

## Enterprise Architecture Based Innovation

### Introduction

Influence in business is all about being ready for the future. Enterprises are often held back by their inability to leverage the opportunities that present itself because of their slow reaction to change, their inability to make use of the talent they possess, or their reluctance to adapt to new ways of thinking.

Innovation challenges presents itself in many ways: It may be the ability to gather, develop, commercialise and scale ideas, gathering support for innovation, securing the funds for innovation, investing in the right innovation systems, resources and talent or even understanding how your business model should transform to adapt to the needs of the rapidly changing future markets.

The ability to innovate as change occurs is a key competitive advantage in a rapidly changing world. The opportunity lies in early identification of ideas and the rapid development and deployment of the innovation. The innovative enterprise is one that has an open channel for harvesting of ideas and a supportive innovation process for the leveraging of ideas to implemented innovation.

### An Enterprise Architecture Approach to Enterprise Innovation

Architecture is the fundamental organization of a system, embodied in its components, their relationships with each other and their environment, and the principles governing its design and evolution. (ANSI/IEEE STD 1471-2000)

Enterprise architecture refers to an architecture description of the total enterprise, which describes the strategy architecture, business architecture and systems architecture.

Business without formal architecture evolves over time to adapt to changing strategy, markets, regulations and legislation. This leads to a loss of a holistic view to enterprise evolution. The most important benefit of formalized enterprise architecture is the understanding of how different parts, or components, of the enterprise fit together and how it interacts with each other.

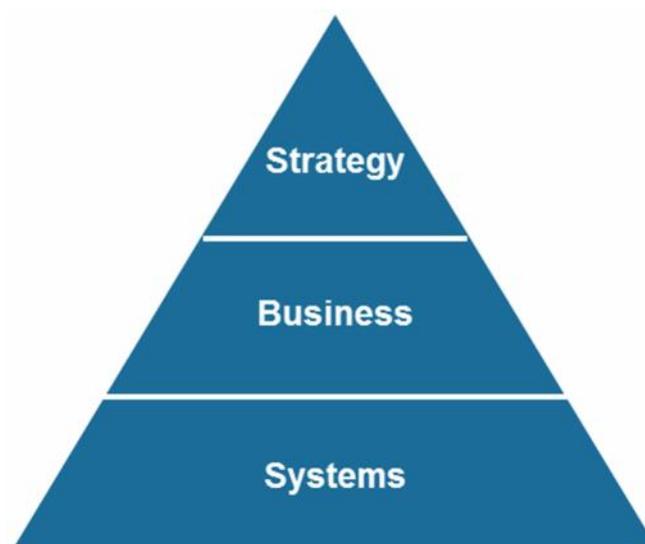


Figure 1: Enterprise Architecture Layers

A simplistic view of enterprise architecture will describe three basic layers consisting of strategy, business and systems for the purpose of:

- Strategy architecture describes the future direction and plans of the organisation in terms of the direction it will take to achieve its vision.
- Business architecture describes the structure, behaviour and functions that are inherent to the enterprise and which execution will achieve the strategy.
- Systems architecture describes the technology based systems in term of how it is used in order to support and integrate into the execution of business.

Expanding on these layers:

### **Strategy**

Strategy is the direction than an enterprise takes with the aim of achieving business success in the long term and is concerned with a match between the internal capabilities of the enterprise and its external environment. Strategy is driven by:

- Stakeholders – Traditionally the needs of the external stakeholders drove the strategic direction of an enterprise, but in modern times, internal stakeholders impact on how planning is done for the future.
- External Factors - External factors include economic, social, legal, technological, political and regulatory change that an enterprise has to conform with and adapt to in order to continue operating.

