The Enterprise Architecture Compendium:

A **Comprehensive** Collection of Notes Based on the Enterprise Architecture Course at the **Master of Science in Information Technology, E-business** at the **IT University of Copenhagen!**

1st Edition

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An Overview of the Compendium

This is a blueprint for how the compendium will be designed. The primary focus is the flow of topics and notes that are necessary to give the reader the proper understand of Enterprise Architecture, business, strategy and technology.

1) The Concept of Enterprise Architecture

This section will be dealing with what Enterprise Architecture, how it is defined and how the various ideas within the field of Enterprise Architecture interacts.

Key Aspects of Enterprise Architecture

The section introduces Bernard's Enterprise Architecture 3 Cube Framework, the basic principles of uncovering the AS IS architecture, developing the TO BE architecture, the management plan, 20 steps to implement Enterprise Architecture and the focus on policy development.

2) The Ideas of Business

This section deals with how business an Enterprise Architecture is related to one another. Thereto will focus on investments and ideas be dealt with.

Key Aspects of Business

Ideas dealing with gaining competitive advantage on applying the business ideas that are present.

3) The Ideas of Strategy

This section deals with how the corporate and IT-strategy has an impact on how the enterprise performs and as such there are several notes that will be presented on IT management.

Key Aspects of Strategy

What is corporate strategy and how does it impact enterprise architecture?

4) The Ideas of Technology

This section will be dealing with how technology impact the enterprise and through that how technology impact Enterprise Architecture.

Key Aspects of Technology

The section will deal with why information technology does or doesn't matter and why it might be important to govern the particular approach.

An Overview of Enterprise Architecture

About this Document:

h. This document deals Scott A. Bernard's introduction to Enterprise Architecture.

i. This document is based on the first chapter of Scott A. Bernard's book “An Introduction to Enterprise Architecture EA3” second edition.

j. The EA3 framework and how it is designed.

k. Deals with how the various elements of the framework are defined and how they work together.

What is Enterprise Architecture

Enterprise Architecture (EA) can be viewed as EA = Business + Strategy + Technology in a single framework (and paradigm).

EA is however more than technology planning since it integrates the three elements of Business, Technology and Strategy and tries to combine them to a framework the decision makers in the organization can make use of to empower the organization by better decision making.

The concept of strategy, business and technology can be identified as the second thread which runs through all of the fives levels in the EA 3 Cube framework.

> "*Enterprise Architecture deals with how the production and its machinery is configured, in other words, Enterprise Architecture isn't solely IT-focused, but a system of many different components. Technology can add with many demands and specifications from within the enterprise; but the demands for technology from external actors is a reality*."

e. John Gøtze (2010)

In relation to what usually drives Enterprise Architecture to enterprises then John Gøtze makes an interesting and valid point. The over all idea is that the external pressure of the domino forces the enterprises to change and in this case adopt Enterprise Architecture.

> "*The usual approach is that every one needs to be at the same standard and the same level. Therefore does the customers, the business, the executives and other stakeholders on that the enterprise has to be able to act as its competitors*"

f. John Gøtze (2010)

EA as a Management Program

Enterprise Architecture is both a management program and a documentation method. The method will give the management an overview of strategic direction, business services, information flow, and resource utilization.

The EA framework EA3 and the concept of EA is not only focusing on IT but can be applied on various other fields of interest. In the book IT is the dominant focus.

Management has to be understood as an integrated approach that consist of many different forms of management techniques and approaches and these can be aligned with EA or better understood. In that way EA is also a way to create a common understand of the Enterprise and its architecture.

Bernard defines that Enterprise Architecture has to be a part of the organization's other forms of governance and management approaches e.g., strategic management.

Enterprise Architecture can be made use to identify gaps that limits the agility of the organization not to mention identify gaps that in one way or the other limits the performance of the organization; thereto can opportunities to implement Information Technology to bridge the gaps.

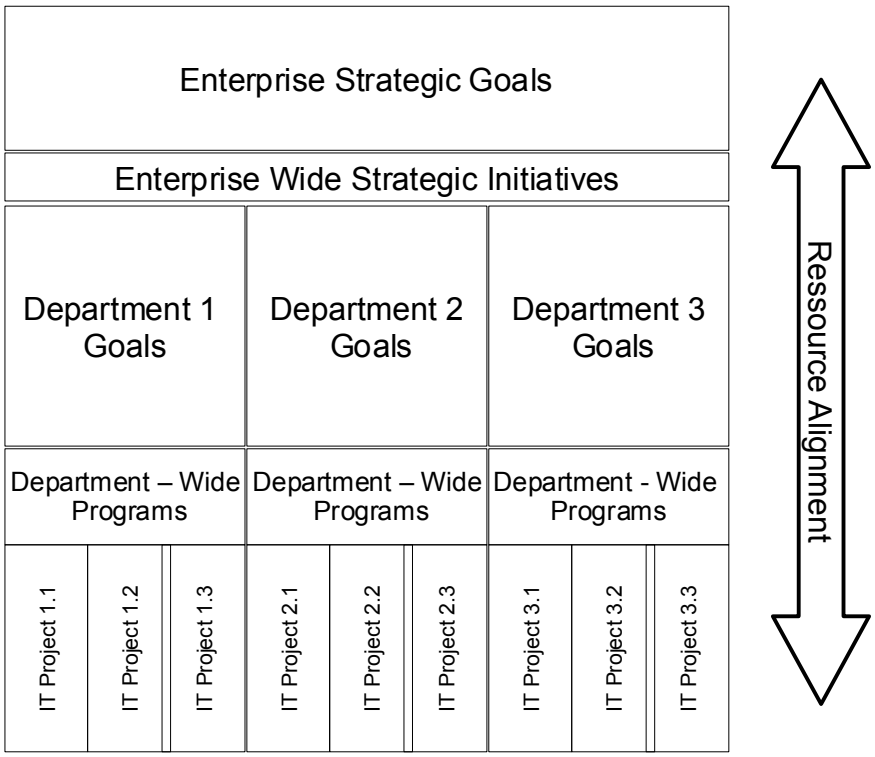
From a strategic management point of view then Enterprise Architecture can be applied since it supports both the macro level of the organization and the micro level of the organization.

EA and other Management Initiatives

EA can be connected to strategic management, IT security (security), workforce planning, program management and capital planning. All in all this can be considered the integrated governance structure.

Standardization of processes and policies

The Enterprise Architecture approach will if applied to enterprise assist the decision makers with creating and enforcing policies. In addition to this the EA approach will enable the decision maskers with articulating policies for identifying strategic and operational requirements, determining the strategic alignment of activities and resources, developing enterprise-wide business and technology resources, prioritizing the funding of programs and projects, overseeing the management of programs and projects, identifying performance metrics for programs and projects, identifying and enforcing standards and configuration management (Bernard 2005, p.35).



Drawing 1: Policy to Resource Alignment

The alignment of resources will be scrutinized by the "AS-IS" and "TO-BE" documents to investigate and validate if the projects (IT as well as Business) supports the strategic goals.

Resource Deployment

When the "AS – IS" phase has been investigated will the IT related initiatives be more visible to the decision makers. This means that the purpose (the advantages and disadvantages) and the strategic and economic consequences can be communicated, understood and dealt with.

The Coherent View

When the various forms of management are combined into the same framework then it is possible for the management of the enterprise to understand how a new strategy, technology or financing will have an impact on the over all enterprise.

The EA3 Cube Framework

The framework is also known as an approach. The framework serves as a way to document the enterprise from various levels of detail (thereby a form of documentation). The approach can be split into two different views. The first view is known as the "AS – IS" which covers how the enterprise architecture is in the moment. The other view is known as "TO-BE" which serves as the future view of the enterprise.

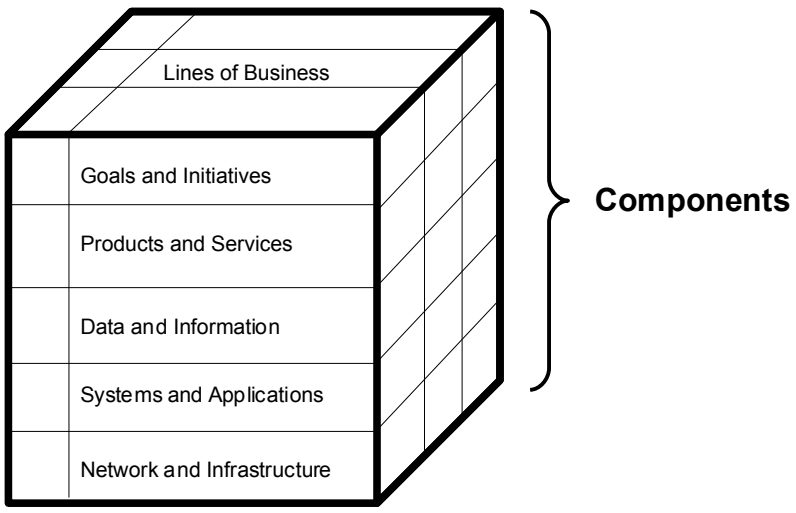
Between the two views is the Enterprise Architecture management plan (which is a kind of transition plan) that details how the Enterprise Architecture should develop to reach the “TO BE” state.

When applying the EA Framework EA3 (the cube) then there are six steps which needs to be a part of the framework and therefore necessary to complete (Bernard 2005, p.35):

1. An EA Documentation framework
2. An Implementation Methodology that supports the creations of the current and the future view of the architecture
3. Current view of the enterprise architecture
4. The future view of the enterprise architecture
5. The articulation of an EA Management plan that enables the transformation from the “AS-IS” (current view) to “TO-BE” (future view)
6. That supports the issues of elements that can be reused through out the architecture that is known as a concept called “threads” e.g., workforce, security and standards.

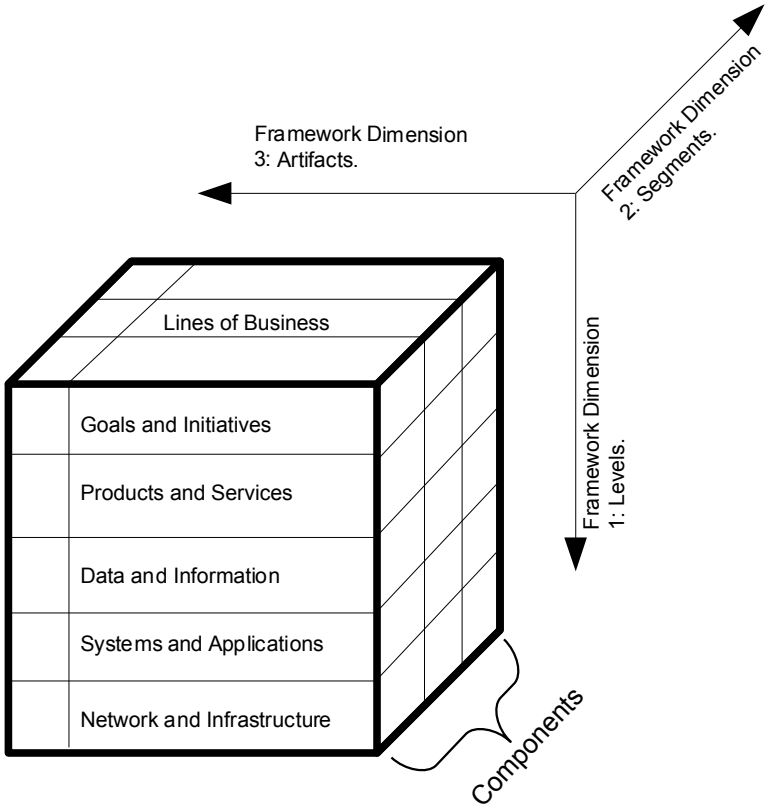
The EA Management Plan

The EA management plan is a living document and it needs to be updated over time. Thereto the chief Enterprise Architect needs to consider who is reading plan since he has to gain the support from the executive group and other stakeholders to be able to implement the Enterprise Architecture.



Drawing 2: The EA3 Cube

The drawing that is handed above is not fully representable for the framework. The framework takes its focus on the cube and on the artifacts, segments and levels. Thereto are components and threads also handled in the segment.



Drawing 3: The EA3 Cube Framework!

In addition then there are two vertical threads in the framework. The first thread is the Strategy, Business and Technology and the second thread is dealing with IT – security, workforce and standards.

Artifacts

Artifacts are the documentation of the components. This included components at each level and it includes the threads.

Components

The concept of the components are defined as changeable goals, resources, processes and standards. These can be enterprise wide or for that matter solely focus on a single line of business.

The components can be identified as two different types. The first one is the cross cutting and the second one is the vertical component.

The Vertical Components

The vertical component is a goal, resource, standard or process that only serves one “line of business”.

The Horizontal Components

The horizontal component (also known as the cross cutting) is defined as a goal, resource, standard or process that serves several “lines of business”.

Segments

A segment is defined by Bernard as being a business activity and with allocated resources. The segments go vertical of the enterprise architecture.

Line of Business

A line of business is defined as a division or a way the organization produce a product or service that the customers can make use of.

The Repository

To enable the holistic approach in the organization then a repository needs to be established. The repository is according to Bernard a “living” document. This means the repository needs to be updated over time otherwise the value of the repository is diminished.

Appendix

Bernard, S.A., 2005. An Introduction To Enterprise Architecture: Second Edition 2nd ed., AuthorHouse.

The Structure and Culture of Enterprises

About this Document:

7. This document deals with how organizations and the components of organizations impact Enterprise Architecture and visa versa.
8. What risks or factors should be dealt with.

The Culture

It is a necessity to understand the culture of an organization to develop a view of how the “AS IS” in reality. The change (transformation) plan will impact all parts of the organization which indicates that it is vital to understand the employees in the organization and how they think and communicate.

The understanding of social enterprises are critical and is as critical the choice of EA approach and other methodology. EA is in between organization theory and system theory is based on Bernard (Bernard 2004, p. 50).

Parson's and Thompson's model consist of three layers or level that describes what happens in the enterprise and how the process or activity makes any purpose. The model consist of structure (Parson) and Function (Thompson).

Institutional	Where the organization establishes rules and relates to the larger society as it derives legitimations, meaning, and higher level support this making possible the implementation of organization goals.	The organization is very open to the environment in order to determine its domain, establish boundaries and secure legitimation.
Managerial	The mediation and the immediately task assignment.	A dynamic of mediation occurs where less formalized and more political architectures occur.
Technical	Where are the actual product of an organization is processed.	The organization is “rational” as it carries production input and output functions and tries to seal off those functions from the outside protect them from external uncertainties as much as possible.

Table 1: Parson's and Thompson's Model.

The model can be found on page 51. The model is merged with the EA3 cube on page 52 in Scott Bernard's work. Bernard deduces that the model can be applied in the forms of organizations we have today. The model is defined as the “rational model”. The model can be applied since the organization charts, mission statements, strategic plans, operational plans and business services.

Bernard concludes that two major impacts have influenced the validation of the organization models.

1) Organizations are becoming regular and global in nature, and are relying on remote sub-

groups to significant amounts of the work.

2) More people are becoming self-employed knowledge workers. These are often able to contact their services remotely to enterprises who motivate them their interests, skills or availability.

This has led to the networked organization. The networked organization and enterprises are appearing to consist of loosely coupled individuals and semi-organized teams that carry out key functions!

> However according to the change management focus then an organization that is loosely coupled can't be changed by the Lewin approach (Unfreeze, Move, Freeze) approach because you can't add or undermine the various factors that influences the organization.

- (Sjoelin 2008)

According to Bernard these organizations can gain advantage by removing layers of management and in the same time be able to create greater agility (Bernard 2004, p. 53). However the independent teams might have different goals than those who are in house in the organization. The organizational network model is defined by an executive team sets the policy and goals for the organization and it approve resources and evaluate results. The semi – autonomous “functional teams and independent workers manage ongoing programs or lines of business, deployment projects and so-called team specific resources.

The so-called semi – autonomous teams and the independent workers receive policy, goals, and general direction from executive teams; though they remain independent.

