

## Digital, Data and Technology (DDaT) Strategy

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## Executive Summary

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### What are we trying to achieve?

Amgueddfa Cymru aims to become one of the most impactful cultural institutions in its field. By harnessing one of the most important revolutions of our time, digital, we can enhance the physical, hybrid and digital-first experiences we provide for the public, our staff and our partners. By leveraging its full potential, across all aspects of the museum, digital will be a core enabler towards delivering our 2030 commitments. *Appx 1. Terms and Definitions.*

### Where are we now?

Amgueddfa Cymru is currently on the cusp between levels 2 and 3 of the Digital Maturity index. *Appx 2. Digital Maturity*

Digital literacy and appreciation are beginning to increase throughout the organisation and islands of digital are starting to emerge outside ICT, but we need to go much further if we're going to achieve the digital transformation required to reach our potential of being a 'Digital Museum'.

#### What we do well digitally...

- Maintaining incumbent systems
- Supporting the core digital needs of the museums
- Reacting to the need for innovation through technology
- Identify need for digital within the organisation

#### Where we need to improve...

- User experience and journey, through inspirational digital spaces
- Adoption of a 'digital-first' approach
- Investment in key digital roles
- Dedicated funding for sustainable digital transformation and technology
- Improved business intelligence based on data
- Further develop incumbent and legacy systems

### What are we going to do?

Adopting this strategy will support the museum in becoming more digitally mature and harness the benefits that brings.

We will use the Digital Management Group as the strategic 'digital board'. The DMG has strategic oversight of our digital estate. across Amgueddfa Cymru and focusses on innovation, vision, governance, and the delivery of our 2030 strategy, the Digital, Data and Technology (DDaT) strategy; alignment with the Welsh Government's Digital Strategy for Wales.

By successfully transforming into a 'digital organisation', the museum will equip itself with the digital capabilities it needs to achieve the ambitious commitments of the 2030 strategy by taking achievable intermediate actions.

We will build synergies with other aspects of the museum, aligning people, processes and connectivity through technology, developing an approach to digital to meet the ambitious goals set in our 10-year strategy.

This digital strategy identifies four strategic principles for transformation that the museum should adopt. These principles have emerged through the consideration of the museum's current position with regards to digital and draw on wider best practice in the public sector transformation programmes.

1. Put users first
2. Provide leadership and governance
3. Invest in people and skills
4. Expand technical capability sustainably

The focus on digital strongly supports Amgueddfa Cymru's commitment to discover and explore digitally; to be an active and purposeful participant in Welsh society and globally, through openness, innovation, collaboration and mutual exchange with individuals, communities, partners, businesses, and government.

Through the understanding of our digital climate impact, we can identify emission reductions, and track our progress towards our carbon emission targets. Data and digital technologies have proven to be crucial in achieving a net-zero world. We will build upon our commitment of using sustainable and renewable energies to host our data and IT systems. We will continue to offer solutions and tools that are securely accessible from any location, to facilitate remote working, thereby reducing the need to travel. We will measure our progress by performing regular Digital Decarbonisation Assessments (DDA).

### **When will it happen and how do we measure success?**

The strategic principles are broken down into 20 actions that have been laid out in a three-phase roadmap across a five-year period. At the end of this journey, the ambition is for digital to be an integral part of the organisation's DNA. Each phase will overlap near the end of the former and the beginning of the latter phase. These dates are ambitious but also realistic, however, where possible, we will look to accelerate the process. *Appx 2. Digital Maturity*

- Phase 1 – Foundational (one year: 2023–2024)  
Developing the museum's capability as an organisation to engage with digital transformation.
- Phase 2 – Transitional (two years: 2024–2026)  
Planning and delivering an increasing number of specific projects to follow the tenets of the digital strategy.
- Phase 3 – Transformative (two years: 2026–2028)  
Absorbing the digital strategy into the organisation's DNA, and increasingly looking for opportunities to share and collaborate externally.

## What are the major risks?

- Business and User Experience disruption
- A lack of digital leadership at the highest level
- Skills shortages
- Underinvestment in technology and digital services
- Lack of funds to deliver the transformation

## What will it cost?

Through the creation of clear action plans, to better understand the skills, time and resources required, we will be in a better place to estimate the cost of a Digital Transformation. We will develop a robust business case prior to any investment to ensure appropriate use of funds and value for money. The business case will demonstrate the return on investment and savings. The initial costing exercise will form part of the foundational stage of the Road Map. *Appx. 5. Roadmap:*

## Introduction

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### Background

Amgueddfa Cymru is a flagship national cultural institution, registered charity and Welsh Government Sponsored Body that preserves, presents and promotes the culture of Wales.

The museum is in the process of finalising its strategy – *Amgueddfa Cymru 2030* – that builds on its vision of *Inspiring People, Changing Lives*. Framed around six commitments, it provides the focus for the museum’s ambitions to help create a better Wales:

- Make sure everyone is represented
- Inspire creativity and learning
- Help protect and restore nature
- Support well-being through inspirational spaces and experiences
- Discover and explore the museum digitally
- Build global connections

*Amgueddfa Cymru 2030* supports the aims of the Welsh Government’s *Programme for Government* and the goals of the *Well-being of Future Generations Act (2015)*, and echoes their themes of community, equality and social justice. In addition, this strategy aligns to the 2030 net zero carbon aspirations for the Public Sector in Wales.

In March 2021, the government published its *Digital strategy for Wales*, setting out a vision for how digital, data and technology can be used to improve the lives of people in Wales. This strategy makes it plain that, whilst the government has a leadership role, it cannot deliver the changes required on its own. It expects innovation, partnership, and collaboration across the public sector.

We recognise the importance of digital as an enabler of the dynamic, visionary, and inspirational services and projects that will see the museum working for everyone,

everywhere across Wales, as well as in our own physical locations, whilst supporting our progress towards becoming net zero.

It is within this context that we have developed this Digital, Data and Technology (DDaT) strategy to ensure we have a clear mandate on how we address these challenges. Set out in this document are the principles that the museum will need to embrace if digital is to become an effective engine of transformation.

