

74 key practices for a sustainable digitalization

Resilio x GreenIT.fr repository



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Preface

As humanity's digital footprint grows faster than any other indicator, it is becoming urgent to accelerate the convergence between ecological and digital transition.

A more sustainable and responsible use of digital technology is possible. The members of the Green IT Club have been experimenting with this convergence for nearly 10 years in their respective companies.

It is no longer a question of identifying the main actions and methods. This work has already been done. The urgency is now to disseminate these key actions as quickly as possible and to as many people as possible.

This is the purpose of this reference tool, which proposes 74 simple but highly effective actions to reduce the environmental and economic footprint of an information system while improving its social performance.

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About the Club

The club and his ambitions

The Green IT Club brings together French-speaking Green IT and responsible digital project leaders - CSR, innovation and Green IT managers - from private and public organizations.

Reserved for user organizations, it allows its members to meet three major objectives:

- exchange with peace of mind;
- collaborate to meet the needs of their Green IT and digital responsibility projects;
- while creating a strong consensus around shared best practices.

The ambitions of the club are multiple:

- To help members improve their skills;
- To help them position themselves with quantified and objective benchmarks (annual benchmark);
- Pooling energy, risks and costs;
- Structure individual approaches around shared principles;
- Valuing members' approaches;

Beyond the services provided to its members, the Green IT Club aims to represent user organizations on the subject of responsible digital and enlighten the market with an objective and honest speech.

The members

Banque de France	Groupe BEL	L'occitane en Provence
Bolloré Logistics	Groupe BIC	SFIL
Grand Paris	Groupe ESG	Ville de Nanterre

GreenIT.fr

The members of the Green IT Club are representative of large French organizations, public and private, pioneers in the toughness of an information system more respectful of the planet, human beings, and less expensive. These companies also design digital services that they offer to their customers in compliance with these more sustainable specifications.

The Club's member organizations total several tens of thousands of users located around the world, with a predominance for France and Europe. They also represent millions of euros of Green IT budget. As such, the Green IT Club can legitimately speak on behalf of Green IT project leaders within user organizations.

The Club is led by GreenIT.fr, the initiative of the project, on a collegial basis: all decisions are taken together.



Introduction

"You can only improve what you can measure"

- Lord Kelvin.

Large private and public organizations have initiated a Green IT approach for many years. These individual initiatives have enabled organizations to reach a first level of performance and maturity, in particular to appoint managers to carry this practice and to legitimize it with general management by showing interesting initial returns on investment (ROI), from an economic as well as an environmental and social perspective.

In 2015, the most advanced organizations felt the need to share their expertise and feedback from the field in order to reach a second level of maturity and Green IT performance. This was the initial objective of the first edition of this benchmark. The second and third versions pursue the same goal.

Beyond an obvious increase in competence, this pooling aims above all to:

- Create a repository of best practices that can be agreed upon;
- Prioritize best practices to increase the effectiveness of Green IT policies implemented;
- Have a common basis for assessing the Green IT maturity and performance of organizations in a standard way, in particular to identify the most important areas for improvement.

In other words, this document aims to:

- accelerate the adoption of the best practices it presents
- industrialize existing approaches
- converge towards a common reference framework

This third edition of the Green IT standard is completed by:

- a public checklist distributed under a CC-by-NC-ND license (see club.greenit.fr)
- a method to assess the Green IT maturity of an organization (p. 10 to 11)
- a methodological guide (p. 7 to 9)



How to use this framework?

Classification of good practices

To facilitate navigation within the repository, we have organized the good practices according to a taxonomy based on two dimensions:

- major area of responsibility;
- technical sub-area;

In the end, this repository is organized as follows:

1. Cross-cutting approaches
 - > 1. Responsible purchasing
 - > 2. Lifespan and end of life
 - > 3. Governance and steering
2. User
 - > 4. Workstation
 - > 5. Telephony
 - > 6. Printing
 - > 7. Tools and uses of the workstation
3. Company
 - > 8. Software
 - > 9. Digital services and business application
 - > 10. Data centers
 - > 11. Network

Identification of good practices

An identifier is assigned to each good practice. It is preceded by the sign "# ". This identifier is not a ranking number. It is therefore normal that the identifiers of good practices do not follow each other in ascending or descending order.

This identifier is essential for:

- ensure the follow-up over time of the good practice, whatever the taxonomy chosen to present the good practices
- allow the creation of subsets of this repository
- allow the good practices to be numbered while ensuring that they always refer to the same good practice, regardless of the numbering system

Presentation of the good practices

Each good practice is presented in the form of a summary sheet whose structure is always identical.

A subtitle locates the good practice by Area of responsibility > Technical subfield.

Icons and symbols allow to identify at a glance:

- the degree of urgency / priority of toughness

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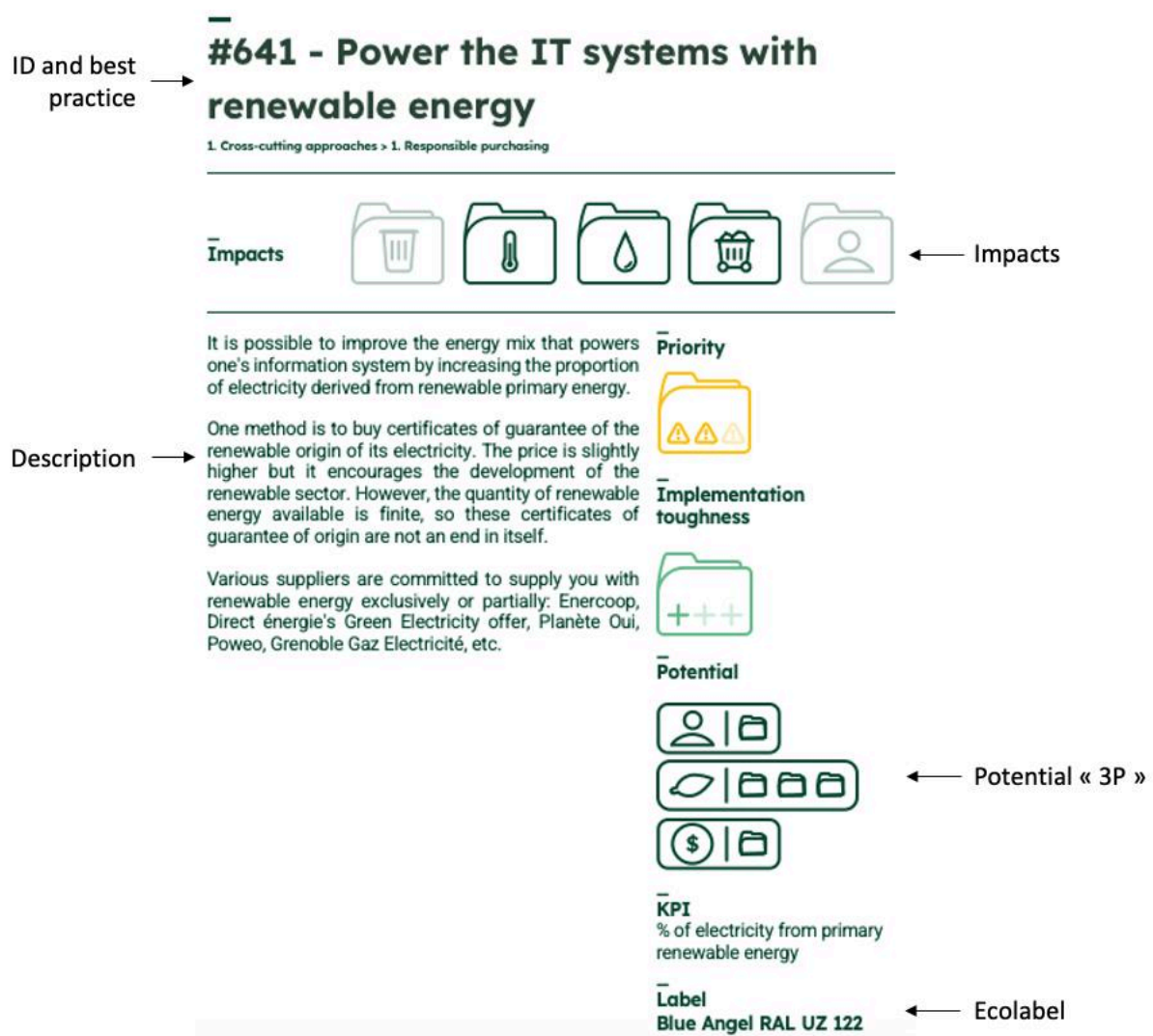


- environmental impacts that this good practice can reduce
- the ease / Implementation toughness
- the logo corresponding to the ecolabels associated with the good practice

Other information is systematically proposed, including:

- the benchmark indicator (KPI) for this good practice
- the potential for impact reduction or improvement in each of the three areas of sustainable development:
 - Social: improving working conditions
 - Environment: reduction of environmental impacts
 - Economy: cost reduction




Other information may be provided to complement the description of the good practice.








Legend of the icons

Priority

Scale	Meaning
	This good practice should be implemented as a priority. Good practices are prioritized when they have a significant footprint reduction potential and are easy to implement or are essential to the implementation of other key good practices.
	These best practices have a medium potential to reduce the resource footprint, but they are quite easy to implement. They therefore offer a good compromise between time spent and results obtained.
	Although this good practice makes it possible to limit resource requirements, the potential for savings is low or the difficulty of implementation is high.

Type of impact avoided or improved

Icons	Meaning
	This icon identifies good practices that avoid or limit the depletion of non-renewable natural resources.
	This icon identifies good practices that avoid or limit the emission of greenhouse gases responsible for global warming and local climate disruption.
	This icon identifies good practices that avoid or limit the depletion of freshwater stocks (aquifers). Freshwater can be considered a non-renewable natural resource when aquifers are recharged at a slower rate than human use. Moreover, freshwater is, along with oxygen, the most vital natural resource for human survival.



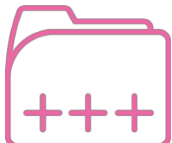


This icon identifies the good practices that avoid or limit the production of waste and / or pollution associated with this waste or the manufacturing process (creating waste and pollution themselves).



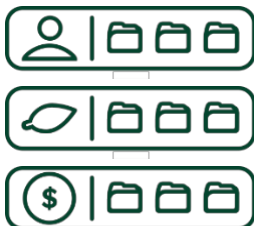
This icon identifies good practices that improve the social, health and societal well-being of humans.

Implementation

Scale	Meaning
	The implementation of this good practice is fast, without risk and does not require any particular expertise.
	Any Green IT or related specialist can implement this best practice.
	Implementing this good practice requires a high level of expertise, is time consuming or involves high complexity.

Environmental, social and economic leverage

For each of the pillars of sustainable development - environmental, social, economic, also called the "3Ps" (People, Planet, Profit) - we indicate the intensity of the expected leverage effect.

Scale	Meaning
	This figure indicates that the leverage effect of this good practice is strong. That is, it is capable of significantly reducing environmental and/or economic impacts and/or significantly improving working conditions.



This figure indicates that the leverage effect of this good practice is medium. That is, it is capable of reducing environmental and/or economic impacts and/or improving working conditions.



This figure indicates that the leverage effect of this good practice is low or non-existent. This good practice does not significantly reduce environmental and/or economic impacts and/or does not significantly improve working conditions.



Assessing its maturity and performance

How to evaluate your Green IT maturity and performance

The evaluation process used with this standard is the standard maturity matrix (CMM - Capability Maturity Model) which is widely used in the IT industry. It allows to describe the level of implementation of various systems and processes.

It is also possible to use KPIs (Key Performance Indicators): the regular collection of these indicators within the organization makes it possible to follow their evolution over time, and to act accordingly.

These systems allow us to judge a level of maturity, but not a level of performance or efficiency. We have developed them based on quality standards and recognized ecolabels.

While all the ingredients are there to make this rating system an eco-label, it is not. Indeed, an eco-label requires a heavy human, legal and technical infrastructure to guarantee the impartiality, relevance and transparency of the analysis leading to the award of a label.

Since the publication of the previous version of this standard, a few labels have emerged. However, no clear consensus seems to be emerging for the moment and their rapid appearance can only attest to a commitment and not to results.

Calculation system

Levels	Description
1: Initial	This level is the most basic. Almost unknown processes are unpredictable. No success factors are identified. The success of the project remains uncertain.
2: Reproducible	The course of the project is beginning to be mastered. The methods of realization set up make it possible to ensure the repetition of an almost identical project.
3: Defined	Project processes are clearly identified and defined. All project stakeholders have a clear understanding of them.
4: Mastered	The progress of the project is measured in both quantitative and qualitative terms. Deviations are analyzed.
5: Optimized	We are at the ultimate stage of the continuous improvement process, the processes are regularly reviewed and adapted to the latest publications.

This evaluation system has two objectives:

- Allow you to objectively evaluate the level of maturity you have reached;
- Encourage you to progress over time.



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— Cross-cutting approaches

> 1. Responsible purchasing



#641 - Power the IT systems with renewable energy

1. Cross-cutting approaches > 1. Responsible purchasing

Impacts



It is possible to improve the energy mix that powers one's information system by increasing the proportion of electricity derived from renewable primary energy.