Page 54 includes the model and how the model can be merged with the EA3 Cube. This model can be found on page 55 that defines the enterprises and organizations to be one and the same thing.

The enterprise architecture can be broken down into segments both vertical and horizontal! This approach can be favorable to the EA program manager since it makes the analysis of the enterprise architecture (AS IS) much less complex.

Change as a result of EA should be initiated according to the change framework suggested by John

P. Kotter (the 8 phases mentioned in the article why change effort fails).

1) This involves the involvement of “EA Stakeholders” in the establishment and execution.
2) Regularly and effectively communicating EA activities to stakeholders.
3) Allowing the stakeholders to come with valid inputs.
4) Managing stakeholder expectations as to what the EA program can do.

The EA stakeholders are defined as these who are affected by changes the EA program will cause. Thereto is it important to communicate to the EA stakeholders so the understand the changes! Therefore should an EA Program Communication Plan and the EA management Plan regard this element on how to communicate the updates.

Thereto can the EA Program Manager of the “Expectation Plan” so unrealistic expectation are avoided.

Appendix

This section do act as the EndNote of this document.

Books

Bernard, S.A., 2005. An Introduction To Enterprise Architecture: Second Edition 2nd ed., AuthorHouse.

Sjoelin, P. F. T., 2008. Notes on Change Management: First edition., Copenhagen Business School.

The Value and Risk of Creating an Enterprise Architecture

About this Document:

9. This document deals with notes for Bernard's book “an introduction to Enterprise Architecture”.

The Benefits of Enterprise Architecture

There are many good reasons for investing in an Enterprise Architecture program. One possibility by initiating the EA program is to get an overview of strategy, organization and technology not to forget an insight into business. The focus in general the enterprise wide (or system wide) approach (in other words a holistic approach).

However there are some risks by using or implementing an EA program in an Enterprise:

3) The implementation of an EA might become disruptive to the business which means that the costly and time consuming.
4) When the members of the organization (managers and the workers) are taken out of production to learn and assist in delivering the Enterprise Architecture.

It us quite clear that the benefits of the EA has to be significant higher than costs otherwise shouldn't the EA program not to be launched.

“The value of EA is to enhance the resource – planning capabilities and supports better decision-making. This accomplished through communication improvements in respect to current and future resources. Ideas are conveyed more rapidly while differences in interpretations and misunderstanding are reduced” (Bernard 2004, p. 64).

John Gøtze emphasizes that Enterprise Architecture is a program and the program needs to based on iterative changes. For that he presented a quote by Brown & Hagel.

> “*If we've learned one thing from the 1990s, it's that big bang, IT-driven initiatives rarely produce expected returns*.”

5) Brown & Hagel, HBR comment to Nicholas Carr's IT Doesn't Matter.

EA can be of a value for both the global decentralized organization and the small – and medium sized enterprises. For the large organizations or enterprises the EA can give an effective EA governance process for IT related issues. For the SMEs EA can give the organization the benefit of a tool that can add agility and business requirements and technologies solutions and by that enhance security, inventory and configuration management activities.

> An example of this is the Carlsberg Groups approach to Business Process Standardization across its European Branches.

When it comes to planning EA enhances or enables both top – down and bottom up planning approaches.

The top – down planning (approach) will focus on considerations for strategy and business that are made into a holistic model of the organization. Focus on the bottom – up planning is based on that the individual projects are thought into a program that forms the overall planning.

Communications are improved by the EA repository that gives each member in the organization an opportunity to understand and use a standardized “terminology” and by that the members of the organization will be able to create a conceptualized model can be created.

The EA repository should be online so it can be accessed 24 x 7 e.g., through the intranet.

Risk Management that should be included in an EA program. Since there are many forms of risks that can be associated with EA then the risk management has to be developed. :

1) Financial.
2) Lack of acceptance.
3) Loss of Key Personnel.
4) Schedule Delays.
5) Documentation Tools.

The above mentioned factors can have an influence on the EA program but the EA program can be a mitigating factor.

Benefits that are usually realized by the organizations that initiates it:

1) Shortened Planning Cycle.
2) More Effective Planning Meetings.
3) Shorter Decision – Making Cycles.
4) Improved reference Information.
5) Reduction of Duplicated Resources.
6) Reduced Re-work.
7) Improved Resource Integration and Performance.
8) Fewer People in a Process.
9) Improved Communication.

10) Reduction in Cycle Time.

Quantifying EA Program Cost

The EA Program Manager has to exam the program life cycle and exam the program methodology for implementation to identify the costs:

1) EA program administrative and other Enterprise Administrative tie – ins.
2) Salary & benefits for a chief architect and EA team staff.
3) Meetings, faculties, materials, and support for stakeholder planning sessions.
4) Computers, applications, and web developers to establish the EA repository.
5) Interviews and materials to documentation the EA future views.
6) Development and documentation of the EA management plan.
7) Purchase, use, and refreshment of EA modeling applications and computers.
8) Regular updates to the EA documentation and the online repository.

The initiation phase will be more expensive than the updating phase. The TCO or LCC (Life Cycle Costs) should be presented to the EA stakeholder.

In relation to the value of Enterprise Architecture then John Gøtze introduced some pitfalls he experienced when he works with EA out in a case-organization.

> "*In relation to myths about Enterprise Architecture then I often face issues on the value of EA, the purpose of Architecture, applied methods, that EA is a project and EA is something big and new. These can be identified as pitfalls.*
> *1) The value of EA is too difficult to measure and therefore is there no reason to try. It is notable that the every business process in an enterprise should be measured before and after the transformation process. 2) EA is developed by architects. The premise of EA is that the business side of the enterprise that develops the architecture, since it generates important and valuable information for the EA assets. 3) Enterprise Architecture can be applied in an organization from the shelves (e.g., from the shelves solutions). There are two issues with that approach. 1) The approach will allocate a lot of*

> *resources and 2) the value of the resource allocation will turn out to be limited. 4) Enterprise Architecture is a six month project. Fact is that EA is a program. 5) Enterprise Architecture is something big and new and it is entirely detached from the daily activities in the business enterprise."*

6) John Gøtze (2010).

Linking Strategy, Business, and Technology

EA has to support a holistic top – down approach and the bottom – up approach! This means the top management's point of view and the LOB managers point of view.

The business side of the enterprise sees EA as a tool or context and business architects by ensuring the strategy drives business and technology planning.. From a technology perspective then EA provides the strategy and business context for resource planning.

Linking EA and Strategy

"The EA framework and methodology organizes EA documentation in a way that allow business and technology planning and decision – making" Bernard (Bernard 2004, p. 72). To do this then strategic goals, strategic initiatives and strategic measures.

1) Strategic goals serves as primary objectives for the enterprise. These goals normally takes years to accomplish.
2) Strategic initiatives these are or serves as the projects, technology activities that can enable the enterprise in accomplishing its goals (strategic goals).
3) These are identified as outcome measures of which can be used to identify when a strategic initiative has accomplished a goal!

Linking EA and Business Planning

This means that strategy creates business requirements and technology has to support solutions to meet the requirements. The framework documents there are primary issues that focuses on the business side (titled level by Bernard).

Supporting strategic goals needs to be documented. Please note that the EA Program Manager needs to be strategic and therefore should a high – impact analysis.

Documentation of Business Architectures

The documentation of Business Architectures deals with applying the right tool for measuring the process before these are re-engineered. The key words for this section is BPI and BPR.

Thereto comes identifying supporting technologies which is based on that the business requirements are examined and the business process (activities) are examined.

When it comes to linking EA and technology planning then it becomes important that technology doesn't drive the business.

Prospects and Consequences of EA

In the 12th session of the course a general approach on the prospects and consequences of Enterprise Architecture was articulated.

Prospects	Consequences
EA creates the advantage of overview.	An EA program demands resources.
EA creates the foundation for better management decisions.	An EA program demands the support from the top management.
EA minimized redundancy by the implementation of the overview so redundant processes, projects etc. can be terminated.	
Optimization of business processes will occur; however it is a necessity to make use of Business Process Re-engineering and as such Enterprise Architecture will act as a meta-frame.	
EA can create a common understanding of the strategical situation.	The communication demands a lot of resources.
EA can create a common understanding of how the organization works and how both the top management and the employees (and everyone in between works).	
EA can facilitate change and communication among different departments and devisions of the organization.	
EA can be an enabler to implement standards both in form of business standards, business processes, IT standards, project standards, IS standards and security standards.	
EA can be an enabler to resource allocation for strategic important processes.	
EA can enable IT governance.	
EA can assist in situations such as mergers and	

acquisitions.	
EA can be applied for implement a focus on economic and strategic initiatives.	
EA can create a common language through the usage of repository and communication. This will ease the usage of transformation.	
EA applies a functionalist world view.	The functionalist approach will lead to a contextual insecurity.

Appendix

This section do act as the EndNote of this document.

Books

Bernard, S.A., 2005. An Introduction To Enterprise Architecture: Second Edition 2nd ed., AuthorHouse.

White Book on IT Architecture

About this Document:

10. This document deals with the white book on IT Architecture that was written and published by the Ministry of Science, Technology and Development of Denmark.
11. This document is dealing with a concept called IT Architecture but in reality the concept is Enterprise Architecture. The reason for the “confusion” is that the ministry of Science didn't realize it was Enterprise Architecture they where working with (a political organization).

The Public Sector has to take Charge of its IT Architecture

The public sector has had a sector wide view on IT investments (that includes investments in information systems and architecture) that they should focus on purchasing the cheapest and most relevant solution. The cheapest solution has often led to that the solution has been developed with in a narrow scope. This has had an impact on the IT architecture since it has been optimized for the local department or unit. The result of this is in general not desirable since the government in 2003 articulated goals for that the architecture should be scalable and reusable.

The suppliers to the IT architecture are still in charge of developing components and implement the business logic. The public sector then have to demand a common set of standards to enhance interoperability.

The reason for the public sector should promote these demands are that the level of competition will become more intense which will be an advantage for the public sector.

The public sector has to realize that if it wants to be ahead of the suppliers and thereby gaining a competitive advantage then it should focus on developing its employees in the skills of Enterprise Architecture or IT Architecture Management.

A common IT Architecture Framework

The framework has to focus on coordination, a common set of methods, a common choice of methods, systems and principles, and common tools.

The common coordination deals with that the public sector should establish a committee that create the common IT architecture that public sector should mature and develop. The common frame of method is a common standard of processes, concepts and processes. The common choice of systems and principles deals with the public sector should deal with standards and infrastructure that should led to a reference profile and a SOA.

The common set of tools deals with establishing common databases, libraries, contracts, description of processes, definition of data, software components including descriptions of infrastructure solutions.

Consequences

To promote the usage of IT and the be able to scale the systems across several departments, ministries, counties, communes and other public administrative sectors and institutions can make use of the data.

The public sector will experience that the costs for developing the IT architecture and the costs of the processes will also diminish.

However when the organizations within the public sector in one way or the other invests in a new information system then the specific organization has to apply specific controls and methods to ensure that the systems are designed and optimized for the specific processes (of course build the reference public reference profile).

The new repository and framework will give the public sector the benefits of organizational change and the understand of systems changes as well since they are build around the same systems and principles of management and SOA. It is notable that the implementation of the IT architecture will be a hugh investment and the investment can result in big benefits and opportunities as well.

The Reason and Background for the White Book

The reason and background for the development of the public IT architecture is to establish a foundation for IT architecture to ensure maturity in the common enterprise architecture to enhance and develop public services to citizens and customers.

The government has established a vision for what is known as digital governance & management. The vision is based on four goals (principles) that needs to be taken into consideration:

5) The digital governance & management has to empower the citizens and corporations to the network society.
6) The public sector has to work and communicate digitally.
7) The public sector has to provide coherent services and products to the citizens and the corporations.
8) The tasks in the public sector has to executed where the tasks can generate the largest benefits.

The above mentioned goals have to be translated into processes and these will be implementing over several years and with different development logic.

7) Goal two to four deals with that the IT architecture should better public support through higher quality in the IT foundation.
8) Support the development of innovative cross governance processes through greater coherence in the informations.
9) Achieve a more effective governance through larger efficiency in IT usage.

10) Gain access to rapid support of new or changed governance processes and organization changes through tested infrastructure solutions.

11) Give access to public information through open to citizens, corporations and public institutions and authorities.

12) Give sufficient protection of public information through secure solutions to manage and communicate data.

13) To create more successful IT solutions through larger predictability of the results of IT investments.

14) Give the public sector access to stabile IT systems with sufficient capacity.

Experiences that can be Crystalized

There are several other countries that have made an effort to implement IT architecture (Enterprise Architecture) and these countries have gained some experiences.

These experiences are as follows:

6) Commitment has to be on government level.

7) A cross government institutions and departments collaboration is needed.

8) Standardization of data structure and functional data interfaces has to be implemented.

9) Choice of technical standards are needed.

10) A common infrastructural platform has to be implemented.

11) Anchoring the knowledge and change through certifications and common shares of practice have to be implemented.

Guiding principles

The white book emphasizes 10 principles that have to be put into consideration when the government of one reason or the other implements a new IT architecture:

11) The Service Orientated Architecture is a paradigm of which the government has to invest its resources so a coherent digital governance can be applied.

12) The prospect is that the government will take an active role in the service orientated architecture.

13) The national common IT architecture has to be the lowest common standard that in the same

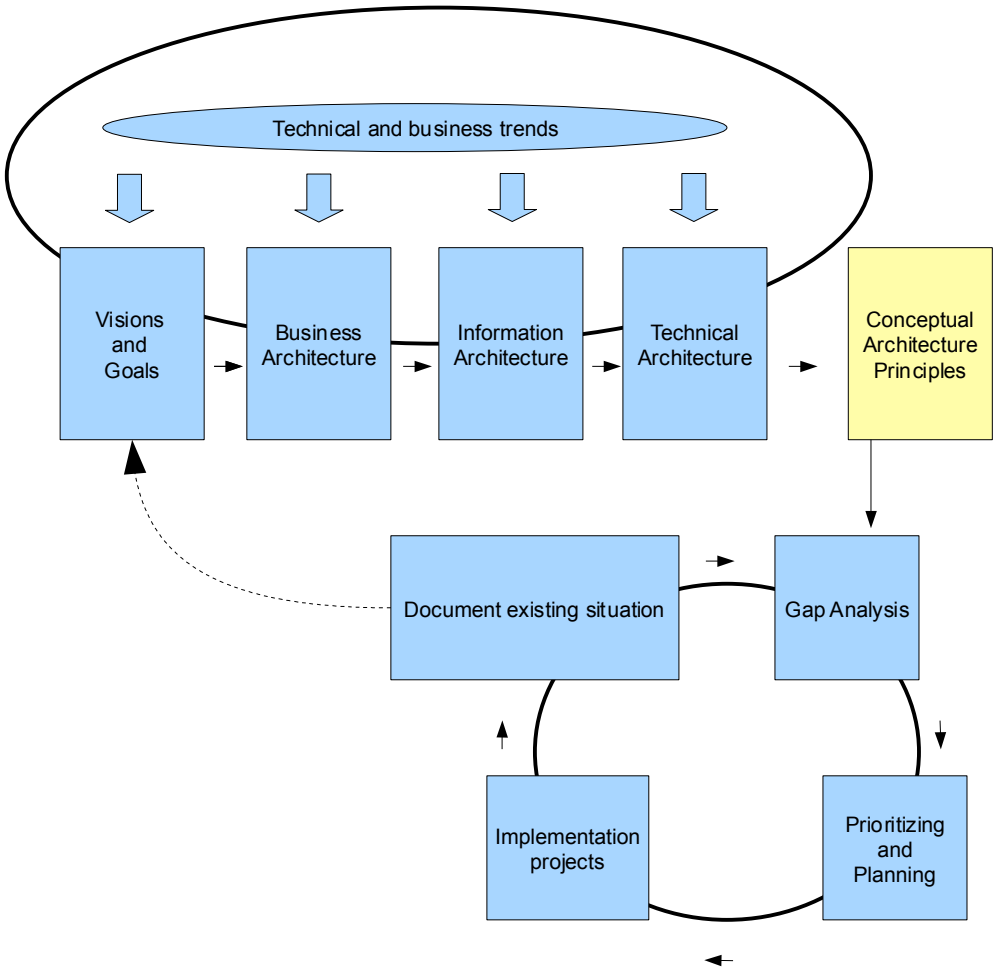
time enables the ability to add to it (a kind of dogma architecture).

