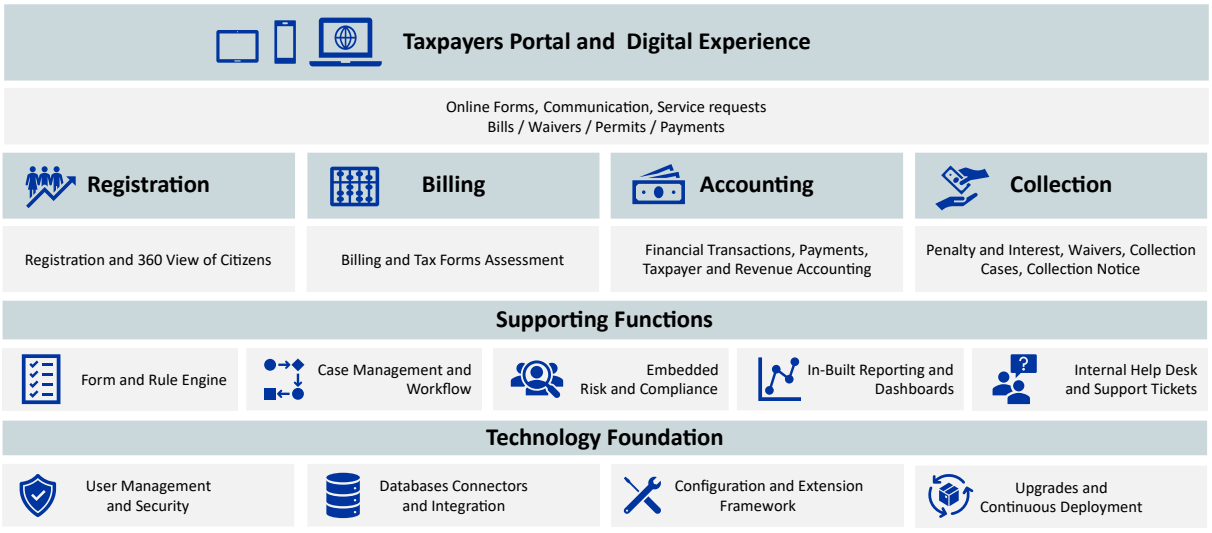
Taxpayer-centric digital use cases regularly involve changing where revenue authorities conduct their transactions. For example, some transactions may run over the open internet (e.g., electronic services). Hence, either to/and from cloud services or to remote endpoints such as mobile, the data transferred and collected is increasingly critical, private and sensitive, both to the organization and to individuals. Ensuring the security of your ITAS application should always be a priority. Within the AGM Open Core architecture, there are many built-in features and best practices to ensure you keep your ITAS secured.

Resiliency and Off-line capabilities

Resilience is the ability of the system to continue to respond to incoming demands in an acceptable manner even if one or more of its dependent components or systems is not functional. The goal of AGM Open Core resiliency is to quickly return the application to a fully functional state after an outage by ensuring that you always have an up-to-date backup and disaster recovery site. Additionally, the AGM architecture includes offline capabilities for remote users using smart devices that automatically sync when connectivity is available and can support registration, form submission and payment functions.

Solution Functions and Features Overview

Our solution is powered by AGM Open Core and provides a suite of integrated business and supporting functions including Registration, Billing and Forms Processing, Accounting, Collection, Workflow and Case Management, in-built reporting and dashboards, powerful user management within a role-based access control mechanism, and an integrated taxpayer portal.



Functional Areas

Registration

The AGM solution establishes and maintains registration profile information to comply with laws and filing requirements. Accounts may be established through direct user registration forms, batch interface with external registration systems, real-time web service interfaces, or through auto-registration using data on tax and registration forms. Additionally, the solution supports common demographic capabilities, such as names, identifiers, relationships, addresses, geolocation coordinates, phone numbers, email addresses, etc. The solution is also extensible to allow additional authority specific information to be maintained through the definition of user-defined fields called characteristics on all core entities. This feature allows the data model to expand without database changes, facilitating data conversion efforts and easing the transition from legacy systems.

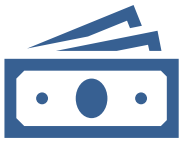
Billing

The AGM solution includes a configurable calculation engine to calculate bills using a variety of inputs and calculation methods. These calculations are defined by calculation controls that are related to the appropriate tax or revenue types. Each calculation control includes one or more effective dated calculation control versions that use calculation rules to define how the calculation should be executed. These configurable calculation rules can be used to perform calculations or make eligibility determinations to calculate the appropriate values for the bill.

