

Chapter 5

Managing Enterprise Architecture



What did we study so far during the course EAM? We started with an introduction into the topic of EA and EAM, and also discussed, what it is good for in Chap. 1. We then had a look at concepts for describing and also understanding business processes and business architecture with a strong focus on business capabilities and business objects in Chap. 2. We then looked at, how to develop the application landscape from the business architecture in Chap. 3. It starts with having the business capabilities so that we can then decide for an optimal application landscape. We also looked at concepts and information that is required for further describing a detailed application architecture. Based on this, we looked at methods and tools for analysing EA in Chap. 4.

In this chapter, we will now have a look at the organisational aspects behind EAM. We will present skills of an enterprise architect (starting from page 153) and discuss options for setting up an organisational unit for EAM (Sect. 5.2). As most of the work is dealing with performing changes, we will start with an overview on change management in Sect. 5.1.

Learning Objectives

After completing this chapter, you will be able to ...

- ... explain typical changes in the application landscape and their impact on the business
- ... create a roadmap for describing changes in the application landscape
- ... describe the role of an Enterprise Architect, including tasks and skills
- ... discuss different approaches for establishing an organisation for EAM

The learning objectives are as follows: After completing this chapter, you should be capable of explaining typical changes in the application landscape, and also, the impact of those changes on the organisation. Furthermore, we will have a look at

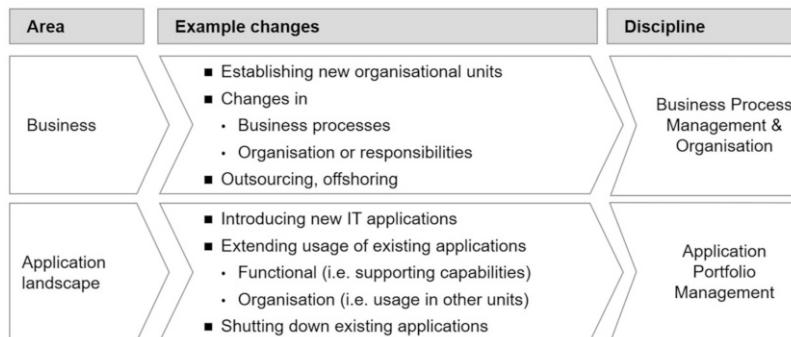


Fig. 5.1 Typical changes in an EA

one typical kind of map or some typical representation called the roadmap, which is used for describing changes not only on your application landscape but also in general. We will create certain roadmaps, and you should be capable of creating such visualisations in the future on your own. Concerning the organisational aspects, you should be capable of describing the role of the enterprise architect, including typical tasks and skills that are required from an architect. The section will end with an overview on options for setting up the EAM organisations, so we will look at different options. And you should be capable of discussing them in your future job environment.

5.1 Managing Changes

Which kind of changes are we facing when dealing with EA? Figure 5.1 shows some examples for typical changes that can occur on the business side. As the environment changes, our company needs to adapt to new situations. This might require that we will set up new organisational units for new products or new businesses that we want to achieve. There might be changes in business processes and also changes in the organisational structure. We might shift responsibilities from one person (or role) to the other. Furthermore, a typical kind of change is subject to outsourcing or off-shoring of certain activities. When a company decides not to execute certain processes on their own but rather hands them over to an external company for service provisioning. Typical examples are IT outsourcing or offshoring of customer service (i.e. the helpdesk) to a country with lower wages.

Those kind of changes can be triggered by any kind of change in the business, but to be honest, also changes in application will trigger changes in business processes. Changes in business or IT will influence each other. Changes in business also often imply changes in the application landscape. Even though we have two

different domains (business and IT), changes are not performed in an isolated way. One change in business might imply several changes in the application landscape and also the other way around. Changes in business are usually subject to other disciplines, like business process management, strategic management, and others.

We will not talk about business changes in very detail within this book on EAM. We will rather focus on changes in the application landscape, their management and alignment with business processes. Changes in the application landscape may consist of introducing a new software application that needs to be integrated with existing processes and with existing applications. A new system does not only mean a new IT application, but implies new processes, processes changes and even changes in the organisational structure. Further kind of changes in the context of the application landscape consist of modifying existing systems, like extending an existing software application with further functionality or even extending the usage of an existing application to other organisational units. Last but not least, as we are driving cost savings within IT, most of the changes will address shutting down existing applications for saving the costs usually associated with hosting, maintaining, and using them.

The discipline of *application portfolio management* (APM) deals with such kinds of changes, so it is closely related to EAM. Based on analysis and visualisations from EAM, application portfolio management also establishes the link to financial accounting and to project management for managing all the projects dealing with those changes. We are not discussing the interdependencies of those changes but rather look at them individually in the remainder of this chapter.

5.1.1 Example Change

We have a Cartesian map showing the application landscape of a fictional company in Fig. 5.2 as a simple example for illustrating changes. It is a matrix showing the applications against the following business capabilities: *purchasing*, *goods in*, *invoice verification* and *payment handling*. It is only a fraction of the business capabilities—showing a snapshot of the application landscape. And on the other side, it maps the applications against organisational units within the company so like the headquarters the European organisation and the SAP organisation in the Asia-Pacific region. We only see five different systems, reflecting a small example. Please always keep in mind real life application landscapes are much larger, consisting of a couple of hundred and even more than 1000 applications.

What do you think when looking at this application landscape? Is there anything that you see that you think might not be optimal and should be changed. We don't know the exact background, but it looks like that there are a couple of redundant systems. There are two inventory management systems on the left-hand side—the one called system A being used in the headquarter and the European region, and another one called system B being used in the Asia-Pacific region. Let us assume

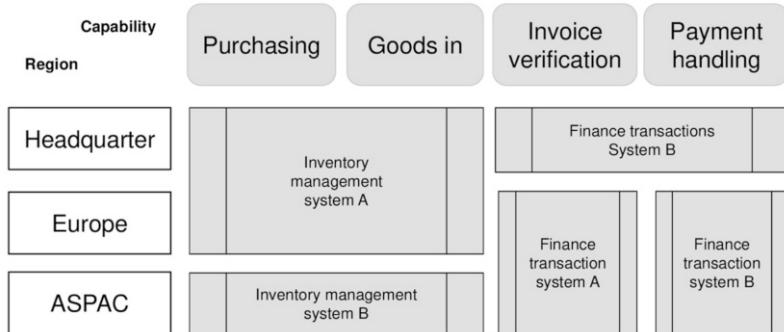


Fig. 5.2 Example map subject to change

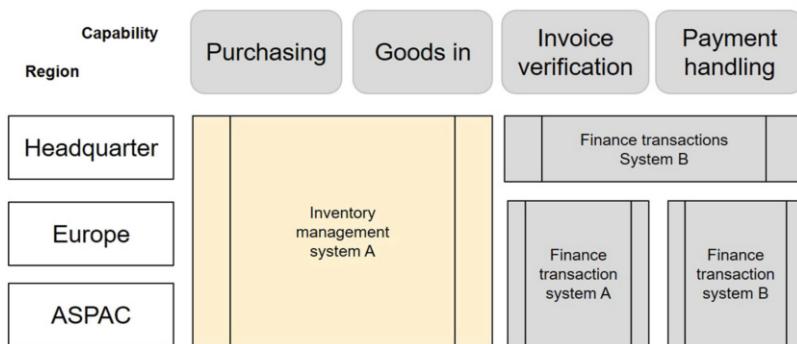


Fig. 5.3 Example map showing result of first change

that the company did some analysis and found out we can replace one system by the other, and then made the conscious decision to club the two systems together. The to-be architecture only contains a single inventory management system.

The result of the optimization is shown in Fig. 5.3. The decision was to only use System A for inventory management throughout the whole corporation. What we see here is just the result. System B is not available any more and the scope of System A has been extended so that it can also be used in the Asia-Pacific region. Looks better, doesn't it? Or is there anything else you would consider in this application landscape?

Obviously, there are two redundant finance transaction systems in Figs. 5.2 and 5.3. One of them is covering the invoice verification and the other one payment handling in Europe and the ASPAC region. Another change consists of getting rid of one of the finance transaction systems and replacing it by another one (Fig. 5.4). It looks like just a small change, but let's keep in mind that switching off applications is not an activity that can be done from today to tomorrow. It does not only require

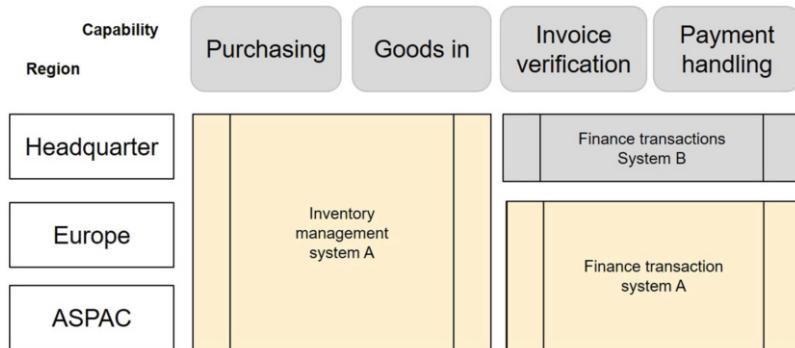


Fig. 5.4 Example map showing result of second change

switching off a computer. There are more implications behind it. Just to mention a few:

- We need to check if there's data in the system to be switched on that is needed by others or we need to move the data from one system to the other.
- We need to cut interfaces between systems so that the one that is about switched off cannot be used anymore.
- We need to train people so that they can also use the new system and that they are not using the old system anymore.
- When switching over systems, we need to change other systems as well.
- We need to inform business (and potentially business partners) and change the way they work and collaborate.

In fact, we have a lot of implications from shutting down a single software application. What happened here within seconds from one picture to another takes a long while. These are major changes within the corporation.

5.1.2 *Managing Enterprise Architecture Changes*

Have you ever been subject to a change? Changes are not done easily in a corporate environment, especially when you think of changing people's behaviour. People need to change the way how they work—usual or common practises that they know from the past which will not be valid after the change. Sometimes the organisation role changes. It might have an impact on the role of individuals, their salary, their importance, or even their self-esteem.

If you ask for issues in an organisation, there will be many people who can tell about the issues they perceive. It will be issues they see anywhere else, and of course,

Reason	Examples
1 Lack of awareness	Underlying problem & details not defined or communicated
2 Change-specific resistance	Workload or wrong methodology
3 Uncertainty & fear	Loss of power, status, influence or compensation
4 Lack of leadership	No guidance or missing trust in leadership
5 Change saturation	Too many or even unsuccessful changes in the past

Fig. 5.5 Reasons for resistance to change

people always have an idea of how to make things better. Similar to going to a pub and asking people about politics, they will always have an opinion.

In the same way, people in a corporation might be supportive with changes in order to get rid of issues. But motivation often looks very different when you ask people to change their own behaviour or situation. It is not only about solving an issue you identified in a rational way. Changes in the company are needed, and this might also require individuals to change. They need to change established habits and beliefs that they trusted in and that might not be valid any more. And what you can see in many companies is that the motivation of change decreases when people are being faced with changing themselves.

The reason is not that people just want to avoid change, or just want to make the management look bad. They have tangible reasons for opposing changes. A couple of typical reasons are provided in Fig. 5.5.

One reason might be that people do not agree that a certain change needs to be done (i.e. **lack of awareness**). It is always easier to say, *the other person needs to change*, instead of, *I need to change*, because of being comfortable with the established way of doing things. Sometimes, people are not aware that they are part of the problem, or that they are working within the problem, and that they should be aware that they also need to change.