14) The IT architecture should reflect the vision of the business side and there should be a consensus regarding the choices the business side has committed itself to.
15) The national IT architecture should be applied in those cases where there is a business needs and business analysis should support the usage of the usage of the IT architecture.
16) Legacy systems shouldn't be scraped or for that matter be converted to run on the same platform. In the other hand no of the legacy systems should be spared in advance of the implementation.
17) The implementation should focus pragmatic assumptions and the implementation should be done in iterations.
18) The IT Architecture should be based on the lowest possible political foundation to ensure that those persons who ar know about the situation locally can take the proper responsibility and accountability for the situation and implementation.
19) Denmark is not the only country on this planet and therefore should the work with the architecture be coordinated with international players.
20) The work with the IT architecture and the standards should be published on a public website like oio.dk.

The IT Architecture Process

The white book is based on two cycle processes that enriches each other while they are executing. The two processes are iterative which means that these have to be executed continuously.

Since the public sector is rather decentralized and therefore is the principles and concepts discussed in the white book based on the idea that these can be dragged down onto the various self-governing institutions and their contexts.



Drawing 4: Stratetic Processes within the Framework

It is worth to mention that the upper circle is the strategic process and the lower circle is the implementation process.

9) Vision and goals describes the strategic business goals and that will be with a special focus on those that are related to Information Technology. It is a necessity to keep a dialog with the top management of the enterprise and and the political side of the business is a necessity as well.

10) The Business Architecture describes those processes the IT system has to support both when it comes to functionality and procurement. This state is a result of an analysis and an optimization of existing work related processes.

11) The Information Architecture describes the business strategy and its demands to the organization of information. This contains both the high level description and low level technical description.

12) The Technical Architecture is based a common shared systemic description of the demands which can be categorized with the high level part of the systems and modules and the low level description of each of the modules.

13) The Conceptual Architecture Principles is a rule set that handles the initiation of the IT solutions so these are within the demands presented in the the “Conceptual Architecture Principles and former mentioned architectures”.

Besides the strategical architecture process the then the practical implementation process will be executed.

4) Document the existing situation (AS – IS).

5) The Gap analysis deals with identifying the identifying what legacy systems that fit into the conceptual architecture principles.

6) Prioritization and planning. This phase deals with the planning the technical change that is needed to bring the “AS IS” to the desired state “TO BE”.

7) Implementation projects deals with implementing the changes through a series of projects.

The Three Layer Model

The three layer model can be utilized and linked directly to the architecture model.

1) The user interface layer (3-layer) that is directly linked to API & Services and Presentation.

2) Business Logic Layer (3-layer) that is directly linked to application server, integration server and database sever.

3) Storage Layer (3-layer) that is linked directly to server hardware and operating system, data layer, and network.

When the public sector starts the redefinition of its “Enterprise Architecture” (IT Architecture) then it should focus on to break down the known barriers and not just enabling old government procedures or processes. This means that that the old processes should be supported with new technology since they often just led to the same result as the old processes and these rarely enables the true potential of the technology.

Principles

The foundation of work with IT Architecture (Enterprise Architecture) is it is based on principles and guided by these.

On the lowest level of principles we find the principles that are focused on a specific system where we in the highest level is based on the idea that the entire enterprise.

Principles are based on:

1) Interoperability is a necessity to enable the usage of and recycle the data. However interoperability can also be viewed as a way to create coherence in new ways.
2) Security is a paradigm and an imperative. If the system is not based on the
3) Openness is based on the idea that the interfaces have to be open so the can ensure communication and interoperability among the systems components.
4) Flexibility is based on the idea that the system has to be build so it would be easy to modify to the system (enterprise architecture will be suited to its surroundings).
5) Scalability deals with how the system will be working when there is a greater demand for its features and usage.

John Gøtze emphasized that the OIO framework and the EA3 Cube framework.

> *"The OIO Enterprise Architecture Framework and Bernard's EA 3 Cube are compatible e.g., you can implement the OIO framework into Bernard's EA 3 Cube Framework".*

– John Gøtze (2010).

Extending and formalizing the framework for Information Systems Architecture

About this Document:

12. This document deals with the article “Extending and formalizing the framework for Information Systems Architecture” by J.F Sowa and John Zachman.
13. The article is from 1992 which is the early beginning of the Enterprise Architecture paradigm.

The Concept of the Framework

The framework can in some ways be compared to techniques such as the flowchart (that was introduced by John von Neumann back in 1945. The flow chart is fine for many different issues and a flowchart is good to illustrate algorithms and flow of goods and processes.

Entity – relationship diagrams are used to show entities among various objects, processes and databases.

The purpose of the framework is to show how everything fits together and how they interacts. There are 30 boxes that are organized in six columns. The 30 cells or boxes are indeed intended to subject matter which means it is possible for those identify the various artifacts and deal with them in each cell.

Overview of the Framework

The framework has several minor items that can be categorized or organized as:

9) The Scope which is the first architectural sketch which is known as the bubble chart. In the ISA framework (Enterprise Architecture) it is equal to an executive summary.
10) Enterprise or business model this is the professional drawing at an architect. In the ISA context then this is equal to the business model to the organization.
11) System model which is equal to a list of specifications. In the ISA context this is equal to a system model designed. The model presents the information and the models that are linked to another.
12) Technology model which is equal to a contractor that has to redraw the architect's plan. The model serves as a way to constrain the technology. The technology model is dealing with the programming language, I/O devices or other technology.
13) Components which in a architecture perspective deals with the sub-contractor work out a specific plans for the building a building. In an ISA context deals with the programmers or actors are aligned with a broader context so sub-optimization is handled in a proper way.

The Extended ISA Framework

Rules of the framework needs to be taken into consideration and dealt with to understand how the framework works.

15) The columns have no order. Order would imply priority and since the cells are equally

important.

16) Each column has a basic model. It is important to understand that each model is representing a simplified version of the world. The focus is to ask what, how, where, who, when and why.
17) The basic model of each column has to be unique. Zachman is of the opinion that the cell is unique.
18) Each row represents a distinct and unique perspective.
19) Each cell is unique. This means that the cells should be checked twice while the framework is applied to the current situation.
20) The cell model are made of the perspective of the row.
21) They logic is repetitive.

Building the Enterprise

About this Document:

14. This document deals with the article dealing that is dealing with Enterprise Architecture. This is the third article by John Zachman and is the latest in the line.
15. The article is written in a time period where the basics of Enterprise Architecture has been implemented and has been working for quite some time.

Management and Modeling

This section deals with how the communication between the enterprise architect, chief enterprise architect or the EA program mamager-

The first thing the EA program manager, Enterprise Architecture or other person don't believe that the management of the enterprse understands the modeling framework and or the concept of Enterprise Architect or the models needed.

Recommendations for EA Communication Plan & Strategy

There are several views on how to enable the organization to involve the management of the enterprise:

14) Enable the management by developing the diagrams (graphics) together with them.
15) The diragams should be focusing on business processes, semantics, IT related stuff such as the network diagram, IS systems diagram, IT architecture, and business cycle models.
16) When the diagrams have been developed then the managers and the EA program manager should discuss what to do next. This has to be done to make the individual managers take responsibility for change and the architecture.
17) Focus on something less than the entire enterprise. Smaller system or segments are easier to deal with; however there is a risk of sub – optimization which the Enterprise Architect, EA program manager or change agent might phase by using this approach.

The Break Down Process

Zachman recommends an approach where the first row. Then the scope and boundaries of the Enterprise. The purpose is to create an overview of the various sub-plans of the enterprise architecture.

The EA Framework

About this Document:

16. This document deals with the EA Framework in the EA 3 Cube as it was presented in the book “An Introduction to Enterprise Architecture” by Scott A. Bernard.

The Steps of the EA approach

There are defined 20 steps to establish the EA program according to the EA 3 Cube framework. The 20 steps have different importance in the four different phases which needs to be taken into consideration.

The first and thereby primary step is the establishment of the EA program. If the EA program isn't established the organization will experience difficulties with improving its Enterprise Architecture.

The second phase deals with how the organization should define an methodology and the tools that are compatible with the EA approach (framework). If that is not in order then the EA program will not aggregate a proper view “AS IS” perspective.

The third phase deals with how the execution of the EA documentation program.

The fourth phase deals with how the EA program should be linked to the management and other kinds of management processes so the organization can generate the full advantage of the investment in the program.

Phase 1: Establishment of the EA Program

18) Establishment of the EA Program and identifying the EA Chief Architect.

19) Establish of the EA Methodology.

20) Establish EA Governance and links to other management processes.

21) Develop an EA communication plan to ensure EA stakeholder buy in.

The EA Program needs a person in charge to apply the right framework and the right tools and the person needs to be hold responsible and accountable. This means that the top management and management of the organization needs to buy in (#4). If they don't buy in then the EA program will easily be detoured.

The EA program needs to be linked to other management processes so they can be coordinated and when they are coordinated they can become a greater asset for the organization. When the coordination has been established and the coordination has been applied then it might turn into a competitive advantage.

Phase 2: EA Framework and Tool Selection

22) Select an EA documentation framework.

23) Identify the EA lines of business (LOB) and cross cuts and the order of the documentation.
24) Identify the EA components to be documented framework – wide.
25) Select documentation methods appropriate to the EA framework.
26) Select the software applications or tools to support the automated Enterprise Architecture documentation.
27) Select and establish an online EA repository for documentation and analysis.

The documentation framework is frame for how the various elements have to be put into to create a systemic analysis. The analysis have to be focusing on identifying symptoms and finding the cure for the right problems within the organization.

The Enterprise Architecture should be documented so an "AS IS" is produced and used as a blueprint so management and the EA program chief architect can articulate a transition plan that can enable the organization to achieve its goals and thereby create the "TO BE" situation for the enterprise architecture.

Phase 3: Documentation of the Enterprise Architecture

12) Evaluate existing business and technology documentation for the use in the Enterprise Architecture.
13) Document the current views (AS IS) of the existing components in all frameworks areas (levels). Organize and store the artifacts in an online repository.
14) Develop future business / technology operating scenarios.
15) Identify future planning assumptions for each future scenario.
16) Use the scenarios and other program / staff input to drive the documentation of future EA components in all EA framework areas. Store artifacts in the online repository.
17) Develop an EA management plan to sequence the planned changes in the Enterprise Architecture.

The business and technology documentation is needed to create the "AS IS" since the EA consist of Business, strategy and technology and acts as a kind of governance tool for the organization.

The scenarios needs to deal with a positive scenario where everything stays the same and a scenario where things change and a scenario where everything goes down the drain (worst case scenario).

Involve the the staff to assist in making the documentation since many of them probably act as SMEs (Subject Matters Experts).

The EA management program needs to be the blueprint for changes that needs to be implemented in the enterprise architecture. This means that the program will have to be broken down to projects that can change the various components (and other elements of the enterprise architecture).

Phase 4: Use and Maintain the Enterprise Architecture

21) Use EA – documentation to support planning making.
22) Regularly updates current and future views of the EA components, and link information in the EA repository to create high – level and detailed perspectives of Enterprise Activities and resources in the current and in the future operating environment.
23) Maintain EA repository and related EA modeling and analysis capabilities.
24) Release annual updates to the EA management plan.

When working with the EA framework then it should be used to assist in the planning making (the transition plan) and not to mention that the methodology needs to be in place for the transition plan.

The EA repository needs to be maintained so every stakeholder in the organization can relate to the objects and terminology in the same way.

The EA management plan needs to be updated so it is matches the changes in the domain.

The EA Documentation Framework

About this Document:

17. This document deals with deals with chapter five in “An Introduction to Enterprise Architecture” by Scott Bernard.

Framework and Methodology

When the framework and the methodology is selected by the Chief Enterprise Architect or EA program manager then it is worth to define what the difference between an EA framework and an EA methodology is.

Definition of the EA Framework

An EA framework is dealing with what the EA program will document.

Definition of the EA Methodology

The EA methodology deals with how the Enterprise Architecture documentation is articulated and used.

The EA Cube

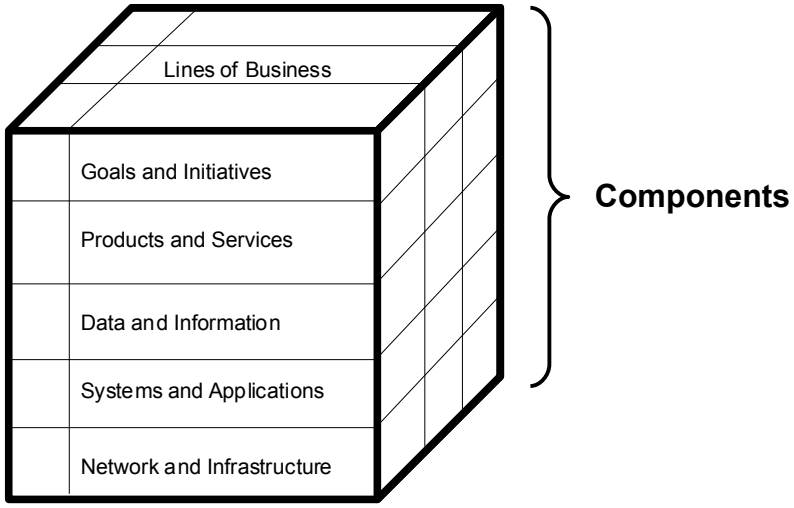


Illustration 1: The EA Cube.

The Documentation Process

There are six steps that needs to be gone through according to Bernard (Bernard 2005, p. 97):

22) The process includes a framework.

23) The process includes the components.

24) The process includes the current architectural views.

25) The process includes future architectural views.

26) The process deals with the transition plan for going from “TO BE” and the “AS IS” architecture.

27) The process deals with threads that influence the enterprise architecture on all levels.

EA Frameworks

Zachman's Framework

The foundation of the EA Framework is John Zachman's Framework. It was originally build on the assumptions on how to build a house or an airplane. The blueprint analogy was used to articulate the framework.

Zachman's Framework According to Scott Bernard

	Data (what)	Function (what)	Network (where)	People (who)	Time (when)	Motivation (why)	
Scope (Contextual)	List of things that is important to business	List of processes the Business Perform	List of Location in Which the Business Operates	List of Organizations that is important to the Business	List of Events/Cycles Important to the Business	List of Business Goals / Strategies	Scope (contextual)
Enterprise Model (Conceptual)	Semantic Model	Business Process Model	Business Logistics System	Work Flow Model	Member Schedule	Business Plan	Enterprise Model (Conceptual)
System Model (Logical)	Logical Data Model	Application Architecture	Distributed System Architecture	Human Interface Architecture	Processing Structure	Business Rule Model	System Model (Logical)
Technology Model (Physical)	Physical Data Model	System Design	Technology Architecture	Presentation Architecture	Control Structure	Rule Design	Technology Model (Physical)
Detailed Representation (Out of Context)	Data Definition	Program	Network Architecture	Security Architecture	Timing Definition	Rule Expectation	Detailed Representation (Out of Context)
Functioning Enterprise	Data	Function	Network	People	Time	Motivation	Functioning Enterprise

Illustration 2: Zachman's Framework.

Zachman has later written a series of articles dealing with the framework and how it should be understood. These articles are included in this note collection; however in a different section.

TOGAF

This framework was in its origin developed by the U.S Military but was realesed to a fond called “The Open Group”. This framework is primarily focusing on the technical side of Enterprise Architecture. TOGAF are one of many EA frameworks or “approaches” developed in the United States.

OIO IT Architecture Framework

This framework was developed for the Danish Ministry of Science and is in its origin designed for the Danish Public Sector. The focus was to implement Enterprise Architecture to give the public sector a better understanding of how it operates and what processes that could be standardized and centralized.

The OIO framework is based on the same perspective as the EA 3 Cube by John Zachman.