One method is to buy certificates of guarantee of the renewable origin of its electricity. The price is slightly higher but it encourages the development of the renewable sector. However, the quantity of renewable energy available is finite, so these certificates of guarantee of origin are not an end in itself.

Various suppliers are committed to supply you with renewable energy exclusively or partially: Enercoop, Direct énergie's Green Electricity offer, Planète Oui, Poweo, Grenoble Gaz Electricité, etc.

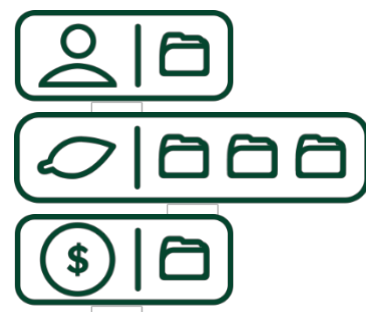
Priority



Implementation toughness



Potential



KPI

% of electricity from primary renewable energy

Label

Blue Angel RAL UZ 122



#646 - Acquire reconditioned equipment as a priority

1. Cross-cutting approaches > 1. Responsible purchasing

Impacts



On the scale of the entire life cycle of a computer, manufacturing concentrates the environmental impacts. Purchasing reconditioned equipment rather than new equipment is a particularly effective way of reducing environmental impacts while at the same time having a positive social impact: reconditioning creates jobs, often through integration.

Many companies offer this type of equipment. For the same quality, we must give preference to social economy actors. From a social point of view, it allows to make work adapted companies (counted in the calculation of the 6% of disabled people made compulsory by the law n°2005-102 of February 11th, 2015).

From an environmental point of view, a reconditioned equipment is an equipment which is not manufactured. And from an economic point of view, the cost is lower for an equivalent service.

It is necessary to raise awareness among buyers and users to adopt these new processes and uses. This good practice is very well suited to small structures (micro-businesses, associations, individuals...), it still remains marginal within large companies.

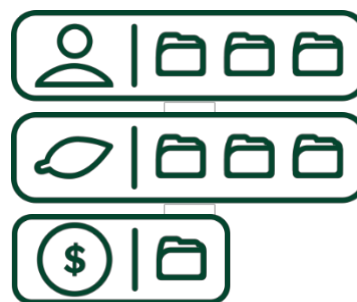
Priority



Implementation toughness



Potential



KPI

% of the fleet reconditioned



#651 - Generalise environmental clauses in equipment tenders

1. Cross-cutting approaches > 1. Responsible purchasing

Impacts



The systematic inclusion of environmental requirements in calls for tenders is a simple action to implement and very effective in pushing manufacturers to propose eco-designed equipment and to properly manage its end-of-life.

It is necessary to act on two levels:

- > The manufacturer's approach and the good practices they apply to reduce impacts
- > The equipment itself

The manufacturer's commitment can be assessed through certifications becoming more and more common: ISO 14001, SA 8000 certification, signing the EICC (Electronic Industry Citizenship Coalition) code of conduct.

The environmental performance of the equipment should, as far as possible, be summarized by an ecolabel. This may be complemented by specific technical requirements (e.g. a removable battery for a laptop).

The selected labels can:

- > either be discriminating when the label is required (integrated in the conditions of execution of the contract)
- > or have an important weighting in the technical note of the product

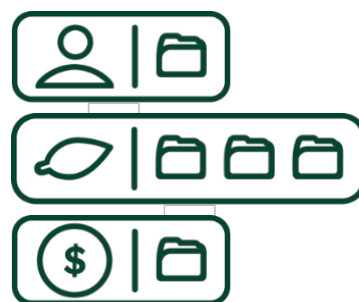
Priority



Implementation toughness



Potential



KPI

% of calls for tender including environmental clauses



#652 - Generalise the integration of societal clauses in tenders

1. Cross-cutting approaches > 1. Responsible purchasing

Impacts



The objective of this good practice is to promote the return to employment of people who are far away from it, for material or intellectual services, through IT service contracts.

On one hand, it is possible to promote the employment of people who have no access to employment except through the involvement of specialized work assistance structures: ESAT (Etablissement et service d'aide par le travail), EA (Entreprise Adaptée), EI (Entreprise d'Insertion) Cf. the GESAT network.

Among the types of operation that can be envisaged:

- > Set up a reserved market mainly for the disabled or for integration. Example: scanning, post-production work (enveloping, sorting, etc.), recycling, etc.
- > Favour the choice of a SSE (social and solidarity economy company) for specific markets. The management of WEEE by an SSE is particularly well adapted to limit our environmental impact (reconditioning/reuse) while participating in the creation of jobs for a disadvantaged public.

On the other hand, the implementation of integration clauses is compatible with intellectual service contracts which may require highly qualified people.

Target group: long-term jobseekers, recipients of the “revenu de solidarité active” (active solidarity income), jobseekers, recipients of minimum social benefits, people recognized as disabled workers, young people who have left school without any qualifications or professional experience, young graduates who have been unemployed for more than a year, qualified senior citizens who have

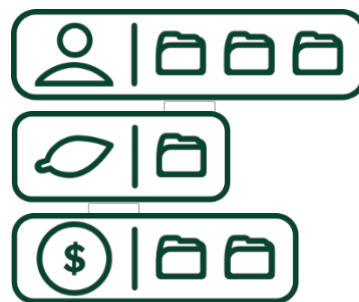
Priority



Implementation toughness



Potential



KPI

% of contracts integrating at least 3% of people in integration



been long-term jobseekers, people covered by a scheme for integration through economic activity.

Principle of the action: The integration clauses are based on an adapted regulatory system, they are included in the conditions of execution of the contract. (Example for public contracts with article 14 performance conditions and article 53 allocation conditions). The successful tenderer undertakes to carry out the integration requirements requested by the client. In case of non-compliance, penalties are calculated at 60€ per hour not performed. This system can only be applied to a contract with a significant financial volume. Example: a request to hire a person for integration for a turnover of 4 million €.

"Code des marchés publics" or "ordonnance" of 2005 (updated June 2015) Art 14 and Art 53.

The law of February 11, 2005 (Law for equal rights and opportunities) requires companies with more than 20 employees to hire at least 6% of disabled workers.

To go further: <http://www.reseau-gesat.com/>



#621 - Integrate good practices in eco-design and accessibility when purchasing external services

1. Cross-cutting approaches > 1. Responsible purchasing

Impacts



As Facebook, LinkedIn, Microsoft, IBM and many others have shown, eco-designing online services can significantly reduce the physical infrastructure needed to run them*. For example, LinkedIn has reduced the number of servers needed to run its mobile website by 112 times and IBM by 100 times the number of servers needed to run one of its business intelligence applications.

For applications and websites, there is a repository** recognized by the profession. It is therefore sufficient to ask the service providers responsible for the design, production and hosting to apply the best practices of this standard. This requirement can be included as an appendix to the technical specifications. A few extra lines in a contractual document are enough to initiate a software ecodesign approach. The possible additional cost - approximately 4 to 5% of the initial budget - is largely offset by the savings in terms of number of servers, electricity consumption and bandwidth.

*<https://www.greenit.fr/2014/05/21/dossier-ecoconception-logicielle-benefices-potentiels/>

**Web ecodesign: 115 best practices, v4

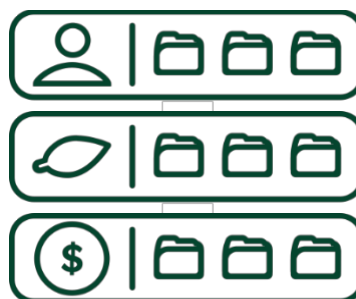
Priority



Implementation toughness



Potential



KPI

% of tenders including eco-design and accessibility requirements

Label

Blue Angel RAL UZ 72 et FSC



— Cross-cutting approaches

> 2. Life span and end of life



#438 - Set up and optimize the selective sorting of consumables

1. Cross-cutting approaches > 2. Life span and end of life

Impacts



The objective of this good practice is to limit the impact of the company's waste (paper, toner, batteries, etc.) by promoting the recycling and reuse of the raw materials they contain.

Entrusted to actors of the social and solidarity economy (SSE), the collection and treatment can add to this environmental approach, a strong societal axis by promoting integration through economic activity.

The implementation is simple. You just have to place in strategic places receptacles adapted to the type of waste:
 > Cardboard "croc sheets" or any other device allowing the collection of office paper without crumpling it, in the offices or near the printing machines;
 > Dedicated garbage can for bulk collection;

Ensure regular collection by a suitable organization or provided for in the company's cleaning contract."

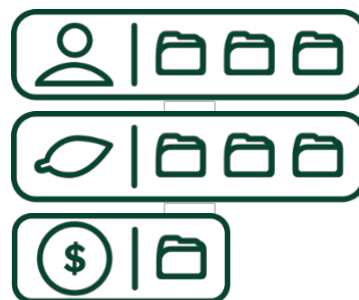
Priority



Implementation toughness



Potential



KPI

% collected by type of waste (weight of paper collected vs. weight of paper purchased, for example)



#470 - Refurbish functional equipment preferably via a company that is part of the social and solidarity economy

1. Cross-cutting approaches > 2. Life span and end of life

Impacts



In the analysis of the life cycle of a computer, manufacturing is the stage that concentrates most of the environmental impacts. Therefore, refurbishing functional equipment is one of the most effective ways to reduce the environmental impact of equipment. It is a matter of deliberately favoring the reconditioning and reuse of workstations in order to give them a second life with associations, schools or individuals wishing to equip themselves at a lower cost.

Principle of the action :

Choose a company of the social economy for which the reuse of computer workstations is a priority.

These structures are either :

- > Integration companies that promote the reception of people far from employment in order to help them gain skills and make them autonomous on the job market (e.g.: Ateliers sans Frontière, Ateliers du Bocage)
- > Adapted companies specialized in the employment of disabled workers. (e.g.: Ateliers du Bocage)

Some of these structures offer an equivalent quality of service in terms of certification, traceability and recycling channels as large industrial groups.

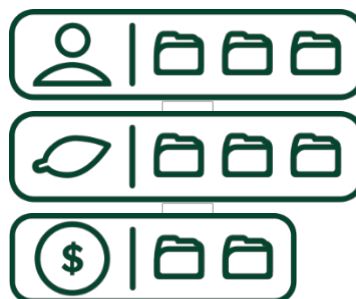
Priority



Implementation toughness



Potential



KPI

% of equipment reconditioned by an SSE player (number of equipments)



#608 - Refurbishing for reuse rather than recycling

1. Cross-cutting approaches > 2. Life span and end of life

Impacts



Extending the life of equipment helps limit the environmental footprint resulting from the manufacture of new equipment and the impacts associated with end-of-life.

This good practice consists of upgrading equipment as much as reasonably possible, in particular by :

- > adding memory modules ;
- > replacing defective HDDs with SSDs, keyboard keys if necessary, fans if too noisy or defective.

On smartphones and tablets, replace screens if broken or scratched, change shells if cracked, change tiles. Extending the lifespan mechanically leads to a reduction in environmental impacts, particularly those associated with the manufacture of new equipment and the end of life of replaced equipment.

From a social point of view, the reconditioning can be entrusted to adapted companies or ESAT. This favors the social and solidarity economy. From an economic point of view, the purchase of new and expensive equipment is avoided, thus optimizing expenses.

The fight against waste gives meaning to the IT strategy: employees and customers appreciate these measures."

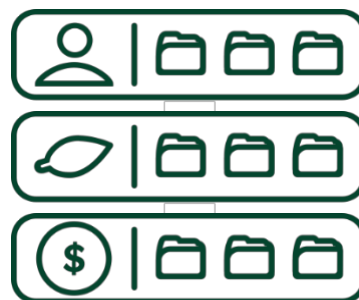
Priority



Implementation toughness



Potential



KPI

% of IT equipment reconditioned and recycled



#644 - Demanding transparency from refurbishers on their outlets

1. Cross-cutting approaches > 2. Life span and end of life

Impacts



Not all WEEE service providers have the same ethics. So much so that 70% of WEEE in the world is subject to trafficking. Entrusting the management of your WEEE to an approved eco-organization is the assurance of traceability and the guarantee of a certified channel.

To date, eco-organizations have oriented their activities towards the destruction of equipment without favouring reuse and the use of labour. Solutions integrating these requirements must be dealt with on a case-by-case basis. Only electronic waste should be entrusted to them. Functional equipment must be reconditioned via another channel.

The eco-organizations are non-profit structures. They are private law companies invested with a mission of general interest by the public authorities who give them an approval. According to the dedicated channels, producers subject to EPR (Extended Producer Responsibility) can choose to transfer their obligations to manage those waste, in this case professional WEEE, to the approved eco-organization related to this field. This transfer of obligations takes place in exchange for a financial consideration that corresponds to the cost of managing the said waste.

To go further:
> [WEEE Directive](#)

Decommissioner: All the actors who take back equipment previously sent to reconditioners.

