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Developing a Method to Leverage FEAF by Deploying Val IT Enablers

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ROI

Abstract

Federal enterprise architecture framework (FEAF), as a known EA framework, can describe baseline and target states and provide a sequencing plan to migrate from baseline state and achieve expected goals. Enterprises need information technology (IT) investments to reach target state. Nowadays with the increasingly importance of IT, a significant number of organizational leaders are questioning IT's return on investment (ROI). Despite the complete description of baseline and target states of the enterprise, the lack of robust management and governance on IT investments and also lack of the value management practices during transition to target state, will prevent from successful execution and usage of EA and optimal value realization for enterprise. Since Val IT as a standard framework helps enterprises to realize value from their investments actually, the present paper aims to to leverage FEAF in terms of governance on optimal value realization from IT investments by developing a method with the use of Val IT2.0 abilities. It is also aimed to indicate that by utilizing Val IT with FEAF in EA projects, enterprises will be enabled to realize and sustain optimal value from their investments at an affordable cost with an acceptable level of risk.

1. Introduction

Considering the ever-increasing growth of IT in business environments, critical dependency on IT and rapid changes in business requirements, enterprises are required to apply new approaches, such as EA to be capable of getting higher power and flexibility for managing upcoming inevitable changes, providing business/IT alignment and achieving competitive advantages. EA has evolved from the need for more careful planning of the enterprises to be able of guiding and supporting effective use of IT in the enterprises [1].

FEAF, as a well-known EA framework, explain how to reach target architecture in addition to describe the enterprise baseline and target architectures [2]. Enterprises need IT investments to reach target state, thereby, a primary output from EA transition strategy for reaching target state is a proposed IT investments portfolio [3].

Although most of the enterprises have increasingly spent on IT during the recent years, they are still suspicious whether they are realizing and maximizing the value of their IT-enabled business investments, in a constant and continuous ROI discipline [4]. Totally, these investments can bring huge value and rewards, but without an effective supervisory and management framework, these investments can also erode or destroy value, as they no longer cover the changing requirements of the business [5].

Because of the low focus of FEAF framework on the guidance of business value realization from IT-enabled investments, the utilization of a powerful framework with FEAF framework in EA projects, seems necessary for developing a sufficiently transparent view of IT expenditures, risks and benefits, and developing a coherent picture of the existing and planned technology investments. This will further lead to the better-informed investment decisions and managing investments which ensures that the enterprise will achieve optimal value from its investments during migrating to the target state.

Val IT is a comprehensive and pragmatic framework with practical guidelines, principles, processes, supporting practices and provides robust governance on IT-enabled investments and it enables the enterprises to manage investment so that they secure optimal value from their investments at an affordable cost with an acceptable level of

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risk [6]. This framework provides the enterprises with the structure they require to measure, monitor and optimize the realization of business value from their investment in IT [7]. Thereforee, it is considered as a road map for organizations towards the improved IT investment decisions [8].

The main impetus of the present study is to develop a method to implement Val IT enablers for promoting FEAF especially in the context of informed selection and effective management of investment to maximize business value from IT-enabled investments.

2. FEAF Framework

FEAF framework provides a common structure according to which different and various segments of the enterprise can develop common processes, promote interoperability and share information effectively. This framework represents a guide to gather architecture information and establish a repository for storing them [2]. Basically, FEAF shows how the architecture should move from the current architecture to the target architecture under the impulse of the architecture drivers and a strategic vision and by the usage of a sequencing plan [9].

In this framework, eight components are identified and defined in four levels, from lowest to the highest level of detail [2]. These components and other approaches are required for developing and maintaining a FEA [2, 3]. Figure 1 illustrates the steps of FEA development and maintenance processes [3].