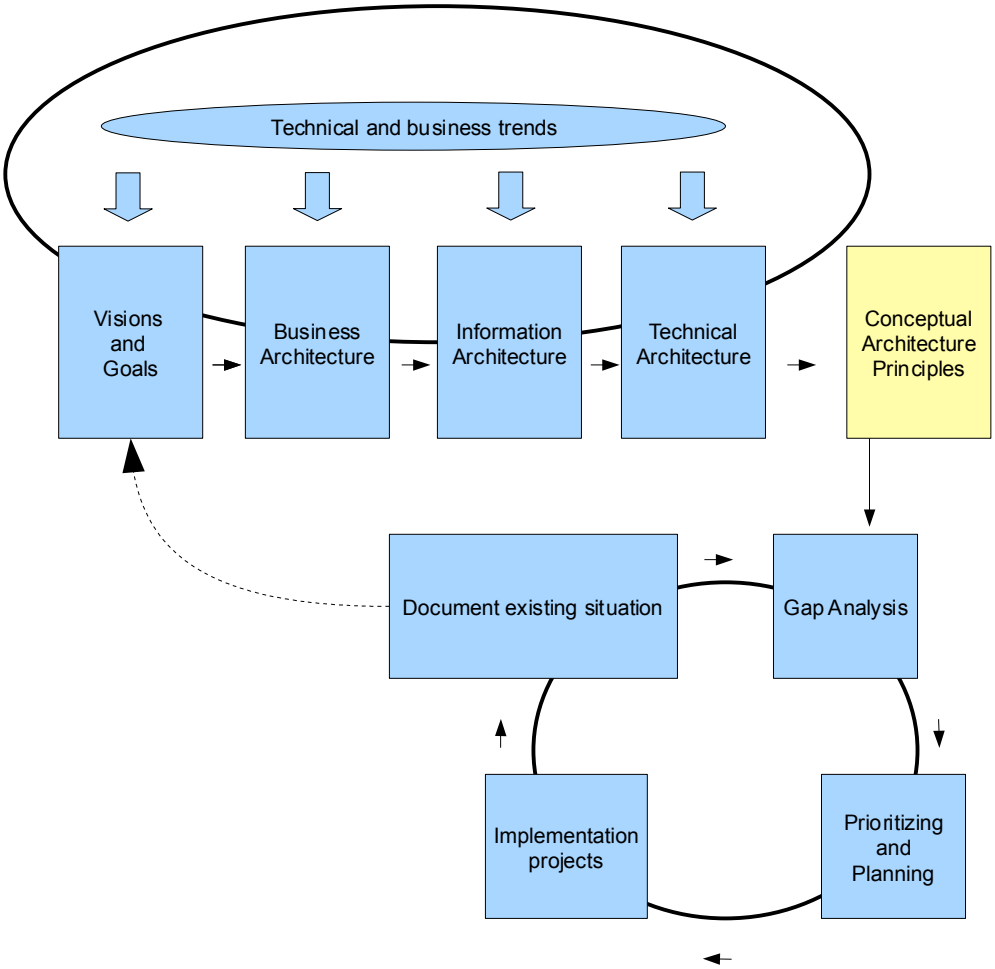


Illustration 3: The OIO Framework.

As the illustrated above then there is a analysis a governance process and a documentation process. The OIO framework has been dealt with in detail in another section of these notes.

The EA 3 Cube

The EA 3 Cube was developed in 2004. The Framework is designed as a cube and it is build upon the idea that hierarchies are needed to avoid sub-architectures (Bernard 2004, pp. 104 – 105).

According to Bernard then the business goals are the drivers of how the Enterprise Architecture is designed.

The EA 3 Cube is based on the primary function of organize and planning IT resources and documentation of the Enterprise Architecture. (Bernard 2004, p. 105).

The framework is build upon five levels and as before mentioned these are hierarchical to avoid

sub-architectures.

The Five Layers of the EA 3 Cube

1) Goals and Initiatives is as before mentioned the driving force of the Enterprise Architecture and therefore are these located in the top of the cube (as the first and primary layer).
2) Products and services shows how Information Technology impacts the various products and services.
3) Data and Information is used to document how the Enterprise makes use of information “AS IS” and how the information flow should be designed for future situations “TO BE”.
4) Systems and Applications is used to organize and group the various information systems that give the organization its IS capabilities.
5) Networks and Infrastructure deals with the so called backbone of the Enterprise Architecture and it includes how the networks interact and how various technologies interact such as VOIP and LAN, WAN etc.

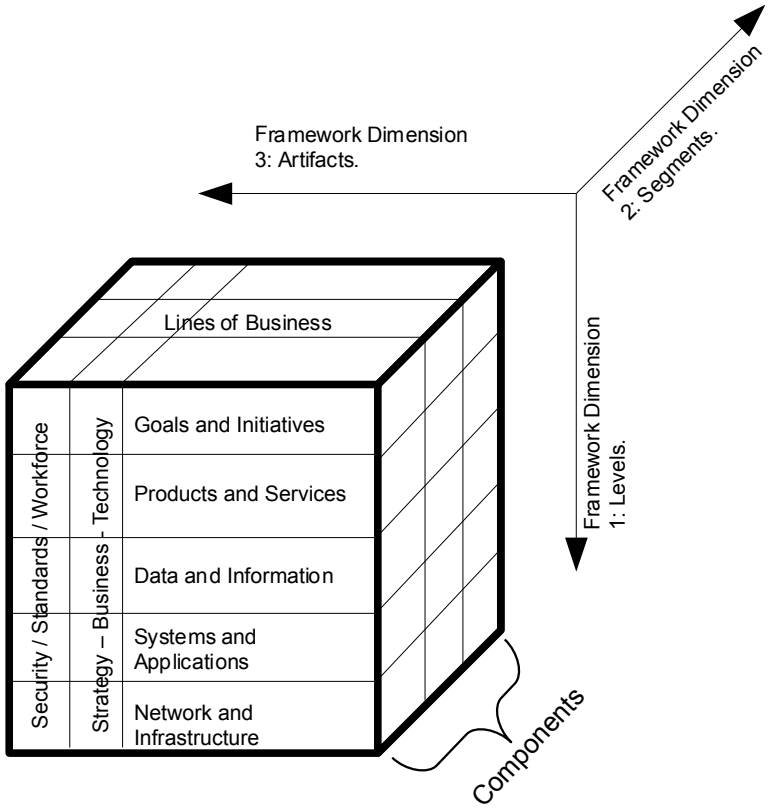


Illustration 4: EA 3 Cube Framework.

Lines of Business (LOBs) that can be considered as a specific activity within the organization and all the have all the five layers of the architecture. The LOBs are named “Vertical Mission Areas”. The LOBs can have their own administration and functions that can be considered divisions within the divisionalized organization.

Crosscutting Components are established so the LOBs don't create redundant features e.g., e-mail hosting and IT services.

Threads are defined as security, standards and workforce. These three threads go through each level of the framework.

Components and Artifacts

About this Document:

- This document deals with Scott A. Bernard's book “An Introduction to Enterprise Architecture” chapter 6 titled “Components and Artifacts”.
- The document and the artifacts mentioned in this document is organized around the EA 3 framework.

Enterprise Architecture Artifact

First of all we need a definition of what an EA artifacts is. Scott A. Bernard defines “an EA artifact as a documentation product, such as a text document, diagram, spreadsheet, briefing slides, or video clip” (Bernard 2004, p. 111).

Please note that the EA artifact documents the EA component.

Various Forms of Artifacts

There are various forms of artifacts in the EA 3 framework. Combined with the Cube to illustrate what kind of artifacts than can be identified at the five levels of the cube (Illustration 1).

The first (and highest level) is the layer titled “Goals and Initiatives” deals with documents and diagrams dealing with mission statement, overall strategy (corporate and IT strategy), purpose of the organization. E.g, SWOT analysis, Porter's Five Forces analysis, competitive strategy, Concept of Operations.

The second (and second highest level) is the layer titled “Products and Services” deals with the business plans, swim lane diagrams, business cases (for investment in new business and IT projects), use case diagrams and node connectivity diagrams among other stuff.

The third (and third highest level) is the layer titled “Data and Information” deals with identifying the knowledge management plan, the information exchange matrix, objects state – transition diagram, logical data model, data dictionary / object library.

The fourth (and fourth highest level) is the layer titled “Systems and Applications”that deals with identifying systems interface diagram, systems communication diagram, systems interface matrix, system data flow diagram, system or operations matrix, systems data exchange matrix, systems evolution diagram and web application diagram.

The fifth (and fifth highest level) is the layer titled “Network and Infrastructure” deals with identifying artifacts like network connectivity diagram, network inventory, capital equipment inventory, building blueprints, network center diagram, cable plant diagram and the rack elevation diagram.

It is notable that the artifacts needs to be organized into a framework and later into a repository. Otherwise will the artifacts not be able to contribute to create a holistic documentation or management approach.

Appendix

Bernard, S.A., 2005. An Introduction To Enterprise Architecture: Second Edition 2nd ed., AuthorHouse.

Applying Enterprise Architecture

About this Document:

- This document deals with the article by Peter Herzum from Cutter Consortium.
- Evaluation and maturity of enterprise architectures are central in the article.

What is Enterprise Architecture

The article “Applying Enterprise Architecture”by Herzum deals with how to estimate how the organization can measure the Enterprise Architecture maturity. For that Herzum established four different forms of Enterprise Maturity.

Herzum's Definition of Enterprise Architecture

Herzum definition of Enterprise Architecture is rather a rather IT-focused approach. This is shown by that he in many occasions points out that Enterprise Architecture is also known as Enterprise IT Architecture and he addresses the issues that are IT related on page 4 in his article.

> “Enterprise Architecture must deal with such topics as:
>
> 1) Legacy Systems, legacy transformation, and legacy retirement.
>
> 2) Outsourced software development.
>
> 3) Software Acquisition.”

Herzum's definition of Enterprise Architecture as ”the set of architectural concepts, principles, guidelines, blueprints, standards, and other enterprise-wide deliverables that guides an enterprise through acquiring, outsourcing, integrating, connecting, developing, modifying, operating, and retiring the elements (internal and external to the enterprise)” - Herzum, p. 4.

Herzum does however conclude that a too IT-related focus (assuming IT-architecture as being the only form of architecture) can lead to costly mistakes (Herzum p. 5).

Herzum declares that Enterprise Architecture is a focus on planning change and change management and people are central in this aspect.

Likewise does Herzum mention that comparing Enterprise Architecture to building small family homes are a misconception. If such an analogy should be used then it should be how to transform a skyscraper into a different form of skyscraper due to the complexity of engineering an organization in a different way.

Failures of Management in Enterprise Architecture Programs

When the Enterprise Architects have proven their worth then management and other groups in the organization through their problems at them. Meaning that the Enterprise Architects looses their

value by being “project members” in non – EA related matter.

Governing Enterprise Architecture

The Enterprise Architecture should be governed by committee since it is important that the stakeholders accepts the concept and works with the holistic management approach. According to Herzum Enterprise Architecture can't work in practice if there isn't a consensus about adopting, adapting and apply Enterprise Architecture.

Herzun concludes that Enterprise Architecture has a lot of users and that is based on the idea that the CIO, CEO, CTO and support the the ability manage strategic programs and it is a necessity to handle the complexity of understanding products and customers. Thereto should the Enterprise Architecture group give input to the individual projects that are handled in the organization.

> “Provide relevant information at the right level of abstraction to the CIO or CTO (and even the CEO).
>
> Support the ability to manage the complexity of individual strategic programs, such as providing one enterprise-wide view of customers or products and identifying synergies across strategic programs.
>
> Provide useful input to individual projects, particularly the kind of information that these projects can directly reuse
>
> (in a cost-effective way) to build solutions without being bogged down in process or nonrelevant details and without having to understand the many parts of the EA not directly relevant to the specific project”
> Herzum (2003)

Herzum states that there are different categories for what an Enterprise Architecture team can deliver:

1) Enterprise reference models. This is the so called Enterprise blue prints. These documents deals with how the enterprise works.
2) Enterprise – wide models aren't reference models but they can describe aspects that run across

enterprise units or organizational units.

3) Enterprise – level standards deals with technological standards (or at least that are the typical usage).However the standards are general principles that have to be applied.
4) Application – level standards. These standards are mostly for the standards for the individual applications.
5) Federated models. Handling individual projects and programs that handles different forms. The models needs.
6) Governance models is based on the idea that the organization needs models to govern portfolios of systems in a long term direction..
7) Support models is based on the idea that the to understand a particular selection of the enterprise.
8) Enterprise components, frameworks, patterns, or service. The most important focus of the enterprise architects are to deliver the frameworks, services, patters or services that are used on the top level of the organization to govern the organization.

The focus of the enterprise architecture is to work as a strategy to enable the organization to reach a particular goal.

> “EA is a mean to an end, not the end itself.” - Herzum (2003) p. 8.

How to measure Enterprise Architecture

Herzum defines five different levels for maturity. There are inception, classification, blueprinting, integration and optimization.

The inception level. There aren't any defined Enterprise Architecture teams in the organization and the focus on how to apply Enterprise Architecture is focused on technology. The application of Enterprise Architecture and the enterprise – wide focus has been build up on data integration. Budgeting is done through collection, and it is notable that the project and program management isn't focusing on promoting synergy. The IT-strategy is developed on an Ad Hoc basis.

The classification level at this level the Enterprise Architecture team is defined and the EA deliverables are collected through collection and categorization. The EA team has defined executive blueprints diagrams and the deliverables have been organized into EA frameworks. There is some sort of the simple portfolio modeling, data warehousing is an independent activity. It is notable that the Enterprise Program is of high risk due to lack of support for architectural and governance support.

The blueprinting level is characterized by that Enterprise Architecture is organized into a program. The portfolio model is organized according to the reference architecture and the modeling of data management and business modeling is build upon the Enterprise Architecture. According to Herzum the information bus beyond technology. Enterprise Architecture as a program and it is enterprise – wide. The enterprise architecture program is supporting the program by establishing a program management office and the office is used and consulted for strategic initiatives.

The integration level. The level is characterized by a level of IT-integration that is rather well structured. There is a degree of alignment of data, application, information and technology integration. It is a possibility that the enterprise is able to retire, purchase and outsource systems within the limits of the framework. Thereto is it notable that there is a rather advanced governance structure.

The optimization level is called “nirvana” by Herzum. The level is characterized by enterprise architecture integration on both the business side and the IT – side. Projects, business and IT are all aligned due to the purpose of Enterprise Architecture. The enterprise is agile due to the integration of Enterprise Architecture, Business and Technology.

No clearly defined EA team.
Focus on technology.
Enterprise Application Integration through technology.
Budgeting through collection.
No direct support for project synergies.
Ad hoc IT strategy.

EA team is defined and enterprise deliverables through collection and classification.
Executive diagrams and blueprints.
Simple frameworks have been applied to classify deliverables.
Simple portfolio modeling
Data warehousing as an independent activity.
Ineffective enterprise programs due to lack of proper architectural and governance support (which means high risk.

Reference architecture which includes detailed blue prints .
Portfolio models are organized according to reference architecture.
Data management and business modeling deliverables related to other enterprise activities.
Information bus goes beyond technology.
Enterprise Architecture has been organized as an enterprise – wide program.
Program management office has been established to handle strategic initiatives.
Basic governance processes.

IT-integration which means a high and well structured integration architecture.
The alignment of data, application, information, technology, integration has occurred
The ability to retire, purchase, outsource, systems within reference architecture.
Advanced governance processes.

This is defined as the so called “nirvana” level for Enterprise Architecture.
Enterprise integration (both within the business sphere and the IT sphere).
Business, IT, individual projects that are aligned.
Processes and architecture continuously optimized.
Agile Integrated Enterprise.

Modern EA approaches

The modern EA approach has to embrace the various levels of differences and similarities of

governing IT and principal IT concern. Likewise should the EA approach be able to place the enterprise deliverables. Herzum argues that the framework should be able to handle the growing complexities the organization will experience while changing and in the growth period.