A typical **change-specific reason** for resistance is that people are already busy with the day-to-day work. They have a lot of work, they are busy, and in many companies, people are doing overtime hours—perhaps because of inefficient processes. But at the end, what they are saying is, I don't have time for spending work on making plans for conducting a change. This will increase the workload of people. They are resisting to change because they just cannot handle planning and performing the change.

Reason number three is a little bit subtle, because this addresses an emotional aspect. For many people, it will remain **uncertain** what will happen to them if the company changes:

How will my process change?

What happens if the system I'm using since 20 years is switched off? Am I capable of using the new one? Will I be overwhelmed with the new software?

Perhaps they don't need my work anymore. Perhaps I get fired, or perhaps I just lose my status, I lose influence, and so on.

Changes can lead to loss of power or a loss in status for some stakeholders. However, they tend to preserve their personal status within the company.

Another reason for opposing change is that the company lacks establishing clear leadership for performing the change (i.e. **missing leadership**). There needs to be a strong leader who will guide the change, who will also talk to people, who will try to address all the other reasons. Hence, a person is required that makes people aware of the reason for change as well as the anticipated result of the change initiative. Urgent changes sometimes need to be pushed in order to avoid, for example, bankruptcy of the company.¹ The leader needs to explain the options, emphasize the urgency and enable people for performing a change. This includes making sure that people get additional time, that they know why to spend working on changes, and that they get rid of other tasks that are not as urgent as performing the change.

The leader needs to be a manager that can also influence the day-to-day work of people. There is also leadership required for managing uncertainty and fears. He or she also needs to provide a proper vision to people in order to provide some guidance for what the change is heading for. You need to tell them what will happen. In many companies, people get aware of changes, but nobody informs them properly. People may get really fearful in such a case because they are afraid of the consequences. A lack of transparency combined with information hiding will hamper any change initiative. A change leader should properly communicate what the change is about and what will it mean for people, so that they can understand what will change for them. In many companies, it is a big issue that management is not properly telling about the implications, because they want to hide. They are afraid of further resistance. But planning a change somewhere in the Ivory Tower and not talking to people will increase their resistance.

Reason number five listed in Fig. 5.5 is **change saturation**. This does not happen in all cases, but there are organisations that already performed a couple of change initiatives in the past—whether successfully or not. I once joined an organisation that already terminated three major initiatives for the same kind of change. All of them failed, and we were about to start project number four. The biggest resistance we got is that people got annoyed as they were expected to support another change initiative—again: They perceived a new team that will again, steal valuable time.

¹Mooney provides several examples and small case studies from his professional experience in [1]. He works as a consultant in the change management area.

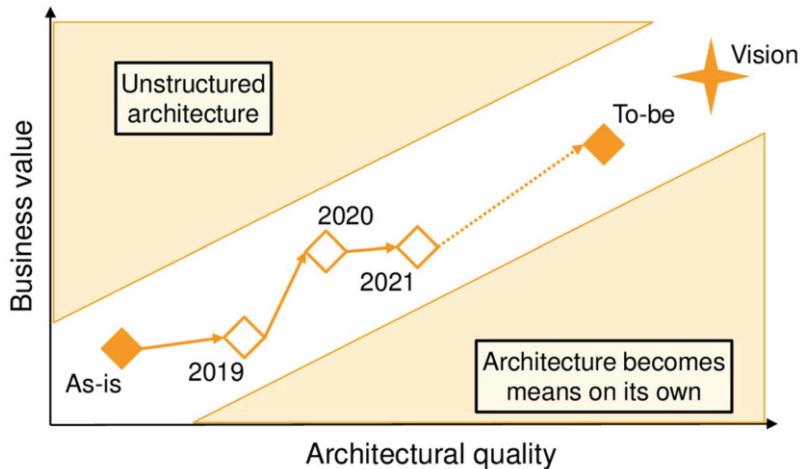


Fig. 5.6 Managed evolution

Again, it will lead to nothing. They did not expect reasonable results from that change as the previous three initiatives already failed. Even though the change management team was explaining the urgency and the innovative change method, people did not believe in that change. Gaining so much experience with unsuccessful changes in the past made them really fed up with new change initiatives. Of course, being saturated by change is not an excuse for not changing. But for a change leader, this is a topic he or she needs to keep in mind and also address during managing the change.

The text book at hand does not provide a chapter on change management.² The previous paragraphs are just meant to emphasize the fact that changes cannot be done easily in most cases. The remainder of this section will now address planning and envisioning changes in EA. There will be a strong focus on the application architecture.

5.1.3 *Managed Evolution*

In EAM, there is one principle for changes called *Managed Evolution*³ (cf. Fig. 5.6). Changing the whole EA of a company is not a short-term task—it will not be done within the course of a single project. Usually, changing several applications, changing the processes related to this change in the organisation, will take a couple

²A plethora of text books is available like for example [1–3].

³The notion of *Managed Evolution* is further explained in [4].

of years. The planning will start with having a clear understanding where the changes are heading at. What are the objectives of a change? We need to establish a clear **vision** that will provide guidance with respect to the anticipated optimal state. A guiding vision will help everybody to understand the big picture. A vision does not exactly describe the to-be, but a rather optimal EA that might never be achieved. It serves as a light house for providing guidance and direction so that all involved people are working towards the same objective. It can be quite high-level and show the ideal future we can just imagine. Nevertheless, having a clear vision is very important as it will help us with getting started with planning several iterations for achieving an ideal architecture.

Let us start with analysing the as-is architecture in the year 2018 (as shown in Fig. 5.6). Instead of planning how to change the whole organisation in order to achieve the optimal architecture (i.e. the vision), we need to perform changes incrementally. The organisation can only deal with small changes while still doing business and the its environment will constantly be changing. We cannot predict the future, like the situation in 10 years or more. Enterprise architects will start with planning the first step in a very detailed way and also already anticipating future iterations. This will mainly cover the application landscape for the next planning period (e.g. next year). We already did this in the small example starting from page 139. We did not perform a big change, but rather doing small changes step by step. This also happens in a corporate environment when performing EAM.

After finishing one iteration (i.e. at the end of the planning period) we need to assess the situation and plan for the subsequent one. The vision will serve as our guiding principle. There are two drivers that will basically influence how the architecture looks like. One of them is the quality of the EA determined by architectural principles and quality criteria. Those criteria will support assessing the quality of the application landscape and how the idea business capability map should look like—just to provide two examples. This might look very academic to business people and only helps with improving the architecture.

However, the company needs to earn money at the same time. Whatever we do with our EA has to provide value for the business (i.e. earning money). This is indicated by the *business value* dimension in Fig. 5.6. At the beginning of each planning period will be decisions about new software applications or new functionality so that we can have a new product, or improve customer relationships. Business stakeholders will provide many requirements from their perspective that aims at making the business impact of our EA better.

Just following business requirements often leads to an unstructured architecture because it is all about having small changes, additions, and not controlling them properly. You remember one of the first pictures we discussed in Chap. 1, the one with the Titanic on it (Fig. 1.6 on page 11), showing that missing guidance for the architecture can lead to unstructured architecture. This would result in an application landscape that is not manageable any more, with a lot of cost, increasing maintenance cost, like an iceberg that are endangering our cruise. If you just follow business value, then you are not controlling your architecture any more. You are just adding the functionality in any way that is required by the business. This is

why you need the architecture quality dimension for making sure that any kind of change also fits to our architecture. This will drive us towards improving the EA, and also makes sure that we have a maintainable structure in the future. This will also foster flexibility with respect to adjusting our architecture easily based on new requirements.

However, working on the quality of the architecture does not always provide immediate business value. By only following IT or EA principles, we are in danger of just having the architecture becoming a means on its own: Having the perfect architecture, but no success on the market. None of the extremes—having the best architecture or providing most business value—will lead to overall success. Each of them might be achievable individually. But for the whole company, both of them are not desirable.

Therefore, planned changes should happen within a corridor between *unstructured architecture* and *architecture as a means on its own*. It should not focus too much on business value and not too much pushing towards the ideal architecture at the same time. Concrete objectives for the next iteration will be decided at the end of the previous planning period.⁴ The example in Fig. 5.6 is assuming a decision every year. Plans for the next iteration will cover one year and set objectives that can be achieved within a one year's period. The objectives will always be a compromise between the two dimensions.

The first iteration is starting from the as-is and moving towards improving the architecture by 2019. It is not supposed to add much business value. For the following year, it looks like people agreed on adding more business value and only slightly improve the architectural quality. The next iteration improves architectural quality by end of 2021. Further iterations for reaching the *to-be* are not planned in a detailed way, yet. This might be some kind of state we want to achieve within 10 years after starting the transformation. The *to-be* architecture depicted in Fig. 5.6 is not carved in stone. An organisation usually has to adjust it based on changes in its environment or due to internal changes. New products or changing market will lead to adjusting a company's understanding of the notion of *business value*.

Managed evolution is emphasising two aspects:

1. Changes in the EA are performed iteratively towards a *to-be* state.
2. Each iteration will balance the improvement of *business value* or architecture quality.

The vision will provide a clear direction for planning the iterations. Decisions on the objectives for each iteration will be made at the end of the preceding iteration. The vision will remain the same while the *to-be* architecture might vary.

Performing a transformation based on managed evolution, consequently, requires thorough planning and flexibility with respect to adjusting plans. Figure 5.7 provides

⁴The decision of the duration of each planning period is done by the organisation. It tends to be a full or a half year. The duration needs to incorporate the ability of the company to adjust to new requirements and objectives.

an overview on various aspects of different phases during the transformation as being defined managed evolution:

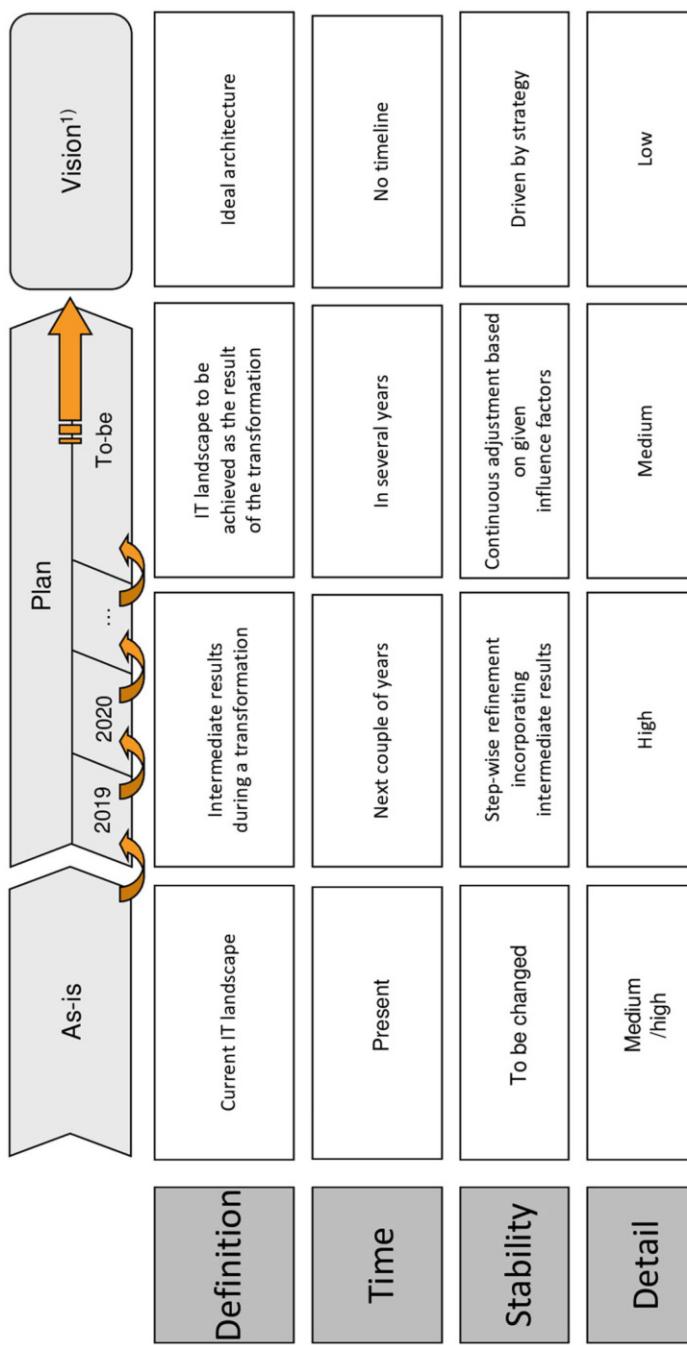
- **Definition:** What is the scope of the phase?
- **Time:** What is the envisioned time horizon for the phase?
- **Stability:** How stable is the description of the architecture in the respective phase?
- **Detail:** Which level of detail is required for the plan?

