Title:

Application Inventory (AI)

Category:

State CIO Special Recognition

State:

Pennsylvania

Contact:

Rosa Lara
Office of Administration, Office for Information Technology
rlara@pa.gov

Project Initiation and End Dates:

July 8, 2016 - April 7, 2017

Executive Summary

The Commonwealth of Pennsylvania has aging systems and infrastructure that cannot accommodate the optimization of services. This situation increases maintenance costs as IT staff with knowledge of these systems are becoming scarce. This poses increased business risk as critical services become difficult to maintain. Modernizing these systems will help advance the Commonwealth of Pennsylvania's goal to improve citizen access to services and information.

To drive transformation in this area, the level of awareness of at-risk information systems and their respective impacts to vital citizen services needed to be conveyed to agency business executives from an evidential data and value reasoning perspective. Further complicating this situation was lack of consistent and real-time status of the key assets agencies own relative to the number, type, viability, and associated technologies of their software applications supporting mission critical business and IT operations and services. Hence, the Office for Information Technology initiated a project to build an Application Inventory (AI) system that would provide a comprehensive listing and risk profile of all agency software applications across the Commonwealth.

The primary objectives outlined for this initiative was to:

a) Create an enterprise repository that would provide a better understanding of the composition and risk profile of the Commonwealth's enterprise-wide and individual agency information systems that aid in the delivery of government services;
b) To establish a risk-based system that could be leveraged as a key resource to assist Commonwealth agencies in effectively managing their application portfolios with real-time information to make timely-informed decisions regarding IT strategies and investments to support agency mission(s);
c) Establish alignment with other enterprise systems used for agency Continuity of Operations Plans (COOP), IT strategic planning, Information Technology Service Management (ITSM), risk management, as well as project & portfolio management platforms; and
d) Joint collaboration between the Office of Administration / Office for Information Technology (OA/OIT) and Commonwealth agencies to drive transformation relative to modernization of at-risk legacy systems supporting mission critical services and improve citizen services.

The initiative was an eleven-month project that resulted in the implementation of an enterprise Application Inventory system populated with a total of 2,383 applications from 41 Commonwealth agencies. The value of this real-time data and information contained in AI, now provides a comprehensive application portfolio view and a reliable resource for senior IT managers to leverage to increase awareness of business risk to agency business leaders. Commonwealth is now in a better position to properly align AI risk profiles with strategic planning processes, business risk, portfolio management processes and funding availability.

Project Narrative

Concept

Many information systems that support critical government functions are built on older technology and are aging. Compounded by the fact that constant technological change continues to weaken the business value of legacy systems, which have been developed over the years through huge investments. The business challenge is twofold: 1) Inability to expand or rapidly modify functionality to meet the business demands of the digital enterprise; 2) Cost to maintain legacy systems is continuing to grow consuming valuable resources that could be better utilized elsewhere to support programs and its citizens. Without modernization, it becomes very challenging to innovate, drive transformation, and provide expected services to citizens.

The Commonwealth needed to have a clear understanding of the overall scope and magnitude of this issue and establish sound executable strategies with executive sponsorship to modernize applications to minimize business risk and improve citizen services. Commonwealth agencies did not have a comprehensive inventory or a mechanism to understand what they have relative to IT assets enabling business and IT services or the ability to assess the risk of their software applications supporting mission critical business operations and citizen services. Additionally, agency CIO's lacked data to raise awareness and facilitate meaningful conversations with business executives to drive change. Hence, the core framework and functionality of AI had to be centered around capturing pertinent data elements and providing real-time information to effectively manage the agency software application portfolio and create a multidimensional risk profile from various business and IT perspectives. In addition, creating alignment with agency's Continuity of Operations Plans, IT strategic plans, and project portfolios.

