ECODESIGN
REFERENTIAL

INTRODUCTION

🎯 Purpose of this Referential:

The Ecodesign Referential for digital products and services at Airbus, first published in October 2024, aims to provide a shared foundation of knowledge and practical recommendations to guide ecodesign initiatives within the company. It draws from a range of existing frameworks while tailoring them to the specific context of Airbus and its global scope.

Rather than being prescriptive, this guide offers thoughtful reflection and actionable insights for reducing the environmental footprint of digital products. Ecodesign, defined as "the integration of environmental considerations into product design to improve its environmental performance throughout its lifecycle," is at the core of this approach.

The goal of this referential is to create more sustainable digital products, reduce resource consumption throughout their lifecycle, and increase transparency around their environmental impact. As both a practical and strategic tool, it seeks to promote responsible and sustainable digital practices within Airbus, while encouraging deeper, long-term ecological thinking and actions.

🧺 Scope:

The scope of this referential extends to all digital products, defined as the combination of various components working together to perform specific functions.

These include infrastructure that hosts equipment used to store, process, and display data; layers of software running on the hardware infrastructure and any additional third-party digital products.

This referential is applicable to a wide range of services, including websites, APIs, installable software, platforms, Software as a Service (SaaS), AI-based tools, industrial applications, hybrid apps, etc. Depending on the nature and functionality of the service, certain criteria may not be applicable.

The general aim is to establish **a common framework** that can be adapted to the specific characteristics of the digital product being designed or evaluated. This general ecodesign referential does not preclude the existence of additional, more exhaustive, or specialized ecodesign documents for particular categories of digital products or services.

🧑 Audience:

This ecodesign referential is intended for all roles involved in the design and development of digital products, including architects, product owners, product managers, business analysts, technical leads, UX/UI designers, developers, testers and more.

📘 Format:

The ecodesign referential for digital products includes **28** criteria, each framed as a question to ensure that the operational or in-development product aligns with ecodesign principles (e.g., "Is the digital product compatible with older device models?").

To guide efforts effectively, each criterion is assigned a **prioritization level**, which considers both the estimated environmental impact and the complexity of implementation. This prioritization helps teams focus on the most impactful and feasible actions. The referential establishes three levels of priority: "Priority" (3 stars), "Recommended" (2 stars), and "Moderate" (1 star), enabling teams to organize their efforts based on the significance and complexity of each criterion.

Each criterion in the referential is accompanied by a dedicated practical fact sheet. These fact sheets provide detailed information, including the goal of the criterion, its applicability, the roles involved, the conditions for implementation, and the methods for testing and validating compliance. The fact sheets are organized **thematically** in 8 categories: *Strategy*, *Specifications*, *Architecture*, *User Experience and Interface (UX/UI)*, *Content*, *Frontend*, *Backend*, and *Hosting*.

This structure ensures that teams can easily navigate and apply relevant ecodesign principles at each phase of the product's development, making the criteria actionable and tailored to specific tasks and roles.

🔢 Maturity Score Assessment:

To help product teams track their progress in applying the ecodesign referential, a maturity score can be calculated through a self-assessment process. This score is not an environmental impact measurement but rather an indicator of how well the referential's criteria are being implemented.

The score is based on the number of applicable criteria that have been met, with each criterion weighted according to its prioritization level. By using this score, teams can gain insight into their overall ecodesign maturity, monitor their progress, and identify areas for improvement. The score provides a dynamic and continuous way to evaluate ecodesign efforts over time.

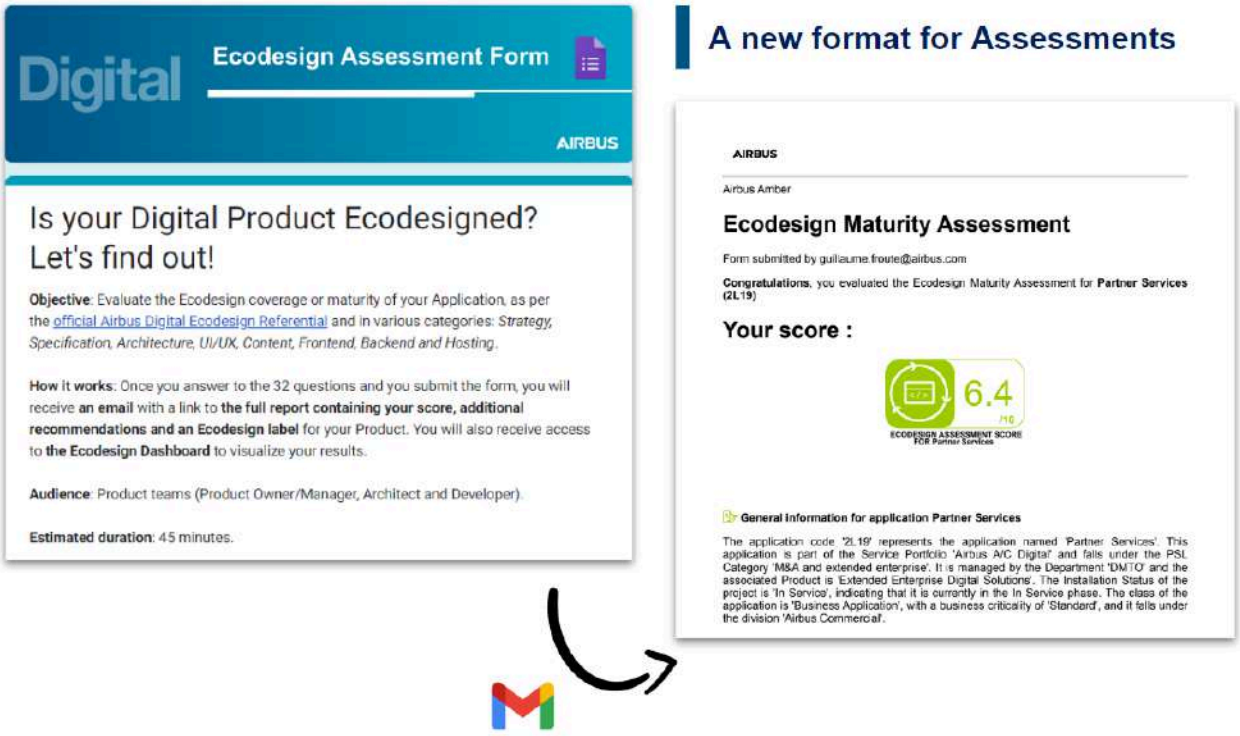


Figure 1: The Ecodesign Maturity Assessment GForm and its Report with the Score.

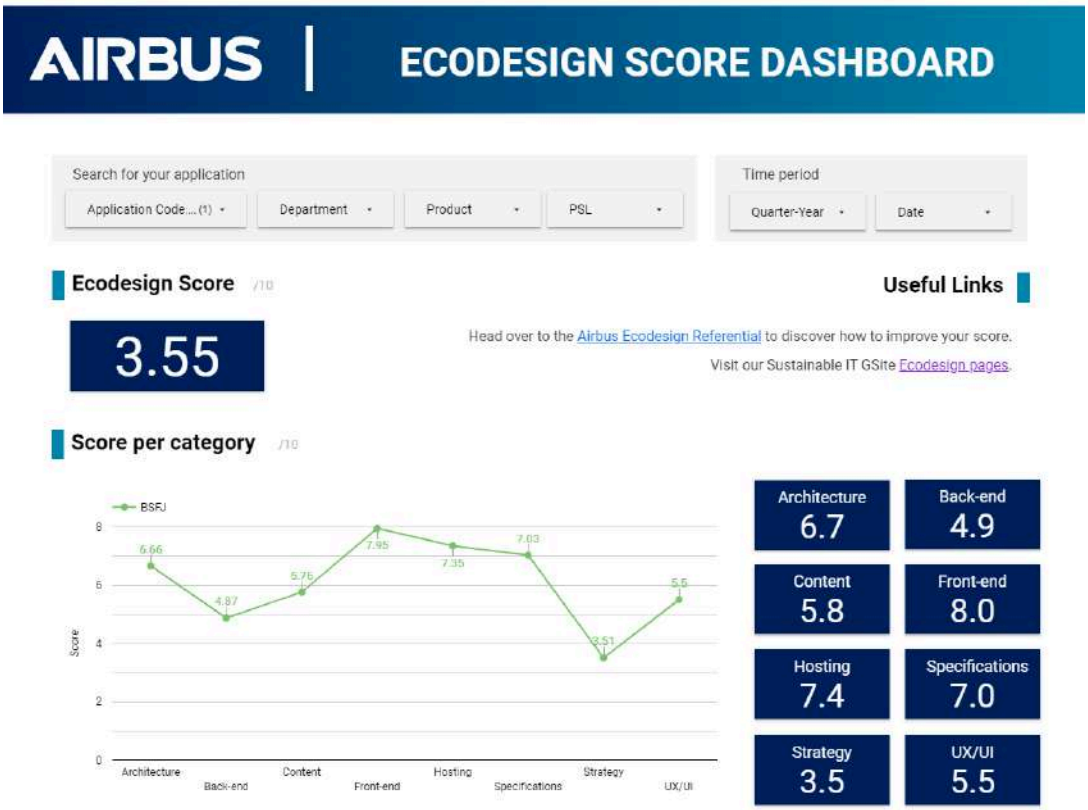


Figure 2: The Ecodesign Dashboard to access insights and track your progress.