The *as-is* shown as the first phase in Fig. 5.7 describes our current architecture. Analysis of the *as-is* usually reveals issues in the architecture that will have to be fixed during the whole transformation. The *as-is* architecture, therefore, is not stable as it will be subject to changes. Its description will not be very detailed as we just need to understand the current situation as a starting point for subsequent iterations. Its level of detail should be medium or high as we need as much information as required for documenting the issues. More detailed information is then required for planning the next iterations (phase **Plan** in Fig. 5.7). Such a plan will include, for example, the following information:

- detailed target application landscape
- changes to business processes and organisation
- projects (including project management documents) for performing changes
- budget and resources required for executing the iteration
- KPI and targets for measuring success of each iteration

The level of detail for the next iteration will be high, while subsequent iterations require plans with less details. Their plans might change after each planning period—including the *to-be*. The vision (right-hand side of Fig. 5.7) is some kind of ideal architecture and has less details than other phases. The level of detail should be very low. It is not about having a plan, how it should look like, but rather having a story to tell. The vision can also be written in an emotional way. We want to be better, or we want to be the best. We want to have the most optimal architecture, so it is more for encouraging people for changing. Because this is the bright future we are aiming at. Knowing we will not achieve it, because we need to face reality. There is no plan for ever achieving the vision, because we know that the way how to achieve the vision (i.e. the iterations) might change over time. Hence, there is no timeline associated with it. However, the vision should reflect what is decided by the corporate strategy. Whenever our business strategy or the IT strategy has some objectives that needs to be achieved, of course, this has to be reflected in the vision for our future architecture. The vision will incorporate a future business motivation and capability map including guidelines for an optimal application support.

For all the steps in between, we have different level of details. The intermediate steps will achieve partial results of the overall transformation. They are steps that we have to do in order to achieve the *to be*. The result of a complete transformation is usually due in many years. We can think of in 10 years or even in 15 years, meaning, we are talking about a long time horizon. Many of things can happen within 10 or 15 years, so cannot predict the exact state we will achieve in 10 years. Each and every



1) Architectural vision which might never be achieved

Fig. 5.7 Planning transformations

year, we need to reassess our to be and adjust it to changes that might happen. If we lost a certain market or don't want to offer a certain product any more, having a new product, even making a strategic decision (e.g. going away from a classical business model to a e-commerce business model), those kinds of changes and decisions can happen within 10 years. Which then also implies that we need to adjust our plan for the to be. Also the intermediate steps that are planned for next year, for in two years, and so on, they need to be refined step by step and also adjusted whenever we change the to be vision or the to be landscape.

5.1.4 Application Roadmap

This current section covers the management of changes in an EA. We already looked at a simple example and discussed different phases during a transformation during a managed evolution. As enterprise architects are using various maps, there is also one kind of map describing the roadmap of a transformation. An application roadmap lists all applications and initiatives that are performing changes on the application landscape. Please, keep in mind that EAM also includes changes on the business side (e.g. business processes, organisational structure). We will not cover those kinds of changes here as they are subject to different disciplines.⁵ We will now focus on how to manage changes in the application architecture by considering dependencies to business architecture.

Definition 5.1 (Application Roadmap) An **Application Roadmap** is a visualisation of (intended) changes to the application landscape of an organisation. It focuses on change initiatives working on applications, each of which ...

- ... has a planned start and end date
- ... implements a new application, performs a **change** on an existing one or **shuts down** a legacy application.

Changes to the application landscape can be visualised using by an application roadmap (Definition 5.1). It shows intended changes to the application landscape in an organisation and focuses on initiatives that are supposed perform the changes (i.e. projects, programs or a small initiative). Each of those initiatives has a planned start and end date. Each of those initiatives can do one or more of the following activities:

- A **new application** is introduced (developed (i.e. make) or procured and configured (buy)). This will most probably be subject to a large project.

⁵There is a plethora of textbooks on business process improvement like for example [5, 6].

- An existing application can be **updated**. The size of the change can vary from very small (initiative) to large (program). Modifications can consist of:
 - adding new functionality based on new requirements
 - changing functionality based on updated requirements
 - rolling out the application to another organisational unit
 - reducing the scope of an application (i.e. disabling functionality)
- An existing application is **decommissioned** (complete or partial)

Most initiatives will refer to updating existing applications, but also shutting down applications happens quite frequently. Running applications is associated with cost and if it does not provide any business value or needs to be replaced by a better application, then we need to initiate projects for shutting down such an application. Please keep in mind, shutting down an application is not like we are doing at home with our computer, uninstall and then it is done. An application in a corporate environment is used by many people, by hundreds of people who are trained with this application, who know how to use it, how to start it. They know all the specifics about it. There are further applications receiving data from one being subject to decommissioning. Therefore, we need to make sure that there is no other application depending on an application before switching it off. And we also need to make sure that business processes will be adjusted so that they are not using the old application any more but either switch to another one or do not require application support.

These kinds of changes, especially when thinking of reorganising the corporation, will take a long time. And any kind of change concerning decommissioning an application has to be done as a project.

Graphical visualisations are a central tool for EAM as already introduced in Chaps. 1 and 4. We already showed a couple of examples representing capabilities, business processes, applications and business support. Of course, there is also a

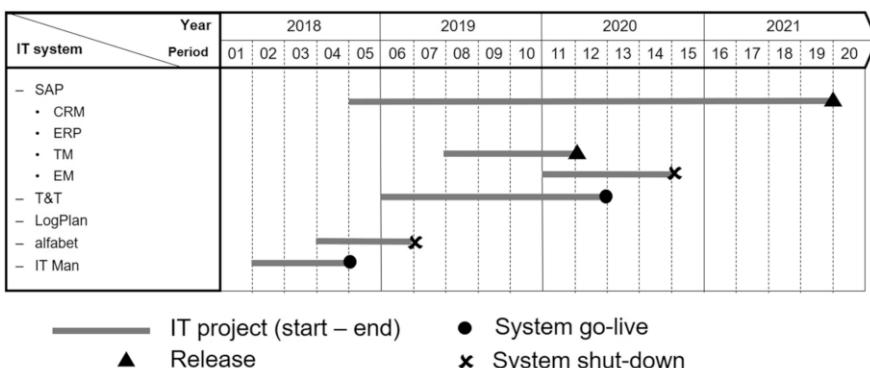


Fig. 5.8 Example roadmap

map or a visualisation for showing transformations, which is called the *application roadmap* as defined in Definition 5.1.

It can be visualised by a map like the one in Fig. 5.8. It indicates the time horizon on top of the map, starting with **year** 2018 until 2021. Software applications are listed on the left-hand side (named **IT systems**): The example consists of an *SAP system* comprising several applications for *Customer Relationship Management* (CRM), *Enterprise Resource Planning* (ERP), *transportation management* (TM) and *event management* (EM). It has a *track and trace* (T&T) application, an application called *LogPlan*, *alfabet*, which is an EAM tool, and a tool called IT management, short *IT Man*.

The main part of the roadmap shows several initiatives (i.e. **IT projects**) that are working on those applications. A very long project already started in 2018 and will last for almost 3 years, leading to a new release of the CRM application. The new release is indicated by the black triangle at the right end of the project time line. As given by the legend, a project can terminate with the **go-live** of a new application, a new **release** of an existing one or a system **shut-down**. The transportation management software is subject to a short project resulting in a new release. What happened to event management? For some reason, there was the decision that it is not required any more. Consequently, a project is started in the beginning of 2020 which will decommission EM before the end of the year. It cannot be used any more from then on and will be replaced by T&T. In parallel decommissioning EM, a project has already been started beginning of 2019 with the objective of having a new track and trace application by around mid of 2020. The black circle at the right end of the project time line indicates the system go live. The same holds true the EAM tools *alfabet* and *IT Man*. There is a plan for switching off *alfabet* and introducing *IT Man* in parallel. Such replacements are usually planned with some buffer between go-live and decommissioning. Planning has to avoid switching off an application before the substitute is in place in case of any unexpected delay.

It is just an example, but maps like this exist in many corporations. It is a very common representation for showing several initiatives like projects that work on changing the application landscape. It visualises information concerning:

1. time line of individual projects and desired result
2. dependencies between related initiatives

The example is very simple and is meant to show the underlying structure. It can be further annotated with additional information, like:

- project milestones or phases for more detailed planning
- resource requirements and financial aspects for resource planning
- business contacts and responsibilities of inter-project coordination
- dependencies from other applications as provided in the application architecture
- affected business capabilities or processes

The application roadmap provides an overview on changes being performed on the application landscape but is also connected to other architectural view.

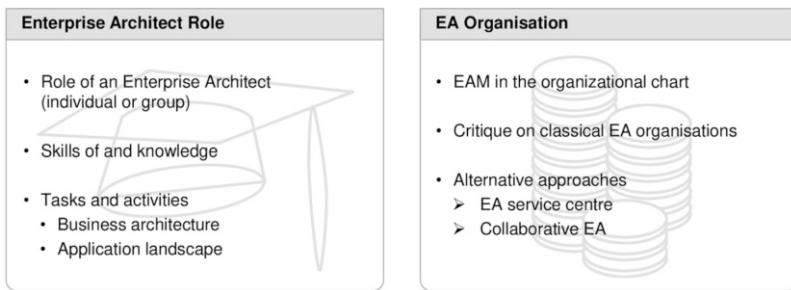


Fig. 5.9 Enterprise architect and organisation

It is, furthermore, the link towards project management or program management (i.e. coordinating several interrelated projects). As projects progress over time, the roadmap has to be updated in case of any change during project execution (e.g. a delay).

5.2 Enterprise Architect Role and Organisation

The previous sections of this chapter provide an overview on conducting changes in EAM. This topic is quite important as EAM does not only describe architecture but also aims at its improvement. Those improvements will then be executed as projects changing the application architecture or the business. Both are interrelated as business changes imply different application, and application changes cannot be done without affecting business processes. Who is responsible for doing all those changes? this will be the role of the enterprise architect as the one preparing, planning, making decisions, and also supporting conducting changes.