## Engagement process

This strategy draws upon the best practices from across the public sector but is very much grounded in a *Amgueddfa Cymru* specific context, which has been explored through direct engagement with the leadership team, the ICT and Digital Media teams, a broad cross-section of staff, members of the public and external stakeholders.

## Principles we will apply

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“The term ‘digital’ has many meanings in today’s society. It’s not just about the computers, tools and technologies that are changing all parts of our lives; it’s far bigger than that. It’s about taking a new approach.”

*Digital strategy for Wales (Welsh Government – March 2021)*

We have identified four strategic principles that need to be at the heart of our digital strategy. They have emerged through the analysis of the museum’s current position with regards to digital. A series of workshops, with attendance from all areas of the organisation, were held to capture where we are now, and what areas we need to concentrate our efforts to improve digitally.

The focus of these strategic principles is to help ensure that the museum is in a position to deliver against the ambitions of *Amgueddfa Cymru 2030*. Each of the four principles supports all six of the commitments in the 10-year strategy.

Each principle has equal weighting. The museum will need to ensure that progress is made on all of them in parallel if this strategy is to be successful. Each principle was measured, based on our current position, and given a score. At the end of each principle, guidance is given on how we improve the score and our digital maturity.

### 1. Put users first

Everything we do is centred on the needs of the wide communities we serve, the visitors to our museums, our staff and volunteers.

### 2. Provide leadership and governance

Our leaders understand the power of digital, and know it is integral to delivering on our strategic goals.

### 3. Invest in people and skills

Our colleagues are passionate and committed; they have the resources and support they need to make a success of digital and to work efficiently and collaboratively through dedicated digital working practices, and further develop their digital literacy.

### 4. Expand capability through sustainable technologies

We have the skills and tools we need to build fast, reliable and secure services that works for everyone, sustainably and ethically.

These principles also reflect the Welsh Government's *Digital strategy for Wales*, and draw on wider best-practice in the public sector digital transformation programme. The *Digital strategy of Wales* sets out the national vision for how digital technology can be used to improve public services. Its six missions are designed to shape how public bodies and third-sector organisations use digital to bring about change. Our principles are aligned to those of the Welsh Government's six missions. [Appx 3. Alignment with Welsh Government](#)

## Where we are now

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### Current Position.

Amgueddfa Cymru comprises of seven national museums and one national collection centre. Each location has digital systems for internal staff and the general public to use.

- User Experience

User experience (UX) and User Interaction (UI) are considered in our digital offerings and must continue to be the priority in any future development. However, we need to engage more with users to help increase adoption levels, reduce inefficiencies, and pain points in the end-product to lower the risk of developing digital 'white elephant'.

- Digital Infrastructure and Systems

All digital services are routed through the primary datacentre, hosted in Cathays, with a secondary datacentre at St Fagans. The core server, network, and storage configurations of both datacentres are identical to provide resilience of infrastructure. At present we manage a hybrid infrastructure environment, with both on-premise and cloud-hosted solutions.

The on-premise infrastructure and systems are hosted in our newly, purpose-built, datacentre in Cathays. The data centre had been designed with resilience in mind, with improved air conditioning, UPS (uninterrupted power supply), and dedicated power feed. Core systems and data storage is offered through a new Microsoft Hyper-V virtual server cluster on Dell PowerEdge servers, with a Dell Unity NAS (Network Access Storage) and Dell IDPA, Integrated Data Protection Appliance for backups.

The LAN, local area network, was replaced with a new network core, using the latest Aruba switches. WLAN, wireless local area network, using Cisco devices, has been recently upgraded, to provide better coverage to across our sites, to support our staff, digital offering in galleries, and the general public accessing web services.

The WAN, wide area network, and internet connectivity is on a BT backbone, terminated at our datacentres. All other sites use these shared internet pipes.

As part of our cloud-journey, which only began in 2020, many of our core systems and solutions are now cloud-based.

Email: Microsoft 365  
Telephony: RingCentral  
Collaboration and video conferencing: Microsoft Teams  
Intranet and Website Hosting: Microsoft Azure  
HR Solution: Ciphre Datacentre  
CRM: Tessitura  
Epos (Electronic Point of Sale): ECR Retail Systems

With this move to cloud platforms, it is vital we have robust digital infrastructure, with fast, resilient internet pipes to access our cloud platforms.

Although cloud hosted environments offer world class resilience, the systems and data ultimately sit on networks and servers outside of our immediate control. There are risks associated with using cloud services, such as inaccessibility, loss of data control and insider threats, but on balance the benefits far outweigh the risks. Concerns are raised around the impact datacentres have on the environment, due to the power consumption and cooling required, but as shared facilities, hosting multiple customer systems and data, it's still considered more sustainable than private datacentres.

- Digital ways of working

During 2020, we had to make radical changes in the way we work, due to the pandemic. One such change was to provide the technology and infrastructure to enable the workforce to work remotely, but also effectively. Brought sharply into contrast with the advent of Covid, the museum had no previously established continuity plans around system availability and access to systems remotely.

Taking a fundamental first step, we transformed the userbase into being a more mobile workforce, using laptops and VPN to access internal systems. Shortly after we migrated core collaboration tools, such as email, digital meetings, and telephony, to cloud provided services.

For the first time in the museum's history, IT services were accessible without the constraints of the museum's walls and physical networks. This gave management and staff a means to respond to the pandemic, but also a platform to continue the delivery of our commitments and ambitions as a museum, despite now being a dispersed workforce, bringing teams together in a hybrid way of working.

Digital infrastructure and cloud services have fundamentally changed the way we work.

With further investment in resourcing, technology, and skills we can ensure the museum has the foundations in place to fully realise our digital transformation.

- Training, skills and staff support

Staff have responded well to the challenges associated with working remotely during the COVID-19 pandemic. They are becoming more aware of how digital technology could improve the efficiency, quality, reach and relevance of the museum experiences and activities.



Cyber awareness training is by far the best method of avoiding a cyber event. Indiscriminate phishing attacks remain the major cause of a cyber or data loss incident. The emphasis on improving the digital literacy of the userbase is paramount if the digital transformation is to be successful.

