

An approach to defining enterprise architecture value within an Organization

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Section 1: Overview

Organizations are facing increasing demands to demonstrate the value of their EA programs in a more data driven way. Due to the enterprise nature of EA programs, it is difficult to gather the appropriate data in a timely manner. Many of the “payoffs” of EA either require years to become apparent or span multiple programs/projects. This presentation provides one approach an organization can use to better measure EA value in a data driven manner and is divided into the following sections:

- **Section 1: This overview**
- **Section 2: The proposed approach**
- **Section 3: A case study that demonstrates some of the key features of the approach**
- **Section 4: Reference and Backup Material**

The Challenge

- **Determining the value of Enterprise Architecture has proven to be difficult.**
 - Output measures are not easily linked to the determination of the value of EA
 - Links between EA products and actions taken based on those products can be hard to establish.
- **Industry trends with respect to measures and measurements of enterprise architecture are moving from output measures to outcome measures.**
- **It is no longer sufficient to only show how EA affects specific outputs (numbers of reports created, number of processes documented, etc.), but to also show the results that the use of enterprise architecture has on outcomes such as positive differences gained by the end users of government products and services.**

Outputs are the direct products of program activities and may include types, levels and targets of services to be delivered by the program.

Outcomes are the specific changes in program participants' behavior, knowledge, skills, status and level of functioning

Roadblocks for Assessing EA Value

- **Linking outputs to outcomes is not an easy exercise, and in many cases there are more than just EA outputs which would tie into an organization outcome.**
- **Establishing output to outcome links may require making changes to business processes for some organizations... and change can be difficult.**
- **There is no one size fits all as each organization has its specific needs that need to be met and a unique environment.**

Why Address EA Value Now?

- **Sept. 2012, Government Accountability Office’s (GAO) report on Organizational Transformation “Enterprise Architecture Value Needs to Be Measured and Reported” recommends that Agencies:**
 - Fully establish an approach for measuring enterprise architecture outcomes, including a documented method (i.e., steps to be followed) and metrics that are measurable, meaningful, repeatable, consistent, actionable, and aligned with the agency’s enterprise architecture’s strategic goals and intended purpose; and
 - Periodically measure and report enterprise architecture outcomes and benefits to top agency officials (i.e., executives with authority to commit resources or make changes to the program) and to OMB
- **New OMB Guidance and Reporting Requirements defined in:**
 - Common Approach
 - Collaborative Planning Methodology
 - Reference Models

The Opportunity

- **Give the EA customer what they want and need**
 - Position the Enterprise Architecture organization to provide a set of offerings tailored for the specific needs of the EA program customers and the overall needs of the organization.
- **Communicate with the customer through meaningful measures**
 - Utilize meaningful measures and measurements for each EA offering and include identification of expected values of the measurement to say this is good, neutral, or bad.

The Approach Concept

- **Determine organization horizon**
 - Where is the organization going? What are it's most pressing issues?
- **Identify objectives for EA and select relevant measures**
 - Select one or more issues that EA is significantly related to (i.e. one or more outputs designed to support/mitigate the issue, either “implicitly” or “explicitly”)
 - Identify which available measures can be applied to those outputs
 - Set baselines, objectives and minimums
- **Start tracking**
 - Determine how often to check in order to determine “movement”
 - Too often = waste of resources / Not often enough = may miss something important
- **Adjust EA program**
 - Review which EA offerings are having an impact and change accordingly.

Start with what you have

Many of the tools used by EA organizations can provide a wide variety of measures with little (if any) additional effort on an EA organization to produce them.

Section 2: Proposed Approach

■ Determine organization horizon

- Determine EA program outcomes that support outcomes and identify EA Offerings to support the EA and organization desired outcomes – illustrated via line of sight or other mechanism that can demonstrate alignment of outputs, offerings and outcomes.

■ Identify objectives for EA and select relevant measures

- Perform stakeholder analysis to identify who in the organization would be interested in EA offerings (products and services) from the EA program.
- Create EA offering agreement with each customer to include:
 - Specific details regarding the product or service
 - Measures and acceptable measurements
 - How the customer organization is using the products and services to impact EA program and organization desired outcomes.