Form Engine

The solution includes a Form Builder that provides an intuitive and configurable tool for building registration and tax forms. Forms Builder is used to configure each form type, including form lines, conditional and required lines, form sections, and recurring lines and sections. The Forms Builder includes a forms rules capability with comprehensive issue handling via the user interface. Forms are used to structure and validate data received from the taxpayers through different channels (office desk, online, files, etc.). Forms are dynamic and can be pre-populated by external data sources like 'electronic Invoice platform' or validated with external data sources from other government agencies like the register of company, register of individuals, customs management system, etc.

Accounting



The Accounting functions include the configuration of adjustments, penalties, interest, fees, and other tax related assessments. AGM's accounting features can perform complex accounting calculations. The solution is built supporting standards based double entry accounting and provides a user configurable chart of accounts, reconciliation capabilities, fund accounting, and support for both accrual-based and cash accounting basis.

All financial transactions are stand-alone financial entities within the system, so each has a corresponding balanced set of debits and credits and general ledger (GL) distribution rules. These entities are the basis for supporting both the revenue authority's internal accounting procedures and its external financial reporting requirements. Individual transactions cannot be deleted or modified within the system. Instead, offsetting transactions are used to capture modifications or reversals.

Penalty and Interest

AGM Open Core supports complex penalties and interest assessments. The solution provides for configurable penalty and interest rules and controls by tax/revenue type.

The penalty and interest configuration breaks down penalty and interest rate structures into step-by-step calculations, and includes configuration options for fixed, minimum, maximum charges, or quantity-based charges. In addition, each component can have its own general ledger (GL) distribution rules as well as a series of user-defined criteria that define the situations in which the component is not applicable and will not be calculated.

Payment

The AGM solution provides the flexibility to configure payment distribution rules for posting payments based on several factors such as person type, tax year and age of liability. The solution can manage payments from several sources: mailed-in payments, walk-in payments, payment processors, wire transfers, and so on.

This includes cashiering capabilities for adding and viewing payments online and managing and balancing individual cash drawers. The system supports multiple types of payments all linked to a single payment event. Payments can be reconciled based upon type, source, and date. The system automatically produces summary totals for day processing, type processing, and batch processing. Where a discrepancy is identified, the user can use the online tools to list all transactions belonging to a particular source, type or batch. The system allows reconciliation to be performed against multiple banks and deposit types.

Collection

The AGM solution regularly monitors how much citizens owe to check that they have not violated debt tolerances. When a violation is detected, the system initiates the appropriate activities based on collection processes configuration. Overdue debts can be transferred to configurable collection cases and an internal escalation process. All collection events are configurable and intended to encourage a citizen to pay any outstanding liability. These events include the generation of warning notices, official collection letters, or tasks for the collection team to follow. Each collection process is linked to a specific account or set of related accounts that contributed to the delinquent debt.

Notices and Documents

The AGM solution provides the ability to track citizen contact records, including letter generation. Correspondence can be automatically sent to citizens based on business rules defined for the business processes where communication is needed or triggered manually. Citizen contact notes are maintained as customer contact records. These records are used to keep details of contacts initiated by both the citizen and the authority. All citizen contacts (telephone conversations, letters, emails, etc.) can be logged and categorized. In addition, the solution can automatically generate correspondence when users create an outbound contact request.

All incoming and outgoing documents are stored centrally in the solution's document storage capacity, are automatically associated with the taxpayer's profile and can also be searched from a user interface dedicated to document management with different criteria.

Risk and Compliance

AGM Open Core risk scoring capabilities enable configuration of individual/entity-based risk scoring that is automatically calculated on metrics extracted from individual/entity profiles as well as behavioral factors such as registration profile, late filing, late payment and any other measurable events within a configured business process. Different scoring calculations can be configured for each business function and a separate scoring calculation can be performed by customer type, such as individuals or businesses, or against different revenue types.

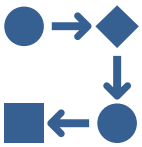
Risk scores can be used as a basis for selection criteria for compliance and audit campaigns and create a set of compliance cases. AGM's compliance case management features guide users through complex processes, ensure consistency in task management, and enable collaboration among team members.