The approach has to deal with architecture and the approach to governance of the enterprise and IT. Herzum is of the opinion that the Enterprise Architecture program has to take the various forms of architecture disciplines into consideration. It has to integrate the various forms of architecture.

Appendix

This section do act as the EndNote of this document.

Herzum, P., 2003. Applying Enterprise Architecture. *Cutter Consortium Executive Report*, 6(3), 36.

Coherency Management

About this Document:

- This document deals with Coherency Management and the four stages of which the Enterprise Architecture can lead to.
- The document will briefly discuss the first chapter in Coherency Management: Architecting the firm for agility, assurance and alignment.

The Enterprise Architecture Levels

Doucet et al. argues that every organization has an Enterprise Architecture otherwise the enterprise (organization) wouldn't be able to produce products or services. However the question becomes if the organization is able to take responsibility of its Enterprise Architecture.

The four different forms of architectures are dealt with below.

The Non-Applied Enterprise Architecture

The first kind of Enterprise Architecture and is known as the most known form of architecture is the “non – applied architecture”. It deals with that the organization hasn't implemented Enterprise Architecture as a management program.

The Foundation Architecture

The foundation architecture deals with that the IT-organization has been able to document the Enterprise Architecture from the “IT point of view” and often the Enterprise Architecture is used as a kind of documentation form that is used to align the IT projects with the business side of the organization.

Ross and Weill's book on Enterprise Architecture as a Strategy is based on this level and the book is in general way to technology focused.

This level is the most known level of architecture after the “non-applied architecture”.

The Extended Architecture

This form of Enterprise Architecture is based on that the Enterprise Architecture as a concept has been adopted by the business side of the Enterprise Architecture. This means that there are business architects who use their skills to document the business processes as well as there are a central expert team who works with enabling policies and enabling the Enterprise Architecture framework as the Chief Architect and the executive group has defined.

The Embedded Architecture

This architecture level is yet to be proven and can be related to Herzum's nirvana level. At this Enterprise Architecture level there is a central team of enterprise architects who work with assisting the lesser experienced architects. The lesser experienced architects can be implicit or explicit. E.g., if a person works with defining the business processes then he or she might not need posses the title of architect and nor will there be a need for the implicit architects to change titles.

Likewise would most of the employees in some way or the other assist in developing the Enterprise Architecture through developing artifacts, policies and components. The Enterprise Architecture has been diffused so all parts of the organization's enterprise architecture has been covered and all of the departments are working together on achieving the three main goals of Coherency Management.

The Purpose of Coherency Management

Doucet et al. works with the goals of alignment, assurance and agility. These three factors are according to Doucet et al. these three virtues are of great importance for any organization that will compete on any of the industries that are available today.

Alignment

Alignment has to be understood as the ability to align the various components of the Enterprise Architecture to gain synergy[1].

Assurance

Deals with that the various departments, managers and employees works according to principles and policies the management supported Enterprise Architecture group has been able to produce and implement.

Agility

Deals with the ability to adjust to the changes in the organizational domino. E.g., adapting to new competitors, new products and economic fluctuations.

Appendix

Books

Doucet, G. et al., 2009. *Coherency Management: Architecting the Enterprise for Alignment, Agility and Assurance*, International Enterprise Architecture Institute.

1 Synergy has to be understood as the various components in the enterprise that aligned will be able to make the enterprise more efficient so it can achieve more.

Zachman on the Framework

About this Document:

- This document deals with the article “Zachman on the Framework” by John Zachman.
- The framework was the original thoughts on Enterprise Architecture and is a foundation for the understanding of Enterprise Architecture.

The Framework and its purpose

The purpose of the framework is to create a methodological framework that can enable the architects do investigate organizations.

Zachman is interested in enterprises and therefore is the framework build upon the titles that are normally used in enterprises.

The framework is neutral when it comes to the organization structure.

Artifacts

The artifacts are organized along a layers of the Zachman Framework and these artifacts have different meanings and purposes through the analysis of the organization.

The first row (or level) artifacts are to identify the boundaries of the enterprise. What does the architect include and what is considered relevant or necessary?

The second row (or level) artifacts are to define what the owners of the enterprise has in mind.

The third row (or level) artifacts are to define how the enterprise concepts will be realized in a systematic fashion. It is supposed to be done independently of the technologies.

The fourth row (or level) artifacts are to define the enterprise implementation that has to be on the general technology constraints that are employed.

The fifth row (or level) artifacts are to define the implementations to specific technology products that are being used for the implementation.

The Enterprise System

“The enterprise system is defined as being a system that is specified by the complete set of models. These sets are classified and then organized in the Framework” - Zachman (Zachman 2009, p 3).

The enterprise architecture that is the collection of systems and subsystems can be both the “AS IS” which is the current state of the organization or the future state of the enterprise the so called “TO BE”.

The systems are then categorized into what is known as the “Enterprise Architecture”.

Assumptions of the Framework

There are two kinds of assumptions regarding the framework. This document will deal with the wrong kind of assumptions and how they can be utilized in relation to the framework.

Wrong Kind of Assumptions

The assumption that the lower level of detail of in the organization is different from the level above it is wrong. The information richness is different but not the category. The rows are different and that is the true difference between the various cells.

This leads to the definition of the Zachman rows that will be discussed as the next section.

The Framework Rows

There are six rows in the Zachman framework and these have different purposes. The various rows are as defined below:

9) The rows of the framework is as earlier mentioned the parameter that changes.
10) The first row deals with the universe of discourse in relativity to the analytical target.
11) The second row deals with the usage constraints of the end result as expressed by “Owners” of the end system.
12) The third row deals with the constraints of the laws of the nature as addressed by the architect.
13) The fourth row deals with the constraints of the builder in terms of the construction process.
14) The fifth row deals with the express the sub-contractors tools specific constraints.

The Framework and its Origin

John Zachman was inspired by the blueprints of an Aircraft which lead him to setup the framework. The framework is based on a semantic structure and is therefore not process orientated.

The Zachman Framework isn't compatible with either UML or CMMI since both methods are focusing in processes.

There are some issues with using those before mentioned methods in one perspective.

Literature List

This section do act as the EndNote of this document.

Articles

Zachman on the Framework, 2009, ZIFA.com.

A Framework for Information Systems Architecture

About this Document:

- This document deals with the article “A Framework for Information Systems Architecture” by John Zachman.
- The system is from 1987 which means the system is the foundation for Enterprise Architecture.

Implementation of Information Systems

The development of information systems have become more complex. The development of the systems and the cost of development has to lead to that the systems can minimize the barriers (constraints of the organization system).

The complexity of the systems leads to issues that the system only adds value to the organization when it is implemented.

The barriers that have been diminished by the information systems have lead to that many organizations have become more flat in their structure. The flatness of the structure leads to decentralization.

The decentralized organization will end in anarchy if the system is not build upon an architecture.

Zachman deduces that the information systems architecture is related to strategy both the corporate strategy and the IT strategy.

Since it becomes of strategic importance then the enterprise has to invest more attention to the concept of the Information Systems Architecture.

The meaning of an Information Systems architecture is losing its meaning without the creation of a framework (this was later known as the Enterprise Architecture framework or Zachman's Framework).

The framework and the paper is not supposed to present a new strategy planning framework though as before mentioned the foundation for IS architecture is closely related to the concepts like IT strategy and business strategy.

The Focus on Architecture

The framework was in its origin based on ideas that origin from the architecture paradigm. This means that Zachman is of the idea that enterprises (organizations and companies / corporations) can learn from the thousands of years of experience.

The Bubble Charts and the Process Along

The first step for an architect is to draw a bubble chart. The bubble chart shows the relationships among the various components. Thereto the bubble char indicates the shapes and the size of the building.

The purpose of the bubble chart is to deal with the communication between the architect (later the

Enterprise Architect) and the customers. Then the bubble chart is refined to something a bit more “serious”. This is called the “the architect's plan” of which the contractors and the sub-contracters will draw their plans.

It is notable that the plan might change several times since the estimated costs will lead to changes in the design since the cost is a constraint.

This means that the chart has to include more information in a more precise sketchup. Which leads us further into the analogy. The contractor then redraws the architects plan so it fits with the perspective of the persons who are building the systems.

Zachman summarizes the various design plan purposes in a table similar to this. It is worth mentioning that the “Nature or Purpose”:

Bubble charts	Basic concept of building	Basic outline of architecture.
Architect's drawings.	Final building to be seen by the owner.	“AS IS” or “TO BE” outlined for the decision makers.
Architect's plans.	Final building to be seen by the designer.	Transformation plan or a more detailed view on “AS IS” and “TO BE”.
Contractor's plans.	Final building to be seen by the contractor.	This is the IT infrastructure and the various other infrastructures.
Shop plans.	Sub – contractors designs or sub segments.	Various artifacts within the various plans and charts.
Building.	The physical building.	The transformed Enterprise (“TO BE”).

Table 2: Charts, designs and other systems.

The table 1 is based on my view of page 277 to 282.

The Current EA View (AS IS)

About this Document:

- This document deals with Scott A. Bernard's book “An Introduction to Enterprise Architecture” chapter 7 titled “Developing Current Architecture Views”.
- The document deals with handling the developing the “AS IS” situation of the Enterprise Architecture.

When Documenting the ”AS IS” situation

The current Enterprise Architecture has to be documented through the usage of EA artifacts. For each level that is represented in the EA 3 Cube framework there are several artifacts.

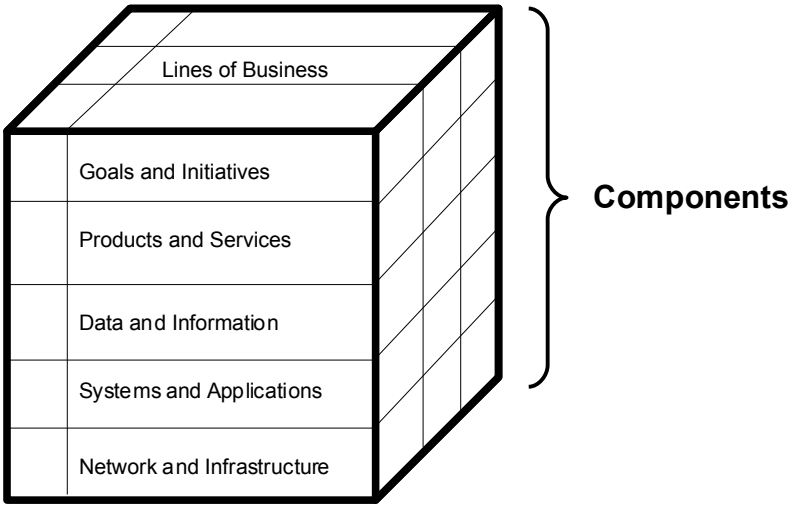


Illustration 5: The EA 3 Cube Framework.

The five levels are goals and initiatives, products and services, data and information, systems and applications and network and infrastructure.

These levels have different artifacts associated with them and those should the Enterprise Architect be aware of. Below you will find notes on what artifacts should be identified for each level.

According to Bernard (Bernard 2005, p. 135) then the purpose of applying the techniques of the current view of the Enterprise Architecture has been to uncover the allocation and usage of IT resources in the organization.

Artifacts for level 1 'Goals and Initiatives'

The first layers deals with the strategic management of the organization. In the ideal world the rest of the layers (levels) would be aligned to these goals; however in most real life cases that isn't the case.

This is dealing with the strategic plan for the organization. The Strategic plan should give a clear view of where the organization should go within the next five to ten years.
The strategic plan needs to be consolidated through the others layers and as mentioned above then the organization is not in alignment. Another form of plan that might be present in the organization might be the “e-Governance plan”.

The artifacts for this layer are:

1) Strategic Plan
2) SWOT - analysis
3) Concept of operations scenario
4) Concept of operations diagram
5) Balanced Scorecard

Artifacts for level 2 'Products and Information'

Deals with the various forms and information that the organization produces. It is dealing with how the different services or products are produced and broad to the clients.

The artifacts for this layer are:

6) Business plan
7) Node connectivity diagram
8) Swim lane process diagram
9) Business process or service diagram
10) Business process or product matrix
11) Use case diagram or narrative
12) Investment business plan

This gives the architect an overview of how the organizational work systems are designed.

Artifacts for level 3 'Data and Information'

Deals with how the sharing of knowledge data is enabled by the usage of technology. In most organizations there are several legacy systems that in one way or the other accumulates data that are vital for the organization.

The artifacts for this layer are:

13) Knowledge management plan
14) Information exchange matrix
15) Object state transition diagram
16) Object sequence diagram
17) Logical data model

18) Physical data model

19) Activity & Entity diagram

20) Data dictionary / object library

Artifacts for level 4 'Systems and Applications'

Depending on what theoretical approach the Enterprise Architect makes use of then it is notable that most theoreticians claims that the usage of Information Systems are pivotal in gaining competitive advantage.

The artifacts for this layer are:

21) System interface diagram

22) System communication diagram

23) System interface diagram

24) System data flow diagram

25) System operations diagram

26) Systems data exchange matrix

27) System performance matrix

28) System evolution diagram

29) Web application diagram

It is notable that this layer is representing the Information Systems that the organization makes use of.

Artifacts for level 5 'Network and Infrastructure'

This layer primarily deal with the information systems (and technology) infrastructure which can be determined through how many artifacts Bernard mentions in the chapter.

The artifacts for this layer are:

30) Network connectivity diagram

31) Network inventory

32) Capital equipment inventory

33) Building blueprints

34) Network center diagram

35) Cable plant diagram

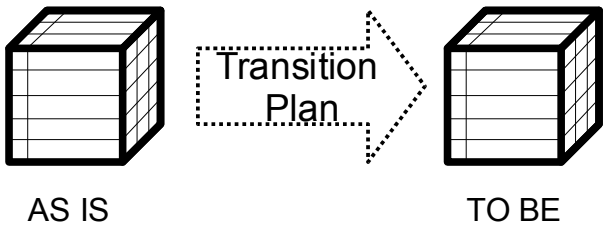
36) Rack elevation diagram

The layer is the foundation for how the enterprise is able to operate.

The Role of the Current View (AS IS)

The purposes of developing the “AS IS” view of the Enterprise Architecture can be many. The organization's executive group wants to uncover the resources allocated to core business processes, investigating the one or more organizations that are about to merge.

If the Enterprise Architecture program evolves within the organization then it should be used to mature the organization's Enterprise Architecture.



Appendix

Bernard, S.A., 2005. An Introduction To Enterprise Architecture: Second Edition 2nd ed., AuthorHouse.

The Future EA View (TO BE)

About this Document:

37) This document is based on chapter 8 in Scott A. Bernard's book “An Introduction to Enterprise Architecture”.

38) The document deals with how the future view (the so called TO BE state) can be articulated.

When Developing the Desired Outcome

The Chief Enterprise Architect has to consider if the Enterprise Architecture program should evolve from being a form of documentation to become a form of management program. If so then the Chief Enterprise Architect has to establish a desirable outcome for the Enterprise Architecture. This means that the Chief Enterprise Architect has to understand the corporate strategy, financial strategy and not to forget the IT strategy of the organization.

To do so the Chief Enterprise Architect has to understand where the executive team wants to go with the organization. Therefore should the Chief Enterprise Architect investigate the strategic implications firstly.

Thereto has the Chief Enterprise Architect the obligation to assist the enterprise architect with identifying how the business processes and information systems can be dealt with so they work in a better way so they enable the strategic theme.

This can be done through developing concepts of operations maps that identify how the organization operates.

When Bernard works deals with the EA 3 Cube framework of which there are five layers.

The first layer has been dealt with since it deals with the vision, overall strategy and goals of the organization. The second layer is the business layer of which the various business processes are to be found. When articulating how this layer should be dealt with then it is a possibility to work with the concept of operations model. In this the business models.

The third layer is build upon the production layer where the services or products that the organization produces.

The fourth layer deals with information systems such as the Enterprise Resource Planning software or applications that aide the employees in their work.

The fifth layer deals with the technical part of the organization's Enterprise Architecture. That would say the computers, servers, network infrastructure and buildings.