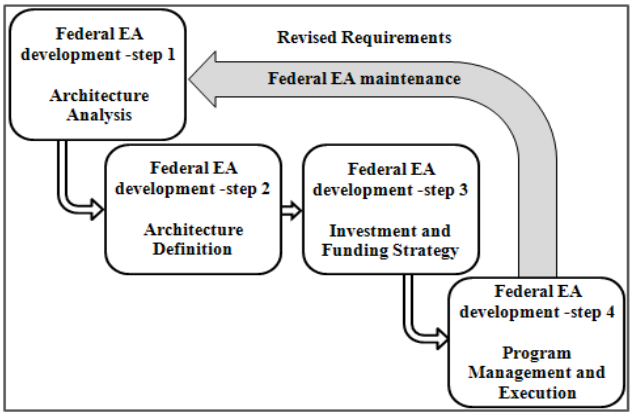

Figure 1. FEA development and maintenance processes

3. Val IT Framework

Val IT is a comprehensive and pragmatic organizing framework that provides a structure to measure, monitor, and optimize the creation of business value from IT-enabled investments [7]. It's a tool that essentially intertwines business and IT into a single strategy, and focuses purely on the value generation. Therefore, Val IT's overall goal is to enable enterprises to manage their investments in IT-enabled changes such that they safeguard optimal value from IT-enabled business investments at an affordable cost with an acceptable level of risk [5]. Realization of this goal can be possible via performing activities, as key management practices, in three domains of Val IT framework as [5]

- Value governance (VG) - establishing governance practices which provide the clear and active linkage between the enterprise strategy, the portfolio of IT-enabled investment programs that execute the strategy, and the portfolios of resulting IT services, assets and other resources
- Portfolio management (PM) - managing the overall investment portfolio for optimizing the value of the enterprise
- Investment management (IM) - managing the results of individual investment programs, including business, process, people, technology and organizational change enabled by the business and IT projects which make up the programs

4. The Reasons of Necessity for Usage of Val IT Enablers With FEAF in EA Projects

The following provides most important reasons for utilizing the components, processes and abilities of Val IT framework with FEAF

- A primary output from FEAF transition strategy for reaching target state is a proposed IT investments portfolio [3]. In other words, the enterprises need IT investments to reach the target state.

  Although enterprises have recently spent alot on IT-enabled changes, they are still questioning if they are realizing and maximizing the value of their IT-enabled investments [4]. In other words, when executive recognition of the importance of IT is increasing, returns on IT investments are becoming a question for a significant number of organizational leaders [2].

  In principles and transition processes of FEAF, the necessity of planning for investment decision making is emphasized on in order to select proper investments for funding them and also one focuses on the necessity of investment management, but these are not explained sufficiently so that can be answerable to aforesaid question. Therefore, the usage of a robust framework with FEAF in EA projects, for developing a sufficiently transparent view of IT expenditures, risks and benefits, and developing a coherent picture of the existing and planned technology investments seems to be necessary for making better-informed investment decisions and managing investments. In this regard, Val IT governance framework that is a comprehensive and applicable framework for realizing value from IT-enabled investments can be useful.
- One of the acts required for the successful usage of the EA is integrating the EA process with the capital planning and investment control (CPIC) process [10]. Because in spite of a complete description of baseline and target states of the enterprise, the absence of a robust governance framework and lack of the value management practices during transition to target state, will be prevented from the successful execution and usage of EA and optimal value realization for the enterprise.

  Furthermore, CPIC process is based on a systematic approach for managing IT investments to ensure that all IT investments align with the agency's mission and support business needs [11].

Considering Val IT as framework which provides enterprises with a systematic approach to establish the right structures, processes and leadership (value governance), we pick the most successful candidates based on the value (portfolio management) and manage investments as programs of business change and focuse on achieving business benefits (investment management). Therefore, all the principles of this framework can be seen in CPIC processes [11] and thereby it can be utilized with FEAF to promote FEAF transition processes in the context of making investment decisions and managing investments and assets and finally to enable enterprises to achieve optimal value from IT-enabled investments at an affordable cost with an acceptable level of risk during migration to the desired state.

- One of the EA framework attributes is the business focus. This attribute refers to whether the framework will focus on using technology to drive business value creation, in which business value is defined as either reduced expenses and/or increased income. This attribute is on low level in FEAF [12]. It can be said that overall focus of FEAF is on the delivery of capabilities and high-quality services.

  But Val IT framework intends to deliver a defined capability based on an agreed schedule and budget on the lowest level (i.e. project level), clearly produce identified business value on the program level and optimize the overall enterprise value on the highest level (i.e. portfolio level) [5].

  Therefore, by utilizing the Val IT framework with FEAF, the goal of IT-enabled investments can be followed on the higher level, the production of the business value and thereupon the optimization of overall enterprise value.

