Sustainable enterprise architecture

pwc

www.pwc.de

Abstract

Over the next few years, all enterprises will have to face unprecedented and complex transformation programmes – whether they are planning for them or not. Environmental, social and governance (ESG) initiatives, demanded by politicians and wider society, will affect all elements of value creation: products and services, corporate capabilities and assets, alliances, partners, suppliers, and customers. So how can enterprises respond to this challenge and put their ESG strategies into practice?

Since IT can have a major impact in multiple areas, this paper argues that companies should start working on sustainable IT strategies, in an effort spearheaded by CIOs. Methods and tools offered by enterprise architecture management (EAM) are a great way to get started on this journey, allowing necessary changes to be made in an effective and targeted manner to maximise the chances of these changes having an impact. EAM has always aimed at using IT wisely. At its heart, it collects and documents relevant information from business and IT, establishing a relationship between them. More importantly, however, it leverages this clout together with tried-and-tested methods to facilitate and guide the company towards its vision for the future, enabling rewarding collaboration between business and IT.

Companies can make use of their EAM assets and processes and augment them with ESG-specific information to:

1. generate the ESG insights that the company needs by collecting and documenting ESG data and stakeholders along established structures (e.g. business capabilities, applications, technologies);
2. use these insights to improve the sustainability of IT;
3. incorporate these insights into planning; and
4. incorporate ESG into general implementation processes – creating sustainability through IT.

This can make a significant contribution to the organisation's work on sustainability, ultimately supporting a broader transformation in line with ESG goals.

CIOs should co-lead ESG transformations

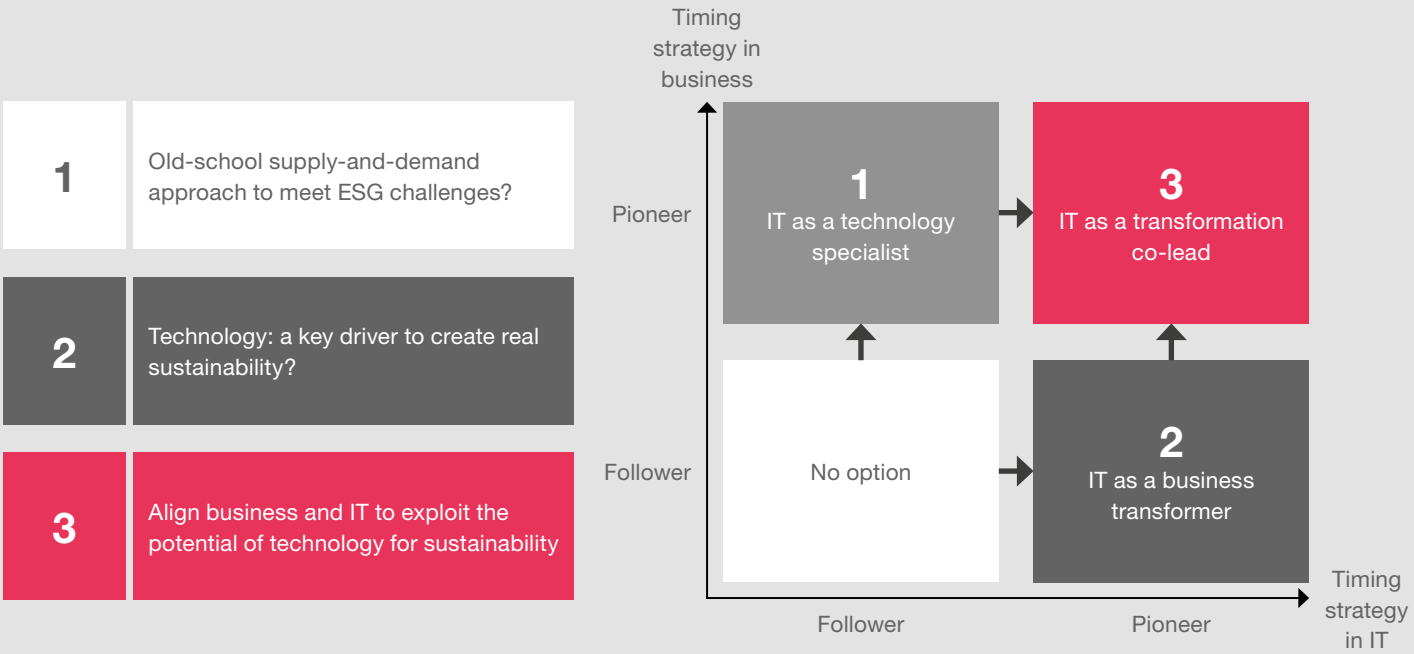
The World Meteorological Organization (WMO) reports that the past eight years are on the verge of becoming the warmest ever recorded, which can be attributed to rising concentrations of greenhouse gases and the buildup of heat in the atmosphere. The COP27 climate conference and new European legislation – such as the Corporate Sustainability Reporting Directive (CSRD) – highlight the urgency of tackling climate change by accelerating ESG transformations. The various measures for doing so, meanwhile, are the subject of widespread discussion.