Some of the components that are considered by strategy are:

- Vision – The vision of the enterprise generally is a broad inspirational image of the future that an enterprise is aiming to achieve. It aims at the long term objective that the enterprise wants to achieve. It defines the overall goal of an enterprise that all business activities and processes should contribute towards achieving. It serves as an important component to the strategic framework since all strategies are inspired by and based on the vision. As the enterprise progresses with the achievement of the vision over time, the vision needs to be amended and repositioned in order to ensure the growth and progression of the enterprise.
- Mission – The mission is a memorable statement of the reasons for the existence of the enterprise and defines a general declaration of the purposes of the enterprise and the objectives that the enterprise wants to achieve in the long term. The mission can be considered to be a high level statement of how the vision is to be achieved in terms of what products, or services, are offered to which external stakeholders, or markets, using which resources and may reference the direction the enterprise will pursue in the achievement of its vision, the core competencies needed to achieve the vision and the enterprise values.
- High-level strategy – the high-level strategy defines the strategic direction than an enterprise takes with the aim of achieving business success in the long term. It is typically defined in broad strokes and will not describe specific actions to be undertaken. It will reference the purpose of the enterprise in terms of what it aims to achieve and what those achievements will mean for the stakeholders of the enterprise; the scope of activities executed by the enterprise; the nature of the business in terms of the types of business the enterprise engage in and how the needs of staff, partners, customers and suppliers will be accommodated through the offering of the enterprise’s products and services; the environment in which the business is operated; the position in the marketplace where the enterprise wants to provide its offerings and the competition the enterprise faces in terms of other competitors and complimentary offering providers.

- Scenarios – Parts of the future are certain and can be predicted based on historical knowledge. The majority of the future is unknown and uncertain and relies on the predictions of scenarios in order to plan for a manageable and competitive future. Scenarios are developed to describe the most likely futures the organisation has to face in the planning period. Scenarios are planned for in order to either increase capability, or capacity. In the case of winding down business, it may also be used in order to decrease capability or capacity.
- Detail strategy – detail strategies are defined according to the most likely business scenarios and serves as tactical plans in order to meet and execute those likely futures.
- Performance Measurement – To measure success of detail strategies performance management frameworks are developed to measure progress. The Balanced Scorecard, as a popular example, may describe detailed objectives, performance measurements, targets, and initiatives across dimensions of financial, customer, internal process and learning and growth perspectives. Such a framework will have as an outcome a definition of the operational processes that may be implemented and the projects that serves to close operational gaps in order to achieve enterprise strategy.

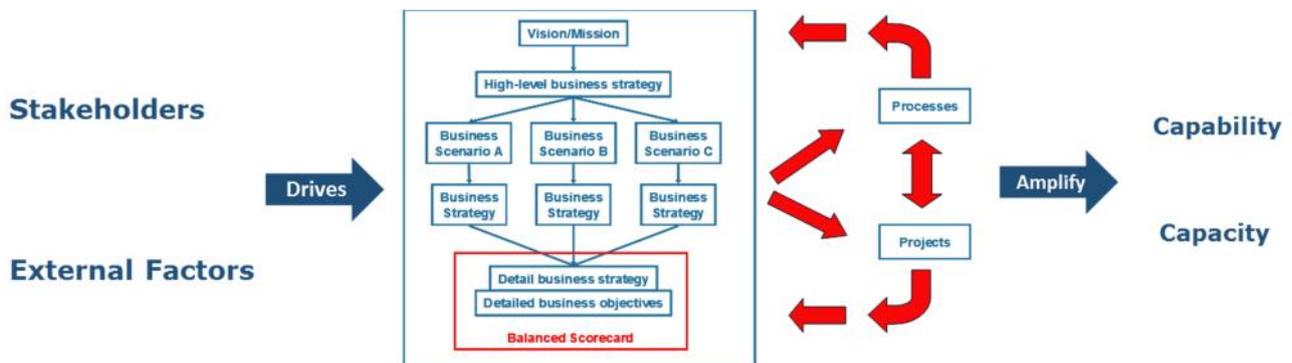


Figure 2: Components of Strategy

## Business

The business systems architecture view focuses on business as perceived from the business execution point of view. This means that the business systems architecture view describes the business as the business process participant sees and experiences it. It describes the business operations as it is executed in terms of achieving the enterprise strategy.

It typically contains descriptions of the dimensions of function, structure, and behaviour. From a functional point of view it describes the business roles that are responsible for execution of business functions. From a structural point of view it describes organisational structures, product structures, service structures, and business information structures. And in the behavioural dimension process execution is described in terms of process flows.