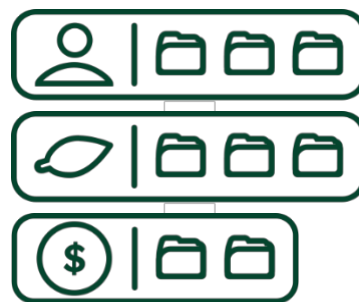
Priority



Implementation toughness



Potential



KPI

% of WEEE (kg or units) taken in charge by an eco-organization



#647 - Systematise and control the collection of WEEE and consumables

1. Cross-cutting approaches > 2. Life span and end of life

Impacts



The objective of this good practice is to control the end of life of equipment and consumables to ensure that their management complies with regulations and respects the environment. Indeed, the impact on the environment and on the health of local populations is disastrous when this waste is not properly treated.

Generally, the supplier (or the broker) remains rather vague about the end of life of the consumables and equipment collected. However, a recent study shows that 60 to 90% of end-of-life IT equipment is heavily trafficked worldwide.

It is imperative to consider a second life (reconditioning) for electronic equipment before categorizing it as waste for disposal.

The general resources and purchasing departments must require traceability of end-of-life equipment and consumables. They must also ensure that they are taken care of by waste professionals. Think about including binding clauses in contracts.

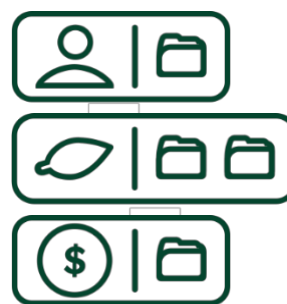
Priority



Implementation toughness



Potential



KPI

% (mass) of consumables and WEEE collected



#650 - Reassign/reallocate existing equipment internally

1. Cross-cutting approaches > 2. Life span and end of life

Impacts



When the capabilities of the computer equipment (PC, laptop, tablet, smartphone) become insufficient to accomplish certain tasks of a particular user profile (e.g. developers), it is possible to reassign the equipment to other categories of less demanding users (e.g. administrative agent). This avoids the systematic renewal of equipment, generating savings and a significant reduction in environmental impact.

To implement this best practice, we start by establishing profiles according to user needs (for example 3 profiles: office use, business application use, developer and expert use). This allows a piece of equipment to be used several times within the company. The idea is to adjust the equipment according to needs rather than leveling up (a practice that is easier to manage but clearly inflationary), generating a stable, adjusted and therefore sustainable environment.

Tools:

- > Evaluation of the applications useful to each profile.
- > Table associating a type of machine to each profile.
- > Tool allowing to regularly scan workstations to remove software that has become obsolete for the user.

To go further:

- > See tools such as Nextthink, Interact or others.

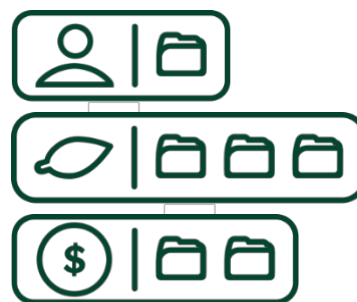
Priority



Implementation toughness



Potential



KPI

Average lifespan of an equipment in the organization or average cost price of a workstation / year



— Cross-cutting approaches

> 3. Governance and steering



#700 - Appoint and train a Green IT Manager

1. Cross-cutting approaches > 3. Governance and steering

Impacts



On a full-time or part-time basis, this person pilots and leads the company's Responsible Digital strategy. He/she coordinates Green IT actions with the IT department and the responsible design of digital services with the business departments.

He/she will understand digital technology from the perspective of environmental, social and economic issues in order to build an (eco) responsible information system and help the company move towards more sustainable models thanks to digital technology.

He/she develops, applies and develops the company's Sustainable Development (CSR) strategy at the level of the information system, in relation with the Director of Information Systems (DSI/CIO), the Director of Sustainable Development (DDD/SDO), and the company's executive committee.

He/she supports the business departments to help them make the most of digital technology in the context of the responsible design of the company's digital products and services.

Resource: ["Green IT Manager" job description from the CIGREF IS job nomenclature](#)

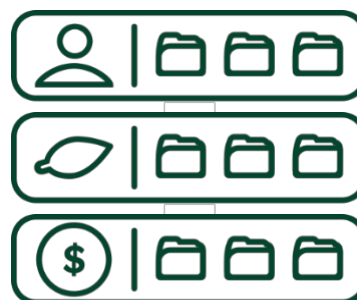
Priority



Implementation toughness



Potential



KPI

Workload dedicated to the Green IT manager (% FTE)



#701 - Dedicate a specific budget to Green IT

1. Cross-cutting approaches > 3. Governance and steering

Impacts



Creating a responsible Green IT / digital policy and implementing an action plan requires more than just man time.

For example, audits and environmental footprint assessments must be carried out. The ever-changing legislation - especially concerning electronic waste - also requires the support of legal experts. Finally, in some cases, it may make sense to use specialized tools and experts. In most of these situations, the Green IT manager must have a budget to cover these services.

A well executed Green IT policy can save much more money than it costs. It is therefore necessary to invest initially in corrective actions.

The % of the IT/CSR budget allocated to this practice is a good indicator of the company's maturity and commitment to the subject.

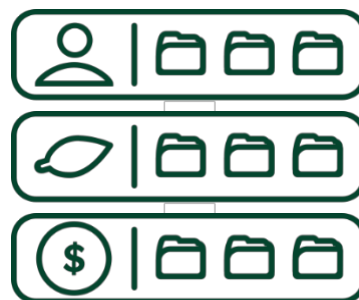
Priority



Implementation toughness



Potential



KPI

% of IT budget



#702 - Define a Green IT Strategy and Action Plan

1. Cross-cutting approaches > 3. Governance and steering

Impacts



The first action when implementing a Green IT / responsible digital approach in a company is to make a global assessment of the environmental footprint of the information system and its maturity in terms of best practices.

By comparing this information with the values of other companies, we can then identify areas of progress, quantify the potential impact of corrective actions and estimate a global gain in terms of reducing environmental impacts.

The creation of the strategy consists in aligning this action plan, the indicators and the associated quantified objectives with the company's CSR strategy. Some companies choose to focus on the use phase of the information system and/or on a single environmental indicator (greenhouse gas emissions for example). Others, particularly in the service sector, rely on the Green IT strategy to improve all CSR indicators: social performance via the refurbishment by players in the social and solidarity economy (SSE) and the adapted economy (EA), reduction of environmental impacts via the extension of the life of terminals, etc.

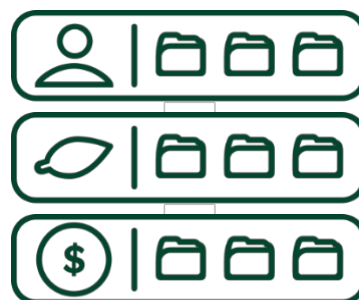
Priority



Implementation toughness



Potential



KPI

Yes = 100%, No = 0%.



#703 - Define Green IT indicators (KPI's)

1. Cross-cutting approaches > 3. Governance and steering

Impacts



It is impossible to properly monitor a Green IT strategy without the implementation of quantitative indicators. It is one of the objectives of this repository to provide these indicators for each area of the information system.

Two levels of granularity are required:

- > micro indicators to be able to make operational decisions;
- > macro indicators to contribute to the company's overall CSR reporting.

Several types of indicators can be used to explain :

- > environmental performance (e.g. kg of WEEE/year/user, for example);
- > the environmental footprint (ton of CO2 equivalent / year / user);
- > maturity (implementation or not of good practices to reduce the footprint).

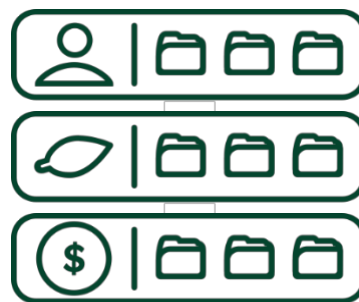
Priority



Implementation toughness



Potential



KPI

Number of green IT KPIs
/ Number of best practices



#704 - Align the Green IT strategy with the company's CSR strategy

1. Cross-cutting approaches > 3. Governance and steering

Impacts



It is essential to align Green IT indicators with those of the company as a whole. This is the best way to effectively contribute to the company's social, environmental and economic strategy.

This alignment also makes it possible to demonstrate the impact of the approach and to create a common vocabulary with the other stakeholders: the company's CSR / SD manager and referents / correspondents, etc.

With this in mind, the Green IT Club has aligned the main indicators of the Responsible Digital Benchmark with those most commonly used by the CSR departments of member organizations:

- primary energy
- climate change (greenhouse gas emissions)
- waste
- water

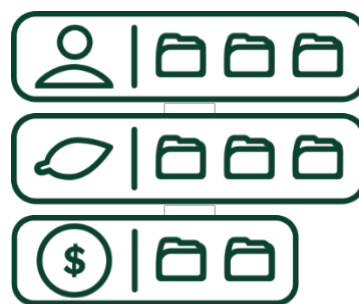
Priority



Implementation toughness



Potential



KPI

Yes = 100%, No = 0% or number of common indicators



#705 - Assess regularly the environmental footprint of the Information System

1. Cross-cutting approaches > 3. Governance and steering

Impacts



Since we can only improve what we can measure, it is essential that the company regularly assesses the environmental footprint of its information system to identify the main areas for reducing environmental impacts.

In addition to greenhouse gases (GHG), this assessment must also cover water, energy (including grey energy) and waste in order to avoid pollution transfers.

Ideally, the depletion of non-renewable natural resources and the impact on biodiversity, among other things, should also be taken into consideration.

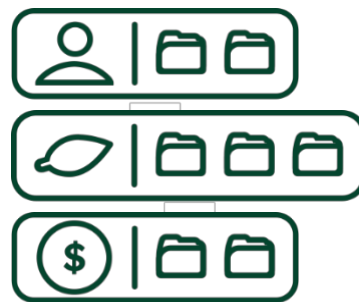
Priority



Implementation toughness



Potential



KPI

Yes = 100%, No = 0%



#706 - Create and train an internal network of Green IT referents

1. Cross-cutting approaches > 3. Governance and steering

Impacts



A Green IT manager cannot instill this dynamic within a large company alone. The best way to achieve this is to create a network of Green IT referents / correspondents whose objective is to animate this practice at their level and to raise awareness of the subject among their colleagues.

For this approach to work, it is imperative to train the referents / Green IT correspondents and ensure that they have really acquired the fundamental knowledge that they will have to transmit to their turn.

It is with this objective that the Green IT Club offers training and certification.

It is also important to feed this network of correspondents with animation tools: e-mailing campaign, animations, awareness materials, etc.

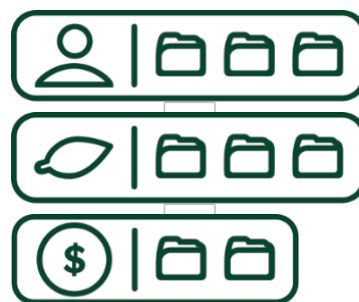
Priority



Implementation toughness



Potential



KPI

Number of Green IT referents / number of IT employees



#801 - Train product teams in ecodesign and/or LCA

1. Cross-cutting approaches > 3. Governance and steering

Impacts



To acquire the necessary knowledge to understand the approach, team training is essential. The concepts of eco-design and LCA can then be applied to product development.

This also allows us to raise awareness of digital sobriety among the teams that have the greatest impact.

We can mention, as profiles to train:

- > product owners
- > Business analysts
- > Project managers
- > IS architects

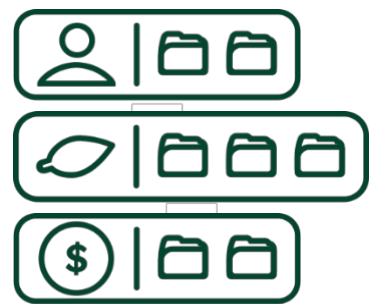
Priority



Implementation toughness



Potential



KPI

% of people trained in product teams



— User

> 4. Workstation



#207 - Upgrading equipment rather than replacing it

2. User > 4. Workstation

Impacts



Whether laptops or desktops, business workstations are designed to make it easy to replace key components such as storage (hard drive or SSD) and RAM.

From an economic and environmental standpoint, it makes more sense to "juice up" an aging piece of equipment than to replace it with new equipment. Simply adding RAM capacity is usually enough to extend the life of a workstation by 1 to 2 years. For laptops, you can complete the process by replacing the hard drive with an SSD.

To ensure that this best practice can be implemented, it may be wise to add a few technical requirements when bidding, including:

- > ease of disassembly and the ability to access key components
- > the ability to expand RAM capacity and replace other key components.

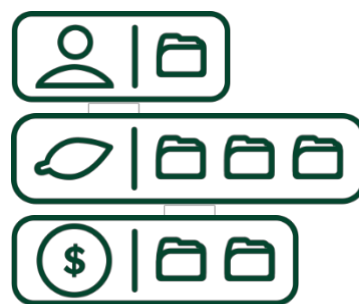
Priority



Implementation toughness



Potential



KPI

% of workstations upgraded rather than renewed and duration of the upgrade



#321 - Put the workstations in idle mode each evening and switch them off for the week end.

