



FSP

**SUSTAINABLE
DIGITAL TRANSFORMATION**

About

This paper explores the impact of sustainability of digital transformation initiatives and the opportunities and challenges it presents digital leaders.

Copyright © 2023 FSP Consulting Services Limited. Some rights reserved. Permission is granted for sharing the content of this paper or use of excerpts, provided that proper credit is given to FSP Consulting Services Limited and a link to the original source is included.

Authors

Paul Bevis

Paul is the Chief Technology Officer at FSP and an experienced technology leader working at the forefront of digital transformation and cyber security. He has over 20 years' experience of helping organisations build digital capabilities across public, private and defence sectors. He has a background in software engineering and a passion for sustainability and cloud technology.

Chris Campbell

Chris is a Principal Consultant at FSP and an experienced digital transformation leader. He spent two years at a large utility company as the Senior Responsible Officer for Sustainable Investment Decision Making. During that time, he led a multi-initiative, multi-year, business wide transformation programme to join up all aspects of the company's long term (25-40 years) strategic priorities and near-term investment with zero emissions targets, benefits, funding, and climate adaptation.

Debbie Kite

Debbie is a Product Manager at FSP and an experienced product leader with a PhD in climate science. Prior to joining FSP, Debbie spent 10 years working as an environmental data consultant helping organisations understand the impact of weather and climate on projects, investments and markets.



Contents

Executive summary	4
Introduction	5
Definitions	6
Sustainability	6
Digital transformation	7
Sustainable digital transformation	7
Carbon emissions	7
Why should we care?	9
Drivers	9
Challenges	12
Summary	13
How to approach it	14
Reference model	14
Cloud	16
Supplier management	16
Data analytics	17
GreenOps	18
Enterprise architecture	19
Change management	20
Conclusion	21
About FSP	23
References and further reading	24



Executive summary

Digital technology plays a critical role in nearly every organisation, but its use has a significant and growing environmental impact on the finite resources of our planet. As digital leaders, we have the opportunity and the responsibility to adapt our digital transformation initiatives to take a sustainable-first approach to the adoption, usage and management of digital technology.

Driven by factors including international policy, legislation and social trends, sustainability will become a mandatory requirement that impacts every aspect of every organisation. However, whilst not without its challenges, sustainability offers us as digital leaders an opportunity to make our digital transformation initiatives more successful by improving efficiency, reducing costs, retaining talent and driving innovation.

To adapt our digital transformation initiatives to be more sustainable, in line with organisational objectives, there are strategic yet pragmatic steps we can take now:

- **Analyse the data** – invest in your data analytics capability to build the skills, platforms and tools to track, analyse and report on your emissions data.
- **Pay attention to consumption** – consumption is a useful proxy for emissions; prioritise reducing the areas of biggest usage where emissions data is not available.
- **Implement GreenOps** – build a GreenOps capability to apply Lean principles and automation to drive efficiency and sustainability simultaneously across your organisation.
- **Consider the cloud** – consider leveraging the capabilities and reporting transparency of cloud service providers who have the scale and scrutiny to drive improvements.
- **Engage with suppliers** – speak with suppliers who are already taking action and providing visibility into their emissions, leveraging their services and expertise in order to better understand your own emissions and that of your supply chain.
- **Rationalise your technology** – reduce duplication and complexity by proactively managing the evolution of your technology portfolio towards fewer, more sustainable applications and platforms.
- **Prioritise your people** – changing people's behaviours is vital for long-lasting transformation, and sustainability can serve as a compelling higher purpose.

Ultimately, embracing sustainable practices in adopting, using and managing digital technology is not only essential for the sake of our planet, it is fast becoming a requirement and opportunity for digital leaders that cannot be overlooked.



Introduction

Climate change is the defining crisis of our time. In today's world, we are confronted with some of the most pressing environmental challenges in human history. As individuals, we each have a role to play in preserving our planet. However, as digital leaders we bear an even greater responsibility to bring about the changes required in our organisations to ensure that our operations and practices do not harm future generations. Digital technology, in particular, holds immense potential for helping organisations modernise as well as become more efficient and more sustainable. Yet, it is imperative that we utilise digital technology sustainably as well as making the technology itself more sustainable.

Globally, the technology industry's impact on the climate is comparable to that of the aviation industry (United Nations Environment Programme, 2021). With the exponential increase in the generation of data and the proliferation of resource intensive AI solutions, the carbon emissions of technology are set to rapidly increase. The need for change is not only an urgent call for the planet's well-being, but also presents opportunities for you and your organisation.

Organisations are already setting sustainability-focused targets for their digital leaders, and Gartner predicts that by 2025, "50% of CIOs will have specific performance metrics tied to energy consumption" (Gartner, 2023). The trend of sustainability-focused targets is only going to continue, compelling digital leaders like you to adapt and demonstrate meaningful progress towards those goals.