■ Start Tracking

- Collect and compile EA program outcome and organization outcome measures to illustrate value of EA program and share via dashboards, reports, and other mechanisms.

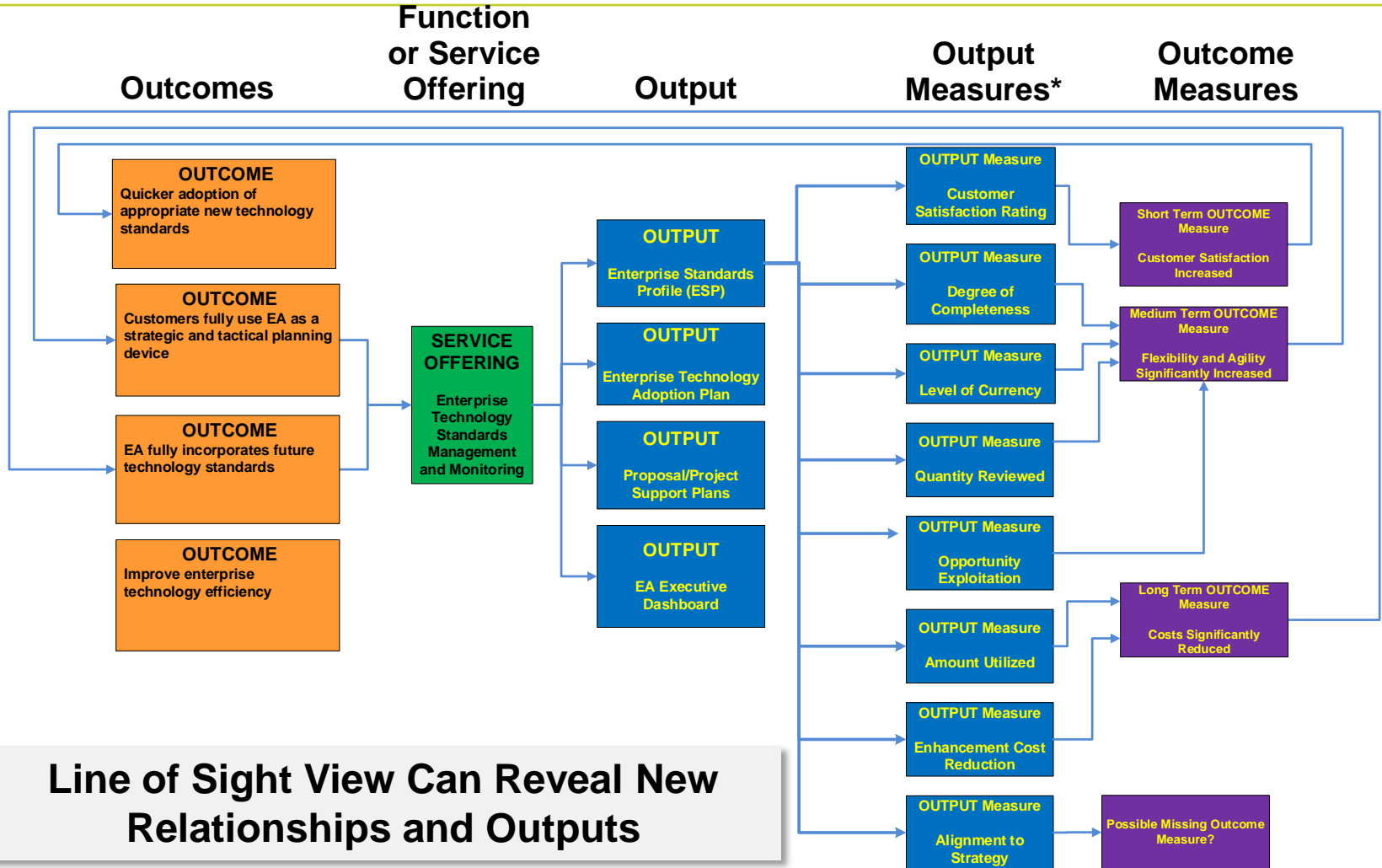
■ Adjust the EA Program

- Over time, prioritize the EA Offerings that have the greatest value to the organization