- Data Analytics and Business Intelligence

As a museum, we hold a large amount of digital and physical data. Our data sets are disparate and siloed. As yet, we have been unable to classify and categorise data sufficiently enough to ensure the integrity and quality. The disjointed nature of our data means we cannot leverage the power of Business Intelligence (BI). In essence, we are often making business decisions that aren't necessarily based on data, or if we are, it's very fractured or too narrow in scope to offer a wider picture of how the museum is performing.

Without data classification and categorisation, there is a risk that our controlled or restricted data is being used in a public or unclassified manner.

- Cyber Security

As a result of the virtual broadening of our network perimeter, to include home or public network infrastructures, there needs to be greater emphasis on our ability to protect our systems and data.

We are continuously improving our security posture, such as the recent replacement of our firewall solution, providing the latest technology to analyse and block potentially harmful packets of data and intrusions.

However, we are very much in our infancy in terms of Cyber Security, and much more needs to be done to mitigate the ever-growing risk of a cyber event.

New technology and hardware, combined with monitoring and detection tools, offer us the best chance of understanding our cyber landscape and posture, and in turn help to mitigate the risks associated.

- Digital Teams

We have well-established ICT, Tech Support and Digital Media teams that are actively engaged in the delivery and management of infrastructure, applications, services, and devices to support staff and our visitors. However, to sustain and build upon the needs of the museum as we embark on this digital journey, we need to refocus, and strengthen our teams with the required skills and resources.

There is a clear gap in skills and resource when considering our understanding and management of business data. To truly harness the data-driven, decision-making power of a BI tool, the museum will need roles such as a Data Analyst and Data Architect.

Digital is now a fundamental part of every aspect of the museum. Synergies of skills across all functions need to be strengthened, to ensure we have the capability of

delivering digital services and content. Bringing ICT, Digital Media and Technical services together, to form a new Digital group. [Appx 4. Digital Team Structure](#)

## Our Digital Maturity

Digital maturity is a useful way of conceptualising the stages the museum has to go through to complete its Digital Transformation. The model we have used is based on five levels of digital maturity.

The digital strategy engagement report, drawing on the outcomes of the workshops and discussions with key aspects of the business, concluded that we are currently on the cusp between level 2 and 3 of the '*digital maturity index*', a recognised model to measure digital maturity. [Appx 2. Digital Maturity](#)

Level 1: Lack of Digital

Digital isn't valued or prioritised

**Level 2: Digital ICT**

**Digital technology and infrastructure exist only in the ICT function**

**Level 3: Digital Island**

**Digital literacy and adoption exist in discreet areas of the museum**

Level 4: Digital Networks

Leadership support, and collaboration across departments

Level 5: Digital Organisation

Digital exists in embedded in the culture and ways of working

In a well-planned and implemented transformation journey, the focus isn't primarily on implementing new technology, but rather on a fundamental shift in the organisation's operations and mindset to function as a digital organisation.

For us to move beyond level 3 we will need to develop our maturity across all four strategic principles.

## How the museum currently stands in relation to our four principles

### 1. Put users first

*Amgueddfa Cymru is largely dependent on informed individuals with the time available.*

- Important steps have been taken to understand the needs of our external users, diverse groups, through the social media audit, the Widening Engagement Research, accessibility review and through its Youth Forums.
- Our teams recognise that internal and external users have high expectation of digital in our museums, and it's not enough to merely improve; we must go beyond what people experience elsewhere. Putting users first means being fully engaged and ensuring that users are part of the delivery process for all digital services.

- We are committed to ensuring our web-based content follows four key elements of accessibility, perceivable, operable, understandable and robust. In-line with WCAG recommendations. *Appx. 6.14. WCAG Web Content Accessibility Guidelines*

For the museum to move up the levels we need to formalise its approach to service design and delivery and ensure that staff have both the skills and the time to follow best practice guidelines. *Appx. 6.13. Service Standard; Appx. 6.11. Centre for DPS*

## **2. Provide leadership and governance**

*Amgueddfa Cymru's leadership exists at a senior level, but is largely tactical or operational.*

- For this strategy to be adopted across the museum, it needs to be led by senior leaders who are champions of a digital transformation.
- The challenges of recent years have meant that museum leaders have had to focus on supporting digital projects on a case-by-case basis at an operational level. This has diverted attention from the development of a more co-ordinated approach to principles, processes, and resourcing.
- We now have a recently created the Digital Management Group (DMG), which includes the director responsible for Digital, as our 'digital board', to help ensure that projects and resources are co-ordinated and scheduled from an organisational perspective, and that key processes are adhered to, best practice shared and barriers to adoption addressed.

For the museum to move up a level we will need our leaders to develop long-term delivery plans in pursuit of our digital aspirations. This means ensuring that the museum has enough people, with the right skills across our core service and function areas, following harmonised processes, backed by reliable technology.

## **3. Invest in people and skills**

*Amgueddfa Cymru's skills gaps are tackled primarily on a short-term basis in response to specific projects.*

- It is people and their skills – more so than technology – that are the key to successful digital transformation. They will be crucial if the museum is to leverage the full potential of digital to help it achieve its strategic ambitions.
- As a matter of priority, we need to focus on ensuring that we can access the range and depth of specialised skills we need to plan and deliver digital projects, and to operate, support and improve digital systems and services. And that the people with these skills have the time available to use them.
- In addition, the improvement to the digital literacy levels of our staff is vital – as well as in wider society – where communication, information and services increasingly rely on digital technology. Such skills are needed if staff are to be efficient and effective in their day-to-day roles. The strategy will enable staff to work efficiently and collaboratively through dedicated digital working practices.
- Across the museum it continues to be a challenge to access the specialist skills required for developing and maintaining digital systems and services. This limits the rate at which projects can be delivered. Where short-term contracts are used there have been issues around information retention, knowledge transfer and upskilling.
- The pandemic was a catalyst in the development of general digital skills across the museum, but the pace has not been consistent. Those departments with the stronger background in digital ways of working have made greater progress, widening the digital divide within the organisation.

The museum will need to tackle both challenges strategically through co-ordinated, cross-organisational resourcing and training plans that recognise the deepening impact of digital.

