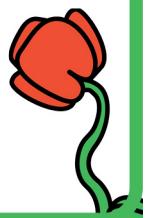


PRIORITY LEVEL

(?)

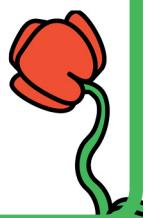
**Eliminate non
essential
fonctionnalities**



PRIORITY LEVEL

(?)

**Anticipate your
design and keep it
simple**



PRIORITY LEVEL

(III)

Studies show that most of time :

- 70% of required functionalities
- 45% are never used

This mesure is technically easy to set up and was a high impact on the energetic expense.

GARD'ON
GRAVES

PRIORITY LEVEL

(III)

You need to anticipate technical constraints for developers. Avoid useless development complexities and functionalities.

If you don't :

Your code may uselessly cost too much resource.

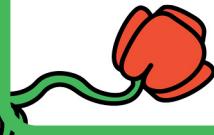
Users might get lost on your website / service and uselessly spend energy.

GARD'ON
GRAVES

**Make the user
experience easier
and smooth**

PRIORITY LEVEL

(-)



PRIORITY LEVEL

(==)

The time spent on a website or digital service has consequences on the energy expense.

The more time you spend on it, the more clicks / actions you make, the more you pollute.

GARD'ON
GRAVES

PRIORITY LEVEL

(===)

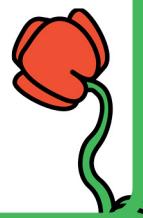
If you don't anticipate the necessary HTML and CSS constraints, you may create a too energy-intensive design.
If you are unsure, ask a front-end developer!

GARD'ON
GRAVES

PRIORITY LEVEL

(?)

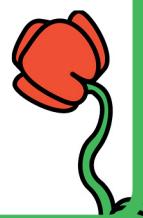
You need to think about HTML and CSS property when you create a design



PRIORITY LEVEL

(?)

Avoid using Content Management Systems (CMS) such as WordPress, Prestashop, Strapi...



PRIORITY LEVEL

(==)

A CMS spends lots of resources. They often display energy-intensive functionalities.

You do not need half of those functionalities on your website / service.

Their codebase is heavy and spends a lot of electricity.

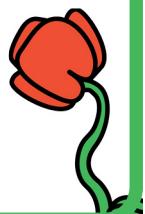
In addition, they often add lots of constraints for both the development team and the client.

GARD'ON
GRAVES

PRIORITY LEVEL

(?)

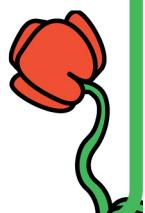
You should implement
the mobile version
first



PRIORITY LEVEL

(?)

Limit the quantity and
number of (distant)
data requested on
every page of your
website /
application



PRIORITY LEVEL

(||)

This is called the "mobile-first"
approach.

It avoids spending too much
resource on a mobile and
anticipate what will be workable
on the mobile version.
It is then easier to adapt a tablet
and desktop version.
In the other way round,
websites are often too
heavy for mobiles.

GARD'ON
GRAVES

PRIORITY LEVEL

(|||)

Data is usually required through HTTP
or HTTPS requests to a distant server.
The more you request data, the
more this data is heavy, the more
energy will be spent.

In order to do this, as a programmer
you may:

Use static files (in css and javascript),

Use a CSS sprite to gather your
interface's images,

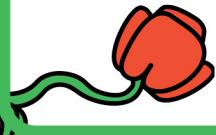
Use icons instead of images
wherever you can (<i> html tags)

GARD'ON
GRAVES

Store the static data
locally on the user's
browser

PRIORITY LEVEL

(-)



PRIORITY LEVEL

(III)

When you store data locally on a browser, you avoid useless communication with the server to get back information that (almost) never change.

There are two big advantages:

You spend less nuclear energy and reject less carbon.

Your website / application is faster !