Desired Approach Outcomes

- **Creation of a service level agreement with customers of the EA program based on defined measures for selected EA offerings and EA program outcomes**
- **Efficient, low cost and repeatable approach utilizing:**
 - Lessons learned from pilots testing the approach at several agencies
 - Feedback from actual use within the organization
- **Demonstration and improvement of EA's value to its customers**
- **Establishment of a framework for communication and modification of existing and new service level agreements as the needs of the organization changes**

Example Line of Sight



Line of Sight View Can Reveal New Relationships and Outputs

*Many Outputs often map to one outcome

Sample EA Offering Measures

■ Quality Measures

- Degree of Completeness
- Level of Currency
- Timeliness
- Accuracy
- Consistency

■ Usefulness Measures

- Validity/Effectiveness
- Customer Satisfaction
- Level of Utilization
- Usability

■ Cost/Quantity Measures

- Quantity Produced
- Cost of Producing EA Offering

**Example EA Offering:
“Systems mapped to
Business Functions
Report”**

Potential Measures:

- Degree of Completeness
- Level of Currency
- Accuracy
- Customer Satisfaction

Sample organization Outcome Measures

■ Cost Reduction

- Reduction in Cost of IT Implementation
- Reduction in Cost of IT Operations
- Reduction in Cost of IT Maintenance
- Reduction in Cost of IT Enhancements
- Reduction in Cost of IT Integration

■ Implementation Time Reduction

- Decrease in Time to Implement IT Functionality
- Decrease in Time to Implement IT Enhancements

■ Quality Improvement

- Increase in Quality of IT Implementation
- Increase in Quality of IT Operations
- Increase in Quality of IT Maintenance
- Increase in Quality of IT Enhancements
- Increase in Quality of IT Integration