#### **4. Expand technical capability**

*Amgueddfa Cymru's infrastructure is being modernised and services integrated, aiding operational efficiency, and supporting collaboration.*

- Digital transformation requires investment in digital expertise and technology.
- Technology is a powerful tool with which to support new ways of working, to help develop innovative ideas, to transform how problems are tackled, to enable collaborative partnerships and to reshape customer-facing services.
- Digital platforms offer opportunities for users to connect in new ways, from exhibitions that can be accessed around the world, to immersive onsite experiences through which visitors can engage with Welsh culture and our collections.
- Modern tools and integrated systems will allow staff to handle functional tasks more efficiently, enabling them to spend more time on delivering services for our users and visitors, customer-facing activities, research and innovation.
- Cloud services will reduce time to delivery, offer scalability, be environmentally sustainable, and improve security. Governments are increasingly expecting us to evaluate cloud solutions before they consider other options.
- Continue to ensure our hardware is purchased, operated and disposed of in line with our Sustainable Development, ethical agendas, and WEEE (Waste Electrical and Electronic Equipment) legislation.
- Technology solves problems, but it needs the skilled people with the time to plan, develop, deliver and maintain the necessary infrastructure, applications and security to be effective.
- Our collections are being digitised, with the ambition of making them accessible to all. Digital storage and preservation solutions will need to be developed. Digital collections are managed through legacy CMS (collection management solution) products. We will need to innovate and migrate as we're going to offer interoperability with other platforms and applications.

For the museum to move up a level we will need further investment in our cloud infrastructure. Its key benefits – including security, accessibility and resilience, as well as the opportunity to use new functionality and integrations – will provide administrative and maintenance efficiencies, freeing-up the time of the ICT team's skilled professionals.

## **What we will do**

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The journey toward a successful digital transformation is not an easy one to traverse. There are many challenges to overcome, both technically and culturally. Some of the work required to make it a success are as follows. With technology moving at such pace, we expect the following list to evolve as we progress but believe these to be the priorities.

### **User Experience**

- Improve accessibility to our data and collections, by making systems and user portals easy to navigate, and offering the latest information.
- Innovative user experiences for our visitors, both physical and digital.

### **Digital Infrastructure and Systems**

- Build on the backbone of our networks to add resilience and coverage.
- Expand the wireless networks to reach more of our estates.
- A cloud-first approach to new platforms and systems.

## Digital Ways of Working

- Continue our journey towards a truly mobile workforce, able to access the systems they need to perform their job effectively and securely.
- Invest in technology to enable hybrid collaboration spaces, such as meeting rooms.

## Training, Skills and User Support

- Cyber Awareness training will be made mandatory for all staff.
- Information owners will be given clear guidance on their responsibilities.
- Improve levels of Digital Literacy for all staff, through training and guidance.
- Effective use of external profession services.
- Collaborative approach to shared resources across our sector and beyond.
- Build a team dedicated to understanding and leveraging our Data.

## Data Analytics and Business Intelligence

- Map all business data to define its categorisation, classification and ownership.
- Cleanse our data, break down siloes and ensure integrity.
- Implement Business Intelligence (BI) tools to analyse and inform our decisions.
- Further develop the management of our data strategy.

## Cyber Security

- All policies and procedures are being reviewed and updated to reflect the new threats we face.
- Improve our ability to identify and mitigate cyber risks.
- Implement technology and artificial intelligence (AI) to understand and improve our cyber security posture.
- Achieve and retain Cyber Essentials certification.
- Develop Cyber Security skills of the teams.

## Digital Teams

- Gain the skills required to deliver coherent business data through the use of Business Intelligence tools.
- Strengthen our web services development team to deliver a better user experience.
- Define the structure of the digital teams to ensure a cohesive approach to delivering this strategy and our Digital Transformation.
- Invest in the Cyber Security team to better protect our systems and data.

A series of actions have been identified for each of the four principles. Implementing these will give the museum the digital capabilities it needs to deliver against *Amgueddfa Cymru 2030*.

### 1. Put users first

#### *Emphasise user research*

- Ensure user research informs the development of both internal systems and public-facing services.
- Build on current work around segmentation and community engagement – the museum's Widening Engagement Research to include working with those with accessibility requirements, lower levels of digital literacy or living in digital poverty.
- Grow the museum's internal capabilities around user research.
- Allocate budget for user research.

#### *Work iteratively and be flexible*

- Adopt iterative approach to larger projects, prototyping and wireframing during product development.
- Adopt iterative and agile user-centered methodologies for digital projects.

- Plan for continuous review cycles during product development

#### *Keep improving digital services*

- Measure performance and impact with appropriate data and insight.
- Devise effective success and impact measures that are continuously measured against.
- Ensure success measures/impacts/KPIS are user focused.

#### *Support the Welsh language*

- Work to provide fully bilingual products both internally and externally to support the ambitions of Cymraeg 2050. [\*Appx. 5.12. Cymraeg 2050\*](#)

## **2. Provide leadership and governance**

#### *Provide active leadership*

- Ensure director ownership of strategy.
- The Digital Management Group is responsible for overseeing the implementation of the strategy action plans.

#### *Communicate and promote the strategy*

- Advocate the strategy internally across all areas and invite feedback and encourage people to get involved.
- The Digital Board actively champions the strategy

#### *Prioritise projects*

- The Digital Board authorises digital products and projects based on following criteria: Dependencies, impact and effort.
- Digital Board reviews any project issues where resourcing needs remedying.

#### *Plan for the longer term*

- The Digital Board oversees the resource requirements of the digital programme, and ensure that these are reflected in corporate planning.
- The Digital Board is responsible for finding solutions to resource constraints. This includes prioritising projects more likely to receive additional external funding or partnering with external organisations to access specialist skillsets.
- Develop the vision for digital user experience and user interaction at Amgueddfa Cymru.

## **3. Invest in people and skills**

#### *Understand the skills needed*

- Keep an up-to-date register of systems and services, along with specific skills required to operate each one.
- Sustainable digital use and practice as part of digital literacy – training staff to use digital tools responsibly to minimise carbon impact
- Use the UK Government's Digital, Data and Technology Profession framework tool to understand the breadth of skills that are recommended for the effective delivery of new projects. [\*Appx. 6.7. Digital, Data and Technology Profession framework tool\*](#)

#### *Identify the skills the museum has*

- Develop an on-going plan to identify and address any skills gaps.