The AI system is composed of nine core sections to capture relevant data elements:

- ***Demographics***: captures data regarding application name, version, age, description, status, program area, physical location, point of contact, and business service(s) name and type.
- ***Business Use***: number of users, utilization rate, transaction volumes, COOP mission essential function and tier level, business impacts (e.g., economic, citizen health & safety, liabilities, etc.).
- ***Audits & Compliance***: internal or external audits and cycles, current findings and mitigation action plans, financial transactions, data types and classification, compliance with CA2 certification, compliance with standards and policies, existing policy waivers, compliance to National Strategy for Trusted Identities in Cyberspace (NISTC) standards.
- ***Agility, Robustness, & Scalability***: interface types, data exchanges, reuse, interoperability, robustness, and viability rankings.
- ***Recovery & Support***: Backup requirements, backup plan, backup plan validation, disaster recovery (DR) requirements (RTO, RPO, etc.), DR plan validation, LCM support method, annual support costs.
- ***Modernization***: Modernization strategy, start and end timeframes, project number.

- ***Architecture & Technology:*** software application category, type, software and hardware platform age and useful life, software and hardware technology and version by tier/layer, IP addresses.
- ***Identity & Access Management***: user base and number, authentication and authorization technologies, use of multifactor authentication and method, level of assurance.
- ***Risk Reporting Dashboard(s)***: provides enterprise-wide and individual agency overall risk profile of application portfolio with drill down details by risk categories (e.g., Support Capability, Platform Useful Life, Modernization, Business Operations Recovery, Business Criticality, Audit Compliance, Scalability, & Support Capabilities).

Significance

Until AI, most Commonwealth agencies did not have a comprehensive inventory or a mechanism to understand what they have relative to IT assets enabling business and IT services as well as the ability to quantify or assess the risk profiles of their software applications supporting mission critical business operations and citizen services. Additionally, the agency CIO's lacked data to raise awareness and facilitate meaningful conversations with business executives to drive change. In the past, there was no comprehensive agency or enterprise view of software applications (reference Figure 1 below). For example, we learned that 78% of our portfolio is custom built.

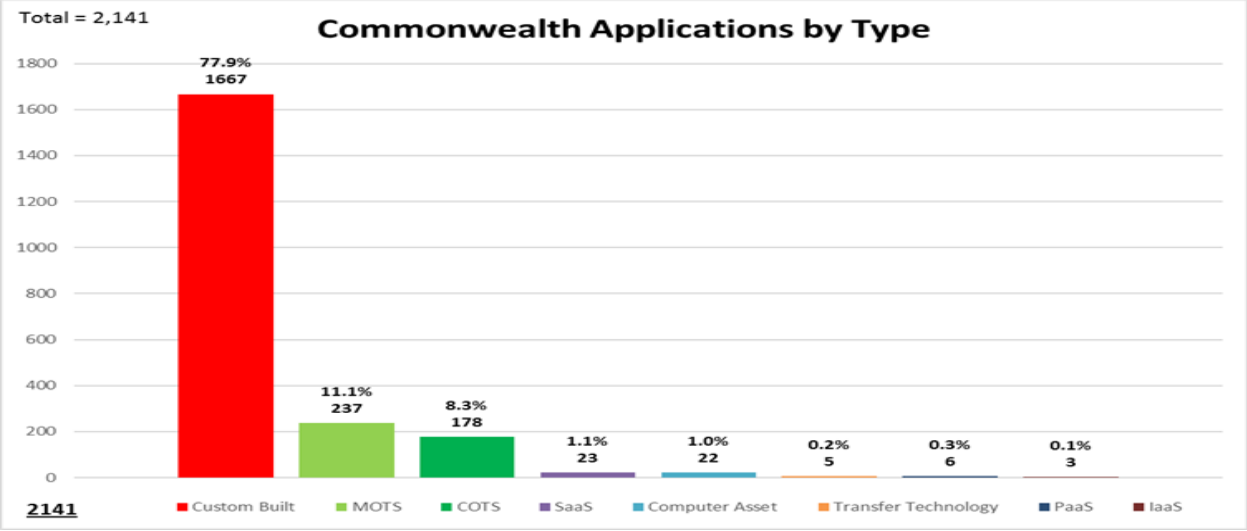

Figure 1

The implementation of AI, has provided in-depth views into the agency's application portfolios, composition, business and IT risks, and other valuable insights for the agency CIOs and the Commonwealth CIO that can be leveraged to raise awareness and facilitate meaningful conversations with business executives.