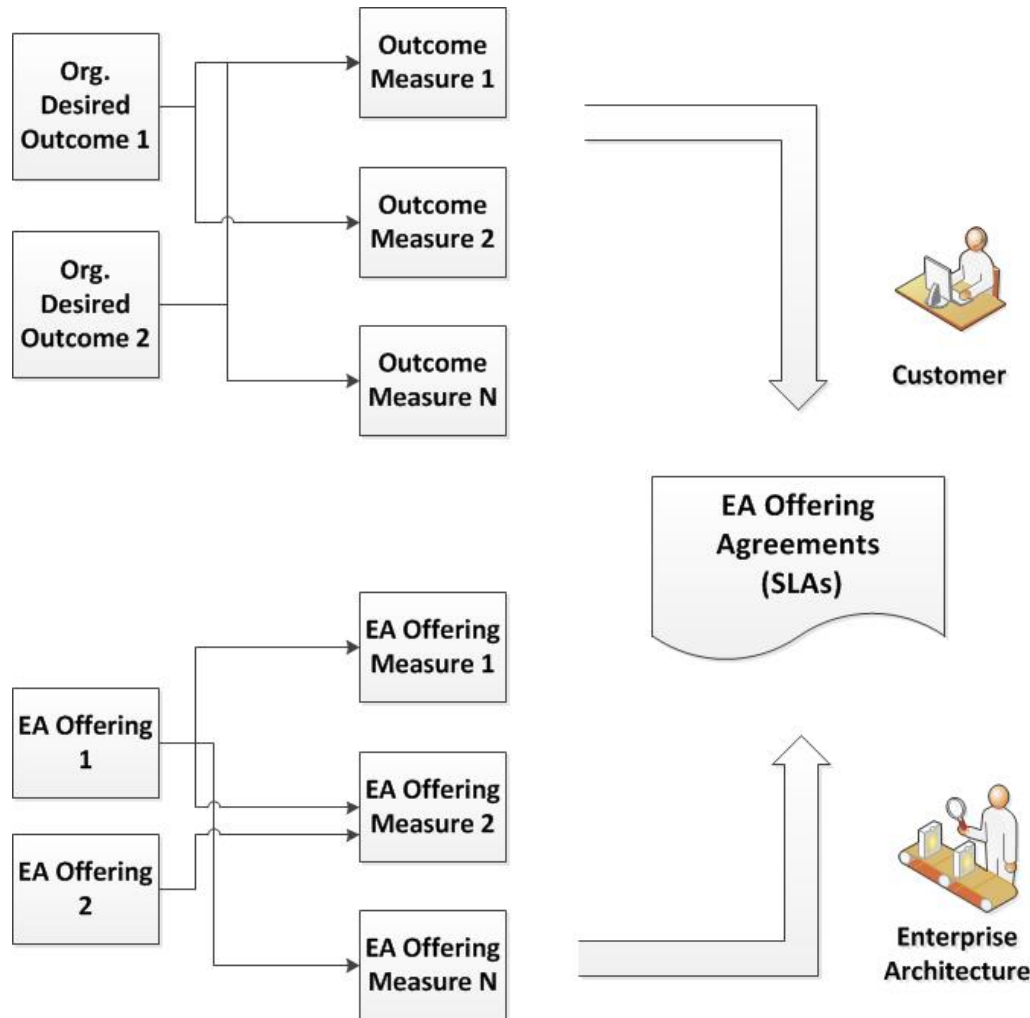
■ Risk Reduction

- Risk Reduction

Example: organization Outcome Measures that could be associated with the EA Offering “Systems mapped to Business Functions Report”

- **Reduction in Cost of IT Operations**
- **Reduction in Cost of IT Maintenance**
- **Risk Reduction**

EA Offering Agreement Provides Link Between EA Offerings and Organization Outcomes



Offering Agreement Includes:

- Details regarding the product or service
- Measures and acceptable measurements
- How the customer organization is using EA Offering

Section 3: Case-Study - EA Performance Measures Limited Pilot in a Federal Agency

- **Purpose: Provide an overview of the performance measures “limited pilot” and obtain feedback on the measures selected**
 - Review suggested measures
 - Determine if other measures should be considered at this time
 - Discuss related metrics efforts, possible data sources and level of effort