The section at hand will describe the two aspects as shown in Fig. 5.9

- **enterprise architect role:** skills and responsibilities of people acting as enterprise architect
- **enterprise architecture organisation:** classical organisational unit providing EA in a company

An enterprise architect does not just exist somewhere in the company. EAM has a place in the organisational chart. This is what we will look at after having a common understanding on the role of the enterprise architect. We will have some options, how to set up and what architecture management in the organisation and compare them against each other.

The following Sect. 5.3 will then provide an overview on critique on EAM as it is implemented in many organisations today. It will also provide an outlook on current and future approaches for a more collaborative working mode of EA—as opposed to classical methods. We will check for organisations that can be set up in

a more service centred way or even establishing a collaborative approach for EAM within a company. Just to state it very clearly, EAM in the past was rather seen as a governance approach and this is still the case in many organisations. If you want to achieve a holistic optimization—i.e. large changes—you need to enable it from top down by using tools and methods from governance. However, EA can also be implemented on a smaller scale. And there is a lot of criticism, especially because of this governance approach. Therefore, you will find new approaches that do not only use governance mechanisms for setting up EA but also adopt collaborative and service oriented ideas.

5.2.1 *Enterprise Architect Role*

Let us start with understanding the role of the *enterprise architect*. It can be an individual but usually will be a group of people providing EAM in a company.⁶ This section cover the following aspects:

- skills and knowledge required for EAM
- tasks and activities performed by an enterprise architect

Definition 5.2 (Enterprise Architect) The **Enterprise Architect Role** (short Enterprise Architect) is an abstract description of skills and knowledge for performing EA work. It also refers to responsibilities of an enterprise architect in an organisation.

Figure 5.10 provides an overview on the responsibilities of an enterprise architect. Depending on the company's size, the EA group can be a large team. Team members (each of them having the enterprise architect role) can share or divide responsibilities.

Enterprise architects need to help with **creating** the artefacts that we discussed so far.⁷ We are talking about a lot of maps that need to be created including collecting information required for creating them. All of this is typically done by the enterprise architect who is feeding the EA repository with information and then can create the maps as required by stakeholders. The enterprise architect is not only responsible for collecting the data but also for ensuring the correctness of the data or quality assurance for all the EA artefacts.

The enterprise architect does not only maintain the artefacts but also support stakeholders with **applying** them. Each stakeholder needs to get an adequate visualisation and they need to be informed whenever data and a map changes. An enterprise architect also needs to make sure that new maps are published within the

⁶The term *enterprise architect* will be used for referring to an individual, a position or even a group of people throughout this book.

⁷We covered for example the following artefacts: business capability map (Chap. 2, application landscape (Chap. 3), business support matrix (Chap. 4) and application roadmap (Sect. 5.1).

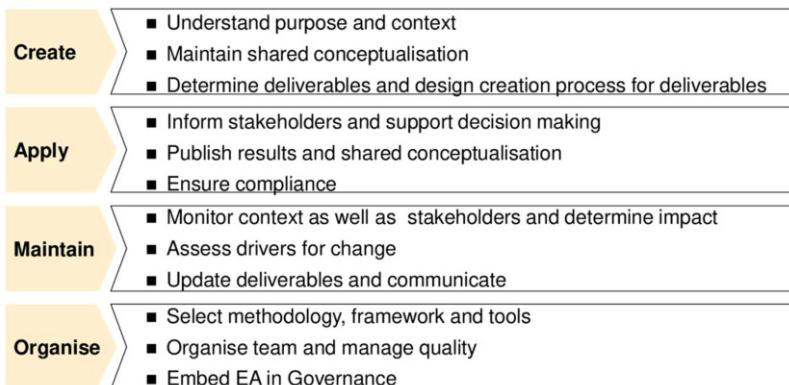


Fig. 5.10 Enterprise architect role: responsibilities

corporation and that anybody who needs to have an overview of certain aspects will have a corresponding viewpoint. Publishing includes making sure that compliance rules are met. The enterprise architect cannot just show all the information to any stakeholder in the company due to data protection and security reasons. The viewpoints have to be created based on a stakeholder's authorisation.

Maintaining data and artefacts (i.e. maps) is usually an underestimated task. I still meet people telling me about introducing an EAM tool. They assume that we just need to install the tool, gather any required data and can then generate architecture viewpoints automatically. This will then provide value to the organisation as depicted in Fig. 1.9 on page 17. Those people (usually sales staff of an EAM tool provider) are very enthusiastic about the tool and the method. What they are very often forget about, is that the company changes frequently. Even worse, the enterprise architect is not always getting aware of all those changes. It is very tough to keep the EAM repository updated over time. The enterprise architect needs to establish mechanisms for monitoring the organisation and also the stakeholders so that the enterprise architect gets informed about changes so that the drivers for the change can be understood. The EA repository can then be updated and also corresponding maps regenerated and provided to the stakeholders.

Generally speaking, the enterprise architect needs to **organise** all the work around EA. It starts with selecting and defining the proper methodology or a framework, selecting a software tool for EA work, adjusting existing frameworks, configuring methodologies so that they fit to organisational needs. A team needs to be set up for doing EA work. In many organisations, they still do not have an EA team. The EA discipline was not that popular in the 1990s. Starting from 2000, many organisations recognised its value and got busy with setting up such an organisation. Forming a team, setting up the organisation, establishing it in the company, and then also managing the team over time are quite important tasks. Also existing governance mechanisms need to be aligned with EAM. Both need to use common tools and mechanisms for guiding the corporation.



Fig. 5.11 Enterprise architect role: Skills

Bad news for specialists: EAM is a job generalists. Being a successful enterprise architect requires a lot of different skills that you need to offer for managing your day-to-day work (cf. Fig. 5.11⁸). One of the most important skills is *communication*. There is a study by Banaeianjahromi et al. investigating critical success factors as well as reasons for EA initiatives to fail (cf. [8]). They come to the conclusion that *communication* and also *collaboration* are key for being successful. The other way around, if communication does not work properly between enterprise architects and stakeholders, then it will not be successful.

EAM is not only about drawing and publishing pictures. It is not only about having a solid IT knowledge, but also being very good at communication. The chief enterprise architect needs to be very good at **leading a team** and each member needs to be good in working within a team. EAM is a holistic approach covering the whole company. Therefore, problems need to be addressed on corporate level rather than fixing small problems. This can only be achieved by working as a team.

The work of the enterprise architect sometimes resembles the one of a **consultant**. You need to know how to talk to people and listen to their concerns. You also need to know how to explain them required actions in an adequate way. At the same

⁸The overview provided in Fig. 5.11 has been compiled from [7].

time, you need to make sure that you are not irritating people. It therefore requires a bit of diplomacy and social intelligence.

Enterprise architects need excellent **communication** skills. This does not only refer to applying human language (written or oral) but also to the ability of creating visualisations that are intuitively understood by stakeholders. This is one of the soft skills that cannot be learned mechanically. It is not only about reading the EA book and then picking any of the existing visualisations. You need to make sure that the chosen visualisation helps your stakeholder with solving his or her concern. This might be very different from the standard way in the book. It is very important to not create just a standard visualisation, but to make sure that you can provide the map that top management perceives as useful for their work.

EA work needs to be **planned** and **organised**. It requires organisational skills and as the enterprise architect, you need to be very **flexible**. You need to adjust to changes in the business and its environment. Even though managed evolution is striving for a vision, priorities in an organisation can change frequently and this needs to be reflected in each iteration in a transformation roadmap.

However, at the same time, you also need to be **persistent** for ensuring architectural quality. Even if people tell you that they don't want to follow your advise. If you exactly know this is the best way to do it, then you should also know how to talk to people, to convince them that there's no choice, or that the other choices are not better than the one you are heading at. Of course, persistence is not just being stubborn and isolated. Being persistent also means that you have communicative skills, that you are some kind of diplomatic that you have some leadership skills, that you can define and communicate a vision. All the skills provided in Fig. 5.11 relate to each other.

When talking to people or conducting meetings, you need to be a good **facilitator**. This also requires being neutral as a facilitator. Even though you have a preference for a certain solution, the facilitator should not for pushing for one solution, but helping people with finding a common solution.

As most IT people, you need to be skilled in **analysis** and have a good understanding of **abstraction**, so that you are not getting dragged too much into the details. You are not the system architect—you are not building a house—but the town planner. You need a high level view on the architecture in order to have the overview on all applications together with their business context. An application landscape depicts all software applications and not details about their internal algorithms.

And last but not least, an enterprise architect needs to **listen** to what people are saying. You will never be successful if you don't listen to people and understand their concerns. You need to listen to them for understanding which kind of visualisation they need. You need to listen to them for understanding which kind of message you need to provide to them, in case of consultancy. You need to listen to them for also doing the facilitation. This will require a balance between appreciating people's concerns on the one hand and being persistent with solid solution on the other hand. There is no easy solution for this balance except for experience. Listening is one of the key skills you need to have as an enterprise architect. And of

course, organisational skills and **organisation awareness**. You need to make sure that you are connected within the company and get informed by other people, or even getting contacted by other people. A successful enterprise architect will profit from his/her network.

What are the typical tasks that can happen in day-to-day work of an Enterprise Architect? An overview is provided in Fig. 5.12. It is not meant to exhaustive or complete but rather provide an impression of the spectrum of EAM activities. The overview is structured by the following two dimensions:

1. Activities can affect the **application layer** or the **business layer**. As these layers are interconnected, some activities can have an impact on both. We will locate them in that level in which activities will have an immediate effect.
2. Any activity can have a long-term relevance (i.e. being **strategic**) or being subject to daily routine (**operational**), providing immediate results.

Let us start with *operational* activities that enterprise architects may perform or might get involved in with respect to the *application layer*. We already talked about some of those activities in previous sections. Enterprise architects need to ...

- ... collect and maintain data about applications (cf. Sects. 3.3 and 5.2.1, page 154).
- ... connect applications to the business layer, i.e. describing the business support (Sect. 4.3)
- ... provide maps describing the application landscape for business and IT stakeholders (cf. Sects. 4.1 and 1.3, page 20)
- ... assist with performing EA analysis (e.g. by using the business support matrix as shown in Sect. 4.3)

Analysis can be performed by the EA team, but can also involve management from the IT side or people from the business side. In many organisations, enterprise architects are also involved in application portfolio management. Therefore, they also have to assess proposals for IT projects. Such an assessment will help with selecting projects with the most potential for success. Each project will be evaluated with respect to effort, benefit as well as its risk so that it can be compared to others. An enterprise architect will also get involved in facilitating, conducting, or managing changes in IT.

There are activities that are not part of day-to-day work, but have a *strategic* relevance. Maintaining the IT architecture or the *application landscape* needs a common methodology. This needs to be defined and implemented on corporate level so that we have tools and visualisations available for managing the application landscape. This includes the kind of viewpoints required by stakeholders for their concerns. Do you remember the posters showing application landscape?⁹ These need to be defined, not on a day-to-day basis, but on a long-term basis so that we

⁹For example in Sect. 4.2.