FACT SHEETS BY CATEGORY

FACT SHEETS BY PROFILES

FUNCTIONAL ROLES (PRODUCT OWNER, MANAGER, BUSINESS ANALYST)

- 1.1 Sustainable IT awareness - **Priority**
- 1.2 Document business needs - **Priority**
- 1.6 Set environmental targets - **Priority**
- 1.7 Adapt service quality - **Priority**
- 2.1 Decommission unused features - **Priority**
- 2.2 Require eco-friendly suppliers - **Priority**
- 5.1 Appropriate file formats - **Priority**
- 7.1 Optimize algorithm footprint - **Priority**
- 8.2 Minimize PUE/WUE - **Priority**
- 2.3 Low-speed internet compatibility - **Recommended**
- 7.2 Efficient data storage - **Recommended**

ARCHITECT

- 1.3 Support older devices - **Priority**
- 2.1 Decommission unused features - **Priority**
- 7.1 Optimize algorithm footprint - **Priority**
- 8.1 Geographically relevant hosting - **Priority**
- 1.5 Use open technologies - **Recommended**
- 3.1 Eco-efficient architecture - **Recommended**
- 3.2 Resource-demand adjustment - **Recommended**
- 3.3 Support protocol evolution - **Recommended**
- 3.4 Ensure long-term support - **Recommended**
- 7.2 Efficient data storage - **Recommended**

DEVELOPER

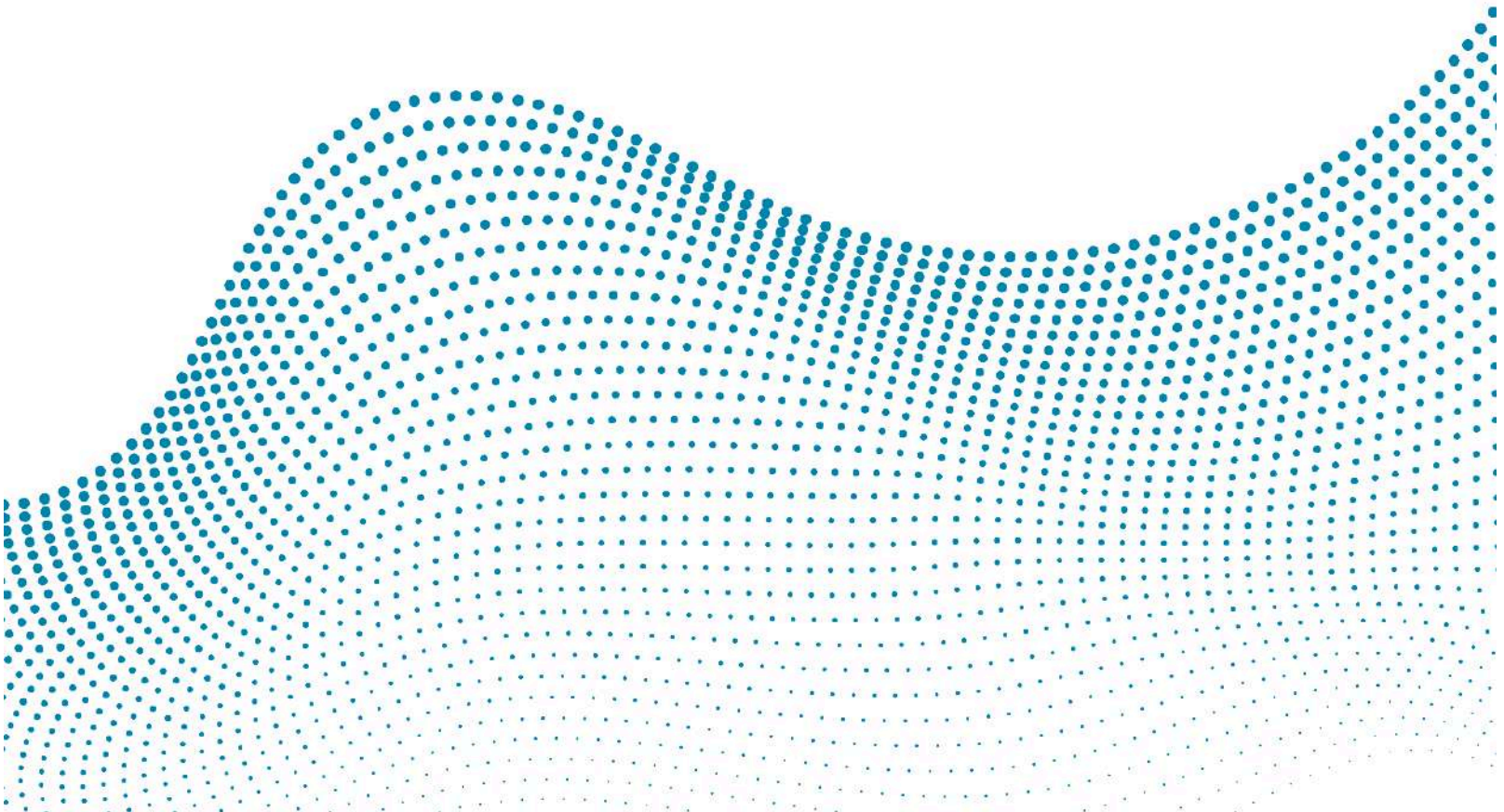
- 6.1 Asset compression - **Priority**
- 1.4 Ensure device responsiveness - **Recommended**
- 6.2 Avoid unused resources - **Recommended**

UX/UI DESIGNER

- 4.1 Accessibility compliance - **Priority**
- 1.4 Ensure device responsiveness - **Recommended**
- 4.2 Necessary media only - **Recommended**
- 4.3 Optimize navigation paths - **Recommended**
- 4.4 Minimalist design focus - **Recommended**
- 4.5 Limit notifications - **Recommended**
- 4.6 Inform environmental impacts - **Moderate**
- 4.7 Manage eco-impact features - **Moderate**

01.

STRATEGY



01. Strategy

1.1. Are internal and external stakeholders (Product Owner, Architect and Developers) aware or trained in Sustainable IT ?

Main role : **Product Owner**

Level of priority : ● ● ●

🎯 Objective :

The ecodesign of sustainable digital products encompasses a broad and complex range of practices that can be challenging to fully grasp and implement at every project stage. Ensuring that all stakeholders, including Product Owners, Architects, and Developers, are aware of and trained in Sustainable IT is essential. This training helps maintain consistency in applying, monitoring, and sustaining ecodesign measures throughout the project lifecycle. An early and well-prepared training plan is crucial, as many key decisions for ecodesign are made during the design phase.

🔨 How to Implement :

Assess the specific Sustainable IT knowledge required for each stakeholder role in your project and propose a relevant training plan by utilizing existing resources. Encourage the team to watch the Ecodesign introduction video for the team to get started on the topic. Ensure the team members are aware of the Airbus Ecodesign Referential and know how to use it. Use the Sustainable IT Google Site for foundational training materials. Ensure stakeholders complete MyPulse e-learnings (Sustainable IT Awareness + MOOC, Ecodesign e-Learning with a trainer) and engage with your Sustainable IT focal point for additional support. Interactive and gamified formats are also available for fun and engaging learning, including a Sustainable IT Escape Game and an Ecodesign game on Klaxoon. Organize a workshop to brainstorm which Ecodesign features might be relevant for your product.

🔍 How to Control :

- ➔ Team members have broad knowledge on Sustainable IT (attendance to a Climate Fresk, MyPulse Sustainable IT Awareness and MOOC completed).
- ➔ Team members are trained on Ecodesign (Ecodesign video & Ecodesign MyPulse e-Learning).
- ➔ Team members know who their Sustainable IT Focal point is.
- ➔ Identify additional, more exhaustive, or specialized ecodesign documents that might be relevant for your particular digital product or service.

01. Strategy

1.2. Has the digital product clearly defined and documented the business needs and expectations of its target users to prevent unnecessary developments?

Main role : **Product Owner**

Level of priority : ● ● ●

🎯 Objective :

About 45% of requested features are never used, and 70% are not essential. To effectively meet user needs, it is essential to clearly define and document the business needs and expectations of the target users. Understanding the primary and secondary user groups, their usage patterns, and behaviors prevents the inclusion of unnecessary features and ensures the product aligns with actual needs rather than speculative or sponsor-driven requirements. This avoids resource wastage, time inefficiencies, and environmental impacts associated with unnecessary developments. Ensuring that the product focuses only on essential features reduces environmental debt and enhances user experience.

🔨 How to Implement :

1. **Ask yourself**: Is the digital product necessary? Are there non-digital solutions available? Do the needs justify the resources required? Is the added functionality truly needed? What if it were omitted? What is the minimum quantification to meet user expectations, such as the number of results or image quality? This approach helps avoid unnecessary developments and minimizes environmental impact by focusing efforts on what is truly essential.

2. **Conduct UX Research**: Engage stakeholders and business lines to gather requirements. Use interviews, surveys, and observations to define user personas and needs. Study existing solutions to identify gaps. Refine requirements iteratively using agile methods. Analyze data from existing services to validate needs.

3. **Document and Validate Requirements**: Create comprehensive documents covering business needs, user personas, and journeys. Ensure journeys reflect real user interactions. Analyze data to confirm feature usage and identify improvements.

🔍 How to Control :

To control the effectiveness of this definition, ensure that research documents—such as user interviews, UX studies, and benchmarks—are complete, accessible and accurately reflect the real needs. Additionally, verify that the features developed align with these documented needs.

01. Strategy

1.3. Is the digital product usable on older model devices?

Main role : **Architect** Level of priority : ● ● ●

🎯 Objective :

Devices account for 65% to 92% of the environmental footprint of digital technologies (ADEME-Arcept study), particularly due to their manufacturing. Extending the lifespan of these devices is crucial for reducing the environmental impact of digital products. Therefore, your digital product should limit its contribution to device obsolescence by ensuring it functions on the oldest possible equipment.

🔨 How to Implement :

To ensure compatibility with older equipment, rigorously test each feature of the digital product on devices that are at least seven years old. This should be an integral part of your Quality Assurance process. Prioritize hardware compatibility over outdated software or operating systems, making sure that the product functions properly with the latest OS versions available for these older devices. While allowing for degraded modes where necessary, ensure that no essential functionality or content is lost. Specifically, native applications should be operable on devices released seven years ago or more, web-based services should work on devices with microprocessors from ten years ago or more, and other digital services should be compatible with devices or peripherals from at least seven years ago.