#### *Think about recruitment*

- The museum's values and collaborative working environment should be attractive to a diverse range of people.
- Increase partnerships with Higher Education institutions by supporting project-based modules or internships as both can work as effective recruitment pipelines.

- Ensure sufficient knowledge transfer for short term contracts or outsourced work to ensure skills are maintained in the museum.

#### *Focus on training and upskilling*

- Develop training in digital skills programmes that allow for the upskilling staff across the museum, including areas of new technologies.
- Offer our technical staff the opportunities to develop. Consider GDS Academy courses and the communities of practice established by the Centre for Digital Public Services. [Appx. 6.10. GDS Academy](#); [Appx. 6.11. Centre for DPS](#)

#### *Cultivate a culture of learning*

- Create an environment of continuous improvement and allow people to share experiences. Place particular emphasis on benefits to the individual and also on supporting the flow of knowledge and skills between different teams and departments.
- Take every opportunity to acknowledge and celebrate success.
- Reserve adequate time in operational planning process for training and upskilling.
- Sustainability forms part of our development.
- Offer our users the chance to experience, and better understand, emerging technologies and their potential impact on our work.

#### *Share expertise*

- Actively participate in the Welsh government's digital skills agenda, and support other heritage organisations and the wider community to develop digital capabilities.

## **4. Expand technical capability**

### *Increase ICT and digital resources*

- Review the capacity and skillsets of the ICT and digital teams to identify where resource is needed, or can be better deployed to meet our requirements.
- Differentiate between areas in which the museum should build its own capacity and specialisms where it may be more cost effective to rely on external suppliers.
- Work closely with the digital board to ensure that the prioritisation of projects reflects the availability of IT skills, the requirement for ongoing investment in the IT and digital teams, and that it is clearly reflected in corporate budgets.
- Invest in the skills needed to understand and better use our data.

### *Integrate and automate*

- Breaking down barriers between data stores or systems is a good way of leveraging the value of content, data and processes to create new products or services, generate new insights or develop new workflows.
- Use Business Intelligence tools to better inform decisions across the organisation.
- Keep software up to date and consider cloud-based versions where suitable.
- Use open standards to increase compatibility between tools and data sources. [Appx. 6.8. Open standards](#)
- Invest in composable platforms and technologies to support integrations between applications.
- Store data centrally as a single source of truth in an open format. This will ensure that the data is easy to find and accessible to many. [Appx. 6.9. Single source of truth](#)
- Look for opportunities where automation can replace inefficient manual processes. These often occur when staff have to work across multiple systems that are difficult to connect.

### *Prepare for the cloud*

- Deepen our understanding of cloud technologies.
- Where new services are being procured, or legacy ones replaced, adopt a cloud-first approach to solutions. Hybrid or on-premises solutions will be considered where deemed necessary.

- Migrate file storage and corporate applications to SaaS solutions. This will enable true hybrid working, offering real-time collaboration, secure sharing and instant access anytime, anywhere and on any device.
- Move the museum's growing collection of digital assets and data to a cloud storage solution. As well as reducing redundancy processes and costs, this will make it easier for everyone to access and reuse digital artefacts.

#### *Protect systems and data*

- The museum takes cyber security seriously. However, the ever-changing digital landscape requires constant protection from evolving threats. Public sector organisations are increasingly targeted by well-organised groups.
- Plan routine security reviews and testing with a view to being certified to external standards (e.g., Cyber Essentials Plus and possibly ISO 27001). *Appx. 6.5. Security Reviews*
- Follow a 'secure by default' approach when implementing cloud services and opening access to the public. Ensuring security is built-in from the beginning reduces risks and increases confidence in services. *Appx. 6.4. Secure by Default*
- Develop the cyber security function in our organisation through adequate resource, raising awareness and providing training. Everyone has responsibilities when it comes to the security of the museum's systems and data.

#### *Embrace emerging technologies*

- Continue exploring how emerging technologies can offer new ways to tell, share and diversify Welsh culture, stories, and heritage. Virtual and augmented reality offer both digital and physical users' new ways to experience, interact and connect with the museum and each other, while also offering ways to improve accessibility and connect with a wider range of communities.
- Look to leverage the power of Web2.0 and Web3.0, alongside the possibilities of Artificial Intelligence (AI)
- To build good value, sustainable, and relevant digital experiences, we will support, plan, and build a collaborative culture of experience development that evidences our impact, is user-driven and commercially aware. This will enable us to support and sustain new ways of developing projects, as well as working with others to challenge our ideas and test our assumptions,
- Investigate how technology could accelerate the process of digitising the museum's millions of physical assets. Ensure that when assets are digitised that the results are accessible to people and systems, within the museum and externally, and that they are protected from quality degradation.
- Work with partners to explore how artificial intelligence could help the museum.
- Sustainable innovation. We will consider natural resources and the environment, with the aim of moving away from non-biodegradable to biodegradable materials in the production process, preventing deterioration, contamination, and negative environmental impact. Ensuring our technology is efficient in its use of energy and resources, minimising our Digital Carbon Footprint.
- Identifying, categorising and tagging digital assets, allowing them to be found and used in new services.
- Measuring and forecasting visitor behaviour
- Managing gallery security and energy systems



## When will it happen?

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The actions relating to our four principles can be broadly ordered across three digital transformation phases, reflecting their dependencies.

The roadmap is set out as a five-year digital transformation journey. Completing the three phases within this timeframe will require significant investment in time and effort and a robust implementation of the actions laid out in this roadmap. [Appx. 5. Roadmap](#)

- **Phase 1 – Foundational** (one year: 2023–2024)  
Developing the museum’s capability as an organisation to engage with digital transformation.
- **Phase 2 – Transitional** (two years: 2024–2026)  
Planning and delivering an increasing number of specific projects to follow the tenets of the digital strategy.
- **Phase 3 – Transformative** (two years: 2026–2028)  
Absorbing the digital strategy into the organisation’s DNA, and increasingly looking for opportunities to share and collaborate externally.