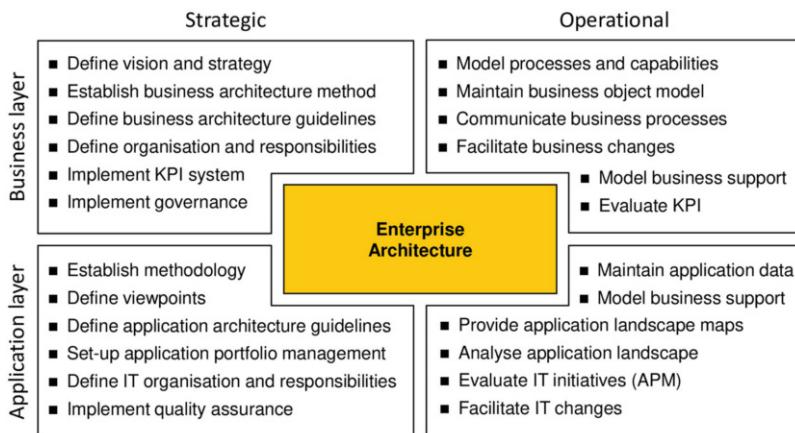


Fig. 5.12 Enterprise architect role—tasks

can make sure we have the resources for creating those posters whenever they are needed.

Managing the architecture does not only mean we are describing and making plans about how to get there. We also need to provide quality criteria for the evolution of the application landscape. Those guidelines will act similar to KPI in the business. They provide information on how to assess a good architecture compared to a not so good one. These guidelines are not changed every day. They are defined once and only rarely updated. They are meant to be valid for a long period of time.

The same holds true for setting up a methodology for application portfolio management. It is not only about performing decisions, but also defining the methodology for managing the application portfolio. The enterprise architect is involved in defining the responsibilities that need to be covered by the IT organisation. This especially holds true in the case of partial outsourcing if part of the activities of the IT organisation are outsourced to a third-party provider.

And last but not least, we need to have quality assurance in IT. This certainly bases on the guidelines for good architecture defined by the EA role. Therefore, the architect also gets involved in implementing measures for assuring the quality of IT landscapes.

Even though we are talking about applications and IT very often, and talk about changing the IT landscape, of course EA still refers to a holistic approach that also incorporates activities on the *business layer*. An enterprise architect can be part of a business process team or can get involved in activities for describing business processes and business capabilities, together with the business specialists. The enterprise architect can also get involved in maintaining the business object model (cf. Sect. 2.3). This is not a task that can be done in IT or by IT people alone, but definitely requires skills and knowledge from the business perspective.

New business processes or changes in existing processes need to be communicated. And if we agree on changes, then they also need to be facilitated. There might be a dedicated business process management team. Business process management teams and enterprise architects are often working closely together for making sure that they are not having two different versions of the company, but having one common understanding of business processes, capabilities and objects. Modelling of the business support—which might look kind of redundant, because here it is on the business layer, and it is here on the application layer—is definitely a shared responsibility. Business support can be managed or maintained from two directions, either from the business side or from the IT side—or both in a coordinated way.

There are a couple of activities that have a *strategic* implication for the organisation. Somebody needs to define the vision and the strategy for the whole corporation. As this is part of top executives or the top management, it will be covered by them and their staff departments. Nevertheless, EA can get involved into those activities. Architecture guidelines, quality criteria for architecture and ideas for business process improvement can influence the definition of the strategy.

The business architecture method needs to be defined and implemented on a corporate level and aligned with the one for the application landscape. We also need guidelines for the business architecture, guidelines describing good business processes, and also how to describe good business capabilities. EA can get involved in organisational design and also assigning responsibilities to organisational units. EA can have a consulting role in establishing a KPI system. Such a system of key performance indicators is necessary for measuring the performance of individual organisations (based on their responsibilities) and measuring the performance of business processes.

5.2.2 *Enterprise Architecture Organisation*

The previous section describes the role of the enterprise architect by explaining responsibilities, skills and typical activities. We should now have an understanding about what an architect is doing. The current section will describe the EA organisation and where EA is located in the organisational structure. This organisation is defined as follows:

Definition 5.3 (Enterprise Architecture Organisation) The Enterprise Architecture Organisation (EAO) is an organisational unit enabling EAM in a company. It consolidates people with EA skills and knowledge. The organisation can be set up in one of the following forms:

- **enterprise architecture team:** consisting of enterprise architects performing EA work
- **competency centre:** for disseminating EAM knowledge

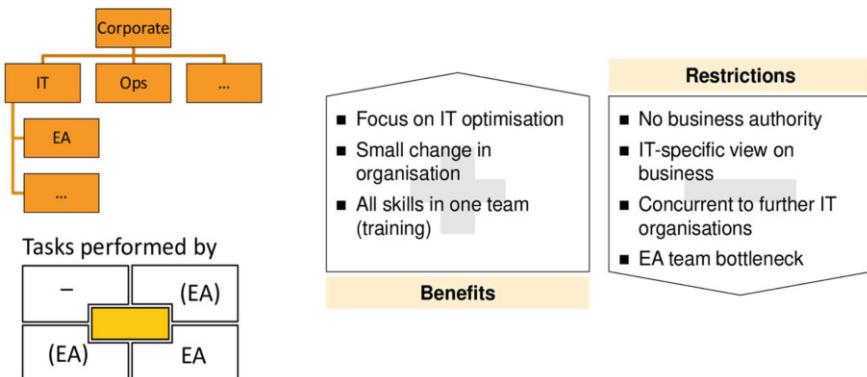


Fig. 5.13 EAM organisation as part of IT organisation

The classical perspective is that EA needs to be implemented top-down as an organisational unit supporting the management. Depending on sponsor, it can be part of the IT organisation (sponsored by the IT head) or on corporate level (driven by a top executive). The current section will present four options for setting up EAM in the organisation. Each option is characterised by its benefits and also drawback. We will also indicate which kinds of activities are performed by different organisational units against the structure of Fig. 5.12. The figures describing each option will show, which set of activities is performed by EA, IT teams or business specialists. This will not represent a strict assignment of tasks but rather serve as a rough characterisation of responsibilities.

A simple option for setting up EA **within the IT organisation** is shown in Fig. 5.13. This reflects the situation when I started my career in EA. The EA team is one among others in IT. This allows for a close collaboration with other IT teams but EA is disconnected from other departments (e.g. operations, marketing and customer service) and far away from corporate management. Having this set-up in mind, I think you can imagine that the power of people working here is quite limited. And effectively, my team was just performing activities on application landscape and being involved in application portfolio management. We were only slightly involved in strategic aspects within IT (in the same extent as other IT departments). We were basically expected to execute what was defined by the CIO together with other IT heads.

Even worse, we were mostly disconnected from business people. This made it impossible to understand business processes, capabilities and objects. We were asking the business departments for providing information about the business architecture. Some of them refused to follow the request because they did not want to or did not have any business process maps at hand. And we could not force them to maintain such kind of information and hand it over to us. Chances are also very low with respect to getting actively involved in activities concerning business architecture—especially no activities with strategic relevance. This just summarises

experience from my perspective. However, this experience is quite common in other companies with a similar set-up of EAM within the IT organisation. Other people reported similar experiences. Even though there might be differences in collaboration (perhaps supported by the company culture) but the basic disconnect still remains.

There might be differences in data, but the general restriction is that those departments do not have any authority in business. And they are focusing very much on an IT-specific topics without properly understanding business priorities. Honestly speaking, this does not reflect the basic idea of EA aligning business and IT. Business capability maps are often created by (senior) IT people who are familiar with the organisation. Nevertheless, it will still remain an IT point of view on the business and not the real business perspective. Also the alignment with further IT departments can become cumbersome. Identifying and eliminating redundancies in the application landscape relies on other departments' support and collaboration. If they do not collaborate, there is no way for forcing them to performing required changes.

The EA team is accountable for performing most of the architecture-related activities, as shown in Fig. 5.13. Architects maintain all information about the application architecture, try to get an overview on business architecture and can only slightly influence strategic aspects. They can easily become a bottleneck if they are not staffed sufficiently or are busy with understanding the business context without (or only minor) support by business departments. If you only have a small team which is located somewhere in IT, your scope of work can get restricted to tasks like drawing maps, collecting information, and do not get any support from other departments.

However, the benefits of such a kind of organisational set-up lies in its simplicity. Imagine the situation not having EA at all in the company. Introducing EA as one department within IT is a small change. The CIO can push for this change and in setting it up. And you can make sure that all the skills that are required are within one team. We don't need to train other people.

But against the restrictions of having limited impact, we should check how could we set up EA differently. Instead of being one department, it can be introduced as staff department directly supporting the CIO. This option—as shown in Fig. 5.14—shifts the responsibility of the EA team from operational activities towards strategic aspects in IT. Collecting information on the application landscape is not only done by architects but can be delegated to IT teams. Maintaining the application landscape is now shifted towards those people who are also performing the changes on applications (i.e. executing IT projects).

However, even though being closer to the CIO, there is still the tendency of being disconnected from business stakeholders. Chances are still high, that the representation of the business capabilities only reflect an IT-specific view and not the view how business people see what the business is doing. And instead of only having skilled enterprise architects within one team, you also need to start training other IT staff so that they can collect and maintain data about applications. They need to understand EA so that they can also create the viewpoints required by

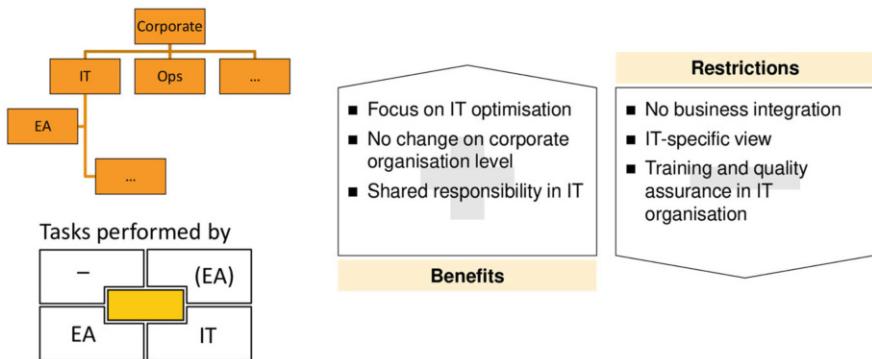


Fig. 5.14 EAM organisation as staff department to CIO

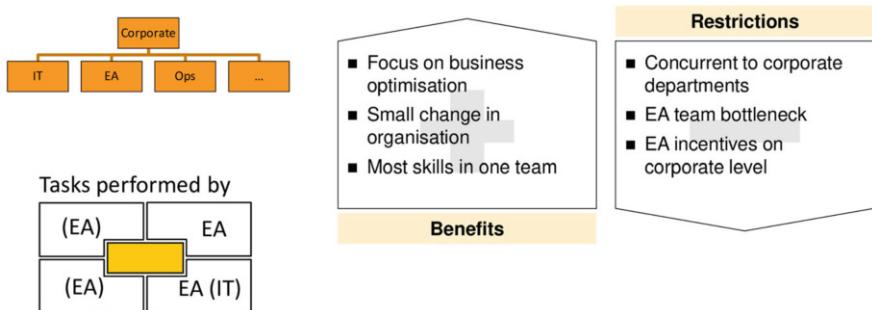


Fig. 5.15 EAM organisation as corporate EA division

various stakeholders. If you want to get other peoples involved, you also need to enable them so that they can perform the tasks as expected.

If training is done properly, then the EA team can share the workload with other IT departments. EA is a shared responsibility within IT. At least you do not need to change the organisational chart on a corporate level, as the change is still within IT, and you can focus on a broader optimization of IT.