2. User > 4. Workstation

Impacts



In a 24-hour day, a workstation is generally not used for more than 8 hours. It is therefore necessary to put it on standby during lunch break and especially in the evening. This saves almost 2/3 of the electricity consumption during working days compared to a workstation that would remain switched on 24 hours a day.

On weekends, it is preferable to physically turn off the workstation to force it to restart.

The power consumption in standby mode is very low and the associated energy savings are almost the same as if the workstation were switched off. In addition, restarting provides better operating system stability and performance. However, unlike a complete shutdown, this power-saving mode makes it easier to maintain workstations at night and allows the user to pick up his or her work environment from where he or she left it.

It is possible to use asset management tools such as Microsoft's SCCM and "power management" tools such as those from Avob, Cisco, Verdiem, etc. to force all IP equipment to shut down or go to sleep: workstation, monitor, printers, etc.

Priority



Implementation toughness



Potential



KPI

% of workstations turned off or put on standby at night and on weekends



#324 - Adjust the configuration of the workstation to the right needs for business uses

2. User > 4. Workstation

Impacts



Not all users in the enterprise need the same workstation.

For example, office uses require less RAM and processor power than 3D modeling and CAD. Similarly, graphic designers will need a larger graphic card than a standard workstation and more local storage capacity.

To avoid unnecessary economic and environmental impacts, it is therefore relevant to define configurations adapted to the uses rather than aligning all workstations to the highest requirement.

This definition of workstation profiles will also facilitate, in a second step, the in-house reallocation of first-hand equipment (c.f. #650).

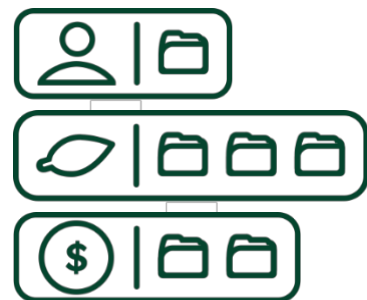
Priority



Implementation toughness



Potential



KPI

% of workstations adapted to usage



#511 - Extending the active lifetime of equipment

2. User > 4. Workstation

Impacts



The most effective way to reduce the environmental and economic impact of the equipment that makes up the workstation - desktop + screen and laptop - is to extend their active life.

Indeed, the majority of environmental impacts (depletion of non-renewable natural resources, pollution, climate change, etc.) occur during the extraction of minerals, their transformation into electronic components, and the end of life of these components.

It is therefore necessary to manufacture less and extend the life of existing equipment.

Extending the life of the workstation starts with a clear statement of intent and a demonstration of the positive impact, both from an environmental and economic point of view.

Many good practices can then support this approach:

- > do not systematically migrate to new software versions,
- > adding RAM if necessary (see #207)
- > Acquire warranty extensions
- > Extend the accounting depreciation period (> 5 years)
- > etc.

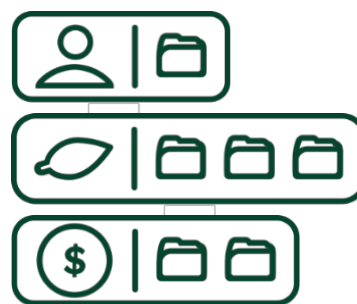
Priority



Implementation toughness



Potential



KPI

average life span by type of equipment



#602 - Select TCO eco-labeled computers in priority, and EPEAT Gold otherwise

2. User > 4. Workstation

Impacts



When purchasing a workstation (desktop and screen, laptop), it is preferable to choose equipment with the TCO eco-label (and failing that, EPEAT Gold).

TCO Certified is the only ecolabel dedicated to digital technology that includes social criteria, such as working conditions at the manufacturer or its subcontractors. With a few exceptions, all other eco-labels focus exclusively on the environmental dimension.

For laptops, check and require in addition that the battery of the equipment is removable and easily replaceable by the user.

Another possible eco-label is EPEAT Gold, but it only takes into account environmental criteria.

To go further:

- www.epeat.net
- www.tcodevelopment.com

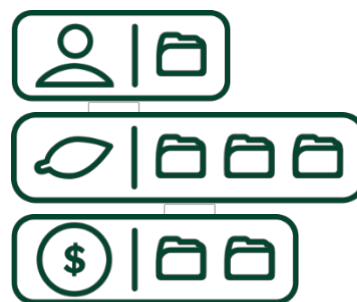
Priority



Implementation toughness



Potential



KPI

% of workstations that are eco-labeled TCO

Label

TCO



#603 - Prioritize 2nd-hand, refurbished or used equipment before considering buying new ones

2. User > 4. Workstation

Impacts



Before buying new workstations, it is better to reallocate internal equipment.

For example, a central unit assigned to a technical workstation will be reassigned to an office profile after being refurbished (erasing data from the hard disk and resetting software).

In a second phase, it is necessary to consider acquiring refurbished second-hand equipment. A "refurbished" monitor or central unit is generally 60% to 80% cheaper than the same equipment when new.

The [Ordi 3.0](#) label makes it easy to identify companies that meet strict specifications for refurbishment. A list of companies is available on the web.

Consult the files # 650 and # 608.

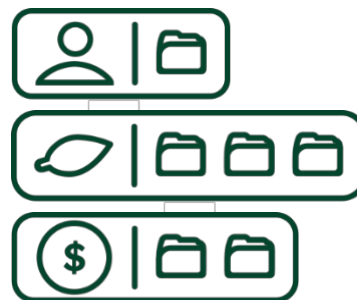
Priority



Implementation toughness



Potential



KPI

% of workstations refurbished

Label

Ordi 3.0



#604 - Have separate renewal cycles for each type of equipment

2. User > 4. Workstation

Impacts



When renewing a fleet, dissociate the renewal of the central units (desktop) from that of other equipment such as the screen, keyboard, mouse, external hard drive, etc.

This good practice also applies to laptops, for which you should avoid renewing the associated peripherals such as the additional screen, the docking station, the keyboard, the mouse, etc.

The lifespan of screens is often 2 to 3 times longer than that of desktops / laptops and the other peripherals (docking station, keyboard, mouse, chargers, bags, etc.) are almost indestructible.

This good practice significantly reduces environmental impacts - especially those associated with the manufacturing and end of life of equipment - while saving the company a lot of money. And the user retains his or her usual environment.

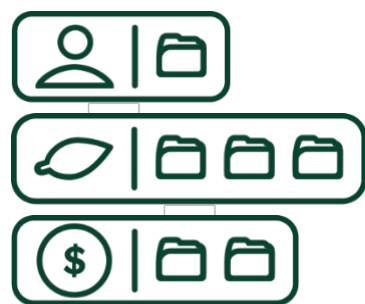
Priority



Implementation toughness



Potential



KPI

% of workstations (desktop / laptop) renewed alone



#800 - Limit the number of screens

2. User > 4. Workstation

Impacts

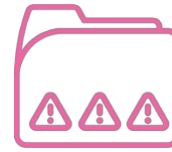


Dual displays have been heavily deployed in offices in recent years.

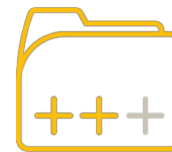
However, monitors represent one of the biggest impacts of equipment at the manufacturing stage. A simple way to reduce the impact of the equipment is not to systematize the double screen for the user environments of the office profiles.

For the more technical profiles, it will be necessary to evaluate if dual screens are essential.

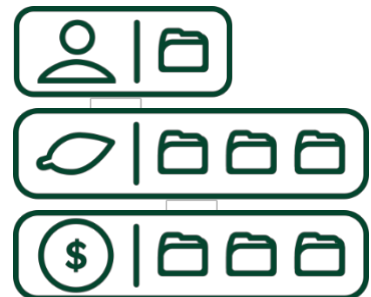
Priority



Implementation toughness



Potential



KPI

average number of screens per user



User

> 5. Telephony



#217 - Limit the number of fixed phones (use soft phones instead)

2. User > 5. Telephony

Impacts



Although landline phones have a long lifespan and a small environmental footprint compared to other information system equipment, they often outnumber users. Moreover, landline phones are less and less used because they are often redundant with mobiles (especially since the appearance of unlimited mobile plans).

It is therefore becoming reasonable to eliminate fixed phones in favor of a software solution: softphone and/or video conferencing tool.

The majority of users prefer soft phones / VoIP such as Lync (Microsoft), Webex, Skype, Zoom etc.

In addition to being interesting from an economic and environmental point of view, this good practice brings an additional service to users. Indeed, you can share your screen, your documents, and see your interlocutor. It is also accessible anywhere, while traveling or for telecommuting.

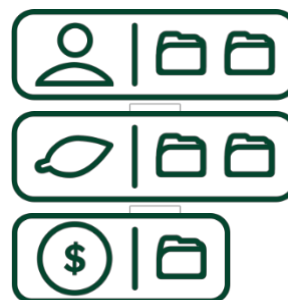
Priority



Implementation toughness



Potential



KPI

average number of fixed or cell phones per user



#235 - Deploy BYOD (Bring Your Own Device) for certain categories of users

2. User > 5. Telephony

Impacts



BYOD consists in giving some employees the possibility to use their personal equipment (laptop, tablet or smartphone) in the professional context. This approach is appreciated by employees who can then choose their favorite or familiar equipment or operating system.

BYOD has an economic interest. One device is sufficient instead of two: one for professional use and one for private use. The savings are shared contractually between the company and the employee. Everyone benefits. The environmental footprint is greatly reduced because there is only one device to manufacture and operate instead of two.

Certain precautions must be taken for obvious security reasons. The company will have to implement a device allowing to ensure a total sealing between the private and professional environment. Many solutions exist on the market for this. The legal framework must also be specified in detail. Thus, two alternatives can be considered:

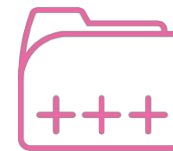
- > Reverse BYOD, i.e. the provision of a business phone allowing personal use
- > Dual-SIM phones
 - Beware, however, of the employees' right to disconnect.

For PCs, BYOD is often associated with virtualization. The OS, professional software and data are then hosted on a central server of the company and the employee's personal PC only displays the screen image of the applications.

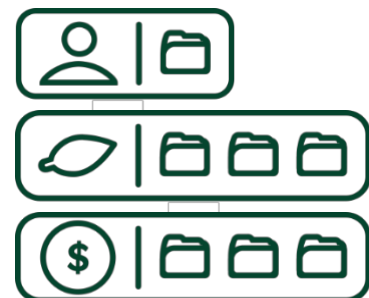
Priority



Implementation toughness



Potential



KPI

% of PCs, smartphones, tablets in BYOD mode



For smartphones, MDM (Mobile Device Management) software is installed by the company on the workstations. It guarantees the security of access to the professional environment and offers classic office functions: directory, calendar, messaging, reading of email attachments, access to the intranet, etc.

Good to know: The total cost of a Mobile Device Management (MDM) solution can be significant. The larger the fleet, the better the return on investment.



#610 - Define and enforce a maximum SAR (Specific Absorption Rate) level of 0,5 W/kg

2. User > 5. Telephony

Impacts



In 2011, the World Health Organization (WHO) classified the electromagnetic radio frequency fields emitted by connected mobile terminals (phones, smartphones, tablets, etc.) as "potentially carcinogenic". In 2015, France passed the "law on sobriety, transparency, information and consultation regarding exposure to electromagnetic waves", law n°2015-136. This law imposes the application of the principles of precaution and sobriety with regard to the emission of electromagnetic waves (relay antennas, cell phones and smartphones, internet boxes, etc.).

When purchasing equipment emitting electromagnetic waves - telephone, smartphone, tablet, etc. but also many active network elements - it is worth applying the precautionary principle by setting a maximum SAR level (Specific Absorption Rate).

The SAR is a measure of electromagnetic radiation that is expressed in volts per meter (V/m) or in watts per kilogram (W/kg) for a space of 10g of human tissue. The first measure is mainly used for GSM base stations and Wi-Fi hotspots. The second measure is mainly used for user terminals.

Regarding antennas, the Council of Europe recommends limiting the power to 0.6 Volts per meter (V/m). Regarding terminals, in France, the legal maximum is 2 Watts/kg against 1.6 W/kg in the USA.

The SAR varies by a factor of 5 between the most and least emissive terminals. Given the current performance of phones, it is not unreasonable to aim for a maximum SAR of 0.5 W/kg.

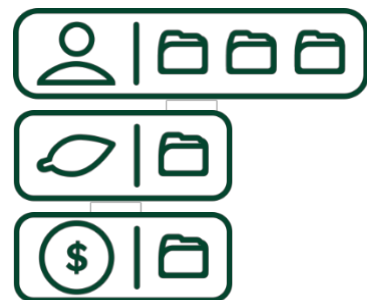
Priority



Implementation toughness



Potential



KPI

average SAR of the fleet in Watts / kg



#611 - Have the telephony equipment refurbished for reuse rather than recycled

2. User > 5. Telephony

Impacts



Reuse is one of the most effective ways to reduce the environmental impact of phones and other smartphones.

Their first use (first hand) in companies is short: from 24 to 36 months. However, this equipment works without problem for more than 5 years. The refurbishment most often consists of resetting the operating system and changing the shell and/or the screen.