Description of the Pilot

■ Limited Pilot

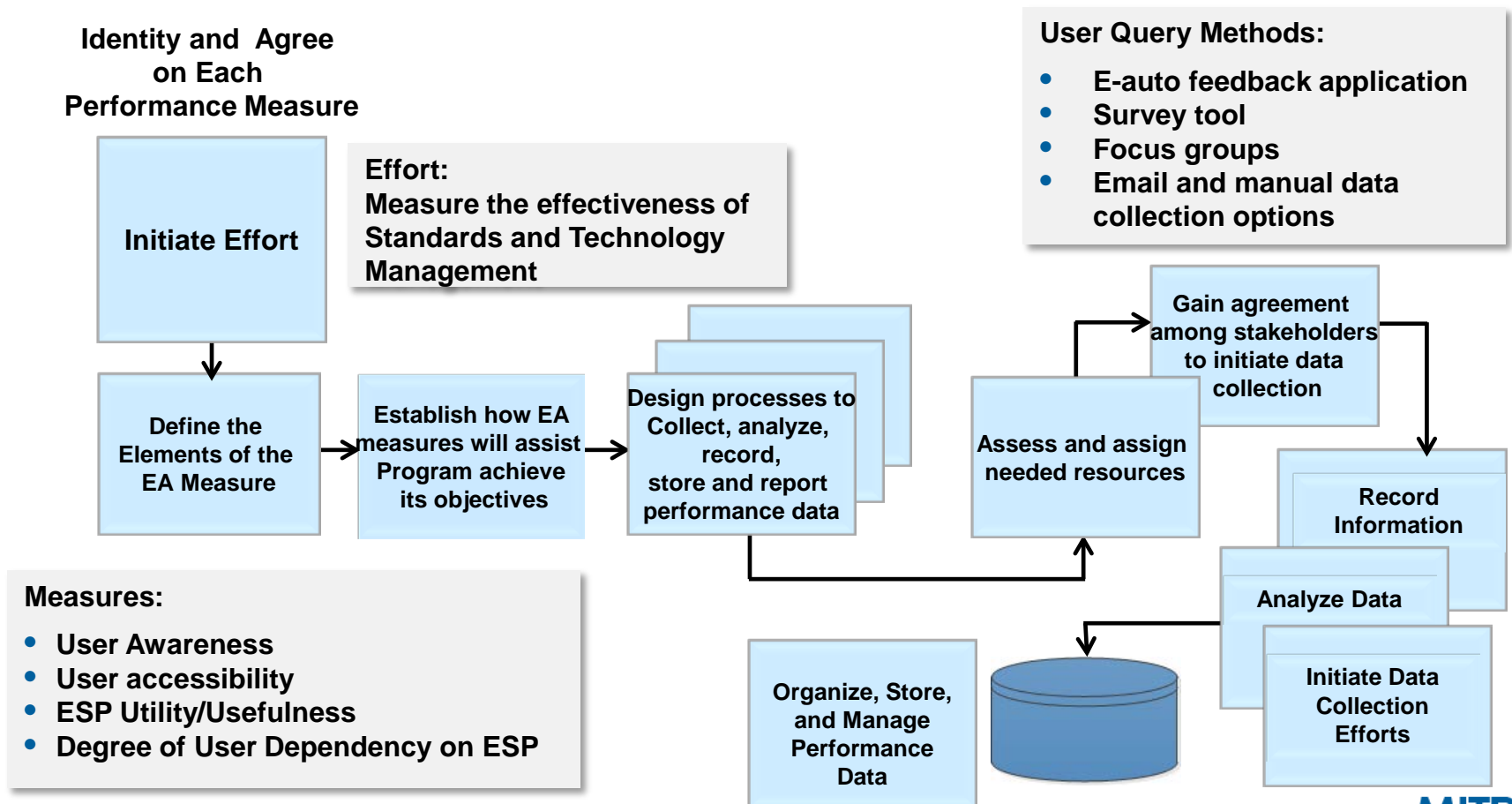
- Received approval to conduct a pilot to expand and institutionalize this service offering
 - MITRE Recommend <Agency> conduct a “limited pilot” to:
 - › Employ the Performance Measures Process (described in a previous deliverable) for collecting, recording, analyzing, storing and reporting EA Measures
 - › Refine and complete the definition of the Enterprise Technology Standards Management and Monitoring (ETSM&M) Service Offering

Limited Pilot Benefits

- **Improved Performance Measures Process for implementing output measures aligned with selected EA goals**
- **Validated line of sight approach and a process that is repeatable and viable**
 - Provides data for determining the government level of effort and possible impact on the organization
- **End State is to operationalize a performance measurement framework for the EA Program**
 - Confirms the output measures identified in the deliverable as valid for measuring services
 - Selected area - Enterprise Standards and Technology Management Functional Area
 - Refines the recommended initial EA measures
 - Defines the Performance Measures Process to collect, record, analyze, store and report EA measures

A Recommended Process to Initiate EA Program Performance Measures

Once each EA measure has been defined and related to the <Agency> service offering, the next step is to design a practical means to collect and establish performance expectations.



Discuss & Validate: Service Offering Output Measures

Example: Approved Product and Standard Repository

- **Customer Satisfaction Rating**
- **Degree of Profile Completeness**
- **Level of Currency of the contents**
- **Amount that the contents are utilized**
- **Reduction of Enhancement Cost**
- **Alignment to Strategy**
- **Number of Projects Reviewed**
- **Opportunity Exploitation**