5. The Structure of the Proposed Method to Leverage FEAF by Deploying Val IT Enablers

The proposed method is developed during three phases as

- First phase includes developing the mapping between FEAF and Val IT frameworks to find relationships and gaps between them.
- Second phase includes developing a table derived from mapping results, so that this table will be composed of key management practices and processes of Val IT which are poorly referenced or not addressed in FEAF.
- Third phase includes deploying Val IT enablers in FEAF and across FEA development and maintenance processes, by considering the table developed in the second phase.

5.1. Developing the Mapping Between FEAF and Val IT Frameworks

One of the implemented approaches in the presented mappings by the information systems audit and control association (ISACA) and IT governance institute (ITGI) for developing mappings between various frameworks is the text search to find key concepts of a framework among another frameworks. Identifying key concepts in each framework and developing a mapping between them can be used to determine areas of alignment and areas in which there are gaps [13].

Figure 2 illustrates all of the stages which are followed to develop the mapping between FEAF and Val IT frameworks by the use of text search.

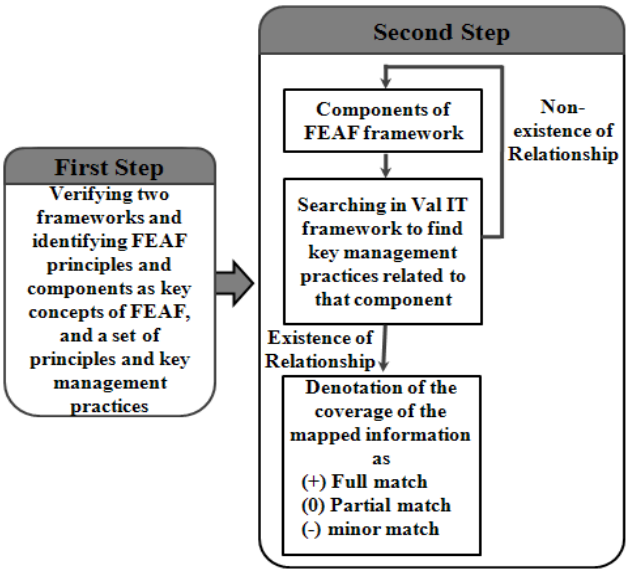

Figure 2. Stages of mapping development

5.2. Developing the table derived from mapping results

As indicated previously, second phase is about developing a table derived from mapping results. Table 1 is consists of the most important Val IT processes and key management practices that are poorly referenced or not addressed in FEAF.

Table 1. Some key management practices identified as gaps

Val IT domains	Val IT processes	Key management practices
Value governance	VG1	VG1.1, VG1.2, VG1.3, VG1.4
	VG2	VG2.1, VG2.2, VG2.3, VG2.4,
	VG3	VG3.1, VG3.2, VG3.3, VG3.4, VG3.5
	VG4	VG4.1, VG4.2, VG4.3, VG4.4
	VG5	VG5.1, VG5.2, VG5.3, VG5.4
	VG6	VG6.1
Portfolio management	PM1	PM1.3
	PM3	PM3.4, PM3.5, PM3.9, PM3.10
	PM4	PM4.1, PM4.2, PM4.4, PM4.5
	PM5	PM5.1
	PM6	PM6.1, PM6.2
Investment management	IM1	IM1.2, IM1.3
	IM2	IM2.1
	IM4	IM4.1, IM4.2, IM4.3
	IM5	IM5.1, IM5.2, IM5.3
	IM6	IM6.3
	IM7	IM7.1
	IM8	IM8.1
	IM9	IM9.2
	IM10	IM10.1

5.3. Deploying Val IT Enablers in FEAF

After identifying the alignment and gap areas between FEAF and Val IT frameworks, the Val IT abilities are used for promoting FEAF to achieve desired state and determined goals and also simultaneously realizing and securing optimal value from IT-enabled investments at an affordable cost with an acceptable level of risk. In order to actualize this objective, we utilize not addressed or poorly referred Val IT

key management practices in FEAF among FEA as following.

5.3.1. Deploying Val IT Enablers in FEA Development Process

As indicated in Figure 3, the FEA development process totally includes four steps [3].