For the company, this reuse is a good opportunity to reduce the overall cost per subscription (because the returned mobiles have a value) while improving the environmental balance associated with the equipment.

All major operators now have a take-back program and most are able to offer reuse rather than recycling. Alternatively, social economy players provide this type of service. Calling on them allows to introduce a social dimension to an economic and environmental action.

You can require from the operator quantified information on the number of equipment taken back, the type of treatment undergone, and the destination of the equipment put back on the market.

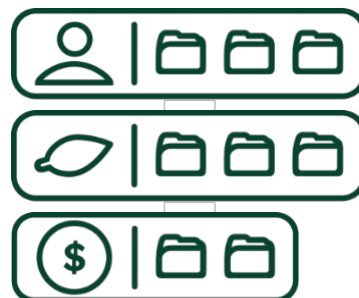
Priority



Implementation toughness



Potential



KPI

% of equipment taken back and reconditioned



User

> 6. Printing



#214 - Set printers by default in eco-friendly mode

2. User > 6. Printing

Impacts



The default setting of printers in "eco" mode, i.e. duplex, monochrome and draft mode, divides by 2 the quantity of paper and toner used compared to standard quality single-sided printing.

Simple to implement and inexpensive, this good practice can nevertheless generate significant savings and significantly reduce the nuisances associated with printing.

Indeed, it is the manufacture of the paper and the toner which concentrate the environmental impacts.

The duplex mode can be difficult to understand for some users, so it is useful to train them to use this feature. We will take advantage of this training to praise the interest: 2 times less weight to carry, etc..

To go further, think also about :

- > Choose a default font that is low in ink consumption
- > Eco design your document templates
- > Layout the documents before making them available.

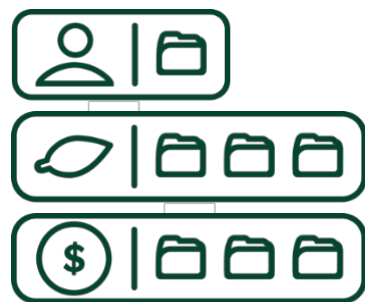
Priority



Implementation toughness



Potential



KPI

% of printers configured by default in eco mode



#215 - Raise awareness on the best practices of eco-friendly printing

2. User > 6. Printing

Impacts



More than in any other area of the information system, users are the key to a controlled printing policy. Indeed, while computers can be turned off remotely, it is impossible to judge for the user whether it is worth printing a document or not. It is therefore crucial to make users aware of the impacts of printing and in particular to value the scope of their effort on an individual and collective scale.

Awareness is facilitated if the company has set clear objectives (number of pages per day and per employee, % of color printing, % of double-sided printing, etc.)

To involve users, some large French companies have decided to index part of their annual employee profit-sharing on their ability to reduce their paper consumption. These companies therefore redistribute part of the financial savings generated to users who play the game. A very effective approach that has allowed some of these organizations to reach less than 4 pages per day per employee!

In addition to raising awareness, many actions can be taken: encourage the transfer of skills between young recruits and older employees, study the potentially positive effect of collaborative work tools and/or online document sharing, dematerialize certain documents in the form of structured data that is easier to handle and less impactful, encourage multifunctional printers with badges (#433), etc.

Priority



Implementation toughness



Potential



KPI

pages / day / user and/or
% of color prints



#315 - Buy recycled and Blue Angel or FSC certified paper, avoid PEFC

2. User > 6. Printing

Impacts



A sheet of recycled paper requires 6 times less chemicals and 25 times less fresh water to manufacture (WWF).

Therefore, this type of paper should be preferred for all printing that does not require a perfect graphic rendering.

The quality of recycling is very important. In particular, you should avoid paper bleached with chlorine. To simplify your life, buy only Blue Angel certified recycled paper, or, failing that, FSC. Avoid the fake PEFC ecolabel.

Recycled paper can be more expensive than paper made from virgin fibers. To get it adopted, it may be necessary to include it in a broader approach to controlling the costs of economically viable printing.

To go further:

- [FSC](#)
- [Blue Angel](#)

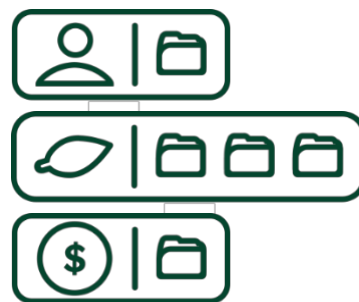
Priority



Implementation toughness



Potential



KPI

% of FSC or Blue Angel recycled paper (in relation to the total quantity of paper used)

Label

EnergyWise de Cisco (par ex.)



#316 - Refurbish used toners via an "SSE / AE" (social and solidarity economy / associative economy) actor

2. User > 6. Printing

Impacts



Printing consumables - paper and toner - are the largest single source of greenhouse gas emissions over the entire life cycle of a print job. Toner itself is almost entirely carbon.

To reduce the greenhouse gas emissions associated with printing consumables, it is therefore necessary to reduce the amount of paper and toner used. However, it can also be interesting to work on the container.

Instead of buying non-refillable toner cartridges (most of them are supplied by the printer manufacturer), opt for refillable cartridges. This gesture is interesting for the environment. But above all, it allows you to use local service providers from the social and solidarity economy (SSE) or ESAT (Etablissement et service d'aide par le travail) to refill the cartridges.

This good practice allows us to improve both the environmental and social impact of printing. Not to mention the savings made on consumables since a refilled toner cartridge costs less than a new one of the same capacity.

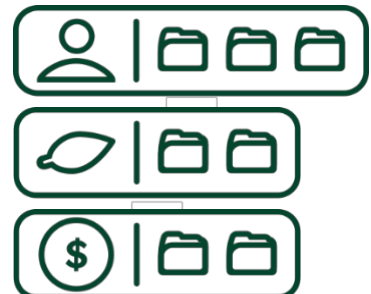
Priority



Implementation toughness



Potential



KPI

% of refillable cartridge / toner in ESAT



#433 - Consolidate the printer fleet on multifunction devices with identification system

2. User > 6. Printing

Impacts



The consolidation of printing resources towards networked collective printers (MFP) is the most efficient way to reduce the number of pages printed per user as well as the number of printing resources (individual printers, faxes, scanners, photocopiers).

This good practice should therefore be implemented as a priority.

However, a preliminary study is essential to determine the type of equipment and the appropriate locations according to usage.

Also, the addition of an identification system (magnetic card/PIN code) is highly recommended to guarantee the confidentiality of printouts and reduce their volume.

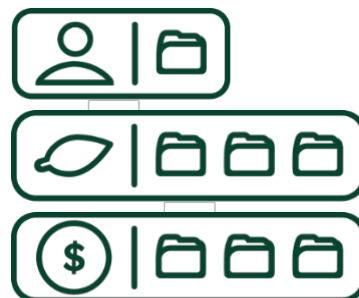
Priority



Implementation toughness



Potential



KPI

Number of users per printing equipment (including individual printers)



#614 - Buy or rent Blue Angel labelled printers (EPEAT if not)

2. User > 6. Printing

Impacts



Blue Angel RAL-UZ 122 is the reference ecolabel for printers. It covers all environmental issues throughout the life cycle of the equipment.

These equipments are not more expensive at the purchase but allow to make consequent savings on the phase of use, in particular by allowing to activate by default the mode ""eco"": draft, monochrome, etc.

Blue Angel RAL UZ-122 also covers health issues. It defines a maximum threshold of toner micro-particles emission (carcinogenic) to protect employees.

EPEAT offers a better conversion than Blue Angel in terms of number of equipments but Blue Angel remains the most demanding ecolabel.

In addition to the use of an eco-label, it may be wise to add some technical requirements to the tender, such as that the color toners be separated to replace only the toner corresponding to the used color.

To go further :

- [BlueAngel](#)
- [EPEAT](#)

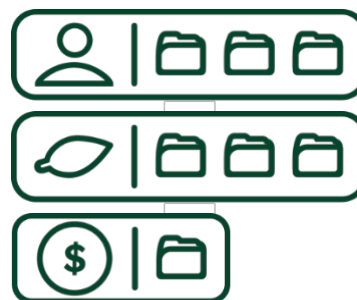
Priority



Implementation toughness



Potential



KPI

% of printing equipment that is Blue Angel (and/or EPEAT) eco-labeled



#615 - Buy Blue Angel certified paper or FSC as second-best choice; avoid PEFC

2. User > 6. Printing

Impacts



The ideal is to use only recycled paper. Otherwise, virgin paper whose cellulose fibers come from a sustainably managed forest offers a better environmental balance than conventional office paper. Indeed, the resource manager is committed to preserving biodiversity and, of course, to replanting the felled trees to replenish the carbon released. Many other social and societal commitments are also required.

It is necessary to privilege the Blue Angel and FSC ecolabels and especially not to use PEFC which is **not** an ecolabel. For the same quality, Blue Angel or FSC certified paper is almost no more expensive than ordinary paper. Often, you just need to organize yourself to order in volume to totally erase the difference in purchase price.

To go further :

- > [FSC](#)
- > Blue Angel (RAL UZ 72) : [here](#) and [here](#)

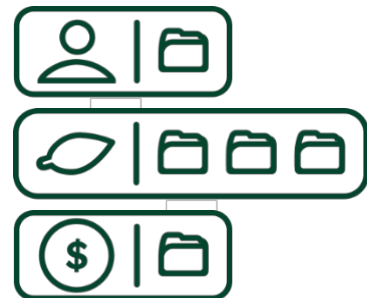
Priority



Implementation toughness



Potential



KPI

% of total weight purchased that is Blue Angel and/or FSC certified



#617 - Collect office white paper without creasing it

2. User > 6. Printing

Impacts



Graphic paper - white A4 sheets used in office automation - is much easier to recycle if it is sorted separately from other paper and cardboard and if it is not crumpled. In particular, it can be de-inked more easily and with fewer chemicals.

While the collection and recycling of bulk paper and cardboard often represents a cost to organizations, properly sorted and uncreased graphic paper represents a valuable raw material that some recyclers buy back from companies.

It is therefore important to sort this paper separately, for example by allocating a specific garbage can in each office, rather than throwing it in the garbage can intended for recyclable materials (plastic, paper, cardboard...). A simple trash can with a flat opening of a few centimeters allows for separate collection.

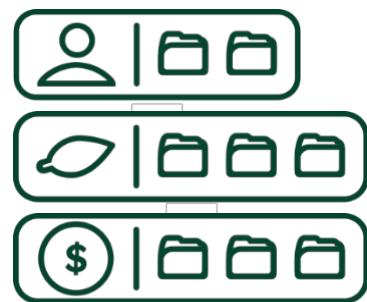
Priority



Implementation toughness



Potential



KPI

kg collected per year per user



#618 - Give preference to suppliers who propose refurbished printing equipment

2. User > 6. Printing

Impacts



Some manufacturers, such as Canon and Konica-Minolta, are extending the life of the multifunction printers (MFPs) rented to companies as part of their Managed Printing Service contracts. Therefore, it is possible to add this criterion when selecting a supplier.

Although the manufacturing of this equipment does not represent the main impact of printing (that is the manufacturing of paper), this approach should not be neglected when it is possible to implement it.

More and more suppliers are offering rental equipment that is perceived as new but is actually second-hand. For the average user, it is virtually impossible to tell the difference between reconditioned and new equipment.

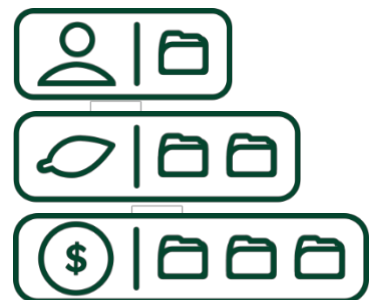
Priority



Implementation toughness



Potential



KPI

% of printers reconditioned (check with supplier if renting)



User

> 7. Tools and uses of the workstation



#210 - Raise awareness among users who leave their workstations switched on while unused for long period of times

2. User > 7. Tools and uses of the workstation

Impacts



Turning off (or putting on standby) one's workstation when it is not in use is a simple and particularly effective action to reduce the energy consumption of the information system.

In France, reducing energy consumption mainly reduces the consumption of fresh water associated with the production of electricity (about 10 liters per kWh of electricity) as well as the amount of radioactive waste produced.

Depending on the company's culture, an awareness-raising campaign may be sufficient to bring about a lasting change in the behavior of some users. This action must emphasize the environmental and economic stakes while showing the impact of this good practice at the individual and corporate level.

When the awareness action is not sufficient, integrating this indicator in the calculation of the variable part of the employees' profit-sharing is particularly effective.

Finally, it is possible to use the tools of administration of park such as SCCM of Microsoft and tools of "power management" such as those of Avob, Cisco, Verdiem, Gimi Green IT, etc. to force the extinction or the setting in standby of the recalcitrant workstations."

Priority



Implementation toughness



Potential



KPI

% of workstations turned off at night/on weekends



#904 - Communicate and train users on GreenIT best practices

2. User > 7. Tools and uses of the workstation

Impacts



Users are the critical link in the implementation of Green IT best practices within an organization. It is therefore important to involve them as much as possible in the Green IT approach.