Our aspiration for this white paper is to empower you with pragmatic advice on how to manage the impact of sustainability on your digital transformation agenda, and the opportunities and challenges it presents. While we acknowledge that we do not possess all the answers, we aim to highlight why sustainability is not only crucial for the sake of your organisation and the planet, but also an enabler for your digital transformation efforts.



Definitions

Before we discuss further, we need to define a few terms to ensure that we have a common understanding.

Sustainability

In 1987, United Nations Brundtland Commission defined *sustainability* as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987). Sustainability is a commitment to long-term thinking, ensuring that our actions today do not have a negative impact on future generations. The United Nations report paved the way for various frameworks to address sustainability, and arguably the most well-known of these is the Triple Bottom Line framework also known as the 3Ps – People, Planet and Prosperity.

John Elkington, the author of the 3Ps framework, said in 2018, “success or failure on sustainability goals cannot be measured only in terms of profit and loss. It must also be measured in terms of the well-being of billions of people and the health of our planet.” (Elkington, 2018). The 3Ps aims to ensure appropriate balance across financial, social and environmental measures;

- **People** – considers how an organisation impacts its people and society. Metrics include diversity reporting, wage gaps and health and safety.
- **Planet** – considers how an organisation impacts the environment. Metrics include greenhouse gas emissions, land protection and water use.
- **Prosperity** – considers how an organisation impacts the financial well-being of its community. Metrics include employment and wealth generation, taxes paid and research and development expenses.

Whilst the word sustainability is often used interchangeably with environmentalism, there is growing awareness that individuals, organisations and society as a whole need to be much more mindful of the impact our actions have on the planet, particularly in light of the climate crisis. It is this environmental lens, including mitigating climate change, that this paper focuses on.



Digital transformation

Unlike sustainability, digital transformation does not have a universally accepted definition from a well-respected intergovernmental organisation. Digital transformation initiatives have been taking place for many years and the term itself has evolved along the way. Within an organisational context, we define digital transformation as the process of implementing the changes required to enable the effective usage of digital technology to generate value. We believe that digital transformation goes beyond the implementation of specific technologies; it is about delivering a shift in mindset to a digital-first approach, together with an underpinning operating model, to enable the organisation to leverage digital technology more effectively.

Sustainable digital transformation

Sustainable digital transformation means approaching digital transformation with a sustainable-first mindset.

In many respects, the current state of sustainable digital transformation is akin to how cyber security was perceived in the past. Previously, cyber security was often an afterthought or considered an optional add-on for organisations willing to invest more. However, with the rise of data protection regulations and numerous high-profile data breaches, cyber security has gained significant prominence and is now taken much more seriously.

Similarly, sustainability requires a comparable level of attention and Board level accountability. The goal is for sustainability to become an inherent aspect of digital transformation, without needing to explicitly denote it, or any other aspect of an organisation, as "sustainable". It should be expected that responsible organisations inherently prioritise sustainability in their transformation efforts.

Carbon emissions

The carbon footprint of an organisation is the total amount of greenhouse gas (GHG) emissions emitted by the organisation during a given time period. There are many different GHGs, the most common emitted through human activity is carbon dioxide (CO₂). To make life simpler, it is standard practice for all GHG emissions to be reported as carbon dioxide equivalent (CO₂eq) which is often abbreviated to simply *carbon*.



The Greenhouse Gas Protocol (GHGP), the most widely used greenhouse gas accounting standard, groups emissions into three categories, called “scopes”, in order to help organisations focus their efforts on the greatest reduction opportunities:

- **Scope 1:** Direct emissions from a source that an organisation owns or controls directly – for example, the emissions from company vehicles.
- **Scope 2:** Indirect emissions that an organisation causes when the electricity it uses is produced – for example, electricity used to power an office or a data centre.
- **Scope 3:** Other indirect emissions from up and down an organisations’ supply chain – for example, the use of a cloud service.

Whilst not officially part of the GHGP, there is also a fourth category known as Scope 4 for “avoided emissions” or emissions that are avoided by using an organisation’s product or service. Scope 4 enables organisations to report on the positive impact they are having through other organisations using their products or services. For example, a cloud service provider that offers a remote working solution may report on emissions saved from people not having to commute to an office. Unlike Scopes 1, 2 and 3 however, there is currently no standard for Scope 4.

Ultimately, everything we do emits carbon into the atmosphere and as an organisation grows, it will naturally emit more. Sustainability is not about eliminating emissions altogether or limiting the growth of an organisation, instead it is about being carbon neutral *and* carbon efficient i.e. minimising emissions per employee, per sale, per transaction, per site visit etc and only offsetting what cannot be reduced further. The primary objective should be to continuously reduce carbon emissions over time, a process known as decarbonisation, in order to maximise value while minimising environmental impact.



Why should we care?

"It is not necessary to change. Survival is not mandatory."

W. Edwards Deming

The shift towards more sustainable digital technology is inevitable, however organisations still need to recognise and adapt to the challenges and opportunities this shift presents in order to survive. Aside from the obvious environmental drivers, in this section we will examine the main factors that are driving sustainability and the challenges that digital leaders, in particular, need to overcome.