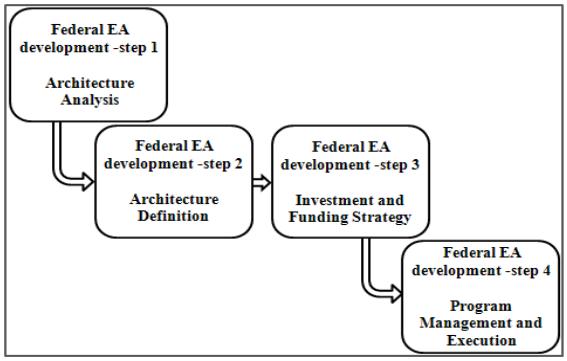

Figure 3. Steps of FEA development

Step 1: Architecture analysis: Some of the most important activities of this step are identifying new or revised requirements and change drivers, defining baseline architecture and identifying and documenting opportunities for improvement [3]. By considering these activities, most important deliverables of this step are as following [3]

- Summary list of change drivers
- Baseline architecture including the description of current status of business, data, applications and technology
- Ordered list of opportunities for improvement

In order to fix and sustain the focus on guidance of business value creation and also to better governance on the value in FEAF framework, adding the following activities, according to Table 2 is necessary.

Table 2. Utilization of Val IT processes to craete more abilities in the architecture analysis step

Use of Val IT processes to craete more abilities in step 1		
Existing activities in FEAF	Added activities from Val IT	Val IT key management practices
Identifying new or revised requirements and architecture drivers	Identifing value governance drivers	
Identifying and documenting opportunities for improvement	Establishing governance framework to value management	VG2.1
	Assessing the quality and coverage of current processes of management and governance on value, against established governance framework	VG2.2
	Identifying and prioritizing process requirements to improve value management	VG2.3

Deploying Val IT enablers in the architecture analysis step will lead to add following deliverables to this step

- List of reasons of the needs for value governance (value governance drivers)
- Current status of the value management and governance processes and lists of requirements for them

Step 2: Architecture definition: Some of the most important activities of this step are defining the performance goals, developing target architecture by consideration of defined goals and developing sequencing plan for transition to the desired architecture [3]. By considering these activities, the most important deliverables of this step are as following [3]

- Performance goals
- Target architecture including the description of desired status of business, data, applications and technology
- Lists of ideas, offers and alternatives for investing

For fixing and sustaining the focus on the guidance of business value creation in FEAF, adding the following activities, according to Table 3 is necessary.

Table 3. Utilization of Val IT processes to craete more abilities in the architecture definition step

Use of Val IT processes to craete more abilities in step 2		
Existing activities in FEAF	Added activities from Val IT	Val IT key management practices and guidelines
Defining the performance goals for architecture development	Defining goals for each of identified processes and pricteses of value governance, portfolio management and investment management	Goals and Metrics
Defining target architecture	Establishing informed and committed leadership for value governance	VG1.1, VG1.2, VG1.3
	Defining, agreeing upon and communicating the meaning of value for the enterprise (i.e. creating a clear and shared understanding of what constitutes value for the enterprise)	VG1.4
	Defining and documenting value management processes	VG2.4
	Defining roles, responsibilities and accountabilities for value management processes and Establishing necessary organizational structures	VG2.5, VG2.6
Developing sequensing plan	Establishing strategic direction and target investment mix with the right balance on a number of dimensions (e.g. an appropriate balance of short- and long term returns, financial and non-financial benefits, and high-risk vs. low-risk investments)	PM1
	Defining portfolio types (e.g. the portfolio of IT-enabled investments, IT projects, services, assets and resources); Defining categories within portfolios; Developing evaluation criteria for each category	VG3
	Recognizing investment opportunities and Classifying each opportunity with respect to the investment portfolio categories	IM1.1, VG3

Deploying Val IT enablers in the architecture definition step will cause to add following deliverables to this step

- Leadership commitment for value governance
- Defined and target value for the enterprise
- Value management and governance processes
- Governance procedures, techniques and tools
- Business and IT roles, responsibilities and accountabilities for Value governance
- Defined portfolio types and investment categories
- Investment evaluation criteria
- Target investment mix

Step 3: Investment and funding strategy: As indicated previously, a primary output from sequencing plan is ideas and propositions for investing. Thereby, determining how investments will be fund, developing business cases for justifying investments and making decision for selecting a portfolio of best investment programs are essential in this step [3]. With respect to the activities of this step, most important deliverables of this step are as following [3]

- Funding strategy
- Business cases
- IT investment portfolio

Although indicated activities can play very significant role in realizing optimal value from IT-enabled investments, but in documents of FEAF implementation guide there is no guidance about how these activities should be done and followed. By considering that these activities are followed and explained completely in Val IT framework, so the usage of Val IT processes and abilities leaves a significant effect on FEAF within this step (Table 4).