In order to improve the business relevance of EA, the team can build an organisational unit on corporate level and not restricting EA to IT. From the beginning on in this book, I was emphasising the fact that EAM is not just IT management. It is a holistic approach, enforcing business IT alignment. It is deriving an IT landscape that is optimal for supporting the business. It also fosters (IT) innovation in the company, so that business can be more efficient in the future. If you want to achieve this, you need to make sure that EA is perceived as part of the whole organisation. The corresponding organisational chart is shown in Fig. 5.15. EA is one department on the same level as IT as well as other business departments (e.g. operations, finance, sales). being the enterprise architect, you can collaborate

with business people and you can align with IT people. You can define guidelines that are relevant for the whole organisation.

When checking the tasks that need to be performed, we have a shift of activities on the operational side for the application architecture. Again, EA tend to get involved because they are not part of IT—even not as staff members for the CIO. They cannot influence other IT people or define their responsibilities. However, as EA is on the same level as IT, they can find some working agreement between EA and IT. Ideally, EA should maintain the EA repository together with IT people. Of course, as they are not part of the IT department, they can only get partially involved in strategic activities for IT and the same for business strategy. The CEO on corporate level will certainly not only ask EA about how to define the corporate strategy. He or she will also involve IT heads, operations heads, marketing heads—i.e. all his or her direct reports.

EA now at least gets in charge of all the activities that are related to maintaining the business architecture. I experienced being in such an organisation at a later point of time during my professional career. The department was not called EA but *Performance Management* and supporting a strategic program for improving business performance. Although being tasked to monitor and improve business performance, this department was also accountable for aligning business and IT.¹⁰

The benefit of this kind of organisation is that you are on the same level as other departments and it is easier to establish a collaborative working mode. You can focus more on business optimization and not only on managing IT landscapes. Introducing such a team in the overall organisation is a small to medium-sized change. You just create a new department on corporate level and do not impact changes in other department. You can consolidate EA skills and competencies within one department which needs to consult and work with other departments.

However, this might lead to conflicts as the EA team is concurrent with other corporate divisions and departments. You can provide guidelines and justify them but incentives for others to obey them are limited. The EA organisation can become a bottleneck like in the second option (Fig. 5.14). All the EA skills are bundled within one department that needs to support the whole organisation. EA is basically defining the objectives, but cannot provide any restrictions or guidelines for other departments as being on the same level (Fig. 5.15).

Ideally, EA should be directly consulting and supporting the CEO.¹¹ What I am describing here is the ideal form of EA (Fig. 5.16). EA is not just in IT or on the same level as others. The enterprise architect is directly supporting the CEO with managing the corporation. EA is supposed to be a corporate staff department, describing, prescribing, enabling changes, standards, guidelines for all the other departments.

¹⁰The team was managing business requirements for IT developments and providing training for business people. As they had they expertise on business and software applications, the team got also involved in activities typical to EA.

¹¹I've never been in such an environment. There is a book published by Chris Potts, a consultant in EA: [9]. It is nicely written as a story and explaining the idea that the CEO is the real enterprise architect.

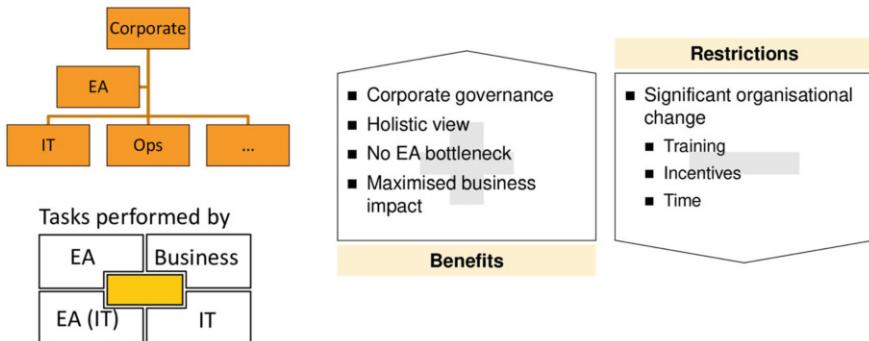


Fig. 5.16 EAM Organisation as corporate staff department

The benefit is that you can then implement a corporate governance approach for EA. You can enforce the holistic view as you are in top of all the other organisational units. You can involve any other department. It is not about performing the work, but defining how the whole organisation should work. This approach can maximise the business impact of EA work.

However, restrictions are clear. If you involve other departments in EA work, you need to enable them. This will result in a lot of changes. You need to implement an EAM method. You need to train people. You need to set proper incentives for people to make sure that we have a corporate, holistic, EAM. Each person working in any department needs to spend some time on EA work.

When looking at it from the task perspective, it really looks like EA can get involved in defining business strategy, setting up KPI, defining measurements, and, also defining the EA method on a corporate level. Business units are in charge of describing business processes, performing business changes, and provide transparency for others. The IT department is in charge of planning and executing changes in the application landscape. Furthermore, EA can also get involved in defining the IT strategy. The IT strategy can be derived from the corporate strategy. IT will still have a stake on defining the IT strategy, but EA can have a leading role.

As I have never been in such an environment, I cannot provide any hands-on experience. But, this is the idea of EAM. It is a holistic approach. It needs to be implemented company-wide. It is addressing each and every part in the company. And if you want to set it up as a corporate responsibility, you need to have it on corporate level and not just as part of any of the other departments.

5.3 Collaborative Enterprise Architecture

The different options for setting up EAM in an organisation base on the assumption that it needs to be implemented top-down. It is supposed to be driven by a leader (e.g. top executive on board level) that pushes for achieving a holistic view. We can

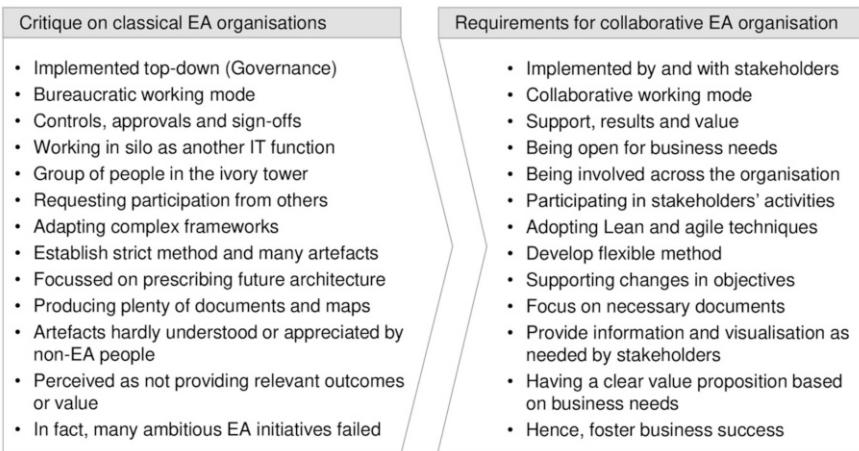


Fig. 5.17 Critique on classical EAM approaches and requirements for collaborative EAM

see that EA can be assigned to different levels in the organisational chart which will have its benefits and drawbacks. However, they all reflect the classical perspective on implementing EA in a company.

In the beginning, the EA function was very often driven by IT departments. They understood that they need to have a good understanding of the business in order to provide optimal (and cost efficient) IT support. It was also motivated by classical IT organisations that were only focussing on IT (technology and networking) and rarely considering business needs. Even though this already provides an improvement, there is some criticism on EAM. The criticism is addressed towards the discipline itself but even more on how organisations introduce and perform it today. Figure 5.17 provides an overview on how EA is perceived in a negative way on the left-hand side¹². The right-hand of the figure derives requirements for an improved EAM.

The EA organisation is very often perceived as being set up **top down** with a very **bureaucratic** working mode. Because of being a governance function, classical EA initiatives were setting up controls and procedures (including **approvals** and **sign offs**) in order to control changes. Those overhead activities tend to delay projects and production processes.

The prospect of EA is providing a holistic view but in some cases EA just created an additional **siloh** if the EA organisation did not establish a collaborative working mode with IT and business units. How can you establish proper controls if you are disconnected from others? Silo thinking and controls rarely foster collaboration.

¹²The overview has been compiled from personal experience and discussions with peers. It also incorporates input from publications like [10–12].

In some organisations EA was set up as some group which was then working in the **ivory tower**. This refers to having a theoretical understanding of the business architecture without any practical experience ion operational processes—both, IT and business processes. In order to analyse architecture and conduct changes, an enterprise architect needs to understand relevant operational aspects of the organisation, like

- the reasons behind the current process design
- peculiarities of the business
- business rules and procedure

Enterprise architects also need to involve further staff from the company. But, instead of solving business relevant problems, architects often request their **participation** for EA purposes (e.g. collecting EA data, drawing maps, reducing the number of software applications).

Frameworks are the most prominent tools in EA. They are prominent in the literature but also with EA consultancies. Major frameworks (e.g. TOGAF) are influencing the EA organisation and its working mode. A framework provides a blueprint for EAM so that many companies just adopted them. We will have a look at frameworks in the following Chap. 6 and their potential for solving imminent problems. As in many cases, people should not just adapt a tool (i.e. a framework).¹³ They should understand the problem to be solved first and then decide for an appropriate tool. Just adopting a framework will primarily result in having an EA organisation but necessarily solving problems if it was not fully understood before.

Producing a lot of **maps** (i.e. viewpoints) and **paperwork** (e.g. architecture guidelines and principles) is one of the pain point for business departments. We as enterprise architects set up methods that result in creating big posters (sometimes helpful posters). But very often this leads to a lot of paperwork with artefacts that are not required. Some artefacts focus on prescribing the future (e.g. to-be architecture). You might already imagine what happens when some disconnected enterprise architects in their silo define the future architecture of the organisation. This will lead to resistance and rejection by other departments. This is what happen frequently during the past years: Having the paperwork from the ivory tower, prescribing how the whole company should work in the future How can you substantiate such a decision without solid business knowledge?

Many of the standard maps (including the one prescribed by common frameworks) are **hard to understand** by business and IT people. Even when following a simple structure, they may grow large and present a lot of information. They get hard by people without EA experienced as they can get very abstract. If you have a team somewhere producing a lot of paperwork, posters that nobody understands, so how can you trust them that they know how to change the business?

There are a lot of initiatives that failed in the past, because EA did not result in any benefits for the company. They did not create any **tangible value**, except for

¹³A fool with a tool is still a fool.

collecting application data, creating paperwork, creating posters and running around with posters (pretending being the architect). Such an organisation can be perceived as costing money without providing any value. Having a successful EAM requires collecting a lot of information in order to improve business and IT. However, doing it properly will take a lot of time for data collection and establishing a method.

If you do it academically, disconnected from business, then you have a high risk that you are spending a lot of work without any result. A lot of EA initiatives started quite ambitious, but failed.¹⁴

Let us look on the right hand side of Fig. 5.17. There are a couple of publications available at the moment that want to drive towards a more **flexible, cooperative, or collaborative** approach for an EA organisation. An organisation that is implemented by and together with other stakeholders. An organisation that does not have a governance mechanism based on controls, but having a collaborative working mode. An organisation that focuses on **supporting** other departments, providing results and value. An organisation that is not caught in the ivory tower, but that is open for any kind of business needs, not just providing decisions from the silo, but understanding the other business stakeholders. This organisation is supposed to be involved in initiatives and activities throughout the organisation, and even participate in activities that are shared with all the stakeholders.

Some of these approaches also aim at adopting existing techniques that have been successful in various other disciplines. Some examples are ...