The Development of the To Be State

When the Chief Enterprise Architect plans the change for the Enterprise Architecture then he should focus on what Bernard (Bernard 2005, p. 160) on CONOPS (Concept of Operations Scenarios). A CONOPS is defined as a plan on how to handle the various opponents in the organizational domain and how to match their ”actions”.

The purpose of the doing the **CONOPS** is to identity ways the organization's Enterprise Architecture needs to be optimized.

The scenarios will aide the Chief Enterprise Architecture and the executive group with establishing views on how the strategic planning should include assumptions, resources and risks to the various projects (and programs) should be dealt with.

In general when it comes to dealing with the particular layers of the EA 3 Cube model then it deals with updating the various artifacts.

When it comes to the repository then Bernard suggest that the repository needs to be locked for six to 12 months at a time due to stakeholders within the organization can relate the to change and the change and understanding of the repository can be institutionalized.

Appendix

Bernard, S.A., 2005. An Introduction To Enterprise Architecture: Second Edition 2nd ed., AuthorHouse.

EA Management Plan

About this Document:

39) This document deals with the Bernard's introduction to the Enterprise Architecture management plan. The management plan is the so called transition plan.

40) The EA management plan has four sections (generic) that needs to be addressed when developed.

The Concept of the EA Management Plan

The concept of the EA management plan is to act as the transition plan that shortly and precisely gives the members of the executive group the necessary overview of what gains the Enterprise Architecture program can add to the organization. In the same time the Enterprise Architecture program should give the executive group an idea of what resources that should be allocated to the particular program. In the same time when the allocation has been detailed then risk of the allocation should occur as well.

The First Section

The section is titled “Enterprise Architecture Program”. This section should handle how the Enterprise Architecture program should be dealt with e.g., governance and principles, support for the strategy and business, EA roles and responsibilities, EA program budget, EA program performance measures.

All in all the focus of the Enterprise Architecture Management plan needs to be designed for the particular stakeholders who have to be influenced to support it. The various stakeholders have different needs for the particular information they need.

The Second Section

The section is titled “Current Enterprise Architecture Summary”. In practical terms this section needs to handle the “AS IS” situation for the Enterprise Architecture. E.g., Strategic goals and initiatives, business services and information flows, systems and applications, technology infrastructure, IT security, Enterprise Architecture standards and workforce requirements.

The Third Section

The section is titled “The Future Enterprise Architecture Summary” deals with how the enterprise architecture should move from the current solution (AS IS) to the future solution (TO BE). Therefore there should be a special focus on the project management part.

This section should deal with the future operating scenario, planning assumptions, updating current and future view, sequencing plan and configuration management.

The Fourth Section

The section is titled “Enterprise Architecture Glossary and Reference” deals with that the stakeholders (readers) of the plan don't understand Enterprise Architecture terminology pr. Definition. It is a necessity to handle this section with great care since if the intended readers don't

understand what the plan says.

The sequencing plan is dealing with implementing Enterprise Architecture components and artifacts. This means that the Chief Enterprise Architect outlines the time frame for the implementation.

Bernard states that this is necessity due to that many small and medium sized enterprises have some sort of development, retirement and replacement of information systems and what to be assumed as work systems (Bernard 2005, p. 188).

The sequencing plan can be supported by a so called sequencing diagram that basically deals with how a time line is integrated and then the various information systems or work processes are dealt with to reach a particular goal. Bernard uses quarters to identify and measure progress.

Beyond the Business Case: New Approaches to IT Investment

About this Document:

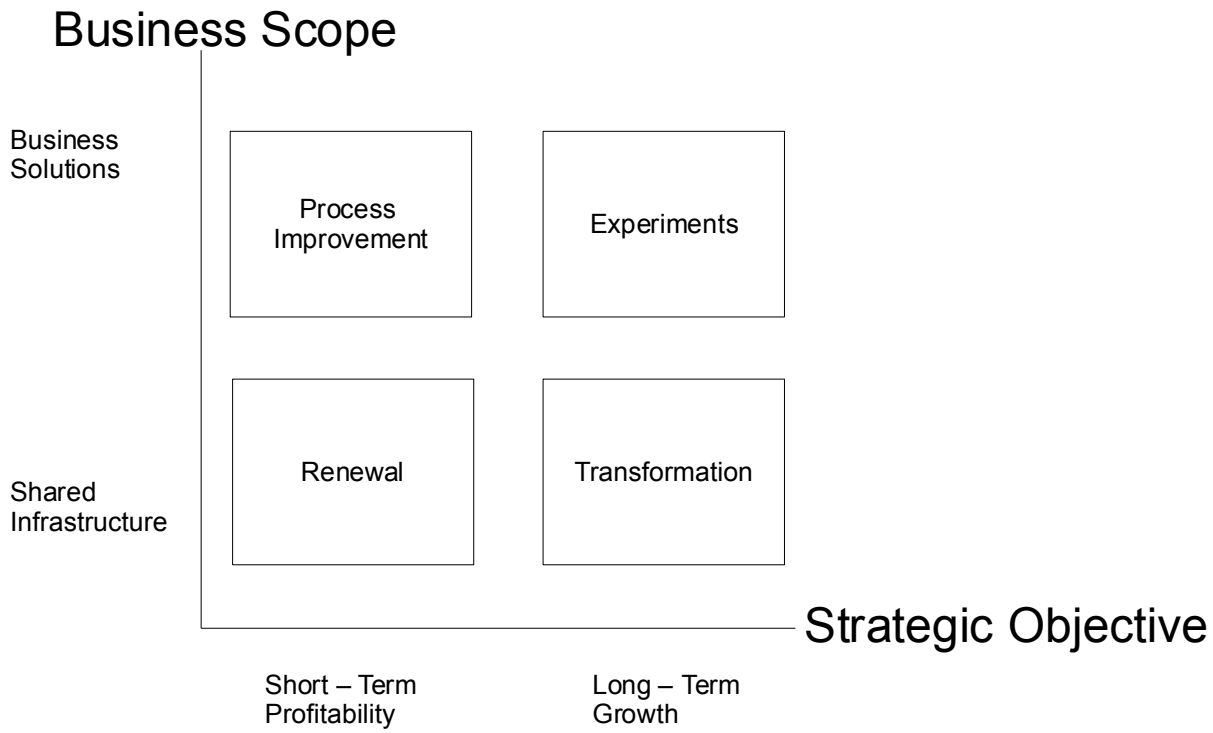
41) This document deals with the article by Ross & Beath.

42) The document is targeting the business architecture in Bernard's Enterprise Architecture 3 Cube framework.

The Four Forms of Investments

Due to the policies of handling investments in organizations then many enterprises demands the usage of business cases. It gives the stakeholders an overview of how the investment will impact the enterprise and the way it does business.

Ross & Beath argus that there are four different forms of investing in an IT architecture. The four forms of investment has been aligned with the axis of the strategic objective and the technological scope. Ross & Beath argues that the horizontal axis is dealing with the benefits in relation top the time horizon. The vertical axis is build upon the assumption that the top of the axis is a business oriented solution and the bottom of the axis is a technically focused shared infrastructure.



In the other hand the business cases aren't effective when the executives doesn't take the holistic approach into consideration. Therefore should the executive group develop investment programs that supports the various projects that enables the change within the enterprise.

As before mentioned then Ross & Beath organizes the investment forms into four major categories. The first form is known as the transformation, the second form is known for experiments, the third form is known as renewal and the fourth form is known as process improvement.

The transformation category deals with that enterprises that migrates to the so called e-business environment. Typically has the enterprise discovered that the external pressure or pressure within the domain of the enterprise demands that information technology or technological advancement to

build new processes, product and services to the customers internally and externally of the enterprise.

Ross & Beath deals argues that the transformation approach is needed for enterprises that are in a situation, that their IT-infrastructure is limiting the enterprise's ability to develop its self. Typically will enterprises that have an outdated architecture invest heavily in the transformation process otherwise will it lack behind its competitors.

The driver of the investment type labeled “Transformation” is a core infrastructure that is inadequate for the desired business model. Typically is the funding approach on executive level and the allocation is on the same organizational level.

The investment form titled “renewal” is build upon the assumption that enterprises tries to avoid that their IT infrastructure should become a liability for the competitive situation and as a result of that the enterprise focuses on investing and maintaining their IT infrastructure.

Typically will the enterprise focus on applying standardized technology e.g., they will focus on minimizing the amount of operating systems, applications etc. so one standard or few standards prevail.

The third form of investment is labeled “Process Improvement”. Ross & Beath argues that process improvement is a short term focus since the processes will give the enterprise will experience that the business processes will provide a bit more efficiency.

This can be related to Porter's paper “What Is Strategy” from 1996 where Porter argues that operational effectiveness isn't strategy.

The process improvement investment should be based on the idea that the investment should be of little risk.

The last investment perspective is labeled “Experiments” is both a long – term focus and it is also based on the business solution axis as one of the more attractive alternatives. The reason for this is that the enterprise will need to experiment to identify the best way to make the IT - infrastructure (or technical architecture) a better form of enabler for creating sustainable competitive advantages.

Conclusion

All in all the enterprises should focus on creating programs of which they can identify and spread their investments into various kinds of IT-related projects that will be able to both assist the enterprise in reaching its strategic objectives and in the same time develop their Enterprise

Architecture or what is more likely to be Technology Architecture.

The dilemma of organizing the investments is that the business leaders (executives) needs to realize both short term and long term benefits. In the same time does quite a few executives work with the idea that efficiency and secure investments are those investments that are most beneficial for the enterprise as a whole.

Appendix

Ross, J., 2002. Beyond *the Business Case: New Approaches to IT Investments*, MIT Sloan School of Management.

EA IT's Not Just for IT Any More

About this Document:

43) This document deals with the article of Tiemann and Mayo.

44) The paper by Tiemann and Mayo deals with Enterprise Architecture and how it has handle the repository to enable agile enterprises.

45) The paper has a rather technical approach on handling SOA and of Enterprise Architecture.

The Focus of Enterprise Architecture

According to the two authors Tiemann and Mayo then Enterprise Architecture has been mainly an IT phenomena which in some places in the world has been enforced by law upon public institutions such as in the United States of America.

Enterprise Architecture should according to the authors be made use of as a way to integrate the management processes.

> "For many enterprises, the EA represents the only repository of cross-cutting information on the business as a whole (e.g., business functions, processes, data objects, and information exchanges). For this reason, the EA should be used as a tool to virtually integrate management processes."

– Tiemann & Mayo (2005)

Likewise do the two authors discuss why the Enterprise Architecture program should be taken away from the IT – organization and handed over to other actors in the executive group. The reason for this is the enterprise architecture program has a greater impact on the entire organization and for that the program and its members needs to be placed in the organizational hierarchy so they are able to delegate the work.

> "In addition, we contend its potential to deliver results to the enterprise can be significantly enhanced by taking the EA function out of the IT shop or the domain of the Chief Information Officer (CIO) or Chief Technology Officer (CTO). In other words, since EA's potential for impact extends well beyond the IT management arena, why not locate it functionally in the organization with that in mind?"

– Tiemann & Mayo (2005)

The American approach to government Enterprise Architecture is build around the focus and need that a chief enterprise architect has to be appointed; however there are many issues with that the Enterprise Architecture program is identified as too IT-related by the other part of the enterprise. In

the same point of view to many architects adapt themselves to this point of view where they focus on engineering analogies to explain their point of view.

> "In addition, we contend its potential to deliver results to the enterprise can be significantly enhanced by taking the EA function out of the IT shop or the domain of the Chief Information Officer (CIO) or Chief Technology Officer (CTO). In other words, since EA's potential for impact extends well beyond the IT management arena, why not locate it functionally in the organization with that in mind?"

– Tiemann & Mayo (2005)

In the same time both Tiemann and Mayo argues that the current focus of the U.S. Enterprise Architecture programs often leads too a specific focus on IT standards, too focused on the "AS IS" situation and yet to focused on the IT-environment.

What EA Should Be

According to the two authors then Enterprise Architecture should be a focus on how to align the corporate, vision, mission and IT strategy. In this approach Enterprise Architecture should enable that the focus of the strategy should be holistic.

The two authors then emphasize that the holistic approach leads to a need for sequencing plan for investments so the enterprise doesn't go out and invests in technology that doesn't fit with the new approach.

> "While the EA does have major implications for program-specific IT solutions, its scope is much broader and should influence mission rationalization and strategy development. Investment decisions for new technology should be delayed until processes have been redesigned to take advantage of innovative approaches enabled by those new technologies."

– Tiemann & Mayo (2005)

The authors emphazise that as a holistic management approach then Enterprise Architecture consists of components that makes the suitable for this particular form of management approach. The

authors mention four components. The first one deals with content of which representation the enterprise and then secondly the form of the structure and relationships among the various models that are used for the representation should create a so called meta model. Thirdly the authors argues that the analytical techniques should be used to create an understanding and documenting the enterprise and fourthly the infrastructure should focus on developing the artifacts and exposing the artifacts to the stakeholders in the organization.

> "EA consists of four elements: (1) *content* – the representation, in a set of models, of the key aspects of the enterprise; (2) *form* – the structure and relationships among the models (the EA "meta-model"); (3) *methods* – the set of analytical techniques for understanding, reconciling, and documenting the enterprise; and (4) *infrastructure* – the tools and repository for developing the EA and housing the artifacts, as well as exposing them to interested parties."
>
> – Tiemann & Mayo (2005)

Mayo and Tiemann concludes that to enable the modern and agile corporation then decentralized teams have to deal with issues like innovation and adaption of new approaches. To enable this then the holistic approach enabled by the Enterprise Architecture repository needs to be implemented. This also means that the repository is a corner stone in the Enterprise Architecture program.

> "An effective EA is one of two essential elements for adaptive enterprise design and implementation. There are simply too many management facts and relationships for individuals to keep in their heads or maintain manually, or even in disparate databases. In addition, depending on personnel (who may or may not be there tomorrow) for management continuity is risky. Therefore, the knowledge database of this information (EA repository) is critical in designing and evolving an adaptive enterprise, especially in the federal government. It is, in effect, the DNA of the enterprise. […] Furthermore, today's agile

> business rests on empowered, decentralized teams, to accomplish the mission of the Enterprise. To ensure that their effort isn't cross – purposes, these teams must be guided by and have easy access to a central unified model of operations across the entire enterprise."
>
> – Tiemann & Mayo (2005)

It is however a necessity to mention that the approach that Mayo & Tiemann usages a rather technical approach to Enterprise Architecture where they invest their trust to Service Orientated Architecture and how the IT architecture concept can be aided by Enterprise Architecture. The focus of the paper is basically on informations systems and not on work systems (a combination of people and technology).

Appendix

Articles

Mayo & Tiemann 2005, EA: IT's Not Just for IT Anymore, Journal of Information Systems.

What Is Strategy

About this Document:

46) This document deals with the paper “What is Strategy” by Michael E. Porter.

47) The focus of for the article would be on the upper two layers of Bernard's Enterprise Architecture 3 Cube framework.

The Focus of Strategy

Michael E. Porter is known for writing some of the most influential books of the 20th century dealing with corporate strategy. Therefore this article is of importance and it can be used for the two upper layers of the EA 3 Cube designed by Scott A. Bernard.

Porter's ideas are based on corporate strategy.

Operational Effectiveness is Not Strategy

States that positioning and differentiation have become obsolete since the changes in the domino of the organizations are too rapid. This means that the organization can't position itself since the competitors will be able to cope or for that matter copy what the organization does best. However it is wrongly to assume that operational effectiveness. Porter claims that the hyper-competition is a self inflicted wound and as such this is caused by the paradigm of operational effectiveness.

> "A company can outperform rivals only if it can establish a difference that it can preserve. It must deliver greater value to customers or create comparable value at a lower cost, or do both."

– Porter (1996).

Porter that argues that a sustainable competitive advantage is generated through a series of activities that a company does better than its competitors and not just from one or two particular activities that are done well.

Michael E. Porter defines operational effectiveness a when an organization (enterprise) in one way or the other perform activities better than its competitors.