Table 4. Utilization of Val IT processes to craete more abilities in investment and funding strategy step

Use of Val IT processes to craete more abilities in step 3		
Existing activities in FEAF	Added activities from Val IT	Val IT key Mgmt. practices
Creating the funding strategy	Identifing and managing limitations of human resouces by means of craeting tactical plans for business and IT human resources	PM3
	Aligning and integrating value management with enterprise financial planning	VG4
	Preparing a budget that reflects the full economic life-cycle costs and the associated financial and non-financial benefits	IM4.1
Justifying the investments	Developing and evaluating the initial programme concept business case and Developing a clear and complete understanding of the candidate programme	IM1.2, IM1.3, IM2.1
	Developing a benefits realization plan and reviewing, refining and signing off it by the business sponsor	IM4.2, IM4.3
	Developing the detailed programme business case, Assigning clear accountability for it and Approving it after appropriate reviews	IM5.1, IM5.2, IM5.3
Creating approperiate investment portfolio	Prioritizing pragrammes for funding via performing Multi-dimensional assessments of business cases of proposed investment programmes and assigning a relative score to them and also via creating an overall investment portfolio view, and finally Making investment decisions to select best investment programmes	PM4.1, PM4.2, PM4.3
	Specifying stage-gates of selected programmes to perform required reviews at each stage-gate and Allocating funds to selected programmes	PM4.4, PM4.5

Use of Val IT abilities and capabilities in this step will be very useful to reinforce the focus on business value and ensure optimal value realization from IT-enabled investments significantly. Business cases not only at the beginning of an investment should be created and reviewed in order to determine whether to proceed with an investment, but also should be continually reviewed and updated throughout the economic life cycle of the investment. This is mainly due to the controlling over the IT-enabled investments if they are moving in the direction of the target architecture and thereby to determine sustaining, increasing or decreasing funding or even cancelling the investment program [14]. For this reason, especially performing multi-dimensional assessment and analysis of business cases such as alignment, financial benefits, non-financial benefits and risk analysis, ensure that throughout moving to the desired architecture and strategic goals according to the migration plan, the enterprise will achieve optimal value at an affordable cost with an acceptable level of risk.

Deploying Val IT enablers in this step will lead to add following deliverables to this step

- Tactical IT and business human resource plans
- Value management budgeting requirements
- Full economic life-cycle costs and benefits
- High-quality business case
- A benefit realization plan
- Overal portfolio view
- Approved investment programs

Step 4: Program management and execution: In this step, a program management plan is developed to define the nature and scope of projects. This plan also includes a performance improvement strategy. After defining indicators and measures to verify performance and success of projects, the executive stage is finally started [3]. With respect to the activities of this step, most important deliverables of this step are as following [3]

- Program management plan
- Performance improvement plan
- Indicators for performance measurements

In order to reinforce performance governance and measurement in FEAF, adding the following activities, according to Table 5 is necessary.

Table 5. Utilization of Val IT processes to craete more abilities in program management and execution step

Use of Val IT processes to craete more abilities in step 4		
Existing activities in FEAF	Added activities from Val IT	Val IT key Managemet practices
Defining performance indicators	Identifying key metrics, such as lead indicators which can be measured before the outcome is met and lag indicators which provide a measure of what has actually been done or achieved	VG5.1
Performance measurement and improvement	Defining information capture processes and approaches and also Defining reporting methods and techniques	VG5.2, VG5.3
	Identifying and monitoring performance improvement actions	VG5.4
	Tracking and managing benefits	IM6.3
	Monitoring, reporting on and optimizing investment portfolio performance and also Reprioritizing the investment portfolio if needed	PM5.1, PM6.1, PM6.2
	Updating operational IT portfolios	IM7.1
	Updating the business case	IM8.1
	Monitoring and reporting on business (benefit/outcome) performance	IM9.2
	Ensuring that the programme is brought to an orderly closure, including formal approval of retirement by the ISB and the business sponsor and also Ensuring that benefits monitoring, realization and optimization will still be followed until the full value of the programme is realized	IM10.1