🔍 How to Control :

Verify the usability of critical features of your digital product on older devices.

01. Strategy

1.4. Is the digital product responsive across various devices and display sizes, including laptops, tablets and mobiles?

Main role : **Developer, UX/UI Designer** Level of priority : ● ● ○

🎯 Objective :

The digital product should contribute to reducing the need for new terminals by operating effectively across a range of screen sizes, including older, smaller devices such as old smartphones. Adapting to screens with lower resolutions can help combat the obsolescence of equipment driven by software requirements.

🔨 How to Implement :

When applicable, ensure the digital product's interface is adaptable to different screen sizes without sacrificing usability ("responsive design"). To avoid the need for multiple versions of the product for different devices, the product should be designed to display correctly on both small mobile screens and large desktop monitors. Menus should be accessible both through touch and traditional keyboard inputs. Adopting a mobile-first approach can streamline the design for smaller screens and then scale up for larger displays.

🔍 How to Control :

Test critical functionalities of the digital product across various display sizes (desktop, tablet, and mobile) to ensure the following:

- ➔ The service dynamically adjusts its display based on screen size ("responsive web design").
- ➔ All menu components are accessible through different types of interfaces, including touch screens and traditional input methods.
- ➔ Ensure the full service is viewable within a 1,200-pixel wide viewport, typical of standard 17-inch computer monitors with a 5:4 aspect ratio, accounting for 80 pixels used by a launch bar.

➔ For interfaces without vertical scrolling, verify that the service is fully viewable within a 720-pixel high viewport, equivalent to 800-pixel high monitors with 80 pixels used by a launch bar.

01. Strategy

1.5. Has the digital product been designed with standard interoperable technologies rather than specific and closed technologies?

Main role : **Architect** Level of priority : ● ● ○

🎯 Objective :

To extend the lifespan of hardware by minimizing software-induced obsolescence, we must prioritize the use of interoperable standard technologies. These are technologies that adhere to widely recognized industry standards, ensuring seamless compatibility across different devices, operating systems, and platforms. For example, using HTML5 for web development guarantees compatibility with a vast array of browsers and devices, reducing the need for proprietary or platform-specific solutions that may become obsolete over time. By adopting interoperable standards, we can create digital products that are more future-proof, sustainable, and accessible to a wider range of users.

🔨 How to Implement :

➔ When selecting technologies, prioritize web-based solutions over native applications whenever possible. This reduces the reliance on specific operating systems and hardware configurations. Ensure that all APIs used adhere to industry standards and are widely supported to maintain compatibility and avoid vendor lock-in.
➔ Furthermore, consider leveraging open-source components to enhance maintainability and reduce the risk of vendor-specific obsolescence. This approach also promotes community-driven development and innovation.
➔ Finally, conduct thorough compatibility testing across a variety of devices and operating systems to ensure that the product functions as expected in different environments.

🔍 How to Control :

Regularly review the technology stack to identify any proprietary or non-standard components that could potentially limit compatibility. Create a compatibility matrix to document the supported devices and operating systems, allowing for easy reference and verification. Additionally, gather feedback from users to identify any compatibility issues or limitations.

01. Strategy

1.6. Has the digital product set targets for reducing or limiting its own environmental impacts?

Main role : **Product Owner**

Level of priority : ● ● ●

🎯 Objective :

To ensure that the digital product has a defined strategy to minimize its environmental impact, we must conduct a comprehensive assessment of its environmental footprint throughout its lifecycle. This involves setting clear objectives to reduce the product's consumption of resources and emissions.

🔨 How to Implement :

To effectively evaluate the environmental impacts of the product, conduct a Life Cycle Assessment (LCA). This methodology allows us to assess the impacts from raw material extraction, manufacturing, use, and disposal.
Once you have the results, set specific, measurable, achievable, relevant, and time-bound (SMART) objectives to reduce the product's environmental impact.
Implement a robust monitoring and reporting system to track progress towards the defined objectives.

🔍 How to Control :

Regularly review the product's environmental performance to identify areas for improvement. Publish the results of the LCA and the associated environmental performance indicators in a transparent and accessible manner. Implement a continuous improvement approach to identify opportunities to reduce the product's environmental impact.

01. Strategy

1.7. Does the digital product adapt the quality of service and the level of availability (SLA) based on user needs and service criticality?

Main role : **Product Owner**

Level of priority : ● ● ●

🎯 Objective :

The goal is to ensure that the quality of service (QoS) and Service Level Agreement (SLA) are tailored to the actual needs of users, avoiding unnecessary over-specification that increases both financial costs and environmental impact. High availability, such as Tier IV data centers, comes with a significant environmental footprint due to redundant infrastructure like power supplies and cooling systems. Thus, it's essential to balance the level of service against the practical needs of the application.

🔨 How to Implement :

1. **Assess Actual Service Needs:** Engage users to determine the acceptable availability and quality level for the digital product. This ensures that the service is neither over-engineered nor hosted on unnecessarily high availability infrastructure, which can lead to increased environmental costs. For non-critical services, a slightly lower availability rate (e.g., below 99%) may be sufficient and more environmentally responsible. Avoid choosing Tier IV data centers unless absolutely necessary.

2. **Evaluate Redundancy Requirements**: Implement IT redundancy only when essential. Different levels of redundancy, such as Backup & Restore, Pilot Light, or Warm Standby, should be considered based on the recovery needs of the application:
    a. Backup & Restore: Ideal for applications with longer Recovery Time Objectives (RTO) or Recovery Point Objectives (RPO). This method is cost-effective and less resource-intensive.

b. Pilot Light: Offers mirrored databases with inactive VMs, suitable for services needing fast recovery times but not immediate availability.
c. Warm Standby: A slightly more expensive solution with VMs running in a low-capacity mode, ready to scale up in case of failure. It ensures near real-time availability but comes with a higher cost and environmental impact.

3. **Align SLA to Needs**: Define SLAs that match user expectations without overspending on infrastructure or increasing environmental burden. SLAs should reflect the necessary service availability based on criticality, ensuring redundancy is implemented appropriately and only when truly necessary.

🔍 How to Control :

Verify that the SLA is aligned with the actual needs of the service, avoiding over-specification. Ensure that any increases in the availability level are justifiable based on user requirements and environmental considerations. No unnecessary increase in redundancy should be allowed if the current SLA meets user needs.
Document the SLA along with justification for the level of service chosen. If applicable, review redundancy mechanisms and confirm that they are necessary and optimized for both cost and environmental impact.

02.

SPECIFICATIONS

02. Specifications

2.1. Does the digital product have a decommissioning strategy for its unused data, features, components or environments?

Main role : **Product Owner, Architect** Level of priority : ● ● ●

🎯 Objective :

A comprehensive decommissioning strategy is essential for optimizing IT resource utilization and minimizing the environmental impact of the digital product. This strategy will outline the process for identifying, evaluating, and decommissioning unused or underutilized components, features, and environments.

🔨 How to Implement :

To effectively manage the decommissioning process, conduct regular audits to identify inactive or underutilized components, environments, and features. Develop a detailed decommissioning plan that outlines the steps involved, including timelines, responsibilities, and criteria for determining which components can be decommissioned. Establish procedures for managing data during the decommissioning process, ensuring that critical data is migrated, non-essential data is securely deleted, and data privacy regulations are complied with. For digital products that are no longer actively maintained, consider when relevant open-sourcing the codebase in Airbus to foster community development and innovation.

🔍 How to Control :

To ensure the effectiveness of the decommissioning strategy, regularly inventory active functionalities, components, and environments, tracking their usage levels. Develop a detailed decommissioning plan, including recall dates for unused elements and actions for optimizing the reuse or disposal of released resources. Regularly review and update the decommissioning strategy to reflect changes in the digital product and industry best practices.

ℹ️ Going Further :

➔ Use this ServiceNow catalog item to request the decommissioning of your Application/Server/Database/Storage.

02. Specifications

2.2. Does the digital product require its suppliers to ensure that they reduce their environmental impact?

Main role : **Product Owner** Level of priority : ● ● ●

🎯 Objective :

Given that most of our digital products rely on external suppliers, it is crucial to ensure that our suppliers adopt environmentally responsible practices. By integrating environmental considerations into the procurement process, we can extend our commitment to sustainability throughout our entire value chain. The goal is to foster a collaborative approach to reducing the overall environmental footprint of the digital product.

🔨 How to Implement :

To effectively address supplier environmental impact, Airbus should:

- ➔ Integrate Airbus Sustainable IT requirements into contracts.
- ➔ Foster open and ongoing communication with suppliers regarding Sustainable IT principles and practices. This can involve regular meetings, workshops, or knowledge-sharing sessions.
- ➔ Determine the specific resources and services required from external suppliers.
- ➔ Utilize existing resources such as the Guide pratique pour des achats numériques responsables and the ISO 20400 standard to inform the development of supplier requirements and assessment criteria.

🔍 How to Control :

The criterion is met when environmental characteristics of suppliers are considered in the product's purchasing or partnership policy, taking into account associated environmental impacts.

02. Specifications

2.3. Can the digital product be used via a low-speed internet connection?

Main role : **Product Owner**

Level of priority : ● ● ○

🎯 Objective :

If the digital product is aimed at a wide audience, then you do not control the level of connectivity. It is necessary to take care not to exclude certain publics who do not have access to high speeds. In addition to reducing the digital divide, it is also a good practice for the environment. Indeed, users are not always aware of what slows down a digital product: the network connection, the digital product or the terminal used.