- ... adopting lean techniques from business process management
- ... agile methods from agile software development
- ... using principles from lean organisation design
- ... enable EAM tools with social media

They are basically aiming at developing a more flexible method with respect to EA, that does not only adapt a framework, but implements a methodology based on business needs. Such a methodology is not strictly aiming at long term objectives only, but that can be adjusted to changes in objectives easily. Such a methodology should not only print or create a lot of documents, but focus on those documents that are really needed by other departments. This should foster the provision of information and visualisation as needed by stakeholders.

The EA organisation should not start with collecting as much data as possible and then create fancy posters, but understand business needs first. It should then specifically get this kind of information, so that it can provide immediate benefit by delivering relevant (i.e. helpful) visualisation. This will require a clear value proposition based on business needs. The following sections provide an overview on some ideas how such an organisation could look like.

¹⁴I remember one of my bosses that hired me, because she wanted to set up EAM in an organisation. Only 7 months after I started my new position as business architect, she had to resign. She was only focusing on collecting data and creating maps, but did not manage to communicate the benefit towards corporate management.

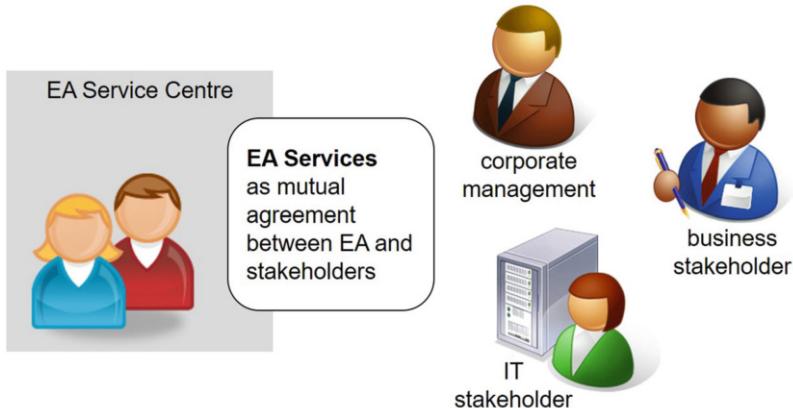


Fig. 5.18 EA service centre: basic idea

5.3.1 *Enterprise Architecture Service Centre*

One idea of having an EA department being more cooperative is the idea of the EA service centre as depicted in Fig. 5.18. There are no corresponding publications available as this idea represents research in progress. The basic principle follows the concept of a sales organisation that is offering services on a market. Stakeholders in the company are treated like customers that can order and use EA services provided by the service centre. EA services are documented in a service catalogue that needs to be aligned with business stakeholders (i.e. customers). Stakeholders still consist of corporate management, business departments as well as IT. Collaboration is supposed to be established by using services and adjusting services based on stakeholders' needs. Their needs can be fulfilled with services that are provided by an EA service centre, having a catalogue with a list of services that the EA service centre offers to all the stakeholders within the corporation.

The two drivers for such a kind of organisational form are **collaboration** and a clear **value proposition** (cf. Fig. 5.19). Collaboration can be established by being in a consulting role towards stakeholders. It can support projects within the company, interact with business departments and adapt to changes. If a service is not needed anymore, then it will be removed from the service catalogue. We can implement new services, so that we have services that are aimed at solving real problems in the corporation and not just provide an academic approach for a holistic view on the corporation.

And it is not only about collaborating with stakeholders, but also telling them what is the value of our service. This is the same as providing products and services on the market which need to have a value proposition. A customer only buys a service if it provides a value. We are aiming at transferring these concepts from marketing and sales to the EA service centre. The value proposition documents

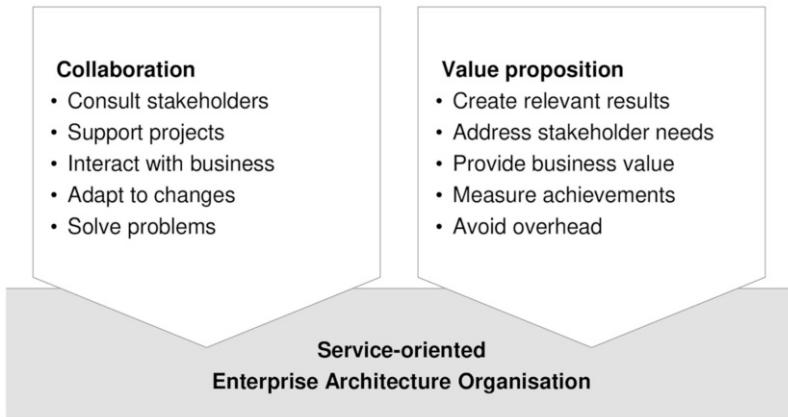


Fig. 5.19 EA service centre: drivers

the value as perceived by a corporate stakeholder (i.e. the customer of the service centre). The focus is on relevant results towards the customers.

The service catalogue needs to be established together with stakeholders. It should not reflect activities and artefacts as proposed by prominent EA frameworks. It should also not be constructed by pushing obligations towards the stakeholders—for example requesting them to maintain EA information or changing their processes. The service catalogue needs to reflect a common understanding between the EA service centre and the stakeholders in order to provide relevant business value (value proposition). This also includes implementing measures for determining the business value. KPI are a well-established tool for measuring business performance and can also be defined for measuring service quality (similar to product KPI measuring a product's sale performance on the market). Relevance and value of a service can then be quantified by KPI which represent a mutually aligned service level agreement. Assessing the value of an EA service based on marketing tools will support changing the service catalogue based on value and demand.

In short: The vision for the EA service centre is having a service-oriented EA organisation providing value within the company.

How could a service catalogue for such a service centre look like? So far, we identified four different service types as shown in Fig. 5.20. There might be **consulting services**, services that can be acquired by other departments that help with understanding a problem, helping with finding a solution. If a department needs to have an integration software for integrating several systems, or even for having an API for doing e-business with external partners, EA can provide a consulting service telling them which integration solutions are available, what are the benefits, which one should we not adopt, and then helping them with making a good decision on which integration infrastructure they should use for their project.

Other services are supposed to be requested by corporate management. They need **information** about the business, about the EA, and also some kind of

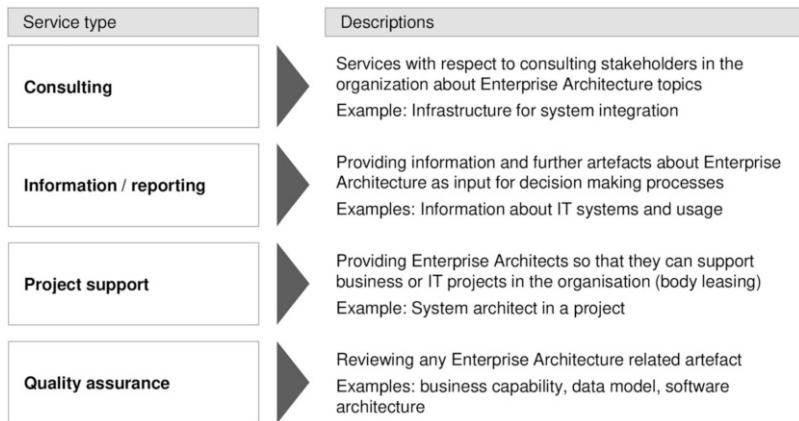


Fig. 5.20 EA service centre: types of services

reporting. CIOs, for example, need to have an overview on their IT systems. They also need to get an overview on who is using which IT systems. Consequently, one service provide the CIO with specific information. As you can already see here, for those services, it is not only about the EA service centre having the obligation for providing the service, but we also need to implement what is required from the users. If the CIO wants to have the information service, he also needs to make sure that the EA service centre is enabled for collecting all the data. He needs to instruct all his subordinates which kind of data each of them needs to be provided to EA so that they can consolidate the data for, then, performing the reporting and the information service.

Project support is one of the main activities of enterprise architects. Consequently, there should be a group of EA services for providing skilled staff for projects like ...

- **system architect:** a person being skilled in software and EA, who can support projects with respect to defining software architecture
- **integration architect:** an architect specialised in integration technology that can support with using integration middleware
- **data architect:** supporting with respect to data modelling and adhering to corporate data standards
- **business architect:** providing knowledge on business capabilities and supporting with understanding business requirements

These resources provide EA services and are intended to become part of a project team. They can and help with implementing a new information system or changing an existing application. This refers to some kind of body leasing—i.e. providing resources which have EA skills and knowledge. Beside providing knowledge, they can also foster adherence to architectural standards and foster reuse across different projects.

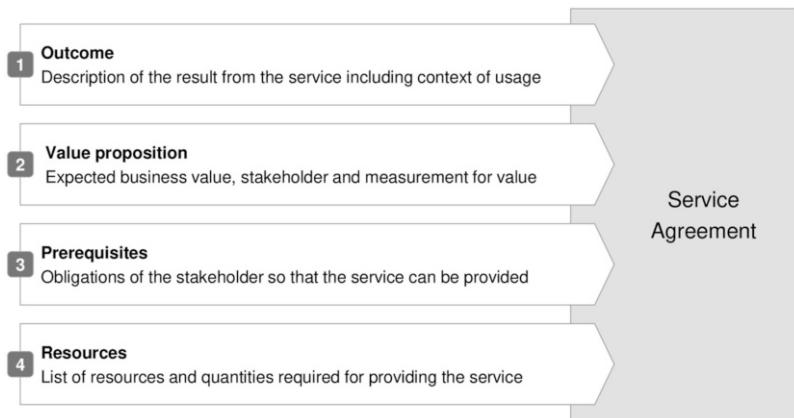


Fig. 5.21 EA service centre—service agreement

Quality assurance needs to be integral with other services but can also be offered as a service on its own. A dedicated service would consist of performing reviews and communicating improvement potential. Reviewing architecture and design documents of a software project would be one example. An architect can review the application architecture with respect to its fit to the overall EA. This check can also include identifying redundancies or overlaps with other business processes, projects or software applications. Having the big picture, architects can help finding reuse potential from other business areas doing similar implementations.¹⁵

Each EA service needs to be further specified by a **service agreement**. This is some kind of contract describing relevant properties of each service. It encompasses its output and also prerequisites for its execution as shown in Fig. 5.21. What is the result? Is it having a resource being available in a project? Or is it a document being created? Or is it a consultancy? Is it being some information or being involved in making a decision? These would be examples for the **outcome**.

Beside of that, we also need to describe the value provided to the stakeholders. It starts with determining the stakeholder as different stakeholders perceive a service's value differently. The value can then be specified in the the service agreement for each stakeholder as **value proposition**. Defining KPI will be part of the value proposition as we also need to specify expected target for the sercie's quality.

The service agreement does not only contain the obligations for the EA service centre, but there are also certain **prerequisites** that need to be fulfilled by the customer using the service. Example: If a stakeholder is asking for a consultancy service, the EA service centre is providing people and skills and documents. At the same time, the architect also need to have all the required information from the

¹⁵For example reusing a single software service for shipping label creation throughout the application landscape.

project that is required for providing the consultancy. If we are leasing resources to projects, the prerequisite is that the projects are not only just having the resource and then assign tasks to them. The architect also need to get involved in regular project meetings and get access to relevant documentation—equally to becoming a project team member.

Each service also have certain **resource** requirements. The service centre will only be capable of providing services if it has an adequate team and additional resources. This might be ...

- computer hardware or software
- EA repository for maintaining business capabilities and related software applications
- tools for reporting and graphical visualisations
- dedicated people and skills
- external consultant provided a specialist service

This is still ongoing research and categories for services might change over time. However, the overview provided by Figs. 5.20 and 5.21 is meant to illustrate the idea of the EA service centre and a service catalogue. The following sections each presents another approach for collaborative EA. Each of them is available as text book for further reading.