Discuss & Validate: Measures and Metrics - ESP Standards & Technologies Profile

Example - Approved Product and Standard Repository

Output Measure	Metrics	Notes
Customer Satisfaction Rating	<ul style="list-style-type: none"> • Site ease of use (Process Improvement) • Likelihood of using this site again (Value) • Would you recommend this site to others? (Value) • Overall rating of your experience 	<ul style="list-style-type: none"> • Category: Architecture Outputs
Effectiveness of Artifacts	<ul style="list-style-type: none"> • Outcome support of artifact 	<ul style="list-style-type: none"> • Category: Architecture Outputs
Degree of Completeness	<ul style="list-style-type: none"> • All in use technologies • Duplicated entries • Obsolete/retired entries archived 	<ul style="list-style-type: none"> • Category: Architecture Processes
Level of Currency	<ul style="list-style-type: none"> • Time since last update/review 	<ul style="list-style-type: none"> • Category: Architecture Processes
Reduction of Implementation Costs	<ul style="list-style-type: none"> • Difference between Planned and Actual Budgets 	<ul style="list-style-type: none"> • Category: Cost
Efficiency of Process	<ul style="list-style-type: none"> • Support hours per query 	<ul style="list-style-type: none"> • Category: Architecture Processes
Reduction of Integration	<ul style="list-style-type: none"> • Costs compared to previous year 	<ul style="list-style-type: none"> • Category: Cost
Quantity Reviewed	<ul style="list-style-type: none"> • Number of reviews 	<ul style="list-style-type: none"> • Category: Flexibility and Agility

Preliminary Assessment Overview

- **The potential of this approach for the development and management of EA measures was demonstrated**
 - The list of candidate measures was eventually narrowed down to 1 measure based on availability of data and ease of implementation. In this case it was number of unique visits to an intranet web page.
- **The Pilot implementation has experienced some challenges**
 - Establishing time in very busy schedules
 - Access to data

Key Points: Identify EA Program's Value to an Organization

Lessons Learned from the Pilot:

- **Position the Enterprise Architecture program within an Agency to provide a specific set of offerings tailored for the specific needs of the EA program customers and the overall needs of the Agency.**
- **Create a service level agreement for each EA program offering (product or service) with each customer of that offering. Measures would be at the output level for each EA offering.**
- **Identify what the customer is doing with the EA offering, and have customer specify the value of its use back to the overall Agency desired outcomes.**
- **Collect and compile EA program outcome and Agency outcome measures to illustrate value of Agency EA program and share via dashboards, reports, and other mechanisms.**

Section 4: Reference and Backup Material

References:

- **Federal Enterprise Framework version 2 from January 29th, 2013. Listed on OMB MAX.**
<https://max.omb.gov/community/download/attachments/654807556/FEAF+v2.pdf?version=3&modificationDate=1360702682206>
- **DoDAF version 2.02.**
http://dodcio.defense.gov/Portals/0/Documents/DODAF/DoDAF_v2-02_web.pdf

EA Offerings Sample Listing (Partial)