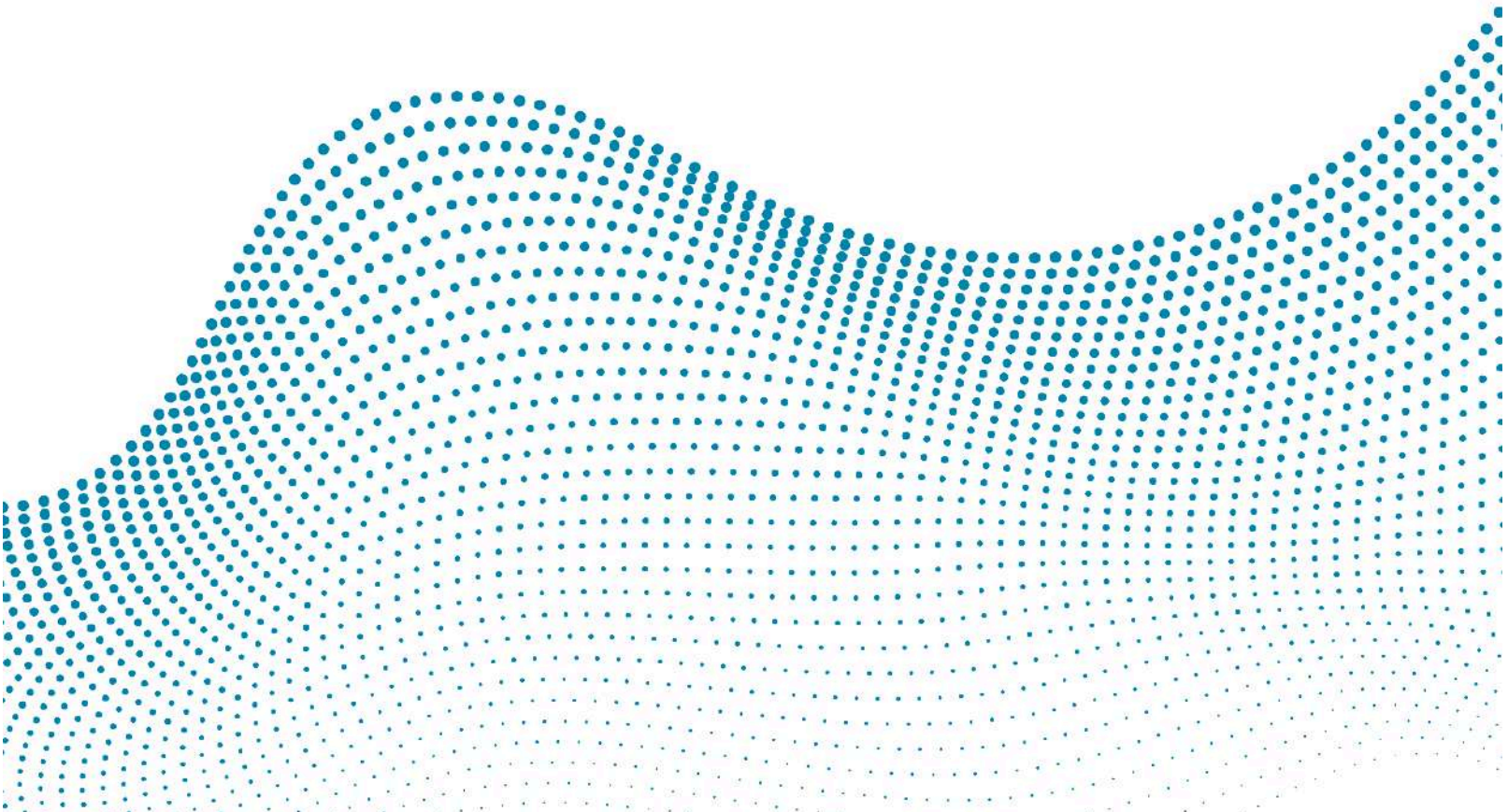
🔨 How to Implement :

Test the usability of the digital product with low bandwidth connections, such as 3G for mobile or 512 Kbit/s for fixed connections, and optimize response times accordingly. Consider serving content in a reduced quality when necessary to improve performance under limited bandwidth. For native applications, implement offline modes where feasible, allowing users to access core functionalities without an active internet connection.

🔍 How to Control :

Test the digital product under low bandwidth conditions and verify its functionality offline. Ensure that the product remains usable with minimal network resources and document the minimum required bandwidth in the eco-design declaration. Validation is achieved if the product operates effectively with low bandwidth or offline and the minimum bandwidth requirement is documented.

03.
ARCHITECTURE



03. Architecture

3.1. Does the digital product use architecture, resources or components specifically designed to minimize their environmental footprint?

Main role : **Architect**

Level of priority : ● ● ○

🎯 Objective :

Digital products often rely on external frameworks or third-party components that can have significant environmental impacts. It is essential to ensure that these dependencies are designed to minimize resource consumption and energy use. Avoid using high-impact technologies, such as energy-intensive algorithms or unnecessary hardware requirements, unless absolutely necessary.

🔨 How to Implement :

Evaluate the frontend and backend frameworks used in the product to ensure they are energy-efficient and optimized for minimal resource consumption. This includes checking for efficient data compression, optimized client-server communication, and reduced hardware demand. Similarly, review third-party services and interface components for their environmental impact, favoring lightweight options that minimize energy use.

🔍 How to Control :

Verify the environmental impact by analyzing the energy and resource use of the chosen frameworks and components. Ensure no resource-heavy technologies are used without justification, and document all ecodesign choices, including a comparison with other options that demonstrates the environmental benefits of the selected components.

03. Architecture

3.2. Does the digital product operate on an architecture that can adjust resource usage based on demand?

Main role : **Architect**

Level of priority : ● ● ●

🎯 Objective :

The goal is to avoid an oversized architecture and implement one that can dynamically adjust the resources used based on service demand. This helps optimize energy efficiency and prevents unnecessary resource waste by scaling resources according to real-time needs.

🔨 How to Implement :

First, conduct a precise evaluation of the product's requirements and the expected number of users to align the necessary computing resources. Then, ensure the architecture is designed to scale optimally, allocating only the resources required to meet fluctuating service demand.

🔍 How to Control :

To verify, monitor the ratio between allocated and consumed resources over time, adjusting any inefficiencies. Use monitoring tools to track CPU, memory, and bandwidth usage. Perform load simulations to ensure the architecture can automatically scale resources up or down as demand increases or decreases. Include a clear demonstration in the eco-design declaration showing how the architecture adapts its resource consumption to meet service needs.

03. Architecture

3.3. Can the digital product support the evolution of technical protocols?

Main role : **Architect** Level of priority : ● ● ○

🎯 Objective :

The choice of underlying network protocols for a digital product affects both infrastructure demands and the product's longevity. If a product does not support evolving protocols, it can lead to functionality issues and increased maintenance needs. To ensure durability and reduce the risk of obsolescence, select protocols that anticipate future developments.

🔨 How to Implement :

1. Verify that the digital product supports IPv6 to ensure future compatibility. Implement IPv6 testing strategies, including tests from devices with IPv4 connectivity disabled, to identify and address IPv4-dependent code.
2. Adopt HTTPS for authentication and encryption. This aligns with browser requirements and GDPR obligations for secure data transfer. Ensure that the TLS version used is up-to-date (e.g., TLS v1.3) and configure servers to support only secure versions of TLS while disabling outdated versions.
3. Assess and select data exchange protocols based on their efficiency, latency, compatibility, and environmental impact. For video content, consider protocols such as Multicast, HLS, RTMP, or WebRTC. For APIs, evaluate REST, SOAP, GraphQL, and Protocol Buffers, choosing the most appropriate one for the product's needs.

🔍 How to Control :

To confirm protocol support, check the product's configuration and documentation to ensure IPv6 is fully implemented and HTTPS with the latest TLS version is in use. Regularly review and update the protocol choices as standards evolve. Document all protocol decisions and their justifications, including comparisons and evaluations that support their future-proofing.

03. Architecture

3.4. Does the digital product ensure long-term support and efficient update management for associated equipment and software?

Main role : **Product Owner**

Level of priority : ● ● ○

🎯 Objective :

Ensuring the longevity and efficiency of a digital product involves addressing both the support for associated equipment and the management of software updates. For equipment linked to the digital product, such as IoT devices or software bundled with hardware, it is crucial to provide corrective updates throughout its entire lifespan. This helps avoid obsolescence and prolongs the equipment's usability. Additionally, managing updates effectively includes offering corrective updates independently of non-essential evolutionary updates and employing incremental updates to minimize data consumption.

🔨 How to Implement :

- ➔ Maintain the digital product for the full expected lifespan of associated equipment. This requires setting up a support infrastructure, allocating necessary resources, and planning for long-term maintenance.
- ➔ Independent Updates: Ensure the product allows for separate installation of corrective updates essential for functionality, security, and compliance, distinct from non-essential evolutionary updates. Provide users with the ability to choose these updates independently.
- ➔ Implement incremental updates where only modified data is transferred, or segment the code so that only changed parts are updated. This approach reduces data consumption compared to full code replacements.