GARD'ON
GRAVES

PRIORITY LEVEL

(III)

Some plug-ins consume lots of CPU resources (your computer's working part) and memory - so it spends more energy, and may slow down your website / application.

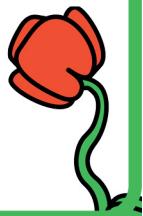
For example, you should avoid Adobe FlashPlayer.

GARD'ON
GRAVES

PRIORITY LEVEL

(?)

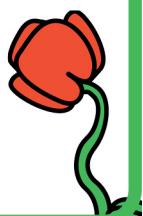
Avoid using too many plug-ins



PRIORITY LEVEL

(?)

Create static pages whenever you can



PRIORITY LEVEL

(==)

This may be a lot of work, but has a strong impact on the energetical expense of a website / application:

It avoids spending too much of the user's computer's energy.

It avoids spending too much internet connexion.

It reduces eletrical consumption.

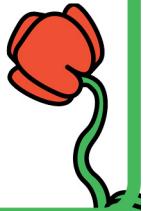
A static file doesn't require communication with a distant database. It is just sent as-is to your browser or its cache, and displayed on your screen.

GARD'ON
GRAVES

PRIORITY LEVEL

(?)

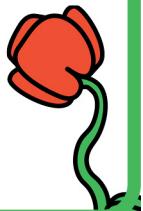
Create a modular architecture for your application



PRIORITY LEVEL

(?)

Choose adapted tools and technologies



PRIORITY LEVEL

(III)

Modular architecture allows you to update or improve your application more easily.

Usually, these applications are also more capable to support heavy loading.

This practice was spread by open-source softwares.

(If you are a developer, you should look at design patterns.)

GARD'ON
GRAVES

PRIORITY LEVEL

(III)

This choice is crucial if you want to optimize your work.
From best to worst IT solution:

Static pages on website (create them with a code editor or specific software such as Dreamweaver).

Generated website (based on Jekyll for example).

Custom-made dynamic pages (PHP, J2EE, .NET, etc.).

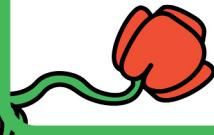
Custom-made dynamic pages made with a framework (Symfony, etc.).

GARD'ON
GRAVES

Choose a coherent data format.

PRIORITY LEVEL

(-)



PRIORITY LEVEL

(III)

This choice has consequences on memory use as well as the computer's work (CPU cycles). Meaning that it impacts a lot energetical expense.

GARD' BON
GRAVES

PRIORITY LEVEL

(II)

The official social networks buttons require specific plugins, with lots of requests to distant servers and heavy files downloading.

Hence they cause a significantly higher energetical expense.

It is lighter and more efficient to create your own, and not too difficult.

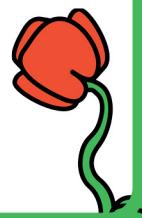
GARD' BON
GRAVES

GARD' BON
GRAVES

PRIORITY LEVEL

(?)

Replace the official social networks buttons by your own, custom-made buttons.

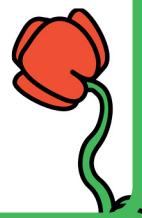


PRIORITY LEVEL

(?)

Minify your CSS and JavaScript files .

(= reduce their size by deleting all useless spaces, end-lines, useless syntax, etc)



PRIORITY LEVEL

(III)

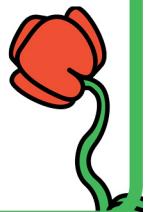
This is easy to make and very efficient as regards energetic costs.

You can use free tools such as YUI Compressor or Google's Apache mod_pagespeed or a plug-in in your code editor.

PRIORITY LEVEL

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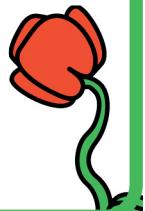
Optimize your images.



PRIORITY LEVEL

(?)

Choose a Green host for your website / application.