The starting point in phase 1 is active leadership and the communication of the strategy across the organisation. This is followed by work to understand the digital skills needed, cross-referencing these with the skills the museum has and identifying gaps.

Additional activities to be started in phase 1 include focusing on training and upskilling, reviewing ICT and digital resources, promoting best practice, emphasising user research and working on integration and automation from a technical perspective.

In phase 2, any open activities from the first phase will be completed and the museum will be able to prioritise projects based on a solid understanding of priorities, capabilities and capacity. Work will be carried out iteratively and flexibly, and there will be a focus on supporting the Welsh language when developing systems and services.

From a technical perspective, the museum will prepare for the cloud, and work on protecting systems and data. Lastly, governance around long-term planning for projects, skills and knowledge sharing will be prioritised, and recruitment will be addressed.

The third and final phase will complete any open activities from phase 2 as the museum cultivates a culture of learning and shares its digital expertise with partners and the public, broadening its positive societal impact. Finally, the museum will keep improving its now prevalent digital services, as well as embracing new technologies and the opportunities that these bring.

These three phases of the digital transformation roadmap go hand-in-hand with increasing levels of digital maturity. While the phases cover the order in which specific actions should be carried out, the digital maturity levels are a way of describing the combined outcome of the various activities.

## What are the risks?

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- 1. *Business and User Experience disruption***  
There will need to be a fundamental shift of culture within the museum, towards a digital-first approach. Change can be divisive, with people and systems actively blocking innovation and progress. To achieve a successful digital transformation, we require a clear change management approach, with unwavering support from senior management. Planning, implementing, and monitoring changes is vital if we are to minimise risks and disruption. Support and effort will be required across a range of departments, and will need to be factored into work programmes.
- 2. *Digital leadership at the highest level***  
Digital transformation requires our leaders to be open to fundamental change, which may conflict with their current strategies and direction for the museum. Without embracing a digital and data-driven culture at the very top, we will fail in our ability to influence the rest of the museum to support our digital journey.
- 3. *Skills shortage***  
Skills in data analytics, application development, cloud computing, SAAS platforms, intelligent automation, change management and cyber security are all key roles required to ensure we deliver a digital museum that is effective, accessible, and secure.
- 4. *Lack of investment in technology and digital services***  
Investment in technology and digital has traditionally been delivered through capital projects and funding. We are now looking to move away from expensive, on-premise solutions, towards cloud and web-based services to support the mobile workforce, the internet of things (IOTs) and connected IT solutions. Almost all of these new ways of working digitally are subscription-based, and require investment to come from revenue, instead of capital.
- 5. *Cost of a Digital Transformation***  
Digital transformation has the potential to streamline our business processes, lower operational costs, improve our user experience, and contribute to revenue growth, ensuring long-term success. The cultural shift to embrace digital isn't easily quantifiable as a cost, but again brings real benefits to our staff and users. Digital infrastructure, technical staff, business intelligence and IT systems aren't cheap, and are subject to funding constraints, risking the overall success of the transformation. However, as we move along the digital journey, we will benefit from efficiencies and cost savings as a result of the systems and changes we make.

### **Risks if we do nothing**

This strategy puts digital, data and technology at the core of the 10-year strategy. Our approach can reduce operating expenses, inefficiency, improve business process, and offer data-derived decision making. If the museum is to achieve our ambitions of being more accessible, with a broader reach, Digital is a key. Without our organisation embracing a digital transformation, we risk not having the tools, skill, processes, and technology to thrive in a world dominated by digital.

## Conclusion

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As a flagship cultural institution that preserves, presents and promotes the culture of Wales, we have set ourselves six ambitious commitments in our 2030 strategy:

- Make sure everyone is represented
- Inspire creativity and learning
- Help protect and restore nature
- Support well-being through inspirational spaces and experiences
- Discover and explore the museum digitally
- Build global connections

We realise that digital has an important role to play in helping deliver these objectives, and in this digital strategy, we have set out the transformational journey needed for us to mature into a digital organisation.

This digital strategy identifies four strategic principles and priorities for effective, people-centred transformation that the museum should adopt.

**1. Put users first**

Everything we do is centred on the needs of the communities we serve, the visitors to our museums and our staff.

**2. Provide leadership and governance**

Our leaders understand the power of digital, and know it is integral to delivering on our strategic goals.

**3. Invest in people and skills**

Our colleagues are passionate and committed; they have the resources and support they need to make a success of digital.

**4. Expand technical capability**

We have the skills and tools we need to build fast, reliable and secure services that work for everyone.

These strategic principles are broken down into a list of actions that have been laid out in a three-phase roadmap across a five-year period. Whilst this roadmap visualises the actions for the museum's digital transformation, the outcome of each phase is represented by the unlocking of a new level of digital maturity. At the end of this journey, the ambition is for digital to be an integral part of the organisation's DNA.

# Appendix

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## 1. Terms and Definitions

### **Digital**

This strategy views 'digital' in broad, functional terms:

- Digital ways of working and digitisation
- Training, skills and staff support
- External-facing digital platforms and engagement
- Digital communication channels
- Analytics and data
- Internal software and systems
- Hardware, networking and cyber security

We recognise that digital technologies are having a far-reaching impact on wider culture and society: how people think; how they engage with each other; how they create; and how they share meaning. Some aspects of culture are digital first or digital only, and the museum must be prepared to reflect this.

The strategy doesn't see digital as an exclusive end point that is in competition with face-to-face engagement or physical experiences. Rather it considers the multiple facets of digital to be part of a programme that will help the museum deliver its wider ambitions. The physical, hybrid and digital are all part of this future.