The Commonwealth CIO continually analyzes utilizing the information obtained from AI to collaborate with agency CIO's and business leaders on how best to prioritize and address the information systems that pose the highest risks to business operations and delivery of citizen

services. The multi-dimensional risk profile view allows users to create various risk profile perspectives. For example: a graphical illustration showing software applications supporting vital business functions, designated COOP Tier (application availability requirement: Tier 1: 24x7, Tier 2: 12x5, or Tier 3: 8x5), with software and/or hardware technology platforms that are declining or obsolete with highly sensitive/protected data by agency and potential impacts to associated program area and citizen services (reference Figure 2 below). For example, we learned that approximately 500 mission critical applications have software or hardware platforms that are declining or obsolete.

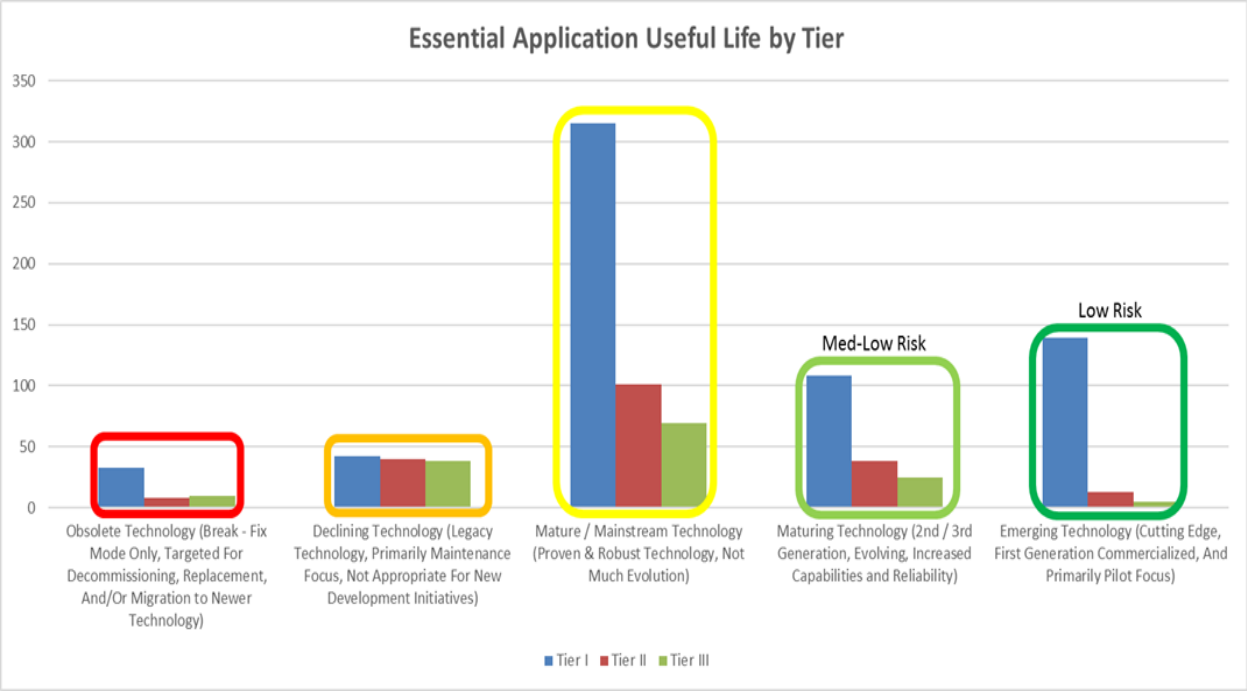

Figure 2

AI provides the ability to determine which of these high-risk applications are subject to audits, not in compliance with standards and policies, or do not have back-up and/or disaster recovery plans that have been validated (reference Figure 3 below).