🔍 How to Control :

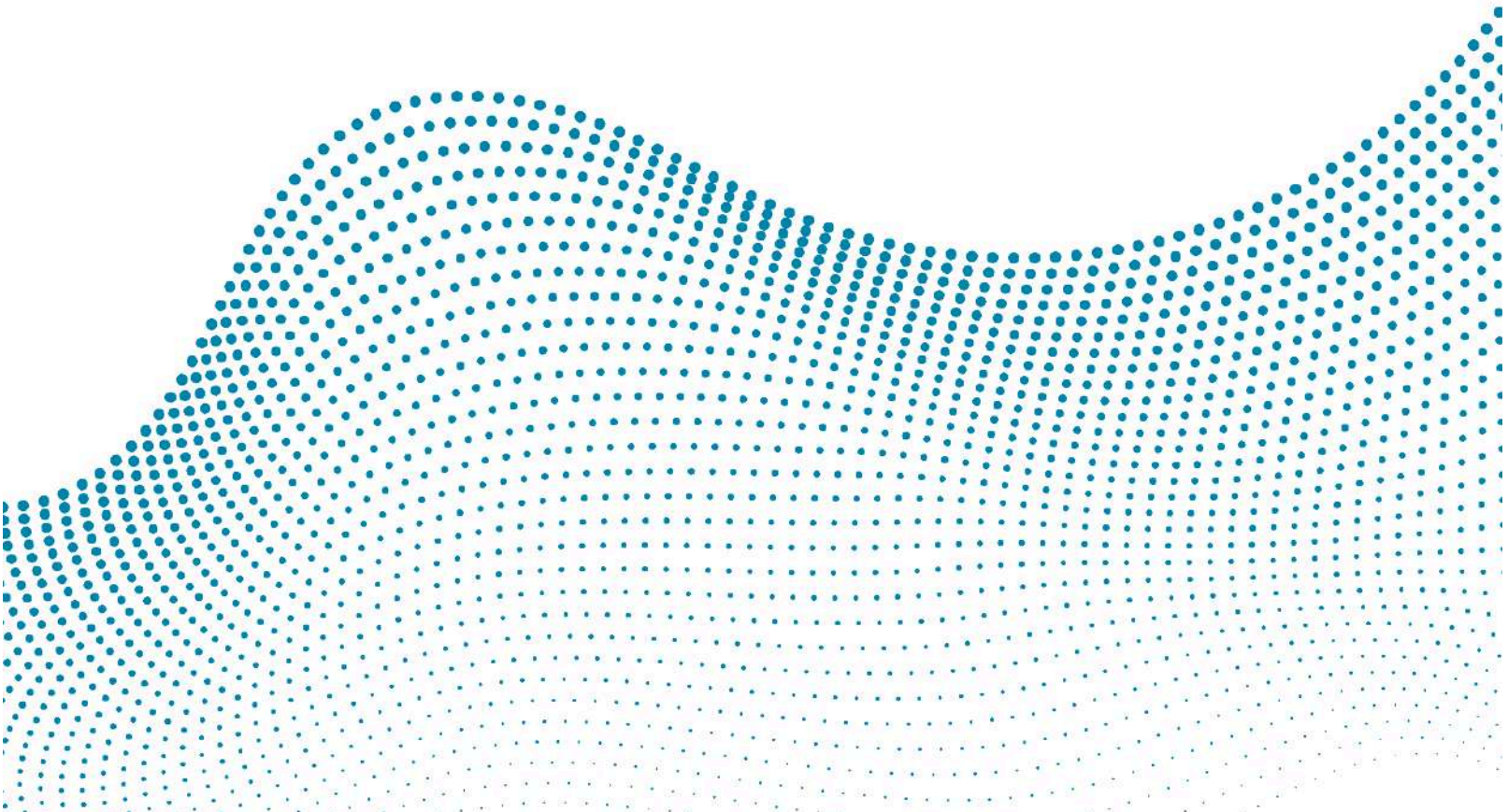
- ➔ Document the duration of maintenance and availability of corrective updates. Confirm that updates are provided throughout the expected lifespan of associated equipment.

- ➔ Check the change logs to confirm whether updates are categorized as corrective or evolutionary. Ensure that non-essential updates do not disrupt product functionality during the maintenance period of supported operating systems.
- ➔ Verify that incremental updates are used wherever possible. If full code replacement is required for specific features like resets or self-repair, this should be documented.

The criterion is validated if the product supports long-term maintenance, allows separate installation of essential updates, and employs incremental update mechanisms effectively.

04.

UX/UI



04. UX/UI

4.1. Does the digital product adhere to current accessibility standards, ensuring effective access and usability for people with disabilities?

Main role : **UX/UI Designer**

Level of priority : ● ● ●

🎯 Objective :

To ensure digital products are inclusive and accessible to people with disabilities, we must adhere to current accessibility standards such as the Web Content Accessibility Guidelines (WCAG) and Accessible Rich Internet Applications (ARIA) Suite. Beyond meeting legal obligations, anticipating future regulations allows for long-term compliance and reduces the need for costly updates dictated by changes in the legal environment. Accessibility features should cover visual, auditory, physical, cognitive, and neurological impairments to ensure inclusivity throughout the product's lifecycle. Providing accessibility from the outset not only supports users with disabilities but also enhances the overall user experience and the product's longevity.

🔨 How to Implement :

From the early stages of development, design the user interface with accessibility in mind, ensuring it is compliant with assistive technologies for various disabilities.

- ➔ For **audio content**, enable play, pause, and volume controls, and ensure foreground audio is louder than background noise for better clarity.
- ➔ For **visual elements**, avoid relying on color, shape, or location alone to convey information and minimize content that could trigger seizures, such as flashing lights. Ensure text content is accessible by using clear fonts like Arial, offering high contrast between text and background, and providing text alternatives for non-text content, such as images. Simplify text by avoiding complex terms and acronyms, while providing explanations for necessary technical terms.
- ➔ In **web page design**, enable users to pause, hide, or stop pop-ups, and maintain a predictable layout that helps users navigate and find content easily. Ensure that time-sensitive content can be paused or extended for users who need more time.

🔍 How to Control :

Regularly conduct both automated and manual accessibility audits, using tools like screen readers, and involve users with disabilities in testing. Periodically review the product's compliance with WCAG standards in key areas such as audio, visual, text, and web page design. Maintain an accessibility statement, clearly outlining the product’s commitment to accessibility and providing an easy method for users to report issues. Finally, provide training for development and design teams on accessibility best practices, ensuring they understand the importance of designing for users with diverse needs. This continuous process ensures the product remains compliant and inclusive throughout its lifecycle.

ℹ️ Going Further :

- ➔ The Airbus Design System is a tool created by the UI/UX teams (DIDU) to enable an accessible and consistent end-user experience on Airbus digital services by providing product teams with reusable components and guidelines aligned with our branding.
- ➔ The UX/UI eco conception guide provides more in-depth information on key UX/UI principles.

04. UX/UI

4.2. Does the digital product only contain and play animation, video and sound when necessary?

Main role : **UX/UI Designer**

Level of priority : ● ● ○

🎯 Objective :

Prolonged use of network and system resources, particularly through auto-playing content, increases the environmental footprint. By ensuring that multimedia elements like animations, videos, and sounds are used only when necessary and with user control, the product becomes more sustainable and user-friendly.

🔨 How to Implement :

- ➔ **Disable automatic playback**: by default, prevent the automatic loading and playback of video, audio, and animations. If automatic playback cannot be avoided, provide users with a visible and accessible option to disable these features.
- ➔ **Control over multimedia**: for essential animations or multimedia elements, include controls that allow users to start, stop, mute, or adjust the volume. Ensure that animations lasting more than 4 seconds and sounds exceeding 2 seconds have these controls.
- ➔ **Avoid non-essential content**: refrain from using decorative animations, videos, or sounds. Opt for static text or images instead of videos or animations where possible to reduce data consumption.
- ➔ **User-controlled animations**: limit the use of non-interactive or automatic animations. If such animations are necessary, allow users to pause or stop them.

🔍 How to Control :

Ensure that the product does not automatically play multimedia content by default and that options to disable auto-play are easily accessible. Verify that users can control animations and multimedia, including pausing, stopping, or adjusting volume, especially if they exceed certain durations, and minimize or avoid non-essential decorative content. Evaluate whether

multimedia elements are essential for conveying information or merely decorative, and reduce decorative content to conserve resources.

04. UX/UI

4.3. Does the digital product optimize the navigation paths for each main feature, minimizing end-user time and ensuring intuitive navigation?

Main role : **UX/UI Designer** Level of priority : ● ● ○

🎯 Objective :

The goal is to minimize the time users spend on the digital product while controlling the environmental impact of its main features and improving the overall user experience. By streamlining navigation paths, users can accomplish tasks quickly and efficiently, reducing unnecessary interactions and limiting resource consumption.

🔨 How to Implement :

During the design phase, eliminate non-essential functionalities and optimize the navigation paths for each core functional unit of the product. For example, core functions might include actions like booking a ticket, searching for a term, finding an address, or contacting support. Analyze usage statistics and UX data to understand user behavior and identify areas for improvement. Ensure the product is designed around the primary needs of users, removing any unnecessary steps or interactions. Use UX tools and techniques such as user journey mapping, interviews, and A/B testing to better understand user needs. Implement a non-intrusive system to track user paths, respecting their privacy, and use this data to periodically adjust navigation for efficiency.

🔍 How to Control :

Ensure UX design tools like card sorting, user interviews, surveys, and usability tests are regularly used to assess and improve navigation. Monitor user paths with analytics tools tracking metrics like requests, resource weight, and time spent on the platform. The criterion is met if navigation is optimized around essential features based on UX insights and usage data, with key performance indicators ensuring ongoing optimization. Remove non-essential features, and ensure the product adapts to user behavior over time.

04. UX/UI

4.4. Does the digital product prioritize a minimalist design that is clean and adapted to the chosen technology?

Main role : **UX/UI Designer**

Level of priority : ● ● ○

🎯 Objective :

Effective interface design should consider user needs, ergonomic principles, technical constraints, ecodesign practices, and accessibility standards. A minimalist design focuses on simplicity, emphasizing essential elements while eliminating unnecessary clutter, ultimately enhancing user experience.

🔨 How to Implement :

To create an effective digital product, embrace a minimalist and clean design achievable with HTML5 and CSS3, ensuring compatibility across various devices and browsers. This involves avoiding clutter by eliminating non-contrasted, unreadable images and unnecessary elements that could lead to mental overload. Prioritize a "mobile-first" strategy by designing for mobile use initially and expanding for larger screens only when justified. Implement adaptive loading techniques to select resources tailored to the user's context, such as screen size, pixel density, and network quality, promoting a lighter and more efficient application. Additionally, utilize client hints, media queries, and responsive image attributes to dynamically adapt content based on user devices and preferences. Throughout the design process, consider ergonomic heuristics and best practices to ensure the interface meets user needs and enhances their journey, aiming for simplicity and accessibility.