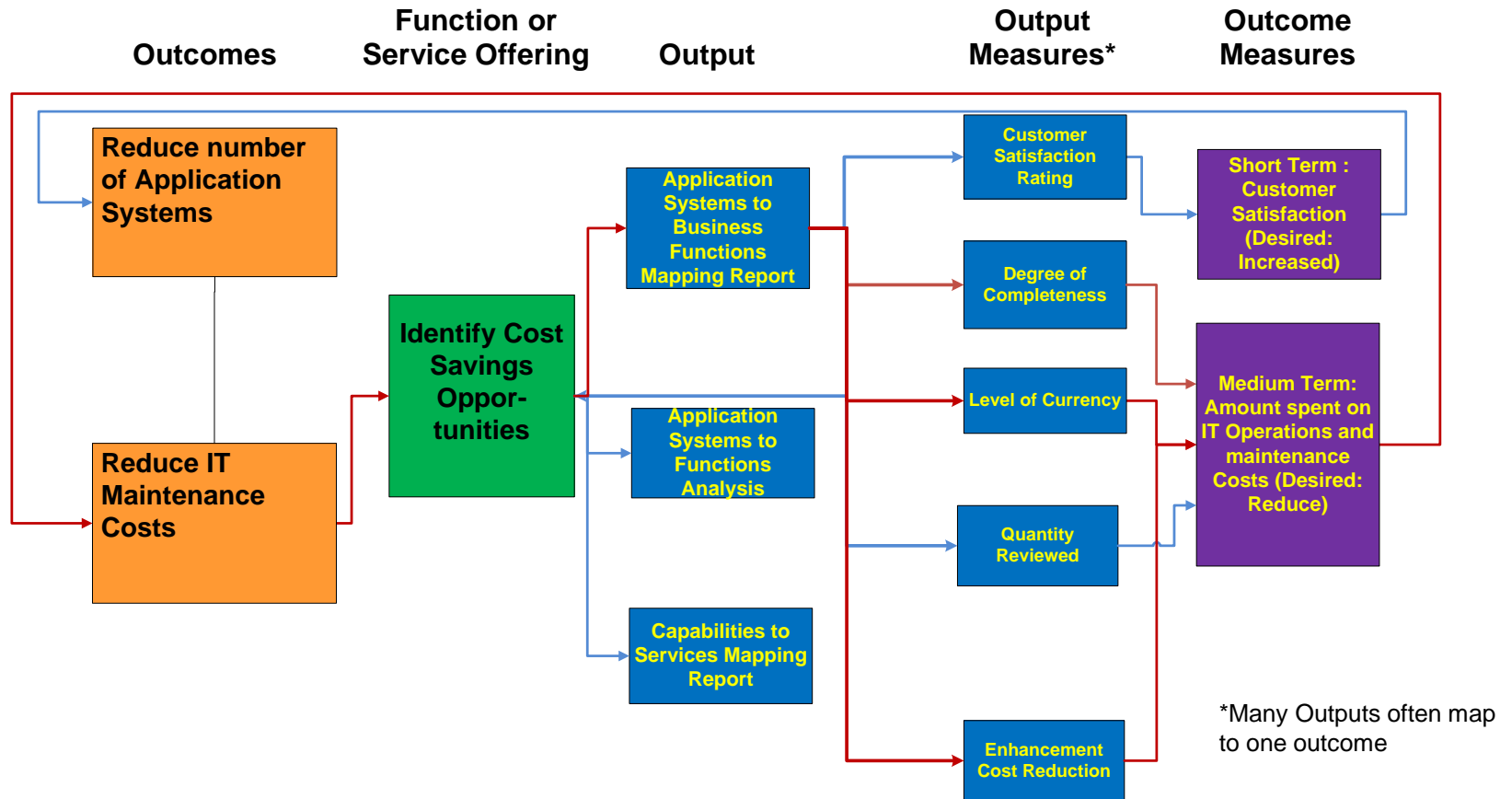
EA Offering (Product or Service)*	FEA Artifact	DoDAF/Other Artifact	Artifact Description	Offering/Service Type	Provided, Hosted, or N/A
Application Interface Diagram	A-1	SV-1	The identification of application resource flows and their composition	Report	Provided
Application Communication Diagram	A-2	SvcV-2	The means by which resource flows between applications occur	Report	Provided
Application Interface Matrix	A-3	SV-3	The interface relationships among systems	Report	Provided
Application Data Exchange Matrix	A-4	SV/SvcV-6	The details of resource flows among systems; the activities performed; the resources exchanged; and the attributes (rules and measures) associated with these exchanges	Report	Hosted
Application Service Matrix	A-5	SvcV-3a&b	Interface relationships between services and applications	Report	Provided
Application Performance Matrix	A-6	SV/SvcV-7	The measures (metrics) of applications	Report	Provided

* List developed from EA Products from the Federal Enterprise Framework version 2 , dated January 29th, 2013, DoDAF version 2.02, FSAM, and other widely accepted practices.