User Adoption and Process Automation

AGM *MyProcessAssistant* is an interactive tool that both documents business processes and navigates users through the process steps. Each process assistant "script" covers a single specific process, such as "Register a Taxpayer", "Fill or Correct a Tax Form" or "Apply a Payment" and is configurable by implementation.

MyProcessAssistant script validates the correct and efficient completion of business processes by presenting the user with predefined steps that can expand and branch depending upon user input. The process assistant allows the AGM Open Core user experience to be tailored around the business processes, rather than system functions. The process assistant has many capabilities including automatic navigation to the appropriate transaction point. With this capability, revenue authorities can maximize policy and procedure standardization and the effectiveness of end-user training.

Workflow and Case Management



The AGM case management feature provides configurable case types, including appeal, collections, and bankruptcy cases. Case types can be created for each typical case model and can reflect virtually any business process flow. Cases are established based on taxpayer inquiries, process or compliance issues that require follow-up to resolve.

Although many taxpayer problems can be resolved through Internet self-service, a brief phone call, or a visit to taxpayer service desk, there are other situations that require longer processes. The AGM workflow capability provides the functionality needed to track and manage these issues, capturing data during process execution to track service levels and create resolution statistics. The solution provides tasks and alerts to help users manage issues requiring human intervention. Tasks represent the work list of a user or group of users. All pending tasks are displayed in the assigned user/user group dashboard for quick reference and allow direct navigation to the associated workflow process.

In-built Reporting and Dashboard

AGM Open Core in-built reporting and dashboard is designed to minimize the complexity of generating reports on application data. Transactional data structures in the core processing system are linearized to make delivery of data analysis much faster and improve user experience.

The solution is designed to normalize the data structures and offers operational reports, persona-based dashboards, and insights for key business functions. The solution can easily be plugged into any existing data visualization or business intelligence tools.

Citizen Portal and Digital Experience

The AGM Customer Self Service Portal is a pre-built, taxpayer-centric business engagement solution that provides efficient digital service delivery. The solution is integrated with the core revenue management platform and is developed to provide an accelerator for the deployment of a modern online experience platform. AGM Customer Self Service includes a comprehensive set of pre-built features designed and built specifically for public sector revenue authorities.

The portal contains pages with taxpayer geographic and demographic information and preferences, account summary and payment history, tax filing and registration forms, and online payment capabilities.

The solution includes online service requests capabilities to provide a flexible and modern experience for taxpayers. Service requests produce a confirmation number allowing citizens to track the status of their request and are seamlessly integrated into the solution's main workflow and user workload management functions.

The service requests may be for example requests for information and assistance or a request for exceptions (for example a tax clearance certificate, a filing extension, exemptions and waivers, etc.)

Offline Smart Field Experience

The solution includes AGM Smart Field Experience. This is the configuration of Android mobile devices (phones, tablets or smart POS devices). Functions include uploading and downloading forms, photos, GPS locations, field surveys, calculations, external datasets, multiple languages, etc.

These functions are embedded in a modern digital user interface that includes radio buttons (single-select), dropdowns (single-select), check boxes (multi-select), and image choices (single and multi-select) to provide simple and fast user adoption capabilities.

Additionally, the solution offers complete user and device identity settings control, and how personally identifiable information and device ID are used.

The solution is designed to work well without network connectivity, collected data is automatically synced when an Internet connection is found.

Customer Help Desk

AGM Open Core Integrated Customer Support is a ticketing system tool that internal support teams use to track, manage, organize and prioritize end-user requests.

The Help Desk ticketing tool can quickly assign issues or inquiries to the agent best suited to handle the request and track the ticket progress from end to end. Support requests are directly linked to the context of the end user's software interaction through user help functions that automatically take an image of the application screen where the user needs assistance and integrate it with user feedback into the support ticket.

In cases where the internal support team cannot resolve the end user's issue, a direct integrated process routes the support request to the AGM Support site where it automatically creates a service request with all the details and conversations collected.

Tickets can also be triggered directly by the system in the event of a malfunction or misalignment between a user action and the existing configuration (e.g., your fiscal calendar for next year has not yet been configured by the admin team, but a user is trying to generate a transaction for these future periods, etc.)

Non-Functional Areas

Authentication and Role Based Access

The AGM solution assigns users to roles and groups with specific levels of access to the system. Users may be assigned to multiple roles, and they automatically receive the highest level of access that any of the roles provide to a particular service or function.