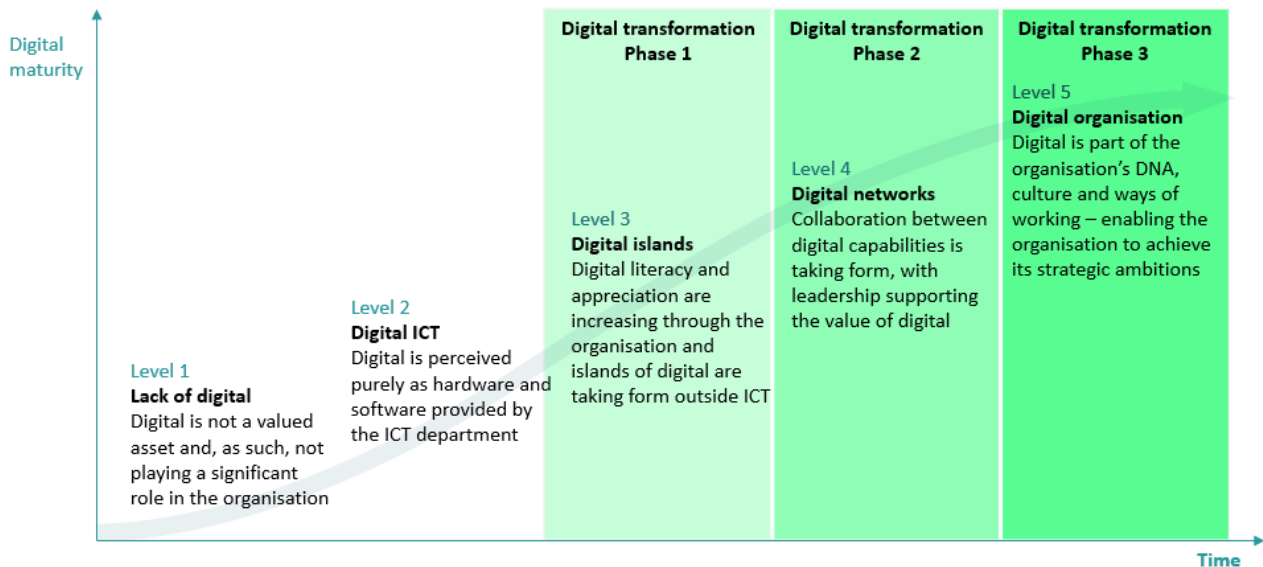
### **Digital transformation**

Digital transformation is a series of strategic changes by which an organisation embraces the potential of digital – in its broadest sense – to change how it operates, how it is organised and, ultimately, its culture. For many organisations, digital transformation can help power a shift from an inward focus on themselves to better meet the expectations, needs and goals of their customers, communities or citizens.

Digital transformation is increasingly not an option. Many businesses are very aware how easy it is for customers to switch to a competitor; governments are accountable to voters and public services to the communities they serve. Museums and the heritage sector are not exempt: they must demonstrate that they understand their audiences if they wish to gain their attention, retain their support and encourage their participation.

## 2. Digital Maturity

In the diagram below, the five levels of an organisation's digital maturity are illustrated. These levels outline a development pathway that can be followed in a realistic manner in a series of iterative digital transformational phases.



### Digital Maturity Levels for each principle

#### Principle 1: Put users first

Level 1	Defined best practice approaches (GDS / CDPS) are not used in the delivery of digital systems or services
Level 2	There are isolated examples of best practice, largely dependent on informed individuals with the time available
Level 3	Best practice is referenced in project planning as a compliance requirement, although implementation is ultimately uneven
Level 4	Best practice is a consistent feature of project delivery; people follow the processes that have been laid out
Level 5	Best practice is embedded in the organisational culture; people contribute to the evolution of best practice and share this with peers

#### Principle 2: Provide Leadership and Governance

Level 1	There is a lack of clear leadership around digital
Level 2	Leadership exists at a departmental level, but not at senior level
Level 3	Leadership exists at a senior level, but is tactical or operational
Level 4	Leadership exists at a senior level, with digital being a strategic priority
Level 5	Leadership exists at a senior level, with digital being a deep-rooted aspect of organisational strategy

#### Principle 3: Invest in People and Skills

Level 1	Identifiable weaknesses are not addressed adequately; systems and services are at risk
Level 2	Skills gaps are tackled on a short-term basis in response to specific projects

Level 3	Recruitment and upskilling is a broad-based strategy directed through a centralised plan
Level 4	A self-sustaining learning culture drives continual improvement in digital skills
Level 5	A shift from a focus on an organisation's own requirements to how it can help others

### Principle 4: Expand Technical Capabilities

Level 1	Technology and data are siloed within teams and disconnected between sites
Level 2	Infrastructure is being modernised and services integrated, aiding operational efficiency, and supporting collaboration
Level 3	Services and data can be accessed by external organisations and members of the public
Level 4	Modern cloud services, open standards and built-in security are part of all new digital projects
Level 5	The organisation is an exemplar in its sector, and actively helps others on their journey

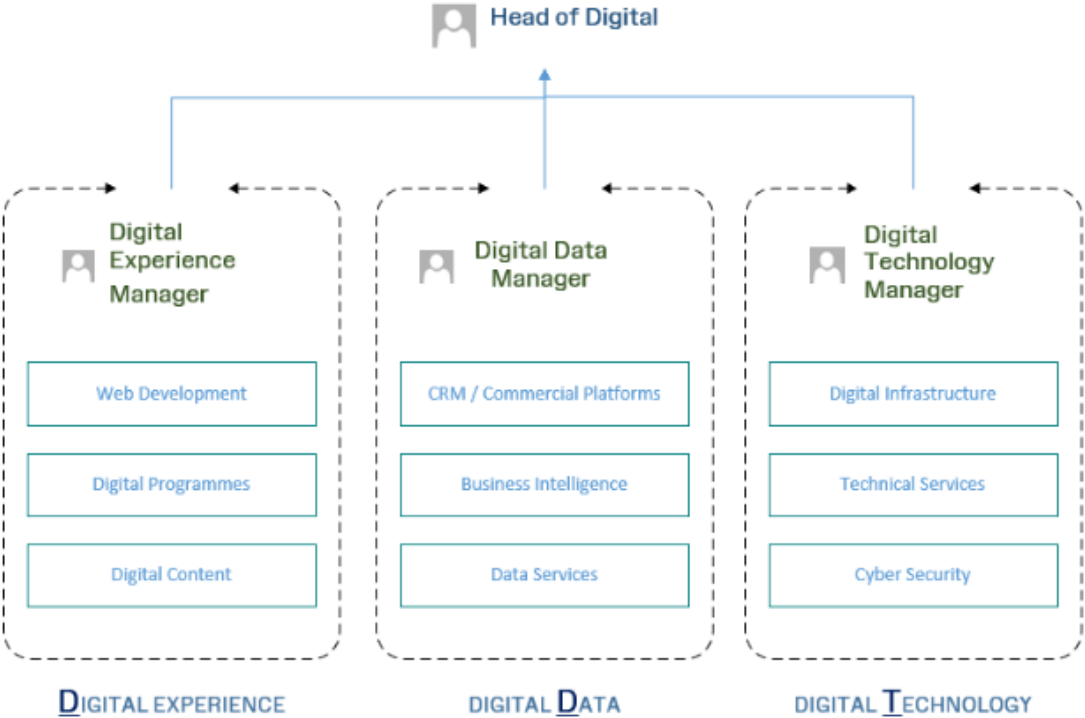
### 3. Alignment with Welsh Government.