Drivers

Political

The political drivers for sustainability are well publicised. In 2015, the United Nations Paris Agreement, signed by 195 countries, aims to limit the increase in the global average temperature to "well below 2 degrees Celsius above pre-industrial levels" and to "pursue efforts to limit the temperature increase to 1.5 degrees Celsius" (United Nations, 2015). To achieve these objectives, a 2018 report by The Intergovernmental Panel on Climate Change (IPCC) found that global GHG emissions need to be halved by 2030, and net zero achieved by 2050 (IPCC, 2018).

Whilst there are still no unanimous, legally binding commitments from all countries to the IPCC's findings, many of the largest emitters have made pledges to achieve net zero by 2050 including the United States, the European Union and the United Kingdom. China, currently the world's largest emitter, has submitted a target to the United Nations to reach net zero before 2060.

These political commitments already place significant pressure on organisations to align their objectives, operating models and underpinning digital technologies with national and international sustainability goals. That pressure will only increase as the target dates draw nearer.



Economic

“There is no company whose business model won’t be profoundly affected by the transition to a net zero economy.”

Larry Fink, Chairman and CEO of Blackrock.

Historically, commercial organisations have existed purely to generate financial value for their shareholders, however there is rapidly increasing pressure on organisations, primarily through Environment Social and Governance (ESG) reporting, to also be accountable for the impact they have on their ecosystem. Research by Gartner suggests that 85% of investors considered ESG factors in their investments in 2020.

A recent study conducted by IDC and ServiceNow found that “73% of enterprises worldwide consider sustainability to be a key business priority” (IDC and ServiceNow, 2021). The main drivers were cost savings, brand and image enhancement, product innovation and customer demand. Additionally, Gartner predicts that by 2026, 75% of organisations will increase business with IT vendors that have clear sustainability goals – along with demonstrable progress towards them – and seek to replace vendors who don’t. It is clear that sustainability is not merely a political imperative, but also a strategic business imperative that organisations cannot afford to overlook.

Digital leaders will not only be called upon by organisations to find opportunities to use digital technology to address some of the challenges of sustainability, but also to identify opportunities to use the technology in more sustainable ways.

Social

Social factors are also driving organisations to focus on sustainability in order to attract and retain employees. A recent study by KPMG found that 46% of people want the organisation they work for to demonstrate a commitment to ESG. This rises to over 50% for people currently under the age of 35 (KPMG, 2023). There is a rising tide of opinion that organisations need to have credible plans to address ESG and reduce their carbon footprints. Digital leaders need to reflect and contribute to this messaging if they want to continue to attract and retain this growing pool of talent.



Technological

“Digital strategy and sustainability are increasingly important and increasingly intertwined.”

World Economic Forum

While digital technology has been widely used in various industries to improve sustainability through enhanced insights and efficiency, the focus on making the use of digital technology itself more sustainable is a relatively new development. However, this is starting to change with the emergence of innovative services and organisations that aim to address this gap.

One example is Climatiq (<https://www.climatiq.io>) which provides access to a consolidated database of vetted emission factors from various data providers. Emission factors include those for cloud computing, air travel, transportation and energy. The data can be used by customers to automate the process of gathering and calculating their carbon footprints.

Another example is the Green Software Foundation (<https://greensoftware.foundation/>), a non-profit foundation dedicated to promoting sustainability in software development. The foundation recognises the need to integrate sustainability as a core principle alongside other critical aspects such as security, cost-effectiveness, and accessibility. By raising awareness, providing resources, and advocating for sustainable practices in software development, the Green Software Foundation aims to drive a cultural shift in the software engineering industry towards more sustainable practices.

These specialised organisations illustrate the growing recognition of the importance of sustainability in digital technology, as well as enabling the transition to more sustainable digital practices.

Legal

Whilst there are numerous legal instruments across the world aimed at setting mandatory disclosure requirements for sustainability, from the UK’s Streamlined Energy and Carbon Report to the EU’s Corporate Sustainability Reporting Directive, there is no global standard and much is still optional. For example, there is currently no legal requirement in the UK or the EU to report on Scope 3 emissions.

However, the EU is currently consulting on a new directive called Corporate Sustainability Due Diligence Directive (CSDDD). The CSDDD will require organisations to not only report on the impact their own operations have on the environment, but also to carry out due diligence on subsidiaries and other related parties in their value chains. Organisations will



need “to develop and implement prevention action plans, obtain contractual assurances from their direct business partners that they will comply with the plans, and subsequently verify compliance.” (KPMG, 2023).

Whilst not a legal requirement yet, the CSDDD shows the direction of travel that the EU is taking, and other governments are likely to follow suit. The CSDDD looks likely to become the next General Data Protection Regulation (GDPR) with organisations, large or small, needing to be able to demonstrate their sustainability credentials.

