



U.S. General Services Administration

# Methods and Tools for EA and eGov Open Source eGov Reference Architecture (OSERA)

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# MDA Overview

- Model Driven Architecture (MDA) from the Object Management Group (OMG) is a business and system design approach that explicitly links multiple perspectives to a unified knowledge model
  - A perspective combines multiple views that represent a model, creating a styled output with the appropriate level of detail for specific user roles
    - executive management <-> capital planner <-> business analyst <-> solution architect <-> software engineer
- Strategic business perspectives are technology and platform independent (MDA lingo calls this a ‘Platform Independent Model’, or PIM), while tactical systems perspectives are ‘mapped’ to platform specific technologies (‘Platform Specific Model’, or PSM)
  - Maintaining conceptually distinct business and system model perspectives facilitates the evolution of business strategies and partners without consequence to supporting IT systems, and vice versa
- EA needs MDA to enable efficient knowledge sharing and effective service planning for successful interoperability scenarios
  - Clarity and uniformity is maintained across model perspectives by virtue of underlying meta-models that encapsulate all viewpoint semantics, resulting in actionable syntactic modeling formalisms

# SOA Overview

- SOA moves the focus of IT interoperability from point to point integration of monolithic stand-alone applications, to messages crossing enterprise boundaries and heterogeneous systems, emphasizing ‘loosely coupled’ distributed Service components
  - Web Services Open Standards extend Internet Open Standards and represent Industry’s practical approach to implementing SOA concepts
    - e.g. Microsoft and IBM WS-\*, UN/CEFACT and OASIS ebXML
- SOA describes a ‘publish-find-bind’ paradigm for (platform and language independent) discovery and execution of Service components whose (peer to peer) message exchanges contain document object payloads
  - A SOA implementation platform or ‘run-time engine’ is referred to as a Service Oriented Integration Platform (SOIP)
- SOA/SOIP is the required architectural/run-time infrastructure for eGov = Citizen to Agency to Agency
  - Service component interfaces (WSDL) are orchestrated into business processes (BPEL), layering additional Web Service protocols for secure, reliable transactions (WS-\*) on top of Internet Open Standard transports and protocols (HTTP/SOAP)
- eGov constituents are both Service Consumers and Providers

# Putting MDA and SOA to work for EA and eGov

- An Agency value chain is first modeled as business processes containing a set of roles that initiate and respond to data driven conversations, each role having a collaborative responsibility to fulfill the overall process objective
  - Roles are external or internal to any organization, you add role activity detail to the level that is significant to your business architecture
- This (PIM) completes the EA contract description as eGov interoperability requirements, putting the data in the context of a business process with holistic metrics to be achieved by each role
  - Associating the FEA with the PIM enables automated generation of CPIC artifacts (e.g. OMB300) that correlate BRM, SRM, DRM, and the ‘baseline-planned’ parts of the PRM
- People and Machines (COTS and/or CBA’s) are the actors that play these roles, whose implementation (a PSM) adapts the (PIM’s) contract description (that defines the ‘component interface’) to a deployment technology, e.g. Web Services, EAI, etc.
  - Continuing the FEA association into the PSM captures the TRM and PRM ‘actual-achieved’, producing ‘line of sight’ metrics from business to systems, by running model simulations on its SOIP

# GSA Leadership in EA and eGov – PortMan POC

- Portfolio Management Proof of Concept (PortMan POC) used ComponentX from Data Access Technologies to demonstrate our core approach to an ‘Executable EA’;
  - MDA and SOA capabilities combined in a consolidated ‘model to integrate’ application environment, addressing design-time and run-time needs of EA and eGov
  - Models (PIM/PSM) are the EA knowledge base, containing business contracts expressed as component interfaces, and puts DRM data in the context of organizational role interactions in business processes
  - The PSM run-time characteristics can be simulated and performance metrics analyzed – prior to any procurement – a more effective approach to expressing system requirements in support of business objectives, and a more efficient hand-offs to contractors
  - Answers the AIC component granularity and configuration lifecycle questions as business and technical model perspectives, that are syndicated to populate federated Registries and Repositories
  - Automated and dynamic generation of model outputs, such as OMB300 and PRM ‘line of sight’ documentation in a variety of formats (.xml, .html, .pdf, others)

# GSA Leadership in EA and eGov – OSERA

- Open Source eGov Reference Architecture (OSERA) is;
  - A GSA managed Program that aggregates and extends existing Open Source projects into a cohesive Platform, utilizing Projects targeted to the complementary challenges in EA and e-Gov communities of interest and practice
    - A transformation and modernization mechanism for Government, as a software suite that connects design-time and run-time tools from modeling to integration, enabling an ‘Executable EA’
- Our Goals for this Free and Open Source Software (FOSS) are;
  - Harmonize EA planning and eGov deployments across Fed/State/Local EA agencies and enhance service to Citizens
  - Collapse the CPIC, Budgeting and SDLC IT lifecycles
  - Develop an Ecosystem for Business, Academia, and Government
  - Build in the refactored FEA, perspectives for default EA users, and deployment adapters for default eGov platform topologies

# For a more detailed presentation -

- Contact me!
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- About:
  - OSERA Program/Platform/Project support for;
    - EA and e-Gov Communities of Interest and Practice
  - and Open Source Software implementations of;
    - MDA
    - BPM
    - SOA
    - Web Services
    - J2EE
    - CBA