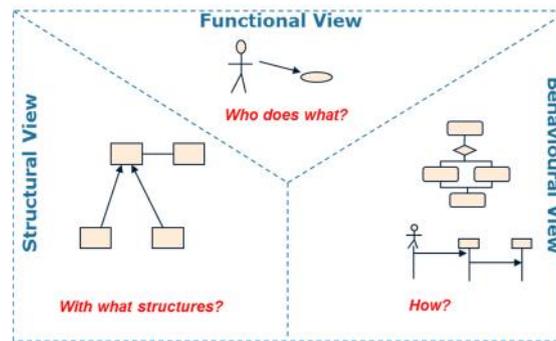


Figure 3: Business Layer

## Systems

The systems architecture describes how technology systems support business execution. It typically will describe a range of viewpoints which may include:

- A platform independent model – This model is a technology agnostic description of the technology systems as it describes what business requires in terms of support from technology systems. It typically contains a general requirements description; a functional description that describes the system roles that executes system functions; structural descriptions of system information required to serve as the source of business information; and behavioural description which describes how the system would be used by system users.
- A platform specific model – This model is a technology specific model which describes how system requirements, as defined in the platform independent model, will be implemented in a specific technology of choice, or a commercial off-the-shelf (COTS) solution.
- Implementation model – the implementation model describes how the software architecture is designed and implemented across the physical network structure.

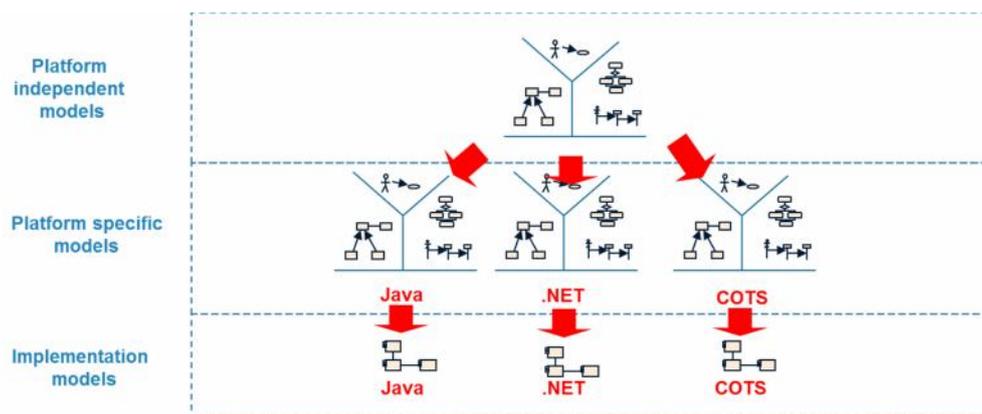


Figure 4: System Layers

## Interaction of Architectural Layers

The interaction between the layers of the enterprise is designed in such a way that strategy defines the direction of the enterprise, and business processes or designed in such a way that it implements the operations necessary in

order to achieve the strategy, and systems are selected and built in order to directly support and facilitate business process execution.

The reality is very different. Normally strategy focuses on a future somewhat distant from the present, and business often lags behind because processes do not yet exist for all of the components of the strategy. Another problem is that legacy processes which do not serve the new strategy exists and often cannot be tied directly to new strategic imperatives.

In addition systems often lag behind business, leaving key business processes unsupported by essential technology systems. There is also the problem of legacy systems that are not directly linked to existing business processes, or current strategic imperatives.

Where new technology systems have been acquired with the view of implementing and supporting good and modern business practices it may even create the situation where the technology systems' ability and behaviour outpace strategic imperatives and business behaviour leading to operational problems.

All these issues create situations in which strategy, business and systems are misaligned to the extent where it becomes counter-productive.

This vertical misalignment is not the only problem organisation face. Considering the internal stakeholders of the organisation: Those responsible for strategic thinking as a point of view, is focused in the future at some planning point. Those responsible for business operations are firmly focused on the present and the responsibility of meeting immediate needs and demands from external stakeholders. Even though both groups are business focused there is a misalignment of focus between the future and the present, which has the potential to create communication and responsibility issues.

Those responsible for technology systems will have a blend of present and future focus, but speaks a language that is technology focused and very different from the language that business uses. This creates the potential of misunderstanding between the business and systems stakeholders.

The misalignment between strategy business and systems, as well as the misalignment that exist in terms of focus has the potential to create horizontal disconnects between the layers of strategy business and systems. These disconnects typically causes problems in terms of communication, culture, execution, and structure and may even lead to internal uncertainty, culture problems, and poor morale.