> "Operational Effectiveness means performing activities better than rivals perform them"

– Porter (1996).

Porter clarifies that operational effectiveness doesn't focus solely on efficiency and as such it deals with any number of ways an enterprise can optimize the usage of inputs it gets to produce products.

Porter emphasizes that in many situations the efficiency approach can be rather easily coped with e.g., the rivals will be able to apply the same kind of technology, the same managerial concepts or employ employees with the same background and skills.

Therefore it is a necessity to use the operational effectiveness to gain a better strategic position for the enterprise. This should be done through developing new products and services that can gain access to new markets.

This leads us to the next section.

Strategy Rests on Unique Activities

Porter then makes use of Southwest Airlines as a case study of how to differentiate. This is defined in the quotation below.

> "Competitive strategy[2] is about being different. It means deliberately choosing different set of activities to deliver a unique mix of value "

– Porter (1996).

Porter clarifies that Southwestern Airlines differentiates through delivering passengers through a standardized portfolio of Boing 747s aircrafts and the organization delivers flights through letting them fly longer hours, demanding that passengers are boarded within 15 minutes. In general Southwestern Airlines is a low cost provider of air flights. This is a clear strategic position.

Likewise does Porter emphasize that IKEA has made use of a similar approach. Needless to say that IKEA has been focusing on a rather different industry.

The Origin of Strategic Positions

There are different forms of strategic positioning. These positions impact the strategies the enterprises. According to Porter then there are three sources to positioning; however the three sources don't exclude one another. The first source of positioning can be achieved through producing subsets of services and products. The second source of positioning comes from serving most needs for a particular group of customers. This particular source is based on identifying a specific segment and then use a classical approach to gain their trust. Porter defines it as the old

2 Michael E. Porter has written the book "Competitive Strategy" in 1980 and this is one of the particular reasons why this particular terminology has been applied in the article.

approach. The third source for positioning is the access based positioning. It differs by that the particular segment of customers that have several different needs that be served through the configuration of products or services. The particular positioning way can be based on customer geography and or customer scale.

> “Positioning is not only about carving out a niche. A position emerging from any of the sources can be broad or narrow.”

– Porter (1996).

When the position has been dealt with then strategy can be dealt with.

> “Having defined positioning, we can now begin to answer the question, 'what is strategy?' ”

– Porter (1996).

A Suitable Strategic Position Requires Trade-offs

Porter notes that choosing a position that might be lucrative isn't enough to sustain a competitive advantage e.g., will new competitors move into the territory (market space) when they see the success and therefore starts to copy the abilities of the enterprise to match the needs.

Therefore it can only be seen as a component of synergy before the entire organization

Fit Drives Both Competitive Advantage and Sustainability

Porter argues when an enterprise has chosen its positioning then it has chosen what activities the company will perform, how the activities are configured but also how the various activities interact.

> “While operational effectiveness is about achieving excellence in individual activities, or functions, strategy is about combining activities”

– Porter (1996).

To cope with imitators then the enterprise have to build a supply chain that is as strong as the strongest link within the supply chain. This is done by linking the components of the enterprise so they commit to synergy. The synergy perspective and its demand for a holistic approach and that

leads to the demand for synergy.

There are three forms of fit-order. The first form of fit-order is known as the simple-consistency between the activities. Porter argues the second order of fit-order occurs when activities are reinforcing one another. This can be summed up by the quotation below.

> "The competitive value of individual activities cannot be separated from the whole."

– Porter (1996).

The third fit-order deals with what Porter defines as optimization effort. The optimization effort deals with focusing on identifying the right amount of effort and information that is needed to keep the activities executed.

Porter argues that the more activities that are based upon the second and third fit-order will assist the enterprise with sustain a competitive advantage.

Rediscovering Strategy

The leadership in many enterprises has degenerated into a degree of which there are two dominating sides. Managers believes that they have to support all the needs of a particular customer segment or they only think on operational efficiency.

Porter argues that operational efficiency hasn't anything to do with strategy and as such the leadership of the enterprise has to challenge its own orthodoxies and start to work with what its customers want the enterprise to deliver and use the information to develop products and service that the customers want.

Conclusion

Operational Effectiveness isn't all about efficiency and not the same as strategy; however more and more managers and enterprises acts as that was the case. As a result the managers needs to challenge their industry related orthodoxies.

The managers need to understand that strategy has to be supported through the activities that the enterprise delivers and not a single process or a small amount of processes are responsible for the success of an enterprise and the activities in the enterprise needs to be grouped and organized so they re-enforce and optimize one another. Therefore managers should focus on establishing the second and third fit-order.

In relation to Enterprise Architecture the various forms of activities (activity maps) needs to be investigated when the business layers of the enterprise such as the business processes and the technology that enables the processes e.g., in the solution layer has been investigated.

Appendix

Porter, M.E, 1996, What Is Strategy, Harvard Business Review.

The IT strategy: An Articulation of IT strategy from a Coherency Architect's Point of View.

About this Document:

48) This document deals with the articulation of IT-strategies in concept that was presented by the guest lecturer Chris Potts who is a world famous CIO and who has written “Fruition”.

49) Chris Potts put a lot of attention to the focus on Enterprise Architecture in gaining competitive advantage. Likewise did he emphasize that the focus has to be on people and not on purely on systems.

Articulation of the IT Strategy

The Coherency Architect needs to be able to deal with the IT strategy otherwise he or she will not be able to drive any value from the Enterprise Architecture. There are many approaches to how an IT strategy can be articulated and what the primary focus should be.

This blog post will deal with the approach Chris Potts have proposed in his book titled “FruITion”. Chris Potts have proposed a bit controversial approach to IT strategy e.g., he focuses on other models and claim that when the organization manages its investments then the right portfolio of technology will be selected, likewise does he propose that the role of the CIO isn't an imperative. In the novel Chris Potts suggest the title “CIIO” for Chief Internal Investment Officer.

The Coherency Architect can make use of the approach to challenge his or her own view on the strategy and thereby be able to produce better strategy.

It is notable that the book is organized around a novel that deals with a CIO that faces a situation where he can't pin point what kind of value the IT department brings value to the organization. Potts then write emphasize some observations that can be made on each of the chapters in the book.

The Strategy Articulation Process

This section is based on the definitions that Potts describes in his work “FruITion” (Potts 2008, p. 13):

- Most robust strategies emphasize high value on its environmental feedback.
- Make sure the strategy is meaningful to the stakeholders of the strategy.
- Distinguish between the strategic level and the operational level thinking.
- Disinterest should never be understood as trust.

The following four statements are based on Potts's “fruITion” (Potts 2008, p. 25):

- A document that contains the strategy is not the strategy.
- The language used to articulate a strategy shows the mindset of which the person who articulated made use of (or has).
- If the host organization (enterprise) has an IT strategy then it is necessary to include all of the Information Technology the organization (enterprise) makes use of.
- It is an imperative that the IT strategy has to summarized in one meaningful sentence; otherwise the strategy needs to be reworked.

- If the organization (enterprise) has an IT roadmap then it is imperative that the driver of the roadmap isn't the suppliers but the tactical goals and strategies of the organization.
- If the CIO runs the IT department as an external business (weak links to the enterprise) then the enterprise will threat the IT department as such.

The following four statements are based on Potts's "fruITion" (Potts 2008, p. 54):

11) Shape the strategy by exploring why the company isn't already fulfilling its promise.
12) The CIO should validate who the promise is "talking about".
13) Build the strategy on a model that emphasize the customer and supplier perspective and never the "Business and IT" perspective. The over all reason for this is that the organization and IT department is one and the same.

The following four statements are based on Potts's "fruITion" (Potts 2008, p. 204):

14) If the organization manages its investments well then it is likely that the most appropriate technology will be selected.
15) The organization should assign an executive accountability for maximizing the total value the company creates by its internal investments in change.

This leads to the Alignment phase.

The Alignment Phase

This section is based on the definitions that Potts deals with in his work "FruITion" (Potts 2008, p.34):

1) Never under estimate the pace (of change) of the Corporate Strategy.
2) The strategy has to be compatible that stakeholders change their minds.
3) Build the IT strategy on a promise and not on aims.
4) If the IT strategy is organized around solving a particular problem, then it is a necessity that the IT strategy solves the problem.
5) Are the persons who develops and articulates the strategy (strategists) game players?

This section is based on the definitions that Potts deals with in his work "FruITion" (Potts 2008, p. 44):

6) If the business side of the organization perceives the IT department as an external supplier

then it is likely that the IT department and the CIO can't influence the corporate strategy.

7) Different kinds of strategies needs different kinds of strategists.
8) The CIO should know his relative strengths and weaknesses when it comes to analysis and synthesis. In a strategy it is the synthesis part that is the most important thing to handle.
9) If the IT department or organization (enterprise) have issues with identifying what value the IT brings to the organization then it is likely that the organization (enterprise) experience wider business related problems.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p. 61):

10) A corporate strategy that is focused on exploiting IT is focused on value, money and organization. The corporate strategy is not focusing on technology.
11) The directors of a company is an independent community that adds value to the company.
12) Value is defined as a portfolio of measures and types.
13) The “business side” of an organization will in many cases assume the money the enterprise is spending on IT is a random number.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.124):

14) Each stakeholder in a strategy has something distinctive to offer.
15) Language and communications are critical to a strategies success.
16) The concept of theoretical, practical and abstraction depends on the audience. The strategy should be articulated and aligned to the audience.
17) People in organizations develops the projects rather fine but they tend not to make the most out of the projects when the projects have been implemented.

This leads to the value adding phase.

The Value Adding Phase

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p. 70):

1) Many relationships are based on perceptions and high profile characteristics.

2) The business side of the organization expects service and therefore should service levels between the IT department as a supplier and the customers be negotiated and incorporated into the strategy.

3) The corporate strategy is about numbers. The focus of the IT strategy should be the same.

4) Often there is a gap between those in the enterprise who adds value and those who spends the value. Is that also the case for the IT strategy?

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p. 159):

5) The CIO (or the Coherency Architect) should make use of color coding to distinguish the business investments from the IT investments.

6) The CIO (or the Coherency Architect) should prove that looking and managing the IT investment as something apart from the business investment isn't sufficient.

7) The CIO (or the Coherency Architect) should show that the strategic projects aren't necessary those projects that aggregate the highest ROI.

8) Explorer the cause and effect with of IT investments and business investements.

This leads to the change management phase.

The Change Management Phase

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.72):

1) When changes occur (as it will with the implementation of a new strategy) then the change process will also impact the employees (and managers) personal life.

2) Numbers is a dispassionate way to analyze the strategic landscape with. It should include what the CIO and the enterprise knows and doesn't know.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.81):

3) The IT strategy has to be articulated in an iterative approach.

4) Look at the numbers in the budget and evaluate if they speak for themselves.

5) The CIO (or the Coherency Architect) has to explore how the company budgets , manages, and measures business change that comes through IT related projects.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.175):

6) The CIO (or Coherency Architect) has to cause other people to change.
7) The CIO should know what he would die in the ditch for.
8) The business side of the organization often experience the IT side of the organization as being “promising a lot and never keeps the promises and it doesn't care about the business side”.
9) 100% alignment among strategies can be dangerous and it occurs rarely that the strategies are 100% aligned.
10) The future role of the CIO is not assured.
11) The CIO or Coherency Architect has to understand that there are competencies else where in the enterprise that is in duplication of the those competencies that are in the IT department.
12) The new strategy for IT demands a new operation model.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.180):

13) Strategists deal only in success and so should the CIO and the Coherency Architect.
14) It can be hard for the CIO and the Coherency Architect to challenge the orthodoxies of the organization.
15) If the CIO will not cross the bridge then let someone else take care of the investments.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.182):

16) Leading strategy can be a lonely job.
17) The over all focus of a strategy is about winning. If the CIO or the Coherency Architect is not committed 100% to achieving the strategy then it is not really a strategy.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.191):

18) Set down your Promise, Principles and Tactics for the key stakeholders to explore and ratify.
19) The stakeholders wants to see the combination of ideas in relation to the organizational system.

20) The strategy can look like the obvious but it is important that the CIO or Coherency Architect emphasize that the strategy isn't applied.

21) The CIO or Coherency Architect should test the best practice of the industry.

22) The strategy is what the CIO or Coherency Architect does (de facto strategy).

This leads to the implementation phase.

The Implementation Phase

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.96):

1) Use the “Promise, Principles and Tactics” framework while the strategy is in the articulation process and when it is about to become executed.
2) The “Promise and Principles are the stabile core of the strategy. Tactics are more fluent or adaptable when it comes to events.
3) Address each of the stakeholders individually (preferable personally) before the stakeholders are addressed as a group.
4) Lead the execution of a strategy don't manage it.
5) When it comes to the investigation of IT investments then start with identifying value and then work backwards. When using a spreadsheet then the focus should be on columns and not on rows. This should help create the overview that is needed (according to Potts).

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.103):

6) The strategist (CIO) is the embodiment of the strategy.
7) Organize the collaboration around one set of numbers and strategic themes; however each person who works with the strategy should be given the opportunity to have an influence on that part of the strategy that they work with.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.115):

8) A relationship is owned by two people.
9) Experimenting with the numbers (in the budget) can uncover a new understanding of the problem.

10) The CIO (or Coherency Architect) should make use of a bottom up value portfolio.
11) The CIO (or the Coherency Architect) should evaluate the investment strategy to sparkle a discussion on what priorities the organization (enterprise) has.
12) The Coherency Architect should be focusing on the exposing the scenarios for what will happen if the investment strategy is changed.

This section is based on the definitions that Potts deals with in his work “FruITion” (Potts 2008, p.134):

13) Strategy is essential about options and opportunities and it is not about being right.
14) Take the lessons for what didn't work as expected.
15) The relationships that people builds are influenced of previous events and relationships.
16) Look for the subtleties in the responses of the stakeholders.

Types of Managers

Potts presents the model (illustration 1) that serves as a compass for characterizing managers within the organization. Note it is a compass and most managers aren't purely technical, purely operational, purely environmental or for that matter purely organizational.

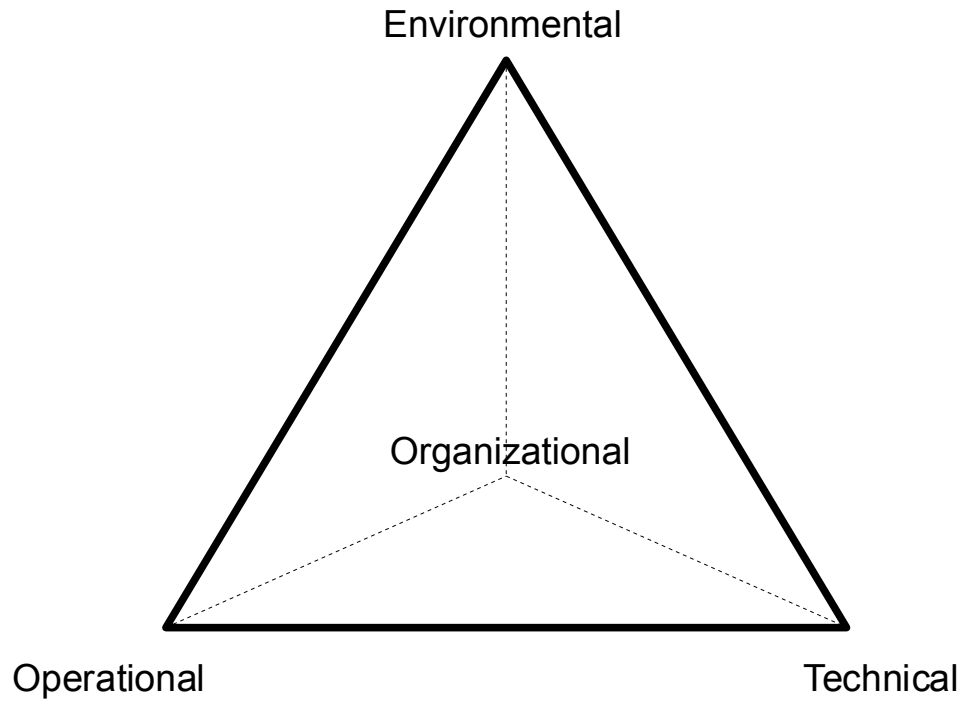


Illustration 6: Types of Managers (based on Potts 2008, p.39)

The **operational** manager focuses on execution and internal processes.