Challenges

Whilst the drivers are clear, there are several challenges that must be overcome to make digital transformation more sustainable.

Measuring emissions

Accurately measuring emissions poses a significant challenge in sustainable digital transformation, compounded by the dynamic nature of emissions data. While organisations often focus on measuring and managing Scope 1 and 2 emissions – those within their direct control – Scope 3 emissions present a more complex challenge. Scope 3 emissions account for the largest proportion of total emissions for most organisations, yet they are the most challenging to measure as they occur outside of an organisation's direct control.

Even for a large multinational company such as Microsoft, which operates a global network of cloud data centres used by thousands of organisations and employs more than one hundred thousand people worldwide, Scope 3 emissions still account for 96% of Microsoft's global emissions (Microsoft, 2022).

Furthermore, emissions data is not static and can change over time due to factors such as shifts in energy sources, updates to emission factors, and organisational changes. Keeping emissions data up to date and accurate will require ongoing monitoring and management to capture and analyse the relevant metrics.



Changing behaviours

“The central issue is never strategy, structure, culture, or systems. The core of the matter is always about changing the behaviour of people.”

John P. Kotter

As digital leaders we know that changing people’s behaviours is hard. Change initiatives often fall short because they do not take enough account of the impact on the individuals who make up the organisation – for organisational change to succeed, a critical mass of individuals need to understand it, believe in it, and change.

The uncertainty caused by the ever-increasing pace of change, particularly when it comes to digital technology, makes individuals at best hesitant, and at worst obstructively resistant to change. The wide-reaching impact of sustainability across every aspect of an organisation – including digital technology – is likely to require significant levels of behavioural change, even for organisations that already have a strong digital-first mindset and a mature operating model.

Summary

The pressure on digital leaders to do more about sustainability is growing but the challenges are similar to ones they already face. In the next section, we will explore some of the pragmatic steps you can take to help prepare and accelerate your sustainable digital transformation journey.



How to approach it

“If you can’t describe what you are doing as a process, you don’t know what you are doing.”

W. Edwards Deming

Sustainable digital transformation should be thought of as an adaptation of the digital transformation process – an evolution rather than a revolution. It should be about enhancing the sustainable aspects of each of the digital capabilities you are building and creating that sustainable-first mindset. As mentioned in the Definitions section, transformation initiatives of any kind cannot be implemented in isolation of the organisation’s operating model or its people. It is, however, useful to consider the capabilities that most digital transformation initiatives cover, and how they can be adapted to be more sustainable.

Reference model

Figure 1 below illustrates a reference model for a sustainable transformation programme to deliver a set of digital capabilities. Not all the capabilities will be applicable to every organisation, however the model is designed to be used as a reference for organisations to assess how sustainable their digital capabilities currently are:

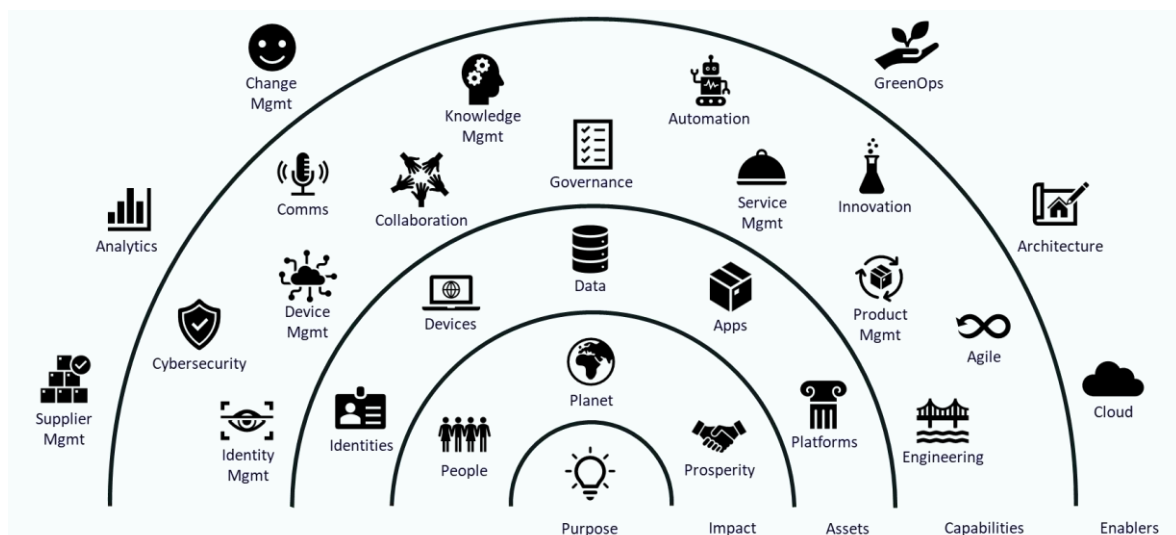


Figure 1 – Sustainable Digital Transformation Reference Model

As with any organisational strategy, a sustainable digital transformation strategy should be aligned with your organisation’s core *purpose* encompassing your unique value proposition.