SLA Sample Template

General Information	
EA Offering Agreement Title	Title of the agreement
Customer Organization	Name of customer organization
Customer Point of Contact	Name of contact at customer organization
Customer Contact Information	Contact information to include email, phone, etc.
Start Date	Date the agreement starts
End Date	Date the agreement ends
EA Offering Details	
EA Offering Description	Name of the EA Offering(s) being requested
Time Frame	Describes the period of time requested for the offering
Frequency	Identifies the delivery schedule - how often and when the offering is requested by Customer (e.g. - would like a report available 24x7 on EA's web site)
Degree of Completeness	Identifies the specific set of information that is needed to be within its scope.
Level of Currency	Identifies how often the offering needs to be updated (e.g. - would like an updated version based on information captured as of last month)
Response Times	Identifies expected turn-around times for acknowledgement of request and then specific requests.
Consistency	Identifies expected level of consistency
Accuracy	Identifies expected level of accuracy
Granularity	The level of detail required for the measure
EA Offering Usage Information	
List of Business Decisions that use Offering	Identifies the specific set of business decisions that the EA Offering supports
Customer Satisfaction	Identifies the factors that the Customer will use in defining satisfaction with EA Offering (timeliness, consistency, accuracy, and other factors relevant to the needs of the customer)
How Often is the EA Offering Used?	Identifies how often the Customer plans on using the EA Offering
Agency Desired Outcome(s)	Identifies which Agency identified outcomes that this EA Offering is used to support.
Agency Desired Outcome(s) Measures	Identifies the measures that are used to monitor the Agency Desired Outcome (Could be from the PAR, IT Spending Dashboard, Internal Agency source, etc.)

Example Line of Sight (High Level View)



Line of Sight View Reveals New Relationships and Outputs

Additional Details on Selected EA Offering Measures

▪ Quality Measures

- *Degree of Completeness*: Does the artifact contain data on all the technologies currently in use? Is there a single set of entries for each technology? Have all entries for obsolete/retired technologies been archived?
- *Level of Currency*: Review each specific record (technology?) and determine the last time it was reviewed/updated
- *Timeliness*: Is the artifact provided in a timely manner? Valuable information delivered too late often loses the majority of its value. Artifacts are delivered on a schedule which can be either regular or Ad Hoc.

▪ Usefulness Measures:

- *Effectiveness of Artifacts*: How effective was the artifact in supporting the desired outcome? Initially this will be a subjective measure based on provision of evidence or observations demonstrating the artifacts effectiveness.
- *Customer Satisfaction Rating*: The purpose of this measure is to verify that the output met customer expectations. There may be times when meeting requirements alone is not enough.
- *Level of Utilization*: This measure examines the extent a product impacts the organization. A product that is heavily used by a segment of the organization and/or widely used across the organization can be assumed to be providing value. Products that are not used should be examined for suitability and dropped if possible.
- *Impact of Process*: results, influence

▪ Cost/Quality Measures:

- *Quantity Produced*: number of artifacts produced
- *Efficiency of Process*: The costs involved in the process being measured must be captured and compared against the level of productivity achieved in order to establish and maintain process control. Efficiency: A measure of the "bang for the buck" or "unit benefit per dollar." Solutions are efficient if they measurably increase the "bang" or "unit benefit" for the amount of resources required to deliver the capability.

Additional Sample Agency Outcome Measures

- **Complexity Measures:** In general, managing complex systems involves greater cost and risk than managing simpler systems and one of the desired outcomes of an effective EA program is to enable the appropriate systems analysis and identification of areas of opportunity to reduce complexity.
 - *Reduction of Number of Systems:* Description (Report Logic, Justification)
 - *Reduction of Redundant Systems:* Description (Report Logic, Justification)
- **Flexibility and Agility Measures:** Agencies are faced with a multitude of rapidly changing opportunities and challenges coupled with an increasing level of automation of key business processes. This increases the necessity for an organization to be able to quickly identify and respond to the most important and critical of these opportunities and challenges.
 - *Time to Market:* Description (Report Logic, Justification)
 - *Alignment to Strategy:* Description (Report Logic, Justification)
- **Architecture Governance Measures:** Ensuring that agencies IT efforts meet the needs of their stakeholders and comply with a wide array of rules and regulations in an efficient way is an important service that the EA program provides.
 - *Quantity Reviewed:* The number of reviews involving use of the artifact.
 - *Level of Effort for Review:* Time to review projects
 - *Quantity of Recommendations:* The count of systems and projects reviewed using the particular artifact.
 - *Cost Avoidance:* Description (Report Logic, Justification)
 - *Opportunity Exploitation:* Description (Report Logic, Justification)

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