🔍 How to Control :

Regularly evaluate the interface design against user needs and accessibility standards to ensure it remains effective and user-friendly.
Monitor the performance and usability of the product across different devices, ensuring that the minimalist design principles are upheld.

Collect user feedback to identify areas for improvement and adjust the design accordingly to maintain a clean and efficient user experience.

04. UX/UI

4.5. Does the digital product limit the use of notifications while allowing the user the option to disable them?

Main role : **UX/UI Designer** **Level of priority : ● ○ ○**

🎯 Objective :

We should aim to reduce the use of IT resources and avoid unnecessary user distraction by limiting notifications and redundant email communications. Excessive notifications can drain user attention and increase resource usage. Similarly, unnecessary and heavy emails contribute to storage and bandwidth use. This fact sheet focuses on minimizing notifications and emails to enhance both user experience and environmental efficiency.

🔨 How to Implement :

1. **Optimize notifications**: design the digital product to send notifications only when truly necessary, aligned with the user's interests and needs. Avoid sending redundant notifications across multiple channels (e.g., SMS, email, app notifications, pop-ups). Offer a configuration that limits notifications by default (e.g., less than five notifications per day). Provide users with simple options to deactivate or adjust the frequency of notifications. This should be a clearly visible and easily accessible feature on the user interface (e.g., a dedicated toggle button for disabling notifications).
2. **Limit redundant emails**: reduce the number of automatic emails to the bare minimum. Implement opt-in systems for newsletters and target only necessary recipients. Consolidate multiple updates into a single email. Minimize the use of attachments; instead, provide links to documents stored on Google Drive. Reduce the size of email content by avoiding large images or attachments. When necessary, compress images or use direct links to online resources.
3. **Automate user engagement controls**: for newsletters, set a rule to send unsubscribe emails to users who haven't interacted with the content over a certain period (e.g., after not opening the last three emails). Encourage users to opt-out of emails they don't find relevant, and provide a streamlined unsubscription process.

🔍 How to Control :

➔ Validate the implementation by ensuring that the system prompts the user about the environmental consequences of their actions for each costly feature. Check that input validation happens client-side to avoid unnecessary server exchanges. Ensure that the user is clearly informed about file weights and formats before initiating any transfer. Periodically review the application to confirm that environmental impact notifications are accurate and that users have the necessary information to make informed choices.

04. UX/UI

4.6. Does the digital product inform users about what is expected and the potential environmental impacts they could generate by using a feature?

Main role : **UX/UI Designer** Level of priority : ● ○ ○

🎯 Objective :

Ensure users are informed about the potential environmental impact their actions may generate while using certain features. Additionally, the digital product should provide clear expectations about input formats, file sizes, and formats to minimize unnecessary data exchanges. By doing so, users can make conscious decisions and reduce their environmental footprint while interacting with the digital product.

🔨 How to Implement :

For every feature that could significantly affect the environment or require heavy data exchanges, the application should notify users beforehand. This includes showing the potential impacts of using features such as downloading files, accessing media, or exporting data. Inform the user about expected file sizes, formats, and input validation to avoid unnecessary client/server exchanges. Provide clear input requirements (e.g., file format, maximum size) before any transfer or submission to prevent failed attempts and repeated uploads.

When the user is about to use a feature with a considerable environmental impact, like transferring large files or performing data-heavy operations, display relevant information, including the file size or expected data usage. Where possible, provide multi-criteria information on environmental impacts, beyond just CO2 equivalent, to offer a more comprehensive understanding.

🔍 How to Control :

Validate the implementation by ensuring that the system prompts the user about the environmental consequences of their actions for each costly feature. Check that input validation happens client-side to avoid unnecessary server exchanges. Ensure that the user is clearly informed about file weights and formats before initiating any transfer. Periodically

review the application to confirm that environmental impact notifications are accurate and that users have the necessary information to make informed choices.

04. UX/UI

4.7. Does the digital product provide users with the ability to control and manage features that have environmental impacts, enabling them to activate or deactivate these features as needed?

Main role : **UX/UI Designer** Level of priority : ● ○ ○

🎯 Objective :

The objective is to empower users by giving them the ability to control and manage features that have significant environmental impacts. By offering choices on how and when to activate or deactivate these features, users can make informed decisions that reduce their environmental footprint. This applies to functions like media resolution, file download quality, notifications, and third-party service activation.

🔨 How to Implement :

Provide users with settings that allow them to customize their experience, such as the option to choose image quality, media resolution (for videos, sounds, and images), and whether or not to display certain media. This ensures that users can actively manage their resource usage and limit environmental impact. Similarly, users should have control over the frequency and types of notifications they receive, as unnecessary alerts consume resources and attention.
In addition, give users the choice to activate or deactivate third-party services that are not essential for the core functioning of the product. For instance, third-party services like video players requiring cookies should be disabled until the user gives explicit consent. This implementation not only reduces environmental impacts but also complies with GDPR requirements regarding consent for third-party services.

🔍 How to Control :

Validate the implementation by checking that users have the ability to manage resource-intensive features. Ensure that media resolution, file size options, and the display of non-essential content are user-controlled. Confirm that notifications can be easily managed, allowing users to reduce their frequency or disable them entirely. Lastly, verify that

third-party services are only loaded with user consent, ensuring minimal environmental impact and compliance with data privacy regulations. Periodically test the system to ensure these controls are working as intended and delivering the expected benefits.

05.

CONTENT

05. Content

5.1. Does the digital product use file, image, and video formats that are appropriate for the content and viewing context?

Main role : **Product Owner**

Level of priority : ● ● ●

🎯 Objective :

The primary objective is to reduce the file sizes downloaded by users, particularly for audio and video content, which significantly impacts internet traffic—nearly 68% of internet traffic in 2023 is due to video (Sandvine's The Global Internet Phenomena Report). A notable portion of this traffic comes from videos consumed in audio-only mode, such as background music, podcasts, and shows listened to while multitasking.

🔨 How to Implement :

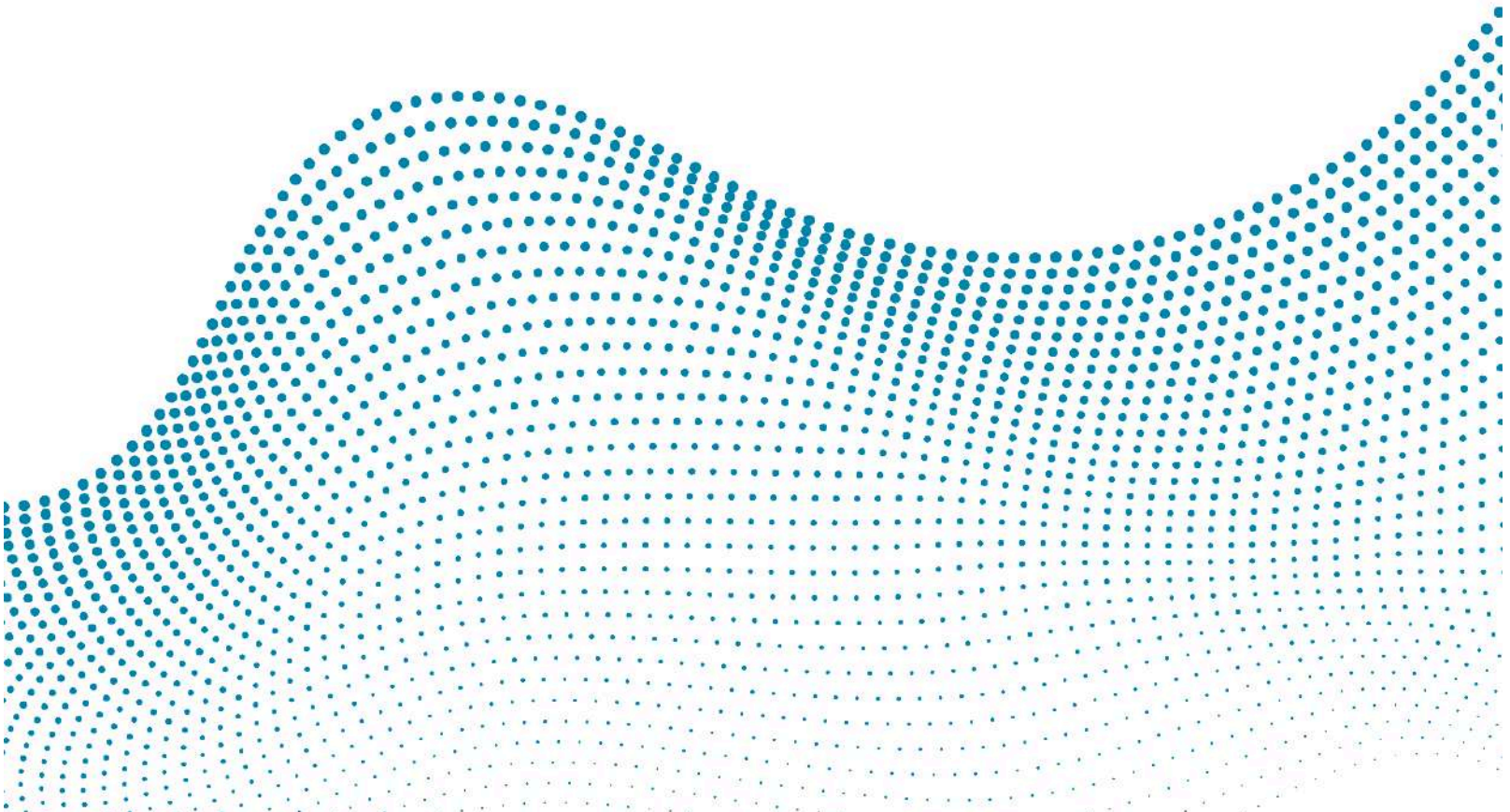
To implement an effective image and video optimization strategy, first select appropriate image formats based on the image type and display context, utilizing vector formats like SVG for illustrations and icons, and lossless formats like PNG, WebP, or JPEG XL for images with flat colors. For photographic content, employ lossy compression (JPEG, WebP, AVIF) with acceptable quality settings around 70% for JPEG, 72% for WebP, and 56% for AVIF. Utilize responsive techniques, such as "srcset" and "sizes," to provide multiple resolutions that adapt to the user's device while ensuring a responsive design. If the digital product supports multiple video definitions, set a default resolution that does not exceed standard quality levels and implement an accessible "energy-saving" mode that reduces resolution for data conservation. In instances where multiple definitions are unsupported, select the lowest resolution that maintains clarity, generally starting at 720p. Utilize efficient codecs like AV1, VP9, and HEVC for videos, optimizing for variable bitrate encoding to save bandwidth on simple scenes, while adjusting audio encoding settings based on user needs. Provide a "listen only" mode in video players, allowing seamless transitions to audio-only streaming, and automatically switch to this mode when the video is no longer in focus. Lastly, optimize audio content by choosing efficient codecs like Opus or AAC, and ensuring a bitrate-to-duration ratio below 1 MB/minute.