The value created by your organisation should drive positive sustainable *impact*, and as your organisation grows so will its digital *assets*. Digital *capabilities* (or services) act as levers to effectively manage and leverage these assets and drive your transformation programme forward. The specific configuration of capabilities and how they are delivered to your organisation will be defined by your organisation's operating model.

As digital leaders, we calibrate our digital transformation strategies based on the maturity of existing digital capabilities and technologies (the current state) alongside our organisation's priorities and the natural evolution of technology (the target state). In the context of sustainable transformation, the maturity assessment must also consider the impact of each capability/technology on the organisation's carbon footprint, the effort required to decarbonise it and the wider sustainability opportunities that can be exploited as a result.

The key questions you need to ask as part of the maturity assessment include:

- What is your organisation's emissions baseline (including Scope 1, 2 and 3) across all digital technology?
- What is the breakdown of emissions by capability or technology?
- How are these emissions currently measured and tracked?
- Which standard are you using to report on your emissions data?
- What is your decarbonisation plan for each capability or technology?
- Which suppliers do you rely on and what emissions do they emit while providing their services to you?
- Do your teams possess the necessary skills to measure, track and develop a plan to reduce emissions?
- How are your teams incentivised and empowered to reduce emissions for the capabilities and technologies they are accountable for?

An organisation that is mature in its approach to sustainability will be able to answer these questions today, however, for an organisation that is less mature in its approach, these questions will be challenging to answer.

For digital leaders in those organisations with lower levels of maturity, your sustainable digital transformation strategy should prioritise the *enablers* shown in Figure 1 to not only help you answer the questions, but also to take pragmatic steps to help make your organisation more sustainable. Whilst every capability has a part to play in driving sustainability, the *enablers* offer the most significant opportunities to achieve long-lasting transformative change because they cut across other capabilities.



Cloud

The Cloud, specifically Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), is widely recognised for its technological benefits such as global reach, scalability, cost-effectiveness, and continuous innovation. However, it also serves as a crucial enabler for sustainable digital transformation, offering more than just technical services if utilised effectively.

Modern cloud data centres are designed to be highly energy-efficient, leveraging advanced technologies and optimised infrastructure. These data centres are engineered to maximise resource utilisation and minimise energy consumption, contributing to reduced environmental impact. Hyperscale cloud providers, including Amazon AWS, Microsoft Azure, and Google GCP, not only provide technical services and granular usage data, but also offer practical guidance to help organisations build and utilise cloud-native platforms and applications securely and sustainably.

The environmental benefits of adopting cloud technology can be significant. A study conducted by Accenture suggests that organisations migrating to the cloud can achieve cost savings of 30-40%, and emission reductions of 84% or more (Accenture, 2022). However, as the study points out, a “lift and shift” migration rarely results in material cost savings or emission reductions. To realise lasting benefits from a cloud migration, digital leaders also need to rationalise infrastructure to avoid wastage and adapt operational processes to take advantage of more efficient, cloud-native patterns and practices.

Supplier management

Effective supplier management plays a significant role in measuring and reducing an organisation's overall carbon footprint. While cloud technology and other suppliers contribute to a significant portion of an organisation's emissions, not all providers offer granular emission data, or any data at all. To accurately report Scope 3 emissions, which encompass indirect emissions caused by suppliers and consumers, it is essential for digital leaders to establish a robust Supplier Management capability and foster an open dialogue with suppliers regarding their emissions.

As legislation evolves, particularly the EU's Corporate Sustainability Due Diligence Directive discussed in the *Why should we care?* section, and more standards emerge, reporting on supply chain emissions is expected to become more transparent. However, digital leaders currently need to guard against misleading claims by suppliers such as net zero targets with no corresponding emissions baseline or decarbonisation plan. Or claims of renewable



energy use, particularly by energy intensive suppliers such as cloud and data centre providers, as such claims typically stem from the use of Power Purchase Agreements (PPAs). PPAs enable an organisation to purchase renewable energy at a given price point from a renewable energy producer. However, in almost all cases, the energy produced is not consumed directly as the producer supplies the national grid, which then distributes the energy based on demand. PPAs effectively allows a supplier to offset the energy it consumes, however that does not mean that the energy it actually consumes to provide a service to you at the point in time you need it, comes from renewable sources.

By leveraging their purchasing power effectively and encouraging suppliers via procurement processes to prioritise sustainability, digital leaders can work constructively with their suppliers to measure and reduce their supply chain emissions.