The table below illustrates how the museum's four principles align with the six missions of the government's strategy.

● Primary alignment    ○ Secondary alignment

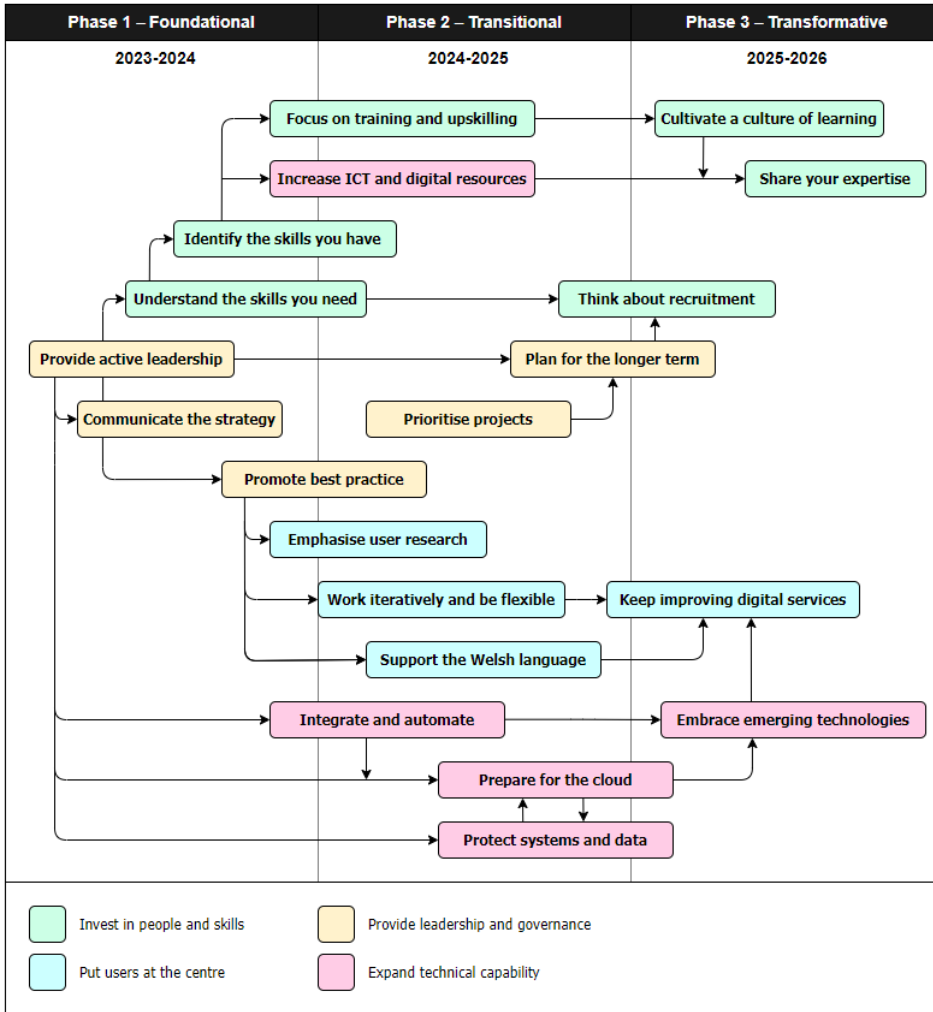
Digital strategy for Wales	Amgueddfa Cymru – Digital Strategy			
	Principle 1: Invest in people and skills	Principle 2: Provide leadership and governance	Principle 3: Put users first	Principle 4: Expand technical capability
<b>Mission 1: digital services</b> Deliver and modernise services so that they are designed around user needs and are simple, secure and convenient.	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green;">●</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>
<b>Mission 2: digital inclusion</b> Equip people with the motivation, access, skills and confidence to engage with an increasingly digital world, based on their needs.	<span style="color: green;">●</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green;">●</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>
<b>Mission 3: digital skills</b> Create a workforce that has the digital skills, capability and confidence to excel in the workplace and in everyday life.	<span style="color: green;">●</span>	<span style="color: green;">●</span>		
<b>Mission 4: digital economy</b> Drive economic prosperity and resilience by embracing and exploiting digital innovation.	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>
<b>Mission 5: digital connectivity</b> Services are supported by fast and reliable infrastructure.				<span style="color: green;">●</span>
<b>Mission 6: data and collaboration</b> Services are improved by working together, with data and knowledge being used and shared.	<span style="color: green;">●</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green; border: 1px solid green; border-radius: 50%; padding: 2px;">○</span>	<span style="color: green;">●</span>

4. Digital Team Structure



# 5. Roadmap

Roadmap for the digital strategy.





## **6. External Resources**

- 6.1 [Digital strategy for Wales:](#)
- 6.2 [Government Digital Service's Service Standard:](#)
- 6.3 [Centre for Digital Public Services](#)
- 6.4 [Secure by Default - NCSC](#)
- 6.5 [Security Review – Gov.uk](#)
- 6.6 [Cymraeg 2050.](#)
- 6.7 [Digital, Data and Technology Profession framework tool](#)
- 6.8 [Open standards](#)
- 6.9 [Single source of truth](#)
- 6.10 [GDS Academy](#)
- 6.11 [Centre for DPS](#)
- 6.12 [Cymraeg 2050](#)
- 6.13 [Service Standard](#)
- 6.14 [WCAG Web Content Accessibility Guidelines](#)