It is crucial for companies to master their ESG transformations, as it is not just about continuing business as usual: depending on how we respond to the climate crisis, we may be left completely unable to do business as we know it sooner than we think. Once they become tangible, ESG-related issues tend to hit companies hard and may impact a wide variety of areas, such as available resources, addressable market or the established supply chain.

As a result, ESG transformation is about to become a priority, even in very challenging times such as the current situation of "permacrisis" and geopolitical uncertainty in many parts of the world.

This paper argues that CIOs have a major role to play in these ESG transformations. They are the interface between business and IT, with a particularly key role of ensuring alignment between business goals and strategies, and the IT systems required to realise them. This means that CIOs need to start focusing on a "sustainable IT strategy", which we define as the strategy to establish and implement a roadmap so that an ESG transformation through IT and of IT itself can occur, powered by data-driven insights. While the environmental aspects have particular urgency in the post-COP27 context of the energy crisis, a sustainable IT strategy also helps organisations to track their impact on society, and it can inform overall ESG-related governance processes.

Fig. 1 Sustainable IT, the opportunity for CIOs to be ahead of the upcoming ESG transformation of their firms



Sustainable enterprise architecture: starting point for sustainable IT strategies, enabler of sustainable organisations

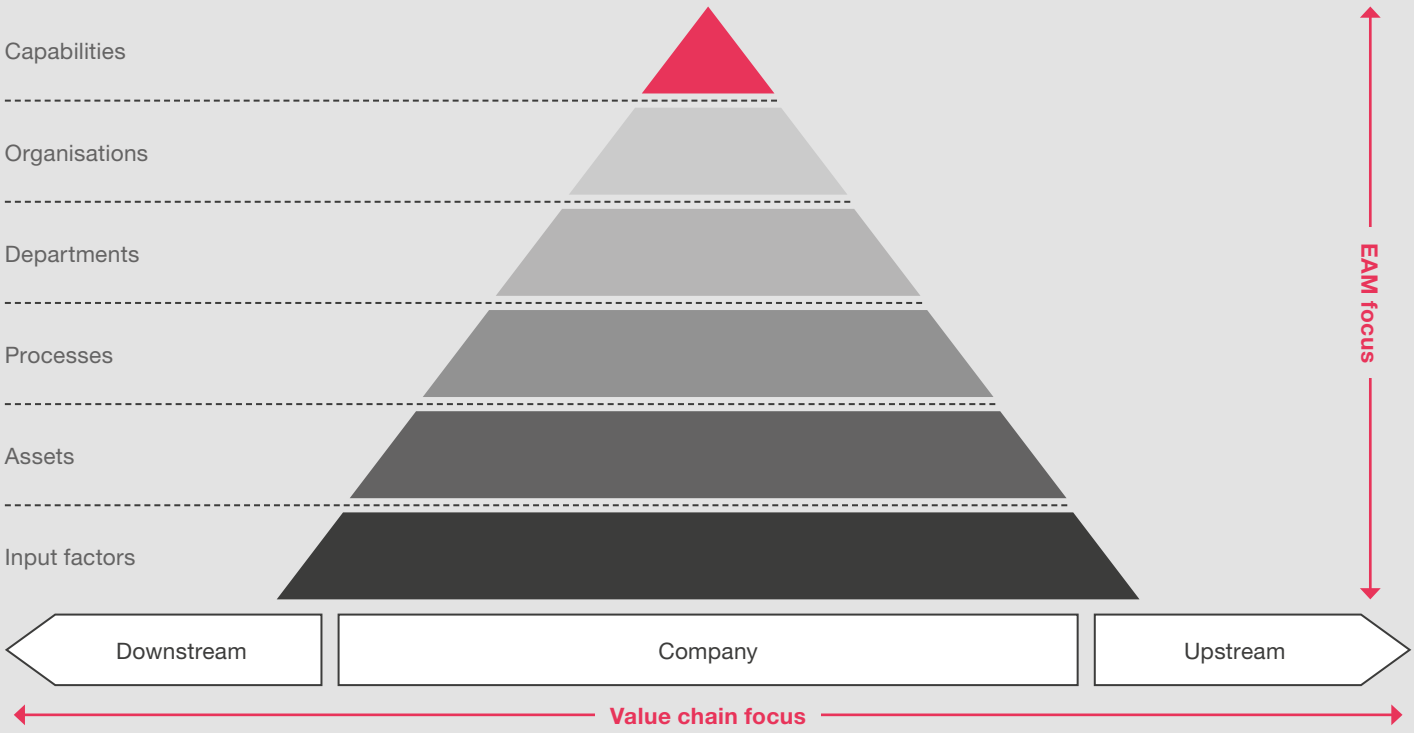
Overall, planning an enterprise's architecture is often likened to planning a city: the design of both cities and enterprises is multi-faceted and complex, requiring stakeholders from many different areas to find compromises on inter-disciplinary issues. Both will benefit from:

- a repeatable way to collect, discuss and prioritise ideas and needs from all relevant stakeholders and disciplines;
- an information platform that helps users to understand, challenge and anticipate future requirements, and documents a common reference using a variety of viewpoints; and
- a design approach that delivers solutions which serve the common good instead of just meeting local requirements.

EAM does exactly this: it provides a proven toolkit and a collection of methodologies for compiling facts (documentation of and insights into as-is architecture) and facilitating decisions (IT landscape planning, to-be architecture). EAM's task is to establish, maintain and use a coherent set of artefacts, architecture guardrails and governance regimes to provide information, practical help and direction in the design and development of an enterprise's architecture.

As shown in Figure 2 below, EAM can provide valuable information on a wide variety of scales – from individual business capabilities to the firm's entire value chain. It structures and focuses efforts within an organisation to maximise the impact of initiatives. A major part of this is providing the CIO and the business with the framework for successful business capability analysis.

Fig. 2 EAM offers the opportunity for organisational-wide, cross-level transparency and insight



The following sections of this paper exemplify a number of aspects where EAM provides a starting point for sustainable IT strategies that enable a sustainable organisation.

1 Acquiring ESG insights: data collection

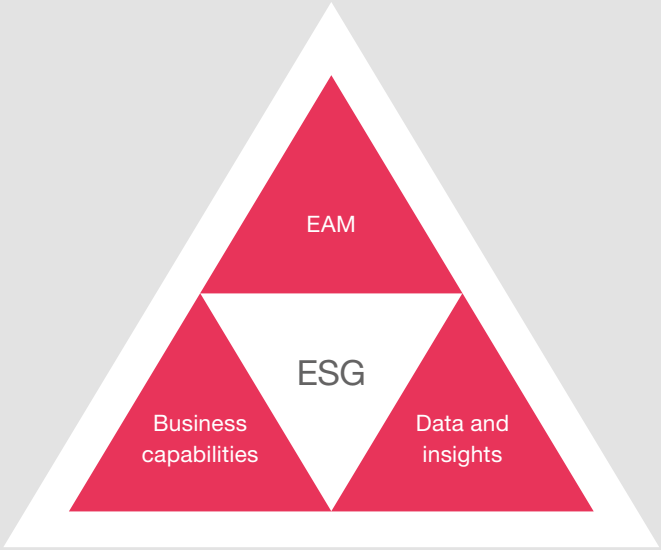
ESG can only work if decision-makers can gain insights into their company. In this context, leveraging EAM is the perfect place to start a sustainable IT strategy: no improvement can be made without transparency, which is absolutely necessary to deliver ESG insights and drive ESG transformation.

In light of the far-reaching digital transformation of our economy, companies need insights into their process-, data-, application-, and technology-landscape, with their respective ownerships. It's also important for leaders to understand their company sustainability status quo to enable effective development and implementation of ESG strategies, initiative planning, and ESG reporting.

EAM offers a means of collecting and analysing valuable ESG-related information such as carbon footprints, energy efficiency, supplier ESG standards, and established electronic or regular waste management processes. EAM also provides a platform to reflect on necessary changes in a way that can be easily understood by both business and IT. This is done by adding ESG-related competences to the organisation's business capability map in order to paint a general picture of the future and to help plan it. Together with enhancing internal ESG awareness through training and campaigns, this helps promote evolution of the organisation's ESG functions.

As a result, this paper recommends making use of the enterprise architecture repository and leveraging established enterprise architecture artefacts, their metadata and relationships to record, plan and report ESG facts and initiatives. This will require some minor enhancements to existing enterprise architecture repositories, but will enable ESG stakeholders to get their information using proven views.

Fig. 3 Enterprise Architecture Management (EAM) is the catalyst for ESG transformations by coordinating and correlating ESG objectives with business capabilities, data and ESG related insights



2 Sustainability of IT: data analytics

A major part of a sustainable IT strategy should be leveraging the insights obtained through EAM to develop initiatives aimed at helping to reduce IT-related emissions in all three scopes, as defined by the greenhouse gas (GHG) protocol standards.