Data analytics

In the context of sustainable digital transformation, data analytics plays a pivotal role in helping an organisation measure and report on its environmental impact. Analysing sustainability data is no different to analysing any other kind of data; it requires:

- knowledge of the data itself
- engineering expertise and platforms to manage the data
- analytical expertise to gather meaningful insights from the data

Digital leaders need to work with the sustainability leaders in their organisations to better understand and analyse sustainability data. Whilst there is currently no universal nor comprehensive standard for reporting on sustainability data as it pertains to digital technology, one standard which is growing in popularity is the SustainableIT standard. The SustainableIT standard was created by SustainableIT (<https://www.sustainableit.org>), a nonprofit organisation formed of sustainability-focused technology executives from around the world, and is tailored for enterprise IT to address the gaps in more generalised standards such as Global Reporting Initiative (GRI) or Sustainability Accounting Standards Board (SASB).

Whilst there are many mature data analytics services and platforms available today, there are currently very few mature sustainability or carbon emission related offerings. One such service that is gaining traction is Microsoft's Sustainability Manager (still in preview at the time of writing) that combines a common, vendor and system-agnostic, data model for emission data, with Microsoft's existing tools and services to store and report on the data (namely Dataverse and Power BI). Organisations still need to extract, transform and load



their emission data into Sustainability Manager, however it is likely that connectors will emerge for third party systems so it is definitely one to watch.

Organisations with mature data analytics capabilities should be well prepared for analysing sustainability data. Writing in the Sustainable IT Playbook for Technology Leaders, Nicole Mercedes Zetheluis, Head of Global Sustainability and ESG Strategy at CGI, states that if implemented correctly, data analytics “will enable new revenue streams, more robust risk mitigation, resource access, and ensured longevity.” (Sundberg, 2022)

Whichever standards, methodologies or technologies you choose, you need to work with the sustainability leaders in your organisation to identify, gather, manage and analyse the raw data required to meet your reporting needs in the most efficient way.

GreenOps

GreenOps (short for Green Operations) is the integration of sustainable practices and principles into the operational processes of an organisation. It focuses on minimising the environmental impact of digital operations while driving efficiency and innovation. GreenOps is akin to FinOps (Financial Operations) and uses carbon emissions and environmental impact instead of cost as a driver for efficiency. Ultimately, GreenOps is about doing more with fewer carbon emissions. Leaner really does mean greener.

Like FinOps, GreenOps takes inspiration from the Lean continuous improvement methodology in that it focuses on learning and reducing waste, or more specifically, emissions. To be able to reduce emissions you need to be able to measure them to see what impact you are having. As a result, GreenOps should build on your organisation’s Data Analytics capability to track emission data and measure improvements.

However, GreenOps doesn’t need to start with emission data. With digital technology consumption is a good proxy for emissions. Consumption is usually measured in terms of compute, memory, storage and bandwidth. Cost is also a proxy for emissions, although not as good as consumption, since most Software-as-a-Service (SaaS) services operate a licensing model where cost does not always equal consumption. By using consumption as a proxy, many GreenOps optimisations can be self-evident including:

- Rightsizing – downsizing servers to the most appropriate size for the workload they need to perform e.g. don’t use a server with 8 CPUs when 4 will do. Not only will it be cheaper, it will use fewer resources and emit less carbon.
- Autoscaling – scaling up and down with demand rather than always running for peak load.



- Only audit or log the information you need to, rather than capturing every data point. It will also make it easier to search your logs later.
- Applying retention policies to automatically remove content after it is no longer required. This will also help remove ROT (Redundant, Obsolete, Trivial data) making it easier for people to find the things they want.
- Reducing, reusing and recycling devices and peripherals to reduce what is known as e-waste.

Other optimisations may be less obvious, for example sustainable demand shifting is the process of dynamically changing the location or the timing of processing to make it more efficient. To illustrate, processing could be moved to regions with a higher percentage of renewable energy (known as having a lower carbon intensity) or processing could be delayed until the carbon intensity in a region is lower. Services such as WattTime (<https://www.watttime.org/>) and ElectricityMaps (<https://app.electricitymaps.com/>) provide near real-time and historical information on carbon intensity across the globe, allowing engineers to build systems that can take this information into account when running workloads.

Building a GreenOps capability is critical to driving carbon efficiency across your organisation's digital operations and you can start today, ahead of any efforts to measure and baseline emissions, by focusing on reducing consumption.

Enterprise architecture

Enterprise architecture (EA) focuses on aligning an organisation's business objectives and processes with its technological infrastructure. It should provide a comprehensive understanding of the structure of an organisation, the technology that underpins that structure and the value chain of that technology.

In order to even begin to answer the question, "What is your emissions baseline (including Scope 1, 2 and 3) across all digital technology?" you need to know what technology you have. An EA capability should be able to provide you with a view of the *current state* of your digital technology, i.e. a list of all the technologies in your organisation today, what business capability they support, who the supplier is and what the expected lifespan is. In addition, an EA capability should also be able to tell you what your expected *target state* is, i.e. what technology you will be using in the future, the expected benefits and, crucially, how you plan to get there.

The larger the organisation, the more technology it tends to have. A report by LeanIX – a leading EA tool – suggests that 36% of billion-dollar enterprises now hold more than 1,000



applications in their portfolios. The more technology an organisation has, the greater the complexity. The greater the complexity, the more scope there is for inefficiency and higher emissions.