5.3.2 *Chess and the Art of Enterprise Architecture*

There is a nice book by Gerben Wierda, a Dutch guy, who is proposing that an enterprise architect should act like a chess player.¹⁶ An overview on his criticism and basic ideas is given in Fig. 5.22. Based on a lot of examples from his experience as a consultant, he summarises typical issues with the way EA is done today. He mentions typical issues that we already discussed previously (starting from page 164): People are spending too much time on creating paperwork and artefacts which are not needed. EA does not provide any significant value for the organisation. His main concern is EA being focussed on the to-be architecture as presented in the context of managed evolution in Sect. 5.1.3. The to-be describes the target architecture we want to achieve (in perhaps like 10 years) and all planning will be tailored around this target state. However, Wierda clearly says that achieving a to-be in such a long period of time unrealistic. We don't know how the world will look like in the future. Why are we sticking so much to a to-be vision, to-be architecture, that will be part of the future? The business and its environment will change and EA needs to adapt to any of those changes.

What he is suggesting is to do architecture how a chess player is working. A chess player is not having the final position of all the figures in mind. A chess

¹⁶Wierda, G.: *Chess and the Art of Enterprise Architecture*, [10].

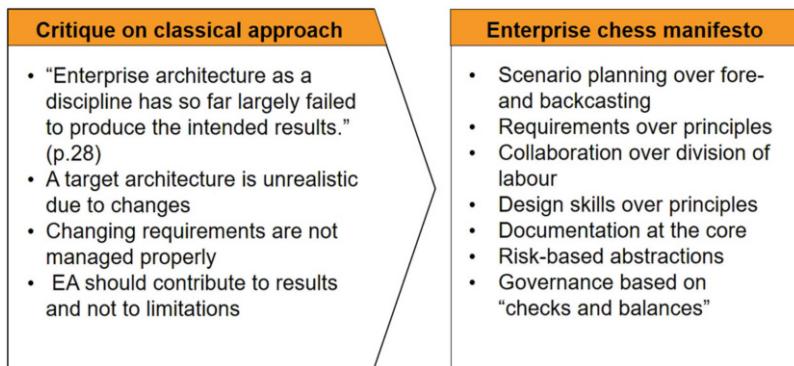


Fig. 5.22 Chess and the art of EA (overview)

player is looking at the current situation and then assesses various options for next moves—not only the immediate next move, but a series of potential moves. A chess player is also considering how the opponent might react. He will make step-by-step decisions; and also adjusting his or her strategy, depending on how the opponent is moving. he does not want to stigmatise business departments as opponents (or enemies). But Wierda wants to promote this working mode for the architect. An enterprise architect can support a change and then evaluate the resulting situation. He can evaluate the outcome and also consider reactions from other stakeholders. This will help with constantly adjusting plans and not being restricted by a—potentially unrealistic—target architecture.

The benefit of Wierda’s approach is that you do not need a target architecture that might be misleading after a while. However, you will still need a vision for providing guidance for any EA activity. EAM should then support decisions making by guidelines on best practises. These will also support assessing each iteration and defining options for next steps. This rather resembles a dynamic planning approach. You can also try to anticipate a sequence of steps and different options for sequences (like the alternative strategies in chess).

Evaluating each iteration and evaluating subsequent steps involves understanding requirements from the business side (in order to not being disconnected from business. Listening to your business side, listening to your stakeholders will foster collaboration with people instead of telling people what to do. Architects will also have more freedom with respect to their choices as they are less restricted by a to-be architecture and principles. Because for each principle, there will be an exception. And it is also the art of architecture to analyse the situation and avoid principles if they are not applicable.

The architect is not supposed to generate a lot of documents, but only providing those kind of documents that are really required by people. Also some risk awareness is a key skill. We should not document because of having documents, but only documenting things that will help us with managing risks. Also governance

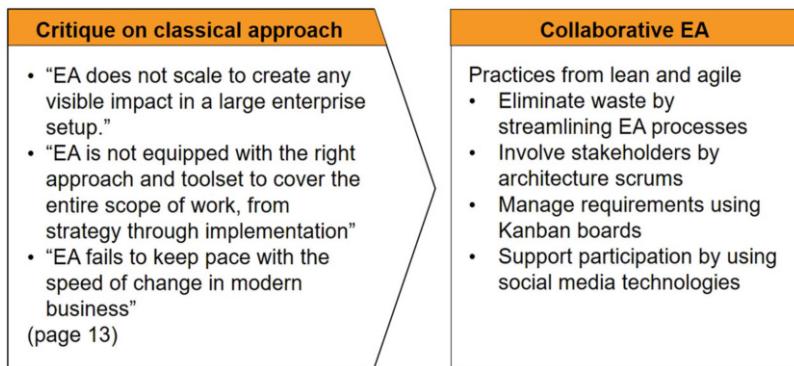


Fig. 5.23 EAM 2.0—overview

mechanisms need to be reconsidered that they are not prohibitive but providing guidance.

I would like to recommend this book as some further reading. It doesn't take that much time for reading and it is not written in a scientific way. It is very hands-on, especially when motivating the issues he identified in EAM. Also his comments on the notion of the architect acting like a chess player is an interesting read.

5.3.3 *EAM 2.0*

There is another book that I would like to recommend. It is titled *Collaborative Enterprise Architecture* and describes an approach developed by three Tata consultants (cf. [11]). And in their book, they also refresh issues they recognised in existing EA organisations:

- EA hardly provides any visible impact or value
- common EA tools are not well suited for solving real world problems that companies are facing

They also see an issue in EA frameworks as there is no *one size fits all*. The biggest issue with those frameworks is that people want to define a framework for being applicable in any kind of company. But companies are so very different. Problems, they face are so different that there is no ultimate solution for all of them. And furthermore, applying a heavyweight frameworks only results in having a framework implemented that will control (or restrict) the business. But business changes frequently and at a very fast pace. The certainty about how we want to act next year will disappear during the next couple of months, as political aspects change, as the market will change, as customers change, as even there might be new innovators that we need to keep in mind.

What they are suggesting is an approach they call *EAM 2.0* in accordance with the buzzword *Web 2.0* (cf. Fig. 5.23). They propose to adopt existing methodologies from other disciplines. For example, adopting Lean methods from Lean business process management. Especially one of them: *eliminating waste* for making EA processes more efficient. They are explicitly not referring to set up processes as prescribed by the framework. They emphasise the customer focus from Lean in order to understand stakeholder requirements. You can then design your process around what is really needed by the stakeholder. Eliminating waste then refers to removing activities that are not adding any value. Value add can be recognised if a customer would directly pay for this activity or its outcome. In general, their processes should just create artefacts and results that provide a benefit to the stakeholder and eliminate any task that is not required.

Their second pillar consists of methods from Agile software development. The main motivation lies in making EAM more flexible by adapting Agile methods and principles. Agile software development is getting popular, because it is providing solutions in a similar context. 20 years ago, the criticism on software development methodologies was that they are heavyweight, document-centric, and do not achieve expected results. A lot of projects started, but failed because of a high risk and a lot of uncertainty. They were not able to flexibly react to changes as the whole project was based on extensive analysis and design documents. The story is very similar to what we currently see with EAM. In fact, they are trying to adopt Scrum into their EAM 2.0 approach for being more flexible. They also incorporate Kanban boards for planning and discussing changes.

Last but not least, they are borrowing technologies from Web 2.0—now you see where the name *EAM 2.0* comes from. The term Web 2.0 indicates the next wave of web applications providing more interaction (as being common in social networks and social media), instead of just static HTML pages. Web 2.0 fosters the development of web applications that are interactive and that enable people to exchange information easily. Bente et al. are using those technologies for developing a novel EAM portal. This portal aims at collecting and maintaining information required for EAM by adopting similar user interfaces as we already know from social media. It feels like having Facebook for individual application or having the collaborative site for projects and change management.

This book as well as the book by Gerben Wierda, I think they are very influential because they show a problem and want to change it by proposing innovative solutions. Of course, each of them has its advantages and drawbacks. You cannot just buy the book and then have the blueprint for a perfect world. But both of them are inspirational in a way that they strive or provide a vision, how could EAM look like in the future, especially against the background that current implementations, that current EA organisations have their issues and we need to improve EAM for the future.

5.4 Further Reading

For terminating this section, there will be an overview on the most important further reading.

The first one is a paper published by two people. They did empirical research about what are critical success factors for EA initiatives: [8]. They were checking why did initiatives fail, what were the reasons, and they tried to cluster the reason. And they came up with a very interesting conclusion. They list a lot of issues. And some of them we also discussed already previously when talking about the criticism on existing EAM approaches. They covered some of them, but they have a common conclusion. They deducted everything back to the original reason is because we are not communicating properly and we are not collaborating properly. Whichever issue we can observe in EAM, we could solve it by just implementing proper communication mechanisms and collaboration platforms so that it is not about somebody doing something in a isolated way but doing things together. And doing things together requires collaboration and also communication. It is an interesting read and describes quite well the scenarios why so many initiatives failed in the past when setting up EAM on a corporate level.

The second one is the book published by Gerben Wierda: *Chess and the Art of Enterprise Architecture* [10]. You see from the subtitle that it is more about making the right moves to manage business IT complexity instead of having a vision and achieving it. Wierda has a strong background in the ArchiMate EA modelling language but also a lot of experience from consulting. He, therefore, motivates his approach by referring to bad practices of applying EAM in today's enterprises.

And the last one is the book by the three consultants from *Tata Consultancy* that aims at incorporating lean methodologies, agile techniques, and also enterprise or web 2.0 practises into EAM: [11]. It has been published in 2012 but the general idea is still popular: Making EAM more flexible by learning from other disciplines.

5.5 Summary

That's it for this chapter on managing EA. Where are we on our EA roadmap? We started the journey with having a look at what is EA and EAM (cf. Fig. 5.24). We are looking at the promised benefits, why are we doing this. For then, having some understanding for the business architecture. Business capabilities and business objects are the central concepts for driving EAM and then using those concepts as an input for developing the application architecture. Developing application architecture as deriving it from our business capabilities, but also looking at which kinds of details are required on our applications, so that we can later on then analyse them with respect to improving our application architecture. The analysis of EA is based on certain maps, default maps, standard maps that are already available in

tools and are described in many textbooks. And we had a closer look at one tool called the business support matrix.



Fig. 5.24 Following next: applying frameworks

The result of the analysis, of course, is we need to change something if we want to improve our application landscape and how to manage those changes we discussed in this section called Managing Enterprise Architecture. We briefly had to look at the motivation, why do we need to manage changes. We did not discuss methodologies as this was already discussed in the governance part of this course. But we then had a brief look at typical activities during application portfolio management and also looking at typical activities performed by an enterprise architect, so that after understanding what an enterprise architect is supposed to do that we could discuss how to set up EA as an organisational unit in the corporation. Having several options, having EAM within IT or even on a corporate level with pluses and deltas for each of them. There will never be the optimal decision for each and every company, hence, we sometimes need to decide for one organisation set up depending on the company and its context, but then we also had a discussion about existing frameworks and approaches are criticised heavily, because of experience of people in the literature based on empirical studies, or then looking at alternative approaches that offer more collaboration and also more service orientation towards the stakeholders.

This covers the whole story for EAM you might experience in the future. The next chapter will summarise many of the topics discussed by looking at the notion of EA frameworks like TOGAF. They are still quite popular as they document best practices for EA and EAM.