Virtual value chain transparency

Thought leader

Consolidate your assets

EAM offers a number of ways to shed light on the environmental footprint of an organisation's IT function. We suggest starting with the following three areas of action:

Work on IT-related supply chain transparency.
While companies are already widely working on investigating and improving the stakeholder networks in their physical supply chains (i.e. IT hardware), virtual supply chains (i.e. software) also matter. Using EAM enables CIOs to understand which groups of employees or business capabilities are using dedicated software and hardware, as well as opening up a window into all applications, technologies and interfaces used by the organisation, with their respective vendors and service providers. If this information is enriched with asset and supplier ESG KPIs, audit results and rankings, this may provide valuable insights to help identify areas of action to improve the carbon footprint and overall ESG impact of IT.

Become a thought leader by combining environmental objectives with profitability objectives.
Digitalisation in society, accelerated by new ways of working, smarter processes and enhanced business capabilities, has considerably increased the relevance of the information and communication technology sector. As company IT systems consume large amounts of energy, they often make up a considerable proportion of the firm's environmental impact. Continued evolution of our habits is expected to further increase this impact and exacerbate the situation over the next few years. Therefore, IT assets – both end-user devices (laptops, smartphones, headsets etc.) and enterprise-related hardware (mainly data centres and network components) – should be carefully selected, with sustainability-related criteria included in the procurement process.

In this context, we would encourage CIOs to leverage the current energy crisis to start developing and implementing sustainable IT strategies now, boosting company resilience and improving the overall ESG-related aspects of their IT at the same time.

Consolidate your assets.
EAMs portfolio management is a great service for identifying redundancy and wasted resources within an organisation. This includes many areas of concern, such as data, applications, processes and technologies. Analysis and assessment of data may reveal inconsistent data flows and archiving routines, redundant data storage or the use of unnecessarily expensive and energy-hungry storage technologies. Along the same lines can applications, technologies and their associated processes also be analysed – including their supported capabilities and maturity – to identify potential synergies, excess availability and wasted resource usage.

3 Sustainability through IT: planning and action

Complementing sustainability of IT, “sustainability through IT” is a major area which can benefit from the cooperation of ESG and EAM. CIOs should leverage EAM as an aid for the guided introduction and integration of new tools. As an example, let’s take a look at supporting the “social” aspect of ESG.

Diversity

New Work

Self-regulation

Diversity can be encouraged by introducing a distinct capability to analyse and monitor diversity. Capability-based architecture planning supports the effective integration of new or changed applications and technologies into the existing IT landscape: necessary measures concerning the capability in question can be identified and then implemented in a structured manner. A diversity enablement capability could allow technologies such as text-to-speech, speech-to-text and other new, barrier free ways of interfacing with the digital world to be effectively utilised. These technologies might even be in place already and their potential just needs to be used more exhaustively.

New Work requires organisations to provide a highly flexible, scalable and secure IT landscape to accommodate the rapidly evolving world of work, including remote locations, flexible facilities and changing equipment needed by both employers and employees.

This includes both software and hardware solutions: the IT landscape architecture supporting New Work typically involves cloud-based collaboration and communication tools. This enables remote work and seamless collaboration among team members, customers and business partners. Robust and secure network infrastructure, such as virtual private networks (VPNs) and access controls, is important to ensure data privacy and security. Mobile devices, such as smartphones and tablets, are increasingly being used to provide access to work-related applications and information from anywhere. However, integrating “anywhere” workflows into our lives while also reasonably separating work from private life is a major challenge. EAM can provide a vantage point to create a structured and informed approach to finding a solution: this will inevitably be a compromise between conflicting requirements and needs, but has the potential to mobilise and embolden the workforce in the long run.