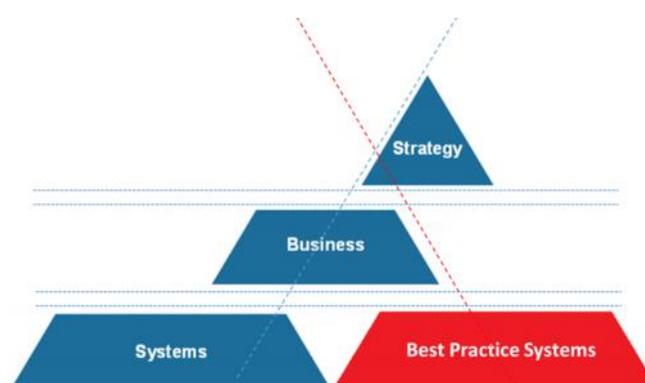


Figure 5: Misalignment between Layers

## Enterprise Architecture enabling Enterprise Agility

In order to build an enterprise that is change ready and have the potential of change agility a solution that may be considered is enterprise architecture.

Enterprise architecture is a representation of the architecture of the organisation across the layers of strategy business and systems. It normally contains a visual description of the components strategy, the processes according to which business is conducted, and a visual representation of systems requirements, systems design, and systems implementation. It also will contain traceability between the different layers, in such a way that strategic imperatives are clearly linked to the business processes that are executed in order to achieve them, and then the system requirements that are linked to the business execution and from which the system design and implementation clearly linked. In such a representation if changed should occur on any layer the impact can then through traceability be determined before any changes are implemented in the enterprise.

For example: If a strategic imperative change, the impact on the business can immediately be seen through the traceability relationships, as well as the impact on the systems from requirement to implementation. Should a change occur on a business process level because of some requirement, it can then immediately become visible which strategic imperatives are affected, as well as which systems behaviour will be impacted. A final example might centre on the possibility of a system being replaced and then in the architecture it be immediately becomes visible which business processes will be affected and in turn which strategic imperatives will be affected.

Formalized enterprise architecture enables rapid impact assessment of prospective change on all levels of the enterprise and allows rapid response to changing external factors. Understanding impact mitigates risk of change and enables stakeholders to make the best decisions for change.

In terms of creating enterprise architecture, it is also not necessary to document every single aspect of the enterprise, but instead just focusing on the mission-critical and core business processes and systems required strategy implementation.

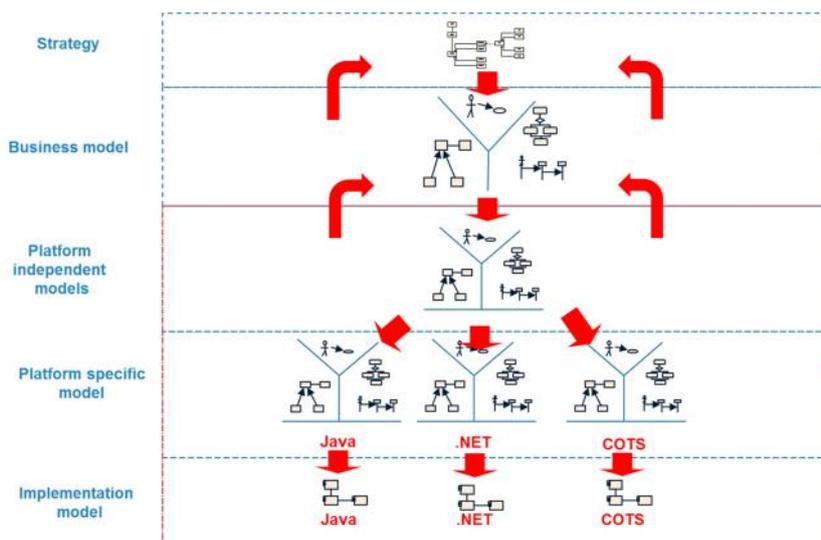


Figure 6: Traceable Enterprise Architecture

Enterprise architecture as a solution will not solve all disconnects that exist between the layers or vertically in terms of misalignment, but it will allow the enterprise to minimise the gaps and misalignments. This then becomes a tool

to increase strategic alignment. It also assists in any innovation efforts that are undertaken by the enterprise, since a full enterprise description exists which is the key success factor to starting innovation and change projects.