One way to ensure this is to conduct awareness campaigns within the company on the impacts of digital. It's also wise to train users on these best practices so that the transition to responsible digital is done effectively.

Priority



Implementation toughness



Potential



KPI

% of users sensitized and/or trained



#670 - Set up document sharing folders

2. User > 7. Tools and uses of the workstation

Impacts



This good practice consists of making a folder containing documents, stored on the company's network or on the Internet, accessible to a group of people who may need it. Only people with access rights to these folders will be able to access them.

Setting up document sharing folders (or collaborative workspaces) avoids sending large attachments and duplicating documents on different workstations or in different folders.

It also allows people to exchange and communicate their writings and documents while collaborating with their colleagues. This collective writing allows to be cooperative and collaborative.

It should be noted that, depending on the person, access rights to the files can be limited to reading the documents to avoid unauthorized modifications.

For large files or for sharing outside the organization there are repository services for transferring large files."

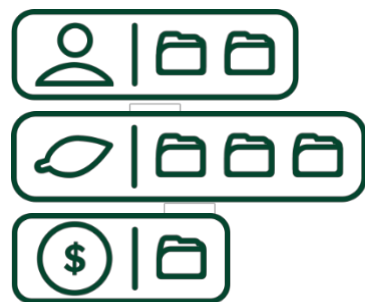
Priority



Implementation toughness



Potential



KPI

Input storage volume (TB)



#671 - Streamline the use of email

2. User > 7. Tools and uses of the workstation

Impacts



Emails have become a source of stress for employees who receive anywhere from 25 to over 100 emails per day. In addition to this deleterious health impact, our emails have an environmental impact. Contrary to popular belief, it is not the storage of e-mails, but the writing, reading and transporting of e-mails that contribute the most to the environmental footprint of the information system.

Based on these observations, a few simple changes in usage can greatly improve the situation:

- > limit the number of e-mails sent each day to a minimum. The email must communicate useful and important information to the recipient (very efficient);
- > reduce the number of recipients: use the "reply to all" function only if necessary;
- > Do not use email as a substitute for telephone or physical contact. If necessary, use an instant messaging system.

To achieve this, it is necessary to set aside specific time slots for e-mail processing and only deviate from this in case of emergency.

And don't forget some basic good practices:

- > Do not print out your e-mails to read them;
- > Send emails in text format;
- > Replace the "image" signature by a simple text. Clean up your email regularly and avoid storing attachments unnecessarily;
- > Do not use your email as a storage or archiving space: avoid attachments when you can replace them with a link (see #670) (very effective);
- > Unsubscribe from threads, newsletters, and other useless notification systems (effective);
- > Delete all unnecessary emails (not very effective)."

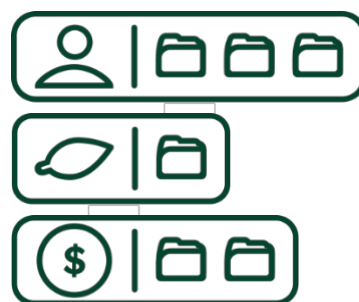
Priority



Implementation toughness



Potential



KPI

Number of emails sent / user / day



#672 - Apply good design and accessibility practices to corporate design of your company

2. User > 7. Tools and uses of the workstation

Impacts



To reduce the environmental impact of printing while improving the accessibility of company documents, it may be worthwhile to take a responsible approach to the design of the company's graphic charter and its variation in the form of office document templates.

From an environmental point of view, a flat area covering 25% of the page contains enough ink or toner to print a text on the whole page. A lot of basic knowledge of this type (fonts to use, important contrasts, etc.) must be taken into account when (re)designing the company's graphic charter.

From a social point of view, most of the color codes used do not correspond to the accessibility standards and therefore cannot be used by the color-blind and visually impaired. Worse, in terms of structure, most office documents do not respect basic guidelines that could make them accessible to blind and dyslexic people (a well-structured document becomes accessible by changing a simple font. But it is still necessary to use styles to simplify this manipulation which can otherwise become very tedious).

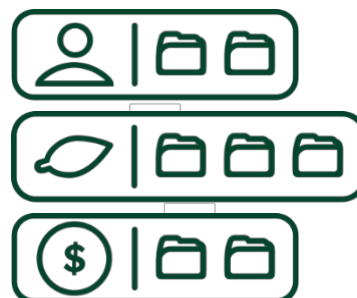
Priority



Implementation toughness



Potential



KPI

Weight of graphic files



— Company

> 8. Software



#625 - Maintain computers to prevent them from slowing down and becoming unstable

3. Company > 8. Software

Impacts



The gradual instability and slowdown of Windows workstations is almost always due to lack of maintenance of the operating system. Simple and safe actions can improve user comfort and postpone the need for equipment renewal.

Effective actions include:

- > rebooting machines ;
- > emptying temporary files: browser, system, etc.; - cleaning the registry;
- > defragmenting the hard disk and the registry;
- > removing certain programs from the startup;
- > etc.

Tools such as CCleaner and Agomo from Piriform allow you to maintain a complete set of workstations from a centralized console.

To give a number

A computer with a poorly maintained software layer can require up to 25% more power (RAM, CPU power, hard drive speed, etc.) to deliver the same performance as a less powerful but well-maintained computer.

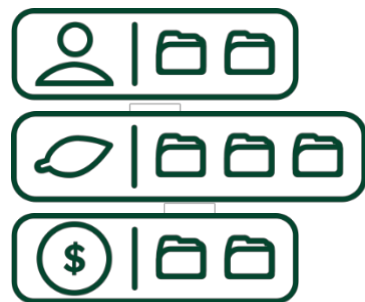
Priority



Implementation toughness



Potential



KPI

% of workstations serviced at least once a month



#626 - Regularly uninstall unused software (have a software inventory)

3. Company > 8. Software

Impacts



Several studies (HP, 1E, etc.) show that almost all companies buy more licenses than they use. On average, 10% of the software purchased and installed is not used. In addition to the cost of the license - \$415 on average - you have to add the cost of upgrades and maintenance. That's a waste of between \$145 and \$155 per year per user, just for maintenance.

Beyond the cost, the more software installed unnecessarily, the more likely it is to slow down the workstation, pushing users to ask for a renewal. It is therefore important to regularly audit unused software and uninstall it.

Tools like 1E's AppClarity allow you to list unused software and uninstall it easily.

To give a number

This best practice also applies to server operating systems. Several studies and feedbacks show that a custom installation of the operating system according to the precise needs of the application can require up to 15% less power. On the scale of several thousand physical servers, that's hundreds of machines that can be shut down.

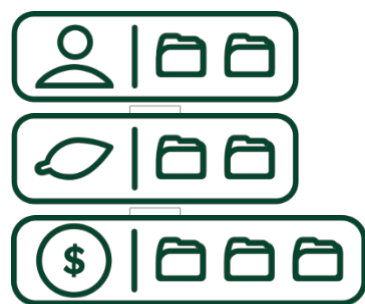
Priority



Implementation toughness



Potential



KPI

number of licenses used
/ number of total
licenses



#627 - Update software only when it is unavoidable

3. Company > 8. Software

Impacts



Contrary to popular belief, the majority of users do not want to replace their current version of a software with a newer one. They prefer to keep their habits and do not want to make the effort to adapt to a new interface.

Until recently, a new version of a software was released every 2 to 3 years and required twice as many resources to run (RAM, CPU, etc.). Each new version was therefore pushing for a premature renewal of the workstation. Fortunately, this trend is slowing down.

However, it is essential to update software to correct security flaws and ensure good stability.

This best practice therefore invites you to sort out between "cosmetic" updates, functional updates that are of no interest to your company, and security updates that are considered unavoidable.

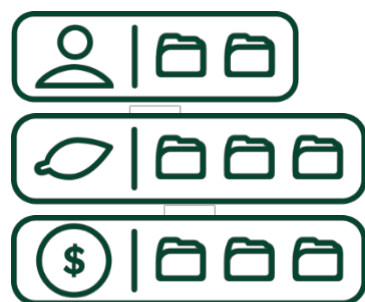
Priority



Implementation toughness



Potential



KPI

Average number of versions between those used in the company and those available for sale



— Company

> 9. Digital services and business applications



#415 - Implement best practices for digital accessibility

3. Company > 9. Digital services and business applications

Impacts



Digital accessibility consists in making a software (web exclusively*) usable by people with disabilities: visual (visually impaired, blind), motor (inability to use a mouse, etc.), cognitive (difficulty to analyze a screen too complex, etc.), auditory or "Dys" diseases: dyslexia, dysphasia, etc...

This approach must :

- > be integrated into the specifications of the website.
- > be implemented in projects that are piloted, designed, produced and hosted both internally and externally (provide service providers with the best practice guidelines and support them in the process).

For this integration to be successful, it is necessary to raise the awareness of all stakeholders (project management, ergonomist, communicator, project manager, developer, etc.) and to train technical "referents" who are responsible for relaying this skill to the teams.

The regular analysis of the developed applications allows to anchor the good practices in a durable way.

Benefits :

- > Better overall ergonomics
- > On the HR level: integration of disabled employees disabled employees
- > From a business point of view: addressing customers with situations (de handicap)

Standards resulting from the work of the W3C specifically addressing accessibility WCAG 2.0. :

- > RGAA (for administrations)
- > Accessiweb (for private companies)

*The main recommendations available on this subject are mainly focused on the web (WCAG/RGAA). They are therefore less appropriate for other services.

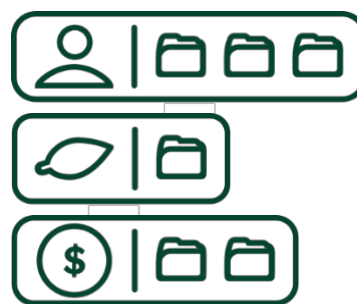
Priority



Implementation toughness



Potential



KPI

% of web sites and applications accessible (define a minimum level among Bronze, Silver, Gold)



#622 - Optimise output and printing from applications and websites

3. Company > 9. Digital services and business applications

Impacts



The ecodesign of a digital service is not, by any means, only about the lines of code. It is also about the externalities of the software, including the output states. When these are designed and coded, it is absolutely necessary to take into account the good practices associated with printing: generating a PDF rather than a paper printout, putting the most recent documents online, easy access to archives, double-sided printing in draft mode, etc.

This best practice should be systematically integrated for a website. Printing any page often gives catastrophic results (many pages, missing information, presence of useless information...). Providing users with the functionality to prepare for printing will give a better feel for the site but will be more virtuous for printouts.

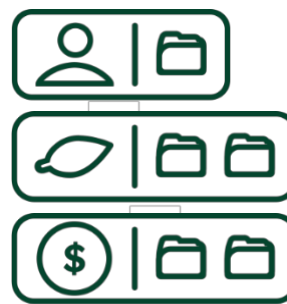
Priority



Implementation toughness



Potential



KPI

% of applications with optimized output states



#623 - Implement eco-design best practices

3. Company > 9. Digital services and business applications

Impacts



The eco-design approach aims to reduce the environmental footprint of digital services right from the design stage.

It must be implemented within the projects that are piloted, designed, produced and hosted both internally and externally (providing service providers with a repository of good practices and supporting them in the process). The efficiency obtained can contribute to a significant reduction in the physical infrastructure required to run the information system.

To guarantee the implementation of this approach, it is necessary to raise the awareness of all the stakeholders (contracting authority, architect, project manager, developer, etc.) and to train technical "referents", who will in turn be responsible for relaying this competence to the teams.

In addition, regular analysis of digital services helps to anchor good practices in a sustainable way.

To find out more:

- "Web ecodesign: 115 good practices", Eyrolles, 2015
- [Sustainable Digital Design Collective](#)

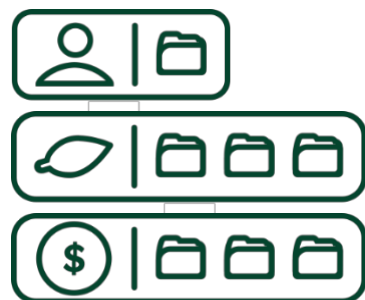
Priority



Implementation toughness



Potential



KPI

% of applications that are eco-designed and accessible



#624 - Give priority to a modular application architecture

3. Company > 9. Digital services and business applications

Impacts



A modular application architecture allows software to be enriched by an extension system.

Popularized by open source software, this approach often brings a greater capacity to scale up, reduced corrective and evolutionary maintenance costs, as well as a more efficient code. If the functional coverage of the software can be made to evolve, it is better to implement the basic functionalities in a kernel and to complete them if necessary by extensions.

Most of the software that has been successful worldwide is based on this architecture. We can mention the Linux operating system, the Apache web server, but also browsers such as Chrome, Firefox, Internet Explorer and Edge that offer extension systems.

Implementing this best practice requires investing in the functional design stage and ensuring that an effective dialogue takes place between the stakeholders responsible for the functional design and the technical architecture. This project must therefore be approached first and foremost as a change management project that aims to re-establish a real dialogue between the project stakeholders.