The **environmental** manager focuses on how the strategy's external context.

The **technical** manager focuses on specifications, technologies and products/services etc.

The **organizational** manager focuses on organization models, cultures, structure, internal politics and sourcing.

That leads to the conclusion.

Conclusion

The Coherency Architect should be aware of that there are various ways to develop and articulate an IT strategy. Potts approach is rather clear and can in many ways be considered as a practical approach to articulate an IT strategy. Potts approach can be considered an alternative approach to IT strategy and it can be used to challenge the “industry orthodoxies” which in itself can create a competitive advantage.

The Coherency Architect has to understand how an IT strategy is and how the artifact can be produced if it doesn't exist in an enterprise already and that makes the concept of the IUT strategy

rather important to understand and challenge.

Sources

Potts, C., 2008. *fruITion: Creating the Ultimate Corporate Strategy for Information Technology* illustrated edition., Technics Publications, LLC.

Keynote with Chris Potts

About this Document:

50) This document deals with the keynote by Chris Potts.

51) Focus of the Keynote is IT strategy and in the same time it takes it focus on to a case by Chris Potts titled “SPANets”.

52) The title of the keynote is “Driving Business Innovation with Enterprise Architecture”

The fruITion Strategy

The corporate strategist from IT was working with technology. There are several layers of maturity with in the usage of Information Technology. Chris Potts mentioned the first generation usage of technology as when the time an enterprise invested in a mainframe of which only a few people in the organization was able to operate and it only operated particular specialized operations. In this particular maturity level the management of the organization didn't understand neither support and enterprise wide system.

The Case Study Titled SpaNets

Why the company needs to innovate in its Enterprise Architecture and what Innovations will the enterprise architect recommend.

The case is an enterprise of enterprises (divisionalized form of organization).

- The Global Economy has lead to a price lead competition and the EA analysis can assist the enterprise in innovating its processes.
- They can use the Enterprise Architecture to give them a proper view of the subsidiaries the SpaNet has acquired.
- They can use the Enterprise Architecture to document the processes to align them or to apply standardized business processes.

From an economical point of view the case has a good Enterprise Architecture since it generates revenue.

In 2008 something happens that leads to that the profit pr. Delivery that SpaNet delivers are falling.

Chris Potts proposed to scenarios where B would lead to zero revenue and where A would lead to an increased revenue for each delivery.

Five themes

The goal is to go from a silo organization to an aligned enterprise.

14) Exploiting our diversity and scale.
15) Improved structural performance.
16) No shared service organization. However this is an option currently since it most likely will have an impact on the way the employees will start behaving differently.

17) Better return from M&As.

18) Increase in market capitalization.

Innovation and Architecture

“Successfully exploiting new ideas”.

The SpaNet should be able to crystalize new ideas. Enterprise Architecture is all about innovation. “When users of innovation are sufficiently entrepreneurial, they secure most of the benefits” by Amar Elhide.

“It is a good idea that the inside matches the outside” - Chris Potts.

Every enterprise has an architecture, whether formalized or not. Which is based on the view of Coherency Management.

The first skill of the enterprise architect is to admire the enterprise architecture where focus should be how the founders and employees have been able to build an enterprise.

Then figure out what if anything how the enterprise can lead to success through frameworks and methods.

“Enterprise is defined on a bold or courage undertaking and the animal spirits of the entrepreneur. The architecture is the science of designing structures and a style of structure.” - Chris Potts.

The case study's solution was to adjust style of architecture to something else than it was.

According to Potts the first 10 years of EA dealt with frameworks and it is notable that the framework isn't the architecture or the design of any enterprise it is a representation.

Enterprise Architecture has usually been driven by the research in Information Systems which has somehow biased the focus of Enterprise Architecture.

Perspectives

Information Systems perspective that is usually applied the engineers and it comes from the enterprise architecture strategy.

Investment perspective which is taken by the entrepreneur means discovering, investing in and successfully exploiting structural innovation.

“Enterprise Architecture is about people” - Chris Potts.

The definition of the enterprise is the combination of labour, land and capital that is used to create

something valuable. It is the enterprise that has the spirit of an animal. Best practice can be considered like a sheep; it doesn't know what is in front of it and it keeps mistaking.

In the enterprise is a kind of toolbox that the Enterprise Architect can make use of.

Enterprise Architecture starts with the market; however you can't architect without knowing the environment of which the enterprise is within. Within the market architecture is the business architecture and within the business architecture is the systems architecture and then comes the technologies architecture.

Process architecture goes through several layers of the architectures e.g., the market, business, systems and technologies architecture. Thereto is the knowledge architecture that likewise go through several layers of architecture.

“Do we the company have a process or is it the consumer have a process” - Chris Potts.

The Enterprise Architecture is within the market, business, systems architecture and technologies architecture. Thereto is capital as well a part of all the enterprise layers.

Capital has an impact on how people behave and how the various layers can be organized and dealt with.

All but the technologies architecture are rarely defined or actively managed.

Enterprise is all about producing value by using production resources.

For the SpaNet case then the return of value diminish from 2008. Remember that the strategy for growth is the desired outcome for SpaNet.

“It takes courage to go to the executive suite and tell the executives that we found out that the company is broken” - Chris Potts.

According to Potts then systems and technologies are located within the capital section of the enterprise.

“The only route for an Enterprise Architect is to create a hotel” - Chris Potts.

The process is to innovate, invest execute and exploit. This is known as the Investment Process from Bathtub to the Bars of Gold.

“One of the issues the enterprise architect has to fix is how the company generates value from its innovation” - Chris Potts.

The enterprise is consisting of people and they are only good at certain things and that has to be

taken into consideration and therefore should a focus be on creating space for people's enterprise to flourish.

The point is a lot of people does Enterprise Architecture not just the Enterprise Architect.

The SpaNet case shows that the executives are happy with the current situation where they have some space for themselves and they want to continue to purchase and merge new companies.

The Next Generation of Enterprise Architects

The Trick Question

The two airport terminals are build differently because there are differences in the environment of the design of the terminals, the resources available, time of when they where constructed, who ordered the construction and the culture of the construction, purpose, themes, spaces and self expression.

It is notable that the two terminals are from spain and England.

“When you are an enterprise architect is all about people, space and purpose.” - Chris Potts.

“We had 15 people and we got 15 answers on what Enterprise Architecture was an should be. We all see it as something different; however what matters is that we have to boil it down to something useful ” - Chris Potts.

The Double E and Double A Journey

What would you do if you got no Enterprise Architecture formalized in your Corporate Strategy.

The Double E and Double A journey consist of four phases.

16) Establish.

1. EA strategy. Mintzberg defines strategy as a pattern of behavior (Creating Strategy by Mintzberg). The Three Steps to Heaven starts with a strategic promise(this is a once sentence description of success), Key Principles (fundamental truths or beliefs, that we use to make strategic and tactical decisions) and Core Tactics (these things that we are doing to execute our strategy given the environment in which we are working). Generic promises are not worth anything.
2. Scope. The over all shape of how 'our' business runs.
3. Guiding Ratios. The guiding rations can be the financial flow.

4. Key measure. Structural performance which is based on the guiding rations.

17) Explore.
    1. Key stakeholders.
    2. Culture and politics.
    3. Structural themes.
    4. Constraints.
18) Activate.
    1. EA Models. Thin about the customers you have in the “market architecture”
    2. Play at pass” dashboard. It is about knowing when to play and when to pass.
    3. Innovation networked.
    4. Existing investments.
19) Apply.
    1. Strategy scenario.
    2. Business planning process.
    3. Investment ideas.
    4. New coalitions.

Constraints

If we make a promise then you focus on how to keeping it. The Enterprise Architects should ask themselves what barriers or constraints they will face.

Conclusion

Chris Potts mentions five elements to his overall conclusion:

6) Enterprise Architecture enhances business performance.
7) The contribution of formal EA differs between enterprises.
8) Discovering investing in and exploiting structural innovation.
9) A journey, that is often unpredictable.
10) Where do you want to go next.

Creating a Strategic IT Architecture

About this Document:

53) This document dealing with Ross's article on lessons learned on a strategic IT architecture.

54) The books written by Ross and Weill are focusing on the technical side of Enterprise Architecture.

55) This article is defined as a rather technical paper.

The IT Architecture

Ross defines IT Architecture as more than just a set of technical standards. In fact she uses the term Enterprise IT Architecture. The reason for this is that the IT standards can't be connected to the requirements that can business require from IT.

Ross defines IT architecture as a process that enables the enterprise with identifying the gaps between the business requirements and the IT requirements.

> “The term IT Architecture lacks a universally accepted definition. In fact, the terms architecture seen as the plan for the next infrastructure. More often, IT architecture refers to a firm's list of technology standards. But viewing IT architecture only as technology standards does not connect to it to business requirements. The entire IT architecture concept, though, does place technology standards in the context of business requirements. Consultants and researchers often refer to an enterprise architecture as a kind of city plan that details policies and standards for the design of infrastructure technologies, databases and applications. ”

– Ross (2003)'

Ross then argues that enterprises have the need for identifying patterns that can enable the organization with reinforcing the ability to align corporate strategy with the IT strategy. For this Ross defines three steps that should be dealt with:

19) “Define the enterprise's strategic objectives.
20) Define key IT capabilities for enabling those objectives.
21) Define the policies and technical choices for developing IT capabilities.”

Ross is of the opinion that it is rather difficult for any kind of enterprise to advance from on step to the next and it might take quite some time to change the behavior of the enterprise to meet the requirements of the enterprise.

The Four Stages

There are four stages of IT architecture that is can be used to identify how mature the IT architecture of the enterprise is.

The first one is known as the application silo architecture, the second one is known as the standardized technology architecture, the third one is known as the rationalized data architecture and the fourth (and last form) is known as the modular architecture.

Architecture Form	Description
Application Silo Architecture.	Individual applications that are used by the various business units. The investment focus is on applications.
Standardized Technology Architecture	The IT-architecture is now enterprise-wide the technological platform provides efficiency through standardization and centralization. In the survey that Ross has executed this most common form of architecture. However the new platform does also leads to the risk on how the enterprise should govern the new platform.
Rationalized Data Architecture.	The IT - architecture expands to include the standardization of data and business processes. When enterprises standardize their systems then the assumption is that the enterprise will standardize the data they have stored in their databases.
Modular Architecture.	The standards of IS and business processes are global are loosely coupled applications, data and technology and these can be applied when ever they are needed. However the advantages does also come with some risks e.g., that the various lines of business will deploy the core processes before they have standardized their technology.

Ross sums up the enterprise architecture levels in a table similar to the one below.

	Application Silo	Standardized Technology	Rationalized Data	Modular
IT Capabilities	IT Applications serve isolated business needs	Firm – wide technology standards	IT focused on wiring core process	Modules enable business model extensions
Key Management Innovation	Technology enabled change management.	Standardization and exception management refresh	Recognize essence of the business	Practices facilitating re-useability
Business Case for IT	ROI of applications	Reduced IT costs through interoperability	Improved business performance through integration	Speed to market that enables strategic agility
Locus of Control	Local control	Senior management support of CIO	Senior management, IT, and process leadership	Senior management, IT process, and local leadership
Key Governance Issues	Estimate, measure, communicate, value	Establish (local, regional and global) standard setting, exception and funding processes	Determine core processes and funding priorities	Define boundaries for business experiments

When working with the various levels of architecture then it is reasonable that the enterprise architecture. According to Ross then the level and topic of communication is significantly different. At the application silo stage then IT and corporate strategy are loosely coupled. This means that neither the IT people or the business people needs to communicate to articulate their often independent strategies.

In the standardization stage then there is a focus on the IT people and business people should communicate the value of IT. They should make decisions based on the understanding they have developed. Normally the enterprises starts to initiate a so called executive group that starts to govern the IT – related issues.

In the rationalization data architecture stage is characterized by that the negotiation between the IT side and the business side becomes more advanced (sophisticated). The strategical (strategic management and planning) starts to be developed through an e-business focus.

The modular approach is based upon that IT and business communicates through the learning both sides have had through the development of the former architecture stages to coordinate the strategic focus.

Conclusion

The various architecture forms have great impacts on how the business will be able to operate on a better level through the alignment of IT and business strategy and projects. The idea is that the operating model of which “Enterprise IT Architecture” is design to uncover will be able to develop enable the enterprise to centralize, standardize and deploy standard business and IT processes. The enterprise would be able to model the enterprise through combining the modules.

Appendix

Ross, J., 2003. *Creating a Strategic IT architecture Competency: Learning in Stages.*, MIT Sloan School of Management.

Does IT Matter

About this Document:

56) This document deals with the focus N. G Carr used to handle discuss the usage of Information Technology.

57) The overall question of the notes is to understand the basic theoretical approach that N. G. Carr makes use of to deduce that IT and the investment in IT isn't a way to create a sustainable competitive advantage.

Why IT Doesn't Matter

N.G Carr argues that Information Technology is defused from the manufacturers or providers to other organizations that through this process will be able to gain the same advantages as those organizations that invested in the development of the particular information technology (or information system).

History of Technology

Since the start of the industrialist revolution, where the steam engine was introduced, and copied to a various variations of enterprises. When technology has been commonly known then associations and educations have been created to aide the diffusion of 'best practices' to those who work with the particular field. Carr believes that this is the case when the engineers who set up and later operated and maintained the steam engine.

According to Carr the same thing happened when electricity was diffused to the enterprises in the modern countries where electro engines was installed in factories. Carr argues when the concept of Information Systems and IT was developed and later diffused then the enterprises who invested in the change and creating the applications needed to gain a competitive advantage often would face that associations, social networks and later virtual communities would diffuse the knowledge of how the particular issues would be dealt with in relation to usage of the technology and information systems.

This means that the initial investment and competitive advantage would be copied and coped with by the organization's competitor.

Diffusion of Innovation

When innovation is diffused then it means that the value of the over all innovation will increase; where the over all competitive advantage for the first mover organizations will diminish. Of this particular reason the investment into technology can lead to both advantages (benefits) and costs.

It is no question about the diffusion on innovations also impacts the various industries.

Economics of Technology

N. G. Carr argues that when an organization invests in technology then the main investment flows directly to the customers and not to the organization it self. The reason for this is that the information systems and other Information Technology applications aides the organization to automatize the business processes and by that most organizations uses this approach to lower the

prices of its products and services to gain market share. This leads to that the customers pay less for more.

Why IT Doesn't Matter

IT doesn't matter since the pure investment and usage of Information Systems and Information Technology are easily copied through social networks, institutions and organizations who provide its members with the knowledge of best practice and training. The issues hasn't decreased over time since communities now can be purely virtual and therefore knowledge can be shared over long distances.

Furthermore when organizations tends to invest in information systems and other IT related technology then they use this investment to lower the prices of their products which tends to lead to a negative situation for the organizations.

Surely some organizations have been able to make use of technology, IS and IT to gain a temporarily competitive advantage but the organizations as such has had to focus on enabling other processes and creating synergies among them to gain the full potential of their investments.

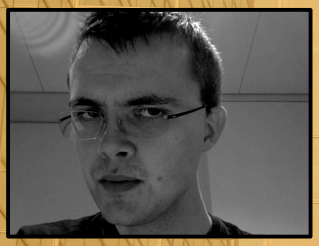
Conclusion

It is not the amount of technology in the organization. It is the way the organization makes use of technology that makes the difference when it comes to the issues of gaining a long lasting competitive advantage.

Appendix

Carr, N.G., 2004. *Does IT Matter?: Information Technology and the Corrosion of Competitive Advantage*, Harvard Business School Press.

Peter Flemming Teunissen Sjoelin



Blogger at **CoherencyArchitect.com** and currently pursuing a Master of Science in Information Technology, E-business at the IT University of Copenhagen.