Establishing a well-functioning EA capability to effectively assess and manage the gradual evolution of an organisation's technology portfolio alongside the evolution of the organisation itself, is essential for achieving long-lasting, sustainable transformation. Not only should the capability provide you with a holistic view of your organisation and the technology it uses, but like GreenOps an EA capability should also drive greater operational efficiency by rationalising portfolios and reducing complexity.

Change management

To achieve a long-lasting, sustainable-first mindset within your organisation, it is essential to change your people's behaviours. Change management is a systematic way of helping people to understand what changes are required, why they are necessary and how their behaviours can make a difference. The goal with a sustainable-first mindset is to make sustainability and choosing sustainable options as a natural part of people's decision-making process. As we have seen from previous sections, often being more sustainable already aligns with the objectives of most digital transformation initiatives i.e. adopting new technology, building partnerships and trusted supply chains, analysing data and being more efficient.

Sustainability can also provide a higher purpose and serve as an additional incentive for individuals. When people are truly invested in change it is 30% more likely to stick (McKinsey, 2015). The majority of people aspire to live more sustainably and desire their organisations to be more sustainable as well.

By establishing a Change Management capability, digital leaders can start to systematically drive behavioural changes within their organisations towards a sustainable-first mindset and demonstrating how sustainable practices are aligned not only with organisational objectives, but also with people's personal values and aspirations.



Conclusion

Digital technology is crucial to almost every organisation, but its use has a significant and growing environmental impact. Embracing sustainable practices in adopting, using and managing digital technology is not only essential for the sake of our planet, it is fast becoming a requirement and opportunity that cannot be overlooked.

Sustainable digital transformation should be viewed as an adaptation to digital transformation, taking a sustainable-first approach to digital technology. It requires organisational change, encompassing shifts in behaviours, mindsets, and operating models.

Despite the challenges the opportunities for organisations in pursuing sustainable digital transformation are substantial. These opportunities include cost reduction through enhanced efficiency, increased investment via improved ESG assessments, and higher staff retention and satisfaction by demonstrating a commitment to sustainability and progress towards net-zero goals.

To make digital transformation agendas more sustainable, digital leaders can take strategic yet pragmatic steps:

- **Analyse the data** – to reach net zero your organisation needs to be able to accurately baseline and measure its emissions. Measuring and reporting is not easy currently, however the data and the standards are emerging. Investing in your data analytics capabilities now will give you the skills, platforms and tools to track, analyse and report on your emissions data as it becomes available.
- **Pay attention to consumption** – digital emissions can be hard to measure currently, but consumption (and to a lesser extent, cost) is a useful proxy for emissions. Things are improving all the time and solutions will emerge, but initially if you focus on measuring your consumption and prioritise reducing the areas of biggest usage, you will have the greatest impact on your emissions.
- **Implement GreenOps** – the more efficient your organisation is, the more sustainable it will naturally be. Establish a GreenOps capability to embrace Lean principles and automation to drive efficiency and sustainability simultaneously across your organisation. The availability of data should not be a barrier to taking action, many of the changes you can make will be self-evident.
- **Consider the cloud** – cloud providers have the greatest scrutiny on their actions, and the biggest economies of scale when taking action. They are already driving improvements that will be hard to match in traditional IT infrastructure, and the agility in the cloud allows you to respond and optimise faster. The hyperscalers in particular also provide granular reporting on both your consumption and your emissions making it easier to measure the impact your organisation has.



- **Engage with suppliers** – many of your partners and suppliers are already taking action and providing visibility of their own emissions as well as offering services to help you. Engage with them, whilst being mindful of their claims, and build on what they offer to better understand your own emissions and that of your supply chain.
- **Rationalise your technology** – reduce duplication and complexity by proactively managing the evolution of your technology portfolio towards fewer, more sustainable applications and platforms. An Enterprise Architecture capability should provide you with a holistic view of your portfolio and help you plan and manage the transition to a more sustainable target state.
- **Prioritise your people** – organisational transformation programmes are hard because they involve changing people's behaviours. Managing that process is fundamental to seeing long-lasting change. Sustainability can also offer a higher purpose to make the change more engaging for people.

This white paper aimed to provide you with some insight on the challenges and opportunities that sustainability presents for digital transformation agendas, and ideas and inspiration for addressing them. Ultimately, sustainability requires long-term thinking and action, especially considering the finite resources available to us. Together, we can make a difference.

Thank you for reading, and best of luck with your sustainable digital transformation journey! If you have any comments, suggestions, or enquiries about this paper we would be delighted to hear from you. Please contact us at sustainability@fsp.co.