Deploying Val IT enablers in this step will lead to add following deliverables to this step

- Lead and lag indicators
- Performance reports of investment portfolio
- Updated investment portfolio view
- Updated operational portfolios
- Updated business cases
- Program performance reports

5.3.2. Deploying Val IT Enablers in FEA Maintenance Process

After developing FEA, it is necessary to focus on its maintenance. FEA maintenance monitors new business and information requirements and applies these drivers to update enterprise architecture work products [3]. In order to arrive at continuous improvement of the value management practices and also value optimization in line with improvement of enterprise architecture work products, adding the following activities, according to Table 6 is needed.

Table 6. Utilization of Val IT processes to craete more abilities in FEA maintenance process

Use of Val IT processes to craete more abilities in FEA maintenance process		
Existing activities in FEAF	Added activities from Val IT	Val IT key Management practices
Revising requirements	Utilizing lessons learned and experiences that are gained via using of Val IT capabilities and practices to continuously improve the selection and management of investments, value management practices and the optimization of value	VG6.1

6. Conclusions

Considering that FEAF does not sufficiently focus on the guidance of business value realization from IT-enabled investments and also its principles and transition processes only emphasize on the appropriate investment selection and management without any detailed guidance about how they should be done and followed, thereby, the usage of a powerful framework with FEAF for enabling enterprises to make better-informed investment decisions and manage investments seems to be vital so that they could realize optimal value from their investments at an affordable cost with an acceptable level of risk. Since Val IT is a comprehensive and pragmatic organizing framework which enables the creation of the business value from the IT-enabled investments, it is attempted to use from the enablers and capabilities of it in order to leverage FEAF concerning informed selection and proper management of investments. Also, we have made an effort to illustrate that by integrating these two frameworks and simultaneously utilizing them in the enterprise, it can be assured that if IT investments are in accordance with the right EA transition strategy and managed and governed with Val IT principles, the key management practices and guidelines and the enterprises as a result, will be enabled to realize and sustain optimal value from these investments and EA programs in line with achieving the strategic goals and objectives.

References

[1] J. Perko, IT Governance and Enterprise Architecture as prerequisites for assimilation of Service oriented Architecture, University of technology tampere, December 2008.

[2] The Chief Information Officer Council, Federal Enterprise Architecture Framework V1.1, Federal Architecture Working Group (FAWG), September 1999.

[3] Federal Enterprise Architecture Program Management Office, OMB. FEA Practice Guidance, OMB, November 2007.

[4] J. Thorp, F. consulting, Information paradox, McGraw-Hill Componies, Canada, 2003.

[5] ITGI. Enterprise value: Governance of IT investments, The Val IT Framework2.0, IT Governance Institute, 2008.

[6] ITGI. Enterprise Value: Governance of IT Investments, Getting Started With Value Management, IT Governance Institute, 2008.

[7] P. Voon, CGEIT, CISA, CISSP. MOF to COBIT/Val IT Comparison and Cross-Implementation Guide, Trustworthy Computing Group, Microsoft Corporation, June 2009.

[8] C. Symons, From IT Governance to Value Delivery, Forrester Research, June 2007.

[9] F. Goethals, An Overview of Enterprise Architecture Framework Deliverables, SAP Belgium, 2005.

[10] The Chief Information Officer Council. A Practical Guide to Federal Enterprise Architecture Version 1.0, Federal Architecture Working Group (FAWG), Feb 2001.

[11] C. Harris, The Book on Better Investment, July 2007.

R. sessions, Comparison of the Top Four Enterprise Architecture Methodologies, Object Watch, 2007.

[13] ISACA. Val IT Mapping: Mapping of Val IT 2.0 to MSF, PRINCE2 and ITIL V3. ISACA, 2009.

[14] ITGI. Enterprise Value: Governance of IT Investments, The Business Case. IT Governance Institute, 2006.