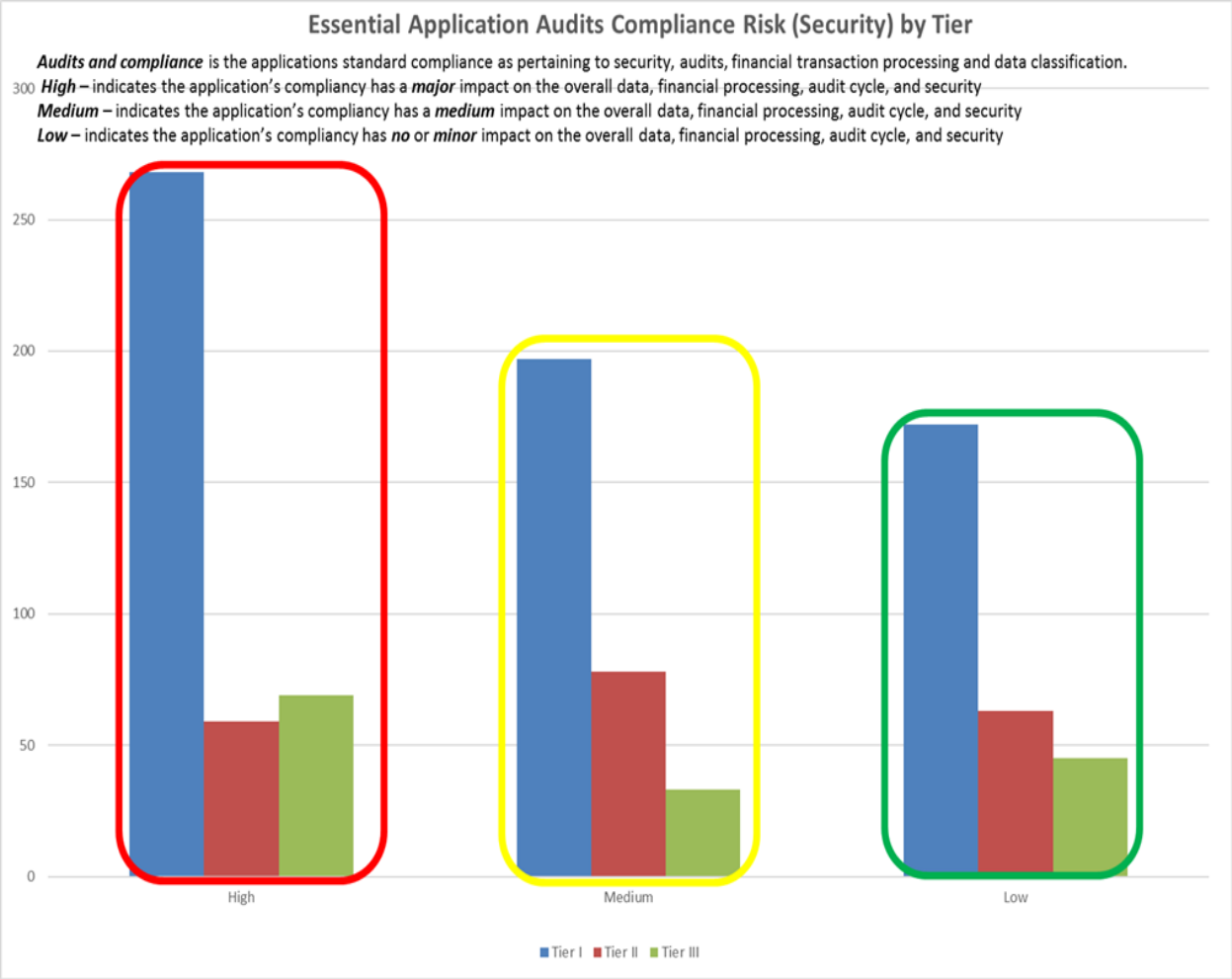

Figure 3

Knowing the risk profile and how and where this software application is utilized to support the agency mission and is critical to understanding the impacts to minimize business risk and improve citizen services as well as making informed decisions regarding business/IT strategies and investments.