🔍 How to Control :

Ensure that the product uses the most efficient codecs and formats. Verify that features like "listen only" mode are easy to use and effective. Maintain clear and comprehensive records of all technical details, such as codecs or resolutions used, encoding settings and features implemented. Regularly assess the performance of the product and make necessary adjustments.

06.

FRONTEND



06. Frontend

6.1. Has the digital product implemented compression techniques for all transferred assets it manages?

Main role : **Developer**

Level of priority : ● ● ●

🎯 Objective :

The main goal of implementing compression techniques in digital products is to reduce the amount of data transferred over networks, thereby improving performance, reducing loading times, and minimizing the environmental footprint. This involves optimizing the size of various assets such as images, videos, audio, and documents without compromising their quality. Compression not only enhances the user experience but also helps service providers lower bandwidth costs, especially for high-traffic applications like video streaming or content-heavy websites. Furthermore, minimizing unused code and unnecessary resource consumption through compression and modular design makes the product more efficient and sustainable.

🔨 How to Implement :

To apply compression effectively, digital products should compress images (JPEGs, PNGs, SVGs) using appropriate settings, such as 60-70% for JPEGs, and consider reducing color palettes for PNGs. Videos should be encoded with modern codecs like AV1, VP9, or HEVC, and bitrate optimization must be used to adapt to different connection speeds. For audio, choose compression settings based on the type of content (e.g., stereo for music, mono for dialogue) and avoid high file sizes per minute of audio. Code files such as HTML, CSS, and JavaScript should be minified to remove whitespace and unnecessary elements, and tree shaking techniques should be applied to remove unused code.

🔍 How to Control :

Regular testing and monitoring are key to ensuring effective compression. Evaluate image and video quality across devices, ensuring assets are properly compressed without affecting user experience. Use server logs and analytics to track data volume and identify optimization opportunities. Maintain documentation of compression policies, including formats and quality settings. Verify code optimization success with performance testing tools that measure load times and confirm removal of unused code.

06. Frontend

6.2. Does the digital product refrain from loading unused resources and content for each feature?

Main role : **Developer** Level of priority : ● ● ○

🎯 Objective :

Development teams often load all components in a single compressed file, regardless of necessity, leading to users downloading unnecessary components and wasting IT resources. To mitigate this, the aim is to reduce data consumption and optimize energy use by loading only the essential resources and content for each feature. By avoiding unnecessary preloading and employing efficient loading mechanisms, we can significantly reduce the environmental impact, save computing resources, and enhance overall performance.

🔨 How to Implement :

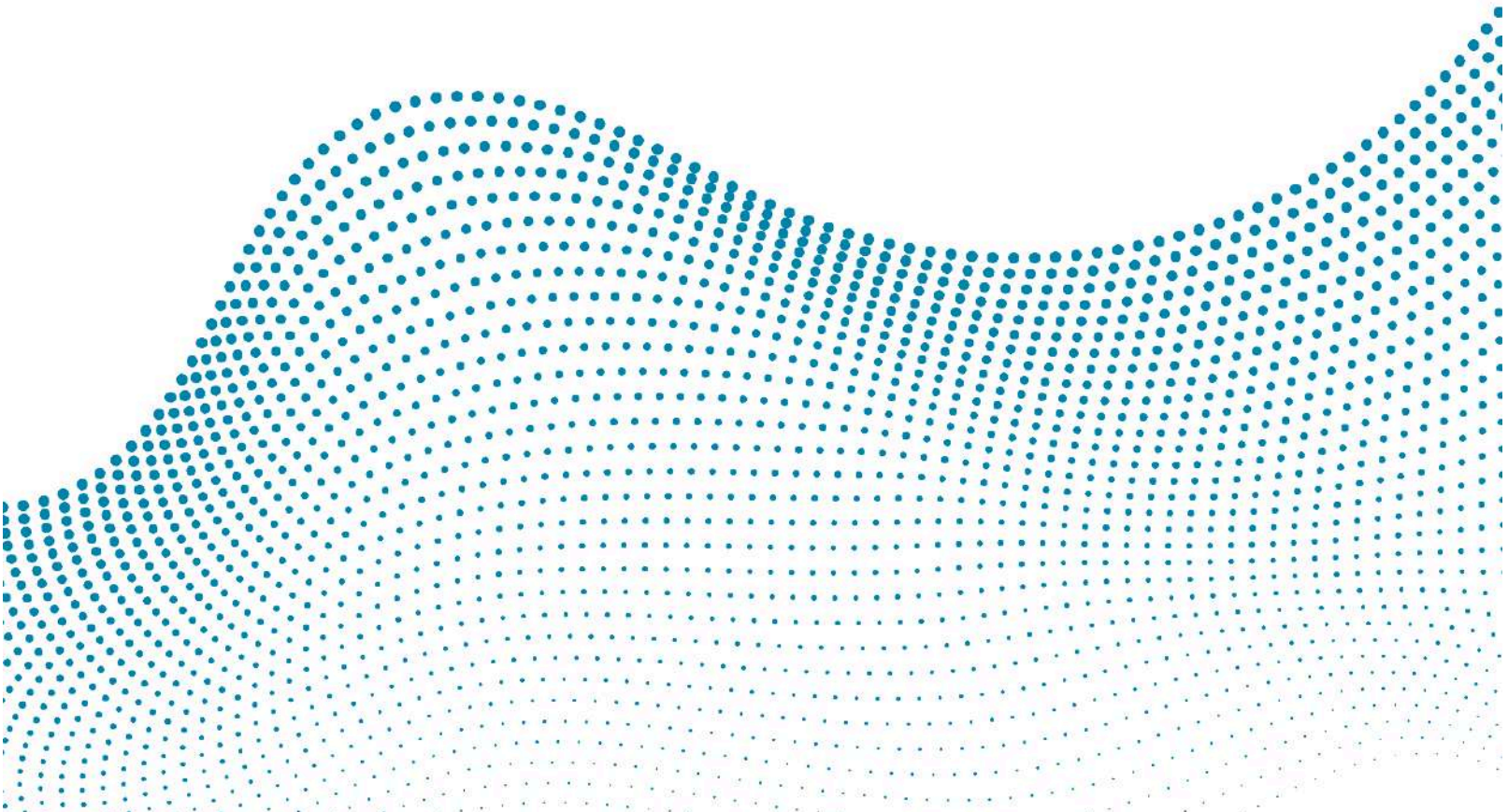
1. **Selective resource loading**: ensure that resources and components are loaded only when they are actually needed. Avoid preloading all components in a compressed file, which might include unused elements.
2. **Progressive loading**: implement mechanisms like "lazy loading" for images and resources that are not immediately visible. For example, load media (e.g., videos) via streaming and only load images as they come into view on the screen.
3. **Avoid infinite scrolling**: implement clear pagination or other content-loading strategies that avoid infinite scrolling. This ensures that content is loaded only upon user request rather than continuously as the user scrolls.
4. **Efficient library usage**: when using libraries, load only the components necessary for the product. Avoid loading entire libraries when only a few components are needed.

🔍 How to Control :

Check that only necessary resources are loaded based on the functionalities being used. Avoid loading unnecessary resources. Ensure the product uses clear pagination or user-triggered loading instead of infinite scrolling. Validate progressive loading techniques, like streaming for videos and lazy loading for images, to minimize data transfers. Review library components and confirm that only essential parts are included, avoiding unnecessary files or components.

07.

BACKEND



07. Backend

7.1. Is the digital product designed to optimize the environmental impact of its algorithmic and AI models throughout their lifecycle?

Main role : **Architect, Product Owner**

Level of priority : ● ● ●

🎯 Objective :

The digital product should prioritize ecodesign principles in the development and operation of its algorithmic and AI models to minimize environmental impact. This involves evaluating the necessity of training phases, simplifying training methods, reducing data and resource usage, and optimizing both training and inference processes throughout the model's lifecycle.

🔨 How to Implement :

1. Verify if an optimized inference strategy for resource consumption and user needs is in place.
2. Check if compression techniques (e.g., sparsification, pruning) are employed for training models.
3. Ensure model updates and retraining cycles are optimized based on real needs and feedback from users.
4. Limit the data used for training to only the necessary amount, and reuse existing data wherever possible.
5. Implement mechanisms to limit training requirements, such as using pre-trained models or fine-tuning, where possible.
6. Minimize the complexity of the learning phase, ensuring it’s proportionate to the product’s actual usage and goals.
7. Rigorously evaluate the necessity of a training phase before implementation, ensuring it brings measurable value to the product.