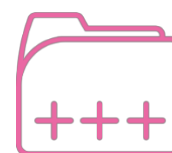
To give a number

According to a Cast Software study, 70% of the functionalities requested by users are never or rarely used, which represents 70% of dead code that must be reviewed (see #628) and maintained.

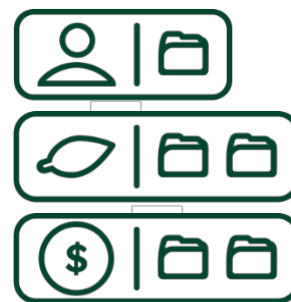
Priority



Implementation toughness



Potential



KPI

% of applications based on a modular architecture

Label

EPEAT, TCO



#628 - Systematise code review during and at the end of development

3. Company > 9. Digital services and business applications

Impacts



The code review consists of having the code reread in order to detect possible defects, both in terms of content (does the code work and does it really implement the planned functionality?) and in terms of form (clarity, readability, compliance with standards, etc.).

The main objective of the code review is the same as the other software quality assurance methods: it is to find the defects that exist in the code to limit the technical debt of the software.

The benefits of code review are no longer in question: according to studies gathered by Caperas Jones on more than 12,000 projects, collective code review allows for the detection of an average of 65% of defects, 50% for peer review, while automatic tests only detect an average of 30%.

In a responsible digital service design approach, code review is especially interesting for reducing the cost of the service, but also, to a lesser extent, the associated environmental footprint by optimizing software efficiency.

To give a number

The technical debt (all the software defects to be corrected) could represent up to 70% of the complete cost of a software. According to Cast Software's The Crash Report 2011 - 2012, it would average \$3.6 per line of code.

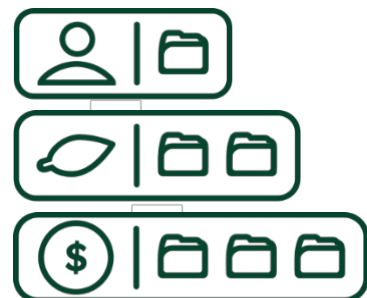
Priority



Implementation toughness



Potential



KPI

% of defects detected



— Company

> 10. Data centers



#219 - Activate the power saving features of modern processors

3. Company > 10. Data centers

Impacts



Over the course of a day, over the course of a week, the workload on the servers changes rapidly depending on the number of users connected. There are peak hours and long periods of under-activity.

However, it is often observed that the power consumption of the data center is relatively stable throughout the day. Recently, processors from major manufacturers (INTEL, AMD) include numerous energy saving devices. They allow you to adapt the computing power to the load, for example by varying the clock speed of the cores, by stopping or restarting a core, etc. But they must be used.

At INTEL, these technologies are called: Speed Step Technology, Clock Modulation, Turbo Boost, etc. They can be made active by adjusting BIOS, OS or even hypervisor settings.

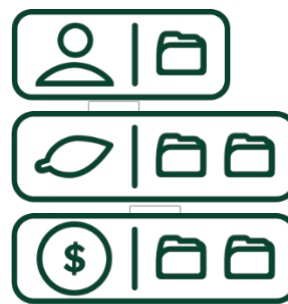
Priority



Implementation toughness



Potential



KPI

% of servers configured



#223 - Require a minimum level of energy efficiency for non-IT equipment

3. Company > 10. Data centers

Impacts



Even if it is not directly its domain, IT must be vigilant in the choice of non-IT equipment in the rooms, especially the equipment in charge of producing and distributing cold (chillers, air conditioners) and those in charge of rectifying and distributing electricity (inverters in particular), especially since they have a very long life span (>15 years).

First, a reasonable sizing is necessary because an underused equipment has a very low efficiency. Secondly, choosing the cheapest equipment can have disastrous consequences on the energy cost and therefore on the total cost of ownership (TCO) during the whole life cycle.

Suppliers routinely publish energy efficiency indicators. They should be used. For example, we can require a category A for a wall-mounted air conditioner, an EER ratio > 3.2 for an air-conditioning cabinet, an efficiency > 94% for an inverter, etc.

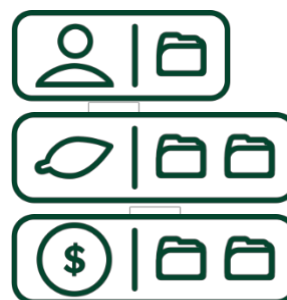
Priority



Implementation toughness



Potential



KPI

% of equipment purchased with minimum energy efficiency (specify)



#224 - Optimize regularly the architecture and layout of IT rooms

3. Company > 10. Data centers

Impacts



The computer equipment in a room is constantly changing. Older equipment is replaced and new equipment arrives with often different environmental characteristics.

The energy efficiency risks to progressively deteriorate if we do not ensure a constant maintenance.

It is a question of guaranteeing over time:

- > The proper circulation of air in the false floors
- > The replacement of certain slabs and the elimination of unnecessary hot or cold air leaks
- > Maintenance of hot and cold aisles (for example by installing partitions on incomplete racks)
- > The addition of flexible partitions on partially filled rooms to reduce the volume of air to be conditioned.

A medium-term view of the proper room layout is necessary, to maintain optimum efficiency as new equipment arrives

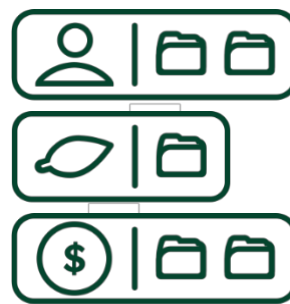
Priority



Implementation toughness



Potential



KPI

PUE or % of DC m2 optimized



#227 - Adapt the physical architecture of the servers to their use (when relevant)

3. Company > 10. Data centers

Impacts



Center managers generally prefer to administer standard virtualized configurations, which can be prepared in advance of new projects and then dynamically allocated to applications.

However, there are cases where using a dedicated IT architecture for a specific problem can optimize performance, cost and energy efficiency at the same time. The creation of a specific architecture must be the result of a thorough study of the need in order to provide the project with the best result. These architectures are often used for all tasks that require a very high computing power, (collaborative work tools, weather forecasting, molecular modeling, physical or financial simulations, etc.).

It may also be appropriate to test new, highly innovative ranges of servers in real conditions, such as those based on ARM architectures, which are much more energy efficient and can meet specific use cases; or even "physicalization" type architectures.

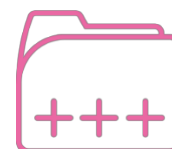
Focus on physicalization

Against the trend of virtualization, this approach aims to concentrate a very large number of physical micro-servers in a single rack. For example, HP offers "Moonshot" configurations that integrate up to 1,800 servers per rack, with the promise of a 65% gain in energy efficiency and a 90% gain in space occupied.

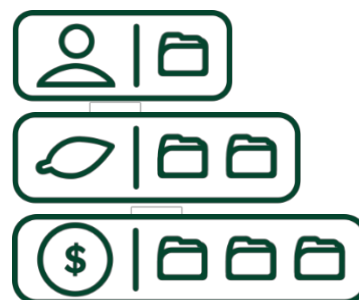
Priority



Implementation toughness



Potential



KPI

% of fleet with usage-specific configuration



#231 - Reuse thermal energy produced by the data center

3. Company > 10. Data centers

Impacts



It is possible to reuse the heat produced by the data center, instead of venting it into the atmosphere.

The most common solution is to use this energy to heat the company's few tertiary premises located near the center.

But more ambitious operations are possible. We can mention as an example:

- > Heating the whole of the company's buildings (Roubaix)
- > Feeding the urban heating network (Marne-la-Vallée)
- > Supply of a hot water network (Amsterdam)
- > Supply of a tropical greenhouse (Clichy)
- > The supply of a swimming pool (Butte-aux-cailles in Paris).

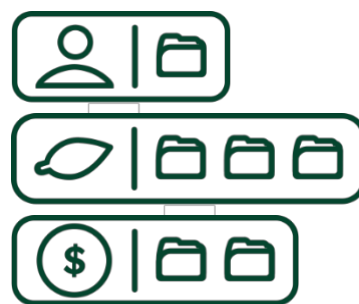
Priority



Implementation toughness



Potential



KPI

Reused energy / total energy consumed by the room (over a full year)



#250 - Set up a regular monitoring of data center energy indicators: implement and follow-up KPIs

3. Company > 10. Data centers

Impacts



Whether the data center is managed in-house or outsourced to an external operator, it is essential to measure and continuously improve its environmental performance.

Since April 2016, ISO/IEC has published several international standards that now provide a harmonized framework for various energy performance indicators for data centers, such as PUE (Power Usage Effectiveness). A multitude of publications, standards and best practices exist on the subject. A white paper, the result of collaborative work between the Green-IT Alliance, France Datacenter and Gimélec, offers an operational tool that deciphers both the existing standards and best practices, while explaining how to calculate the KPIs and how to measure the associated parameters.

Examples include

- > The PUE, which measures the energy efficiency of the infrastructure used for IT production
- > The REF (Renewable Energy Factor) which measures the share of renewable energy consumed by the data center
- > The COP (Coefficient Of Performance) which measures the efficiency of the cold production

These measures are of paramount importance, especially in a context where the share of electricity consumed by the CdC (data centers) and SdS (server rooms) represents 3.6% of the electricity consumed in Switzerland (in 2019). In addition, the average energy efficiency improvement potential (PUE) of these centers corresponds to almost 46% of their electricity consumption. (EnergieSchweiz April 2021; RechenzentrenStromverbrauchEffizienzpotenziale)

Priority



Implementation toughness



Potential



KPI PUE

For more information:

White book « [Les indicateurs de performance énergétique et environnementale des data centers](#) », APL datacenter.



#312 - Give preference to DC operators who endorse the European Code of Conduct for Data Centers

3. Company > 10. Data centers

Impacts



The [EU Code of Conduct for Data centers](#) was created as a consequence of the increasing energy consumption in data centers and the need to reduce their environmental, economic and energy impacts.

The objective is to inform and educate data center operators and owners to reduce energy consumption in a cost-effective manner and without hindering the essential function of data centers. The Code of Conduct aims to achieve this goal by improving the understanding of energy demand within the data center, raising awareness.

As an appendix, it provides a best practice guide and a number of indicators to assess the current energy efficiency of one's data center(s).

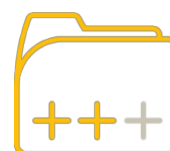
Good to know

By ratifying this code, the operator certifies that it applies a minimum list of best practices, or that it has a short-term implementation plan for some of them. It also undertakes to provide a certain number of indicators proposed in the guide.

Priority



Implementation toughness



Potential



KPI

% of DC or m2 of DC or kW IT managed by vendors who signed the CoC



#517 - Closed cabinets for improved hot and cold airflows

3. Company > 10. Data centers

Impacts



Containment of the bays makes it possible to significantly reduce the energy required for air conditioning.

- Two solutions exist:
- > Fresh air containment: the volume of air to be cooled is reduced and channeled precisely to the servers. 100% of the fresh air will pass through the racks. The architecture of the room can provide for this at the outset, but it is also possible to implement it afterwards by adding partitions around the cold aisle
 - > Containment of hot air: a technique used by APC, for example, in its closed "cubes", where server racks alternate with air conditioning racks that cool the hot air and expel it to the outside of the cubes

Containment is becoming essential for high-density server racks because conventional air conditioning techniques are no longer sufficient.

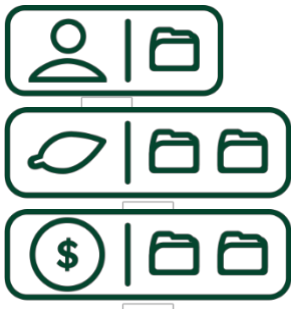
Priority



Implementation toughness



Potential



KPI
% of rack confined

Label
Ordi 2.0 631



#631 - Select in priority ASHRAE-compliant IT equipment, A3-A4 class

3. Company > 10. Data centers

Impacts



ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers) publishes standards that are the benchmark for data centers and their equipment, and which are included in the European Code of Practice.

These standards are followed by manufacturers of computer equipment who extend the temperature and humidity ranges of their equipment, thus reducing the energy required for their air conditioning.

Thus, equipment classified as A2 must be able to operate between 10° C and 35° C (temperature at the air intake of the fans) and in a relative humidity of between 20% and 80%.

For class A3, the scale becomes: between 5° C and 40° C and between 8% and 85% humidity. For class A4, the scale becomes: between 5° C and 45° C and between 8 % and 90 % humidity.

These standards also concern technical rooms containing network equipment and located in industrial or tertiary buildings. Buying hardened equipment (class A4) can allow you to avoid air conditioning and thus be satisfied with simple ventilation.

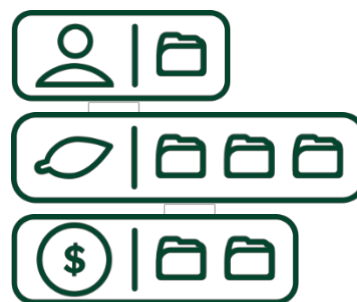
Priority



Implementation toughness



Potential



KPI

% of equipment compliant with ASHRAE class A3-A4 requirements



#634 - Virtualize the underused physical servers in order to consolidate them physically

3. Company > 10. Data centers

Impacts



The traditional approach of IT project managers was to define a technical architecture dedicated to their application. This approach has become counterproductive with the rapid growth of machine power. A server dedicated to a single application becomes underutilized. Virtualization techniques have brought a solution to this problem. They allow to run several OS and several applications on the same physical server, as if they were running on separate machines.