The solution contains multiple layers of security, each one providing the revenue authority with the tools needed to secure its data within the application. AGM authorization features provide a simple and organized way to manage any type of authorization control with policies. Policies are classes that organize authorization logic around a particular function or set of data.

True Multi-Lingual application framework

AGM Open Core is a true multi-lingual application. Additional languages can be added quickly and allows system configuration teams to design user interfaces that display information in the language of the operator’s choice, including languages with Latin, Cyrillic, Arabic and Ge'ez characters.

AGM Open Core can generate bills, notices and letters in the language of the taxpayer’s choice. Information such as line-item bill descriptions, notice messages, and other specific labels can be entered in multiple languages.

Documentation and Online Help

The AGM solution provides business process documentation that describes the configuration of the application and provides tips and techniques on how an end user can use the system.

The documentation is organized into three levels: business process, work process and work instructions. The business process can describe the main business processes of the enterprise and include all associated work processes, which represent specific end-user actions necessary for a configured transaction lifecycle. The final level is a step-by-step work instruction that guides the user through the end-to-end transactional process using the software's process assistant feature. Contextual help is extensible by implementation teams to reflect site-specific configurations.

Additionally, end users can directly create and log a support ticket from their current application context, the process will automatically capture an image of the screen and feedback from the end user.

Integration and Security

AGM Open Core includes a comprehensive set of integration models from staging tables and batch processing to native web service integration capabilities that provide flexibility and adaptability for tax authorities when integrating both internal processes and with business partners and other government organizations. The AGM solution batch processes can run concurrently with any other process or real-time update request.

AGM Open Core puts a lot of emphasis on application safety. It provides a range of built-in features to protect against common security vulnerabilities, such as password hashing, CSRF protection, input sanitization, and session protection. The framework can use Bcrypt to hash passwords, generate and validate CSRF tokens, use PDO binding and escape tags to prevent SQL injection and XSS attacks, and offers several options to encrypt and manage user sessions and integration points securely.

Database Drivers and Connectors

AGM Open Core makes interacting with databases extremely simple across a variety of supported databases using raw SQL. This includes open sources databases, e.g., MariaDB 10.10+, MySQL 5.7+, PostgreSQL 11.0+, SQLite 3.8.8+, and SQL Server 2017+.

Although AGM Open Core also supports database drivers from major software vendors like Oracle, we recommend our customers to use PostgreSQL database.

Configuration and Extension Framework

AGM Open Core implementation is primarily done through configuration. There are different types of configurations that are done to tailor the solution to meet implementation specific business requirements using the administrative tools supplied within the application.

Configuration through Metadata Changes. Simple access is provided to the metadata that define system properties and behaviors through the user interface that enables to configure and modify the system, including configuration of the following:

- Menu and pages labels.
- Characteristics and Lookup table data.
- Multi-language attributes.
- System message category and system messages.

AGM Open Core is built and extended using the following programming languages:

- PHP: Hypertext Preprocessor. An extremely popular scripting language that combines syntax from the C, Java and Perl languages, PHP code is embedded within HTML pages for server-side execution.
- JavaScript: JavaScript is a dynamic programming language that's used for web development and allows you to implement dynamic features on web pages that cannot be done with only HTML and CSS.
- JSON and XML for data interchange
- SQL to perform tasks such as updating data on a database or retrieve data from a database.

Upgrade and Maintenance

Upgradeability

AGM products adhere to strong principles of upgradeability applied by its technological foundation. AGM Open Core uses a data-driven design and execution framework that stores key metadata about configurations or extensions. This allows for lower cost upgrades when the provided extensions guidelines have been followed. This uses a combination of metadata-based extensions and traditional code-based extensions to provide flexibility and consistency. AGM products use a concept called “owner flag” to prevent non-standard customizations in crucial places and preserve upgradeability for customers.

Configuration management and deployment.

AGM product support includes a server management and application deployment service. The service takes the pain and hassle out of deploying servers and can be used to launch a new version of the configuration. Our tools offer the ability to provision multiple server types (e.g., web servers, database servers, load balancers) and after your server has provisioned, you can manage, deploy and test your applications using the embedded UI dashboard.

CONTACT US

For more information about AGM Open Core™, please send an email to info@allgovmatters.com or visit https://allgovmatters.com/ocdf