The diagram below (Figure 4) is an overview of AI and the intersection with other enterprise systems to create domain synergies and drive effective strategies for transformation, legacy system modernization, minimizing business risks, improving business and IT service reliability and delivery in the Commonwealth of Pennsylvania. Daptiv is our enterprise portfolio/project management system, BOLD is our enterprise continuity operations planning system (COOP), ServiceNow is our enterprise service portfolio management system, Archer is our enterprise government risk and compliance system (GRC), and technology product life cycle roadmaps from vendors.

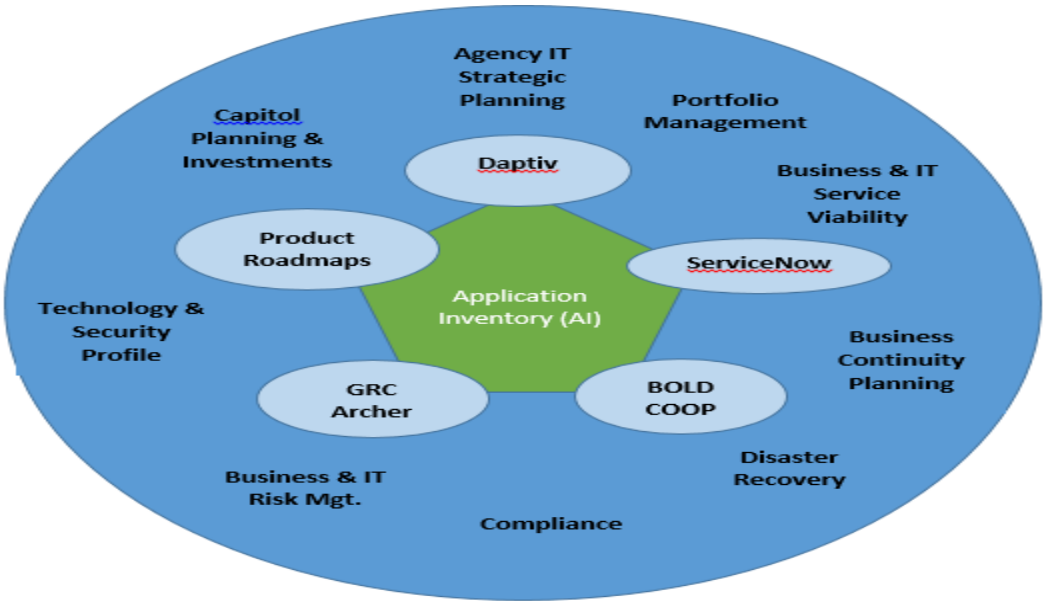

Figure 4

Impact

Since its inception, the Application Inventory system contains a total of 2,383 applications from 41 Commonwealth agencies. The agency CIO's now know what assets they have so they can begin to proactively manage their application portfolio and properly aligning business and IT strategies, investments, and project initiatives priorities. The real-time data and information contained in AI provides a comprehensive application portfolio view and a reliable resource for commonwealth IT executives and managers to increase awareness to agency business leaders and have a productive dialog to formulate sound strategies and investments to support the agency mission. The Commonwealth CIO, Chief Technology Officer (CTO), Chief Information Security Officer (CISO) and agency CIOs all have a common reference point that can provide a more holistic view of the agency application portfolio and have a better understanding of the potential impacts and opportunities regarding enterprise-wide IT strategies, services, security posture, and investments across the Commonwealth.

The data mined from AI has provide some valuable insights such as:

- 494 mission critical applications that have software designated as declining or obsolete or hardware platform that is 10 years of age or greater;
- 396 applications that are not in compliances with IT policy requirements,
- 187 mission critical applications without a disaster recovery plan or means to recover.

AI has become a catalyst and focal point for the Commonwealth CIO and agency CIO's to have candid conversations and foster a collaborative approach to the successful transformation relative to modernization of at-risk legacy systems supporting mission critical business and IT services and adoption of a holistic approach to managing the IT portfolios and business and IT strategic planning and investments.