Virtualization is very effective on existing applications, especially if the servers are old. It saves space, hardware and energy in a spectacular way. It is also highly recommended for new applications, which can be developed natively on this more agile, economical and ecological environment.

In addition to these advantages, virtualization also offers ease of installation, deployment and migration of applications.

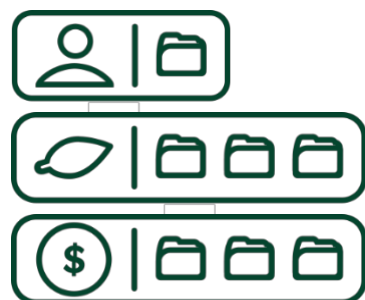
Priority



Implementation toughness



Potential



KPI

% of virtualized servers



#635 - Keep the storage capacity under control

3. Company > 10. Data centers

Impacts



Although data and document storage is not a major source of environmental impact on an information system scale, it is an area that is progressing rapidly.

There are three techniques to effectively reduce physical storage capacity:

1. Deduplication: this involves storing a document or a fragment of a document only once. For example, a 10 MB PowerPoint file sent by e-mail to 20 employees is stored only once on the server side.
2. Thin provisioning: the software is made to believe that it has been allocated more storage than it actually has. This approach makes it possible to use the right amount of physical storage despite the requirements of the software (minimum configuration. required);
3. Hierarchical data management: management rules tell the storage array which media is appropriate based on the stage of the data's life cycle. For example, on the day of its publication, an annual report is stored on a very fast medium (SSD), but 6 months later it is stored on a 4TB capacitive hard disk. This reduces the economic and ecological cost of data storage.

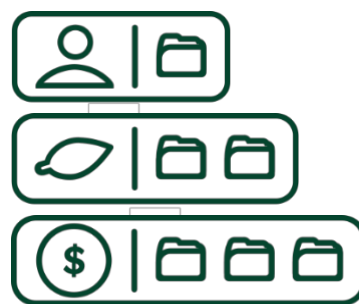
Priority



Implementation toughness



Potential



KPI

GB / user / year



#636 - Implement strict procedures for IT equipment provisioning and deprovisioning (incl. VM's)

3. Company > 10. Data centers

Impacts



While the arrival of new equipment is usually well anticipated by all the players, as it is linked to a corporate project expected by internal and external customers, the shutdown of old machines is always more difficult to organize for various reasons: the end of the deployment of a new system that is dragging on, the maintenance of a secondary application with a few users, the switching of project teams to another subject, etc.

However, it is essential for the data center manager to manage the end-of-life of equipment properly, otherwise there will be a lot of useless equipment that continues to consume energy and needs to be air-conditioned.

A strict deprovisioning procedure must be put in place with identified actors, schedules to be respected and reminders in case of delay.

To give a number

Several feedbacks show that about 15% of deployed virtual machines are useless. Yet they monopolize part of the physical servers on which they run.

Priority



Implementation toughness



Potential



KPI

Yes = 100%, No = 0%.



#637 - Use as much as possible free cooling

3. Company > 10. Data centers

Impacts



Conventional air-conditioning techniques work in a closed loop. Hot air is taken from the servers and then re-injected into the room after it has been cooled. This is very energy-intensive.

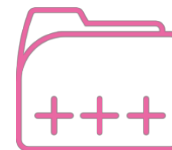
Free cooling has brought considerable progress. It consists of using the ambient air outside to cool the room, whenever the outside temperature falls below 20°C. Depending on local climatic conditions, this technique can reduce the energy needed for air conditioning by 50 to 70%.

All modern data centers use this technology. For older data centers, the free-cooling option should be systematically considered when replacing air conditioning equipment that has reached the end of its life. If the installation is too complex, there is an alternative, free-chilling, which can be easier to implement. It uses a water circuit that circulates in an outdoor cooling tower when the temperature is low enough. The cold water thus obtained can, for example, be used to cool the air in the room via an exchanger.

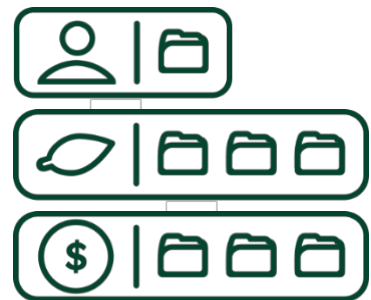
Priority



Implementation toughness



Potential



KPI

% of enterprise data centers using natural cooling



#638 - Organise cabinets/racks in hot and cold corridors

3. Company > 10. Data centers

Impacts



One of the basics of good air conditioning is to ensure efficient circulation of cool air in the room, including:

- Avoiding mixing hot and cold air
- bringing the cold air as close as possible to the bays and extracting the hot air as close as possible to the bay exits

Ideally, 100% of the cool air should flow through the computer equipment and 100% of the hot air should be exhausted directly to the air conditioners. Any mixing of cool and hot air will degrade efficiency.

To achieve this, a first simple way is to organize the racks into hot and cold aisles.

- > Cool air exits the false floor in the middle of the cold aisle
- > The computer equipment is all oriented in the rack so that its fans draw cool air from the cold aisle to the hot aisle
- > The air extractors are located above the hot aisle

Note:

- > Accessories exist to integrate atypical equipment (bottom to top ventilation for example)
- > The empty spaces of the rack must be sealed to avoid losses.

There is regular maintenance work to be done, taking into account the departure and entry of new IT equipment, to guarantee the effectiveness of the device over time

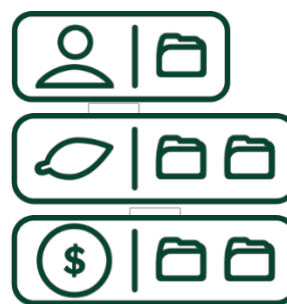
Priority



Implementation toughness



Potential



KPI

% of DC organized into hot aisles cold aisles



#639 - Increase the operating temperature above 24 ° C

3. Company > 10. Data centers

Impacts



According to the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), a data center reduces its electric bill by 4 percent every time it increases the temperature set point by 2°C inside its computer rooms.

In addition to increasing the temperature set point, increasing the temperature and humidity range also helps to reduce energy costs. More generally, widening the temperature and humidity range also helps to reduce the electricity bill. This is because if servers operate at more variable temperatures and humidity levels, there is less need to treat the indoor air. ASHRAE is proposing a set of specifications that IT, network and telecom equipment manufacturers can follow for this purpose. Classified in four categories - A1 to A4 - the equipment is then more or less tolerant in terms of temperature and maximum humidity level and the speed of variation of these two parameters. Equipment in classes A3 and A4 allow free-cooling to be practiced in France more than 80% of the time.

Point of attention

Beware of equipment that claims to be ASHRAE 3 certified 98% of the time. In practice, they are only at ASHRAE 2 level.

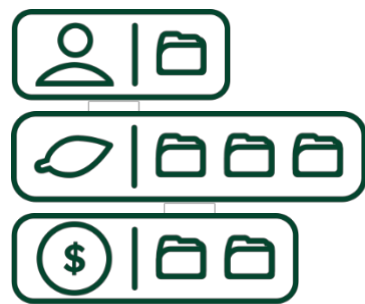
Priority



Implementation toughness



Potential



KPI

Setpoint temperature



#640 - Give preference to a modular architecture for the physical layout of datacentres

3. Company > 10. Data centers

Impacts



Large computer rooms often have a low energy efficiency for 2 main reasons:

- > It is difficult to guarantee a good filling rate over time, which can make the volume of air to be conditioned disproportionate to the computer equipment actually installed.
- > The air-conditioning parameters must be set for the most demanding equipment, even if they represent only a small proportion of the total.

Dividing the datacenter into smaller autonomous modules allows :

- > Group together in the same room the equipment with the most demanding environmental constraints (and thus reduce the air conditioning load for the others without risk)
- > Avoid air-conditioning empty modules and only open them gradually, depending on the arrival of new IT equipment.

It facilitates the maintenance of a good energy efficiency over time. This approach is feasible whether the datacenter is old or new.

Priority



Implementation toughness



Potential



KPI

% of m2 of modular DC



— Company

> 11. Réseau



#327 - Enable the power saving features of active network equipment (switch, etc.).

3. Company > 11. Network

Impacts



The network is the component of the information system whose power consumption is increasing the most compared to the other major areas.

This is mainly because the network is the only area where very little effort has been made so far to reduce power consumption, whereas it is almost standard practice for workstations, printing equipment, and data centers.

It is possible to put unused devices (or unused ports) on standby via equipment settings. Remote control systems make it easy to deploy this best practice.

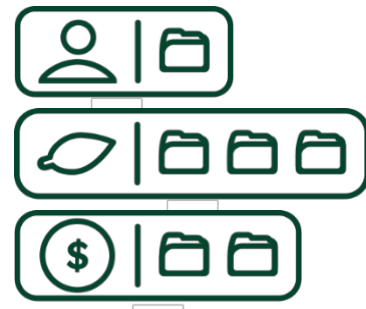
Priority



Implementation toughness



Potential



KPI

% of equipment with energy saving features enabled

Label

Ordi 3.0



#900 - Adapt the size of the network to real and just needs

3. Company > 11. Network

Impacts



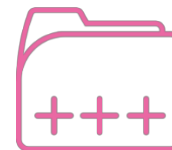
The manufacturing of network equipment has a heavy impact, especially during the manufacturing process (e.g. copper wire).

Avoiding oversizing the networks allows to limit their impact on the resources and the electric consumption.

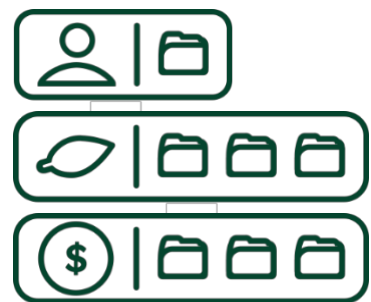
Priority



Implementation toughness



Potential



KPI

% network port used, % network used



#901 - Purchase Energy-Efficient Ethernet compatible network equipment

3. Company > 11. Network

Impacts



The IEEE-802.3az protocol significantly reduces power consumption during low activity periods by putting unnecessary ports to sleep.

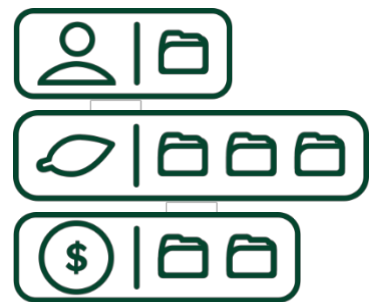
Priority



Implementation toughness



Potential



KPI

% of network devices with Energy-Efficient Ethernet protocol



#902 - Purchase network equipment that meets ASHRAE Class A3-A4 requirements

3. Company > 11. Network

Impacts



ASHRAE standards require a certain tolerance in terms of temperature and humidity variation.

Thus, A2 rated equipment must be able to operate between 10° C and 35° C (fan inlet temperature) and 35°C (temperature at the air inlet of the fans) and in a relative humidity between 20% and 80%. For class A3, the scale becomes: between 5° C and 40° C and between 8% and 85% humidity. For class A4, the scale becomes: between 5° C and 45° C and between 8 % and 90 % humidity.

Notes

- >The least tolerant material (lowest ASHRAE class) will impose the conditions of the whole room
- >The ranges given above correspond to the 2011 ASHRAE standard

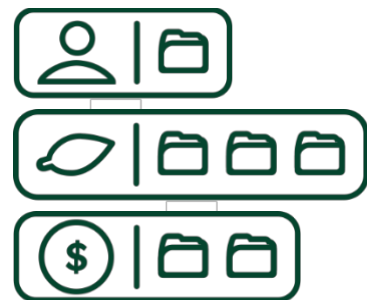
Priority



Implementation toughness



Potential



KPI

% of network devices that meet ASHRAE class A3-A4 requirements



#903 - Promote the most energy-efficient telecommunications networks

3. Company > 11. Network

Impacts



Passing information through the airwaves is more expensive in energy than through wires. Moreover, the installation of a functional Ethernet cabling is mandatory in France since 2009* and recommended in Switzerland** during the construction or transformation of a building. The manufacturing of cables has already had an impact, so it is preferable to use them (without adding impacts due to the emission of waves).

On the human level, being connected and solicited continuously can generate significant stress and has a definite impact on the efficiency and productivity of employees.

Not to mention that electromagnetic waves also have a potential impact on health. Using only the Ethernet network in the office allows you to connect at selected times and limit these continuous demands. Laptops can be connected to the Ethernet network through connectors present in the office. For smartphones, it is possible to put a Wifi point in the rest/coffee areas for example.

Remember that the speed is always better with a wired connection.

* Article R111-1 of the building code

** KBOB Recommendation / Universal Communication Cabling (UCC) / Edition 3 / March 2012

Priority



Difficult de toughness



Potential



KPI

Power consumption per unit of data transferred