🔍 How to Control :

1. Define retraining and update conditions for algorithmic and AI models based on real user needs and legal constraints. Minimize the frequency of these operations to reduce resource consumption.
2. Use existing datasets wherever possible to avoid unnecessary data collection and training.
3. Conduct a pre-implementation review of existing models and functionalities, selecting pre-trained models or fine-tuning them where applicable.
4. Monitor energy and resource consumption of training methods. The methods chosen should be recognized as energy-efficient or have been tested for low resource consumption.
5. Avoid including a training phase unless absolutely necessary. Where relevant, prefer pre-trained models or more straightforward alternatives.
6. Document the need for training by clearly defining the target audience, their needs, and the added value that training brings to the digital product.

07. Backend

7.2. Has the digital product implemented a strategy to optimize data storage by archiving and deleting obsolete or outdated content?

Main role : **Architect, Product Owner**

Level of priority : ● ● ○

🎯 Objective :

Reduce the environmental impact of data storage by lightening databases and physical servers of unnecessary, obsolete, or outdated data. Given that data storage is neither unlimited nor free, optimizing data retention is essential.

🔨 How to Implement :

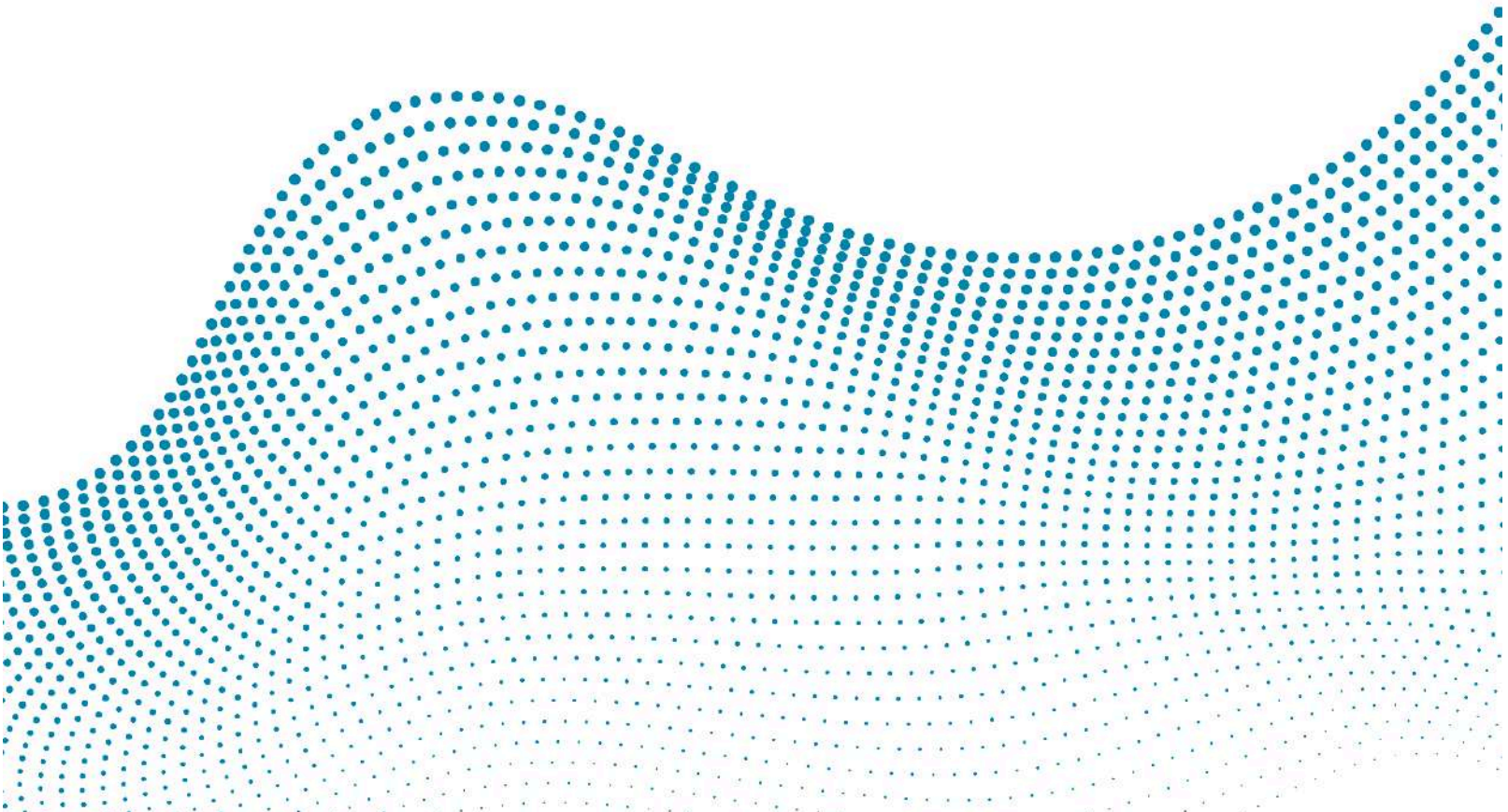
1. Develop a clear strategy for archiving and deleting outdated, expired, or unnecessary content. This strategy can be automated by setting expiration dates and creating automatic archiving or purging processes.
2. In addition to automated mechanisms, provide manual deletion processes for content requiring human evaluation, particularly sensitive or complex data.
3. Implement systems that automatically archive or delete data that has exceeded its retention period. This includes providing users with indicators or suggestions for identifying obsolete data.
4. Archive infrequently accessed data (“cold data”) and integrate a recovery process for users. Move cold data to alternative, less costly storage, and delete unused archives after a specified retention period.

🔍 How to Control :

Verify the existence of a well-defined archiving and deletion strategy, including automatic processes and manual interventions where required. Ensure expiration dates are set for obsolete data, and mechanisms for archiving or deleting data past its retention period are in place. Regularly track database and server occupancy, monitoring the storage size of files and databases to evaluate the effectiveness of the deletion strategy. Conduct regular assessments of data storage, archiving, and deletion processes to ensure ongoing compliance with the strategy and identify areas for improvement.

08.

HOSTING



08. Hosting

8.1. Does the digital product use hosting that is geographically consistent (close) with the location of its users and activities?

Main role : **Architect** Level of priority : ● ● ●

🎯 Objective :

The goal is to choose hosting services that minimize environmental impact by selecting locations with low carbon intensity electricity. Additionally, hosting should ideally be located close to where the majority of the product's users are based. This helps to reduce the distance data needs to travel, which in turn minimizes the energy consumption and environmental footprint associated with network infrastructure.

🔨 How to Implement :

Select a hosting provider whose servers are located in a country with low-carbon electricity, using sources like Electricity Maps to assess carbon intensity. It is important to prioritize countries where the annual carbon intensity of electricity is below 100 gCO_2eq/kWh, aligning with the Science-Based Targets initiative (SBTi) and the goals of the Paris Agreement. As of 2030, the threshold should be reduced to 80 gCO_2eq/kWh and ultimately reach 0 gCO_2eq/kWh by 2050.

Additionally, where possible, choose hosting providers that are geographically closer to the majority of the product's users or its core activities. This approach reduces the distance that data has to travel, lowering the environmental impact of the associated network infrastructure.

🔍 How to Control :

To validate this criterion, first identify and document the geographic locations of both the product's users and the hosting servers. Ensure that the chosen hosting provider operates in a country where the electricity consumption's carbon intensity is low (ideally under 100 gCO_2eq/kWh annually). Periodically check this data using platforms like Electricity Maps to ensure continued compliance. While not essential for validation, selecting a provider located in a region where the majority of the users are based is encouraged for further reduction of environmental impact.

08. Hosting

8.2. Does the digital product use hosting with minimized PUE (Power Usage Effectiveness) and WUE (Water Usage Effectiveness)?

Main role : **Product Owner**

Level of priority : ● ● ●

🎯 Objective :

The goal is to minimize both the energy and water consumption required for the efficient operation of data centers. This involves monitoring and reducing the Power Usage Effectiveness (PUE), which measures the energy efficiency of a data center, and the Water Usage Effectiveness (WUE), which tracks the water consumed for cooling servers. By optimizing these metrics, the environmental impact of hosting services can be significantly reduced.

🔨 How to Implement :

When selecting a hosting provider, prioritize one that publishes its PUE and WUE metrics, along with the methodologies used to calculate them, based on internationally recognized standards like ISO/IEC 30134.

For PUE, choose a provider with a real PUE of less than 1.5 (or a by design PUE of less than or equal to 1.3 if the facility has been operating for less than two years). The PUE measures the ratio between total energy consumed by the entire facility (including cooling and infrastructure) and the energy used directly by IT equipment. A PUE closer to 1 reflects greater energy efficiency, with hyperscalers typically achieving a PUE of around 1.1, while older data centers can have a PUE of 2 or higher.

For WUE, focus on providers who monitor and report this metric, aiming for a WUE below or equal to 0.4 L/kWh, especially in areas where water stress is a concern. WUE represents the ratio of water consumed to energy used, measured in liters per kilowatt-hour (L/kWh). For newer facilities (operating for less than two years), by design WUE values can be referenced but should be re-evaluated once the facility has matured beyond this two-year mark.

Ensure that both PUE and WUE are measured using actual operational data if possible, rather than theoretical values, and avoid focusing solely on these metrics at the expense of other environmental impacts such as material management and overall energy consumption.

🔍 How to Control :

To validate the criteria, check if the hosting provider publishes both the PUE and WUE metrics, with explanations of the methodologies used for calculation. Verify that the PUE is below 1.5 for operational data centers or below 1.3 for new data centers in operation for less than two years. Similarly, ensure the WUE is below or equal to 0.4 L/kWh.

Document these metrics and provide supporting links or documents. The provider's commitment to continuous improvement in both energy and water efficiency should be part of the product's overall sustainability strategy.

Help us improve.

What do you think works well, and where can we make improvements?