Figure 7: Minimise Enterprise Architecture Gaps

The end goal of enterprise architecture is to develop enterprise architecture components or artefacts useful to the enterprise and should contain the following:

- Models – these would be models that describe the enterprise on various levels, from organizational structure, to information, to process descriptions.
- Architectural principles – principles serving as the foundation for establishing the architecture. Architectural principles are the general rules and guidelines for architecture implementation, use and management.
- Standards – standards would describe the skills, business, data and technology standards

Once an enterprise architecture description exists for the current state of the organisation, and the vision of the organisation is known, a growth path can be designed in order to get from the present to the desired future through how many transitional architectures is required.

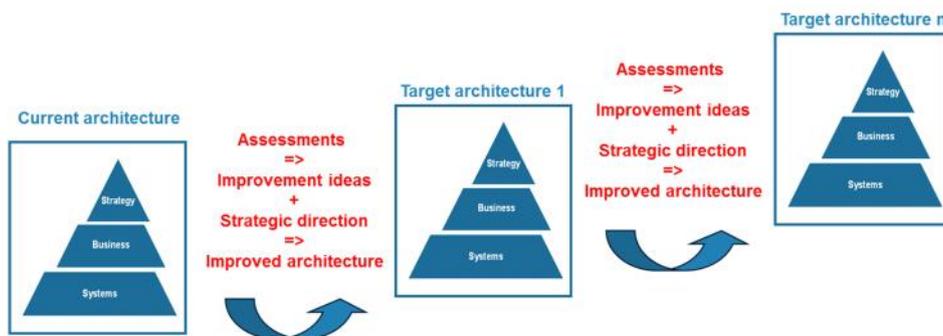


Figure 8: Transition Enterprise Architecture

This growth path can then serve as an input into future cycles of strategic planning and organisational design.

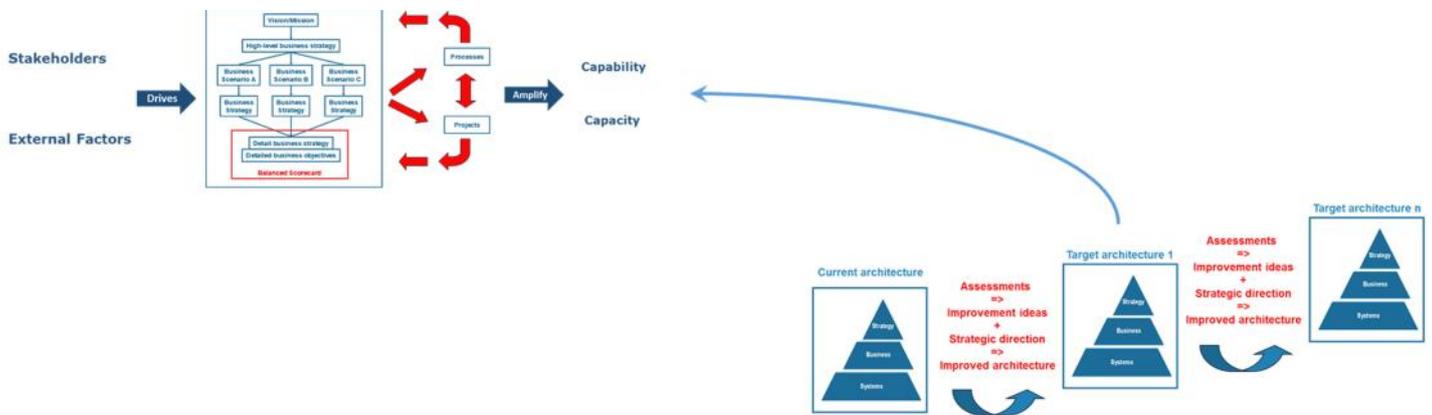


Figure 9: Transition Enterprise Architecture Feedback Loop

## Conclusion

Enterprise architecture should show how all systems (strategy, business and technology systems) work together to deliver enterprise value. Ultimately, enterprise architecture should be a mechanism to accelerate innovation in the business by considering the long term vision and defining the principles necessary to guide business and projects executed within the enterprise. It takes into account constraints like legal and regulatory changes and informs planning and decisions on how best to evolve the enterprise to some future state.

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