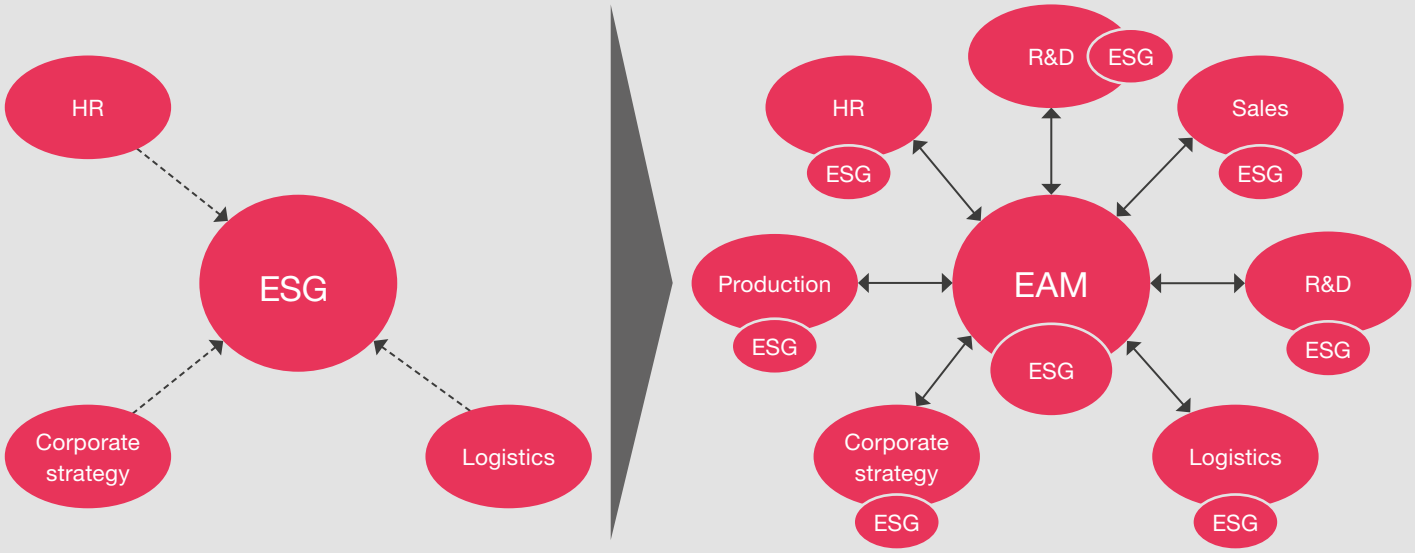
Self-regulation creates the need for companies to implement transparent and accountable protocols for financial transactions, supply chain management, resource sourcing and origin tracking. It also involves incorporating environmental sustainability criteria into the supplier selection process and prioritising sustainable products and services and renewable raw materials. All of these efforts complement existing EAM initiatives, such as establishing structures for documenting security and compliance checks, addressing technical debt, and ensuring secure, compliant and ethical handling of data and technology in accordance with restrictions, regulations such as the GDPR, and ethical principles.

4 Sustainable IT: effective implementation

Although data collection, analysis and impactful initiatives make EAM a valuable tool to facilitate corporate ESG transformations, it's important to realise that EAM can do more than this: it can also serve as a catalyst for ESG efforts.

So far, we have discussed approaches to promoting ESG from a top-down perspective. However, EAM architects can also leverage their role as facilitators to drive ESG governance within their organisations through their own efforts and an "ESG everywhere" network. Doing this requires steps such as getting ESG representation on architecture boards and in other decision-making forums, and integrating ESG into the organisation's architectural policies, principles and standards. The resulting functional and non-functional requirements will help shape the evolution of the organisation, and will significantly help the organisation to not just consider ESG, but also make the most of ESG in practice.

Fig. 4 EAM can bring an "ESG everywhere" attitude into an organisation by adjusting the architectural guardrails and governance structure to include and consider ESG at every decision stage throughout the organisation.



Summary

CIOs and enterprise architects have an opportunity to significantly influence and guide their organisations' ESG transformation by leveraging their interface and alignment role between business and technology. By using transparent enterprise architecture to provide a clear understanding of its current state, they can make sustainability opportunities and challenges visible and actionable. This will represent a valuable contribution to the ESG transformation that all organisations will need to undertake in the near future.

Contacts

Silke Schelkmann
Partner
Mobile: +49 160 90916131
silke.schelkmann@pwc.com

Alexander Thome
Director
Mobile: +49 160 97276536
alexander.thome@pwc.com

Estelle Places
Manager
Mobile: +49 175 617125
estelle.places@pwc.com

Wilhelm Eduard Sorteberg
Senior Associate
Tel: +49 69 9585-1900
wilhelm.eduard.sorteberg@pwc.com

About us

Our clients face diverse challenges, strive to put new ideas into practice and seek expert advice. They turn to us for comprehensive support and practical solutions that deliver maximum value. Whether for a global player, a family business or a public institution, we leverage all of our assets: experience, industry knowledge, high standards of quality, commitment to innovation and the resources of our expert network in 152 countries. Building a trusting and cooperative relationship with our clients is particularly important to us – the better we know and understand our clients' needs, the more effectively we can support them.

PwC Germany. More than 13,000 dedicated people at 21 locations. €2.61 billion in turnover. The leading auditing and consulting firm in Germany.

www.pwc.de