About FSP

Founded in 2012, FSP Consulting Services (FSP) are a leading digital transformation specialist. We are working with a broad range of public and private sector organisations to help them accelerate the opportunities created through digital transformation. As a long-standing Microsoft Solutions Partner, our portfolio of modern workplace, cloud, data, and cyber security offerings, alongside trusted managed services delivery, is driving change for high-profile clients across a range of sectors. We are also proud to be a Best Companies™ 'World Class' workplace.

Find out more about FSP here: www.fsp.co



References and further reading

Accenture, 2022. *The green behind the cloud*. [Online]

Available at: <https://www.accenture.com/us-en/insights/strategy/green-behind-cloud>
[Accessed 04 June 2023].

Andersen, E., 2022. *Change Is Hard. Here's How to Make It Less Painful.* [Online]

Available at: <https://hbr.org/2022/04/change-is-hard-heres-how-to-make-it-less-painful>
[Accessed 28 May 2023].

Elkington, J., 2018. *25 Years Ago I Coined the Phrase "Triple Bottom Line." Here's Why It's Time to Rethink It.* [Online]

Available at: <https://hbr.org/2018/06/25-years-ago-i-coined-the-phrase-triple-bottom-line-heres-why-im-giving-up-on-it>
[Accessed 2023].

Fink, L., 2021. *Larry Fink's 2021 letter to CEOs*. [Online]

Available at: <https://www.blackrock.com/corporate/investor-relations/2021-larry-fink-ceo-letter>
[Accessed 30 May 2023].

Gartner, 2021. *The ESG Imperative: 7 Factors for Finance Leaders to Consider*. [Online]

Available at: <https://www.gartner.com/smarterwithgartner/the-esg-imperative-7-factors-for-finance-leaders-to-consider>
[Accessed 02 June 2023].

Gartner, 2023. *Gartner Predicts 70% of Technology Sourcing Leaders Will Have Environmental-Sustainability-Aligned Performance Objectives by 2026*. [Online]

Available at: <https://www.gartner.com/en/newsroom/press-releases/2023-01-31-gartner-predicts-70-percent-of-technology-sourcing-leaders-will-have-environmental-sustainability-aligned-performance-objectives-by-2026>

Green Software Foundation, 2023. *Carbon Efficiency*. [Online]

Available at: <https://learn.greensoftware.foundation/carbon-efficiency>
[Accessed 2023].

IDC and ServiceNow, 2021. *The C-Suite Sustainability Imperative 2021*. [Online]

Available at: <https://www.servicenow.com/content/dam/servicenow-assets/public/en-us/doc-type/resource-center/infographic/info-csuite-sustainability-imperative-2021.pdf>
[Accessed 2023].



IPCC, 2018. *Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments*. [Online]

Available at: <https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments>

[Accessed 12 June 2023].

KPMG, 2023. *Climate quitting - younger workers voting with their feet on employer's ESG commitments*. [Online]

Available at: <https://kpmg.com/uk/en/home/media/press-releases/2023/01/climate-quitting-younger-workers-voting-esg.html>

[Accessed 05 June 2023].

KPMG, 2023. *The EU's Corporate Sustainability Due Diligence Directive*. [Online]

Available at: <https://kpmg.com/xx/en/home/insights/2023/02/the-eu-corporate-sustainability-due-diligence-directive.html>

[Accessed 30 May 2023].

McKinsey, 2015. *Changing Change Management*. [Online]

Available at: <https://www.mckinsey.com/featured-insights/leadership/changing-change-management>

[Accessed 28 May 2023].

Microsoft, 2022. *2022 Environmental Sustainability Report*. [Online]

Available at: <https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RW14sJN>

[Accessed 2023].

Microsoft, 2023. *Carbon Accounting at Microsoft*. [Online]

Available at: <https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RW13XCo>

[Accessed 30 May 2023].

Sundberg, N., 2022. *Sustainable IT Playbook for Technology Leaders*. Birmingham: Packt Publishing.

United Nations Environment Programme, 2021. *With new pact, tech companies take on climate change*. [Online]

Available at: <https://www.unep.org/news-and-stories/story/new-pact-tech-companies-take-climate-change>

[Accessed 2023].

United Nations, 1987. *Report of the World Commission on Environment and Development: Our Common Future*, s.l.: s.n.





United Nations, 2015. *Adoption of the Paris Agreement. Proposal by the President..* [Online]
Available at: <https://unfccc.int/documents/9064>
[Accessed 12 June 2023].

United Nations, 2023. *The 17 Goals.* [Online]
Available at: <https://sdgs.un.org/goals>

World Economic Forum, 2022. *3 ways digital technology can be a sustainability game-changer.* [Online]
Available at: <https://www.weforum.org/agenda/2022/01/digital-technology-sustainability-strategy/>
[Accessed 2023].

World Resources Institute, 2018. *Low-Carbon Growth Is a \$26 Trillion Opportunity. Here Are 4 Ways to Seize It..* [Online]
Available at: <https://www.wri.org/insights/low-carbon-growth-26-trillion-opportunity-here-are-4-ways-seize-it>
[Accessed 30 May 2023].