PRIORITY LEVEL

(III)

This is easy to do and has huge consequences on the weight of the data request answers. It also impacts a lot your website's performances.

You can:

- Choose the appropriate format depending on the type of image and quality needed.
- Re-size your image to the target size before you put it on your site.
- Use technologies such as Squoosh to automatically optimize your image (you can choose a format and quality level)

GARD'BON
GRAVES

PRIORITY LEVEL

(III)

This measure can importantly reduce energetic expense and carbon rejection.

It may be difficult to find a truly green host. You might want to give a look at these 6 criteria:

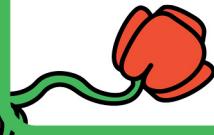
You can check a website's host with free online tools such as TheGreenWebFoundation.org

GARD'BON
GRAVES

PRIORITY LEVEL

(-)

Use tools to check your website's carbon emissions and performance.



PRIORITY LEVEL

(==)

You can check your website's host with TheGreenWebFoundation.org

You can check carbon emissions with WebsiteCarbon.com

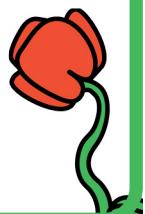
You can also check your website's performance score with Google's Lighthouse

CARD'BON
GRAVES

PRIORITY LEVEL

(==)

Choose adapted tools and technologies



CARBON
GRAVES

PRIORITY LEVEL

(===)

Modular architecture allows you to update or improve your application more easily.

Usually, these applications are also more capable to support heavy loading.

This practice was spread by open-source softwares.

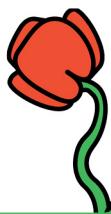
(If you are a developer, you should look at design patterns.)

CARD'BON
GRAVES

PRIORITY LEVEL

(?)

You should limit the number of CSS files used on your page.



PRIORITY LEVEL

(===)

Limiting the number of css files limits the number of HTTP requests to load them on the page.

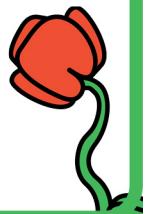
If you use multiple CSS stylesheets on your page, you can concatenate them in one file. Some frameworks help you doing that.

You can also pass parameters to the HTTP server so that it compresses the files.

PRIORITY LEVEL

(?)

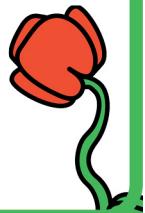
Optimize your website's cookies.



CARD'BON GRAVES PRIORITY LEVEL

(?)

Use canonical fonts for your projects.



PRIORITY LEVEL

(I)

Cookies allow to maintain information between the user's browser and the web server.

This is actually a file being transferred in each HTTP request. It has to be optimized to limit its size and delete it when it isn't useful anymore.

This is only one file, generally smaller than images, documents, or a bunch of stylesheets. The impact is thus a bit less important but it still matters, and doesn't require too much work on the developer's side.

GARD'BON
GRAVES

PRIORITY LEVEL

(III)

Canonical fonts are already loaded on all browsers.

When you add other fonts, the user's browser has to download them.

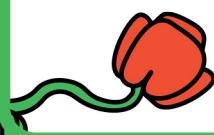
When you use canonical fonts, you save energy and make your website faster.

GARD'BON
GRAVES

Avoid redirections.

PRIORITY LEVEL

(?)



PRIORITY LEVEL

(III)

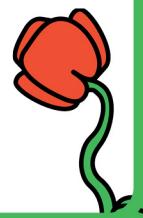
Redirections (in HTML, JavaScript or through HTTP server and application server) increase the response time and uselessly consume electricity.

GARD' BON
GRAVES

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PRIORITY LEVEL

Optimize your PDF files.



PRIORITY LEVEL

(III)

PDF files can be specifically optimized for the Web:

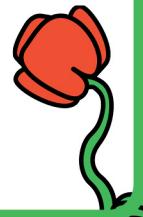
- Images
- Fonts,
- Resolution,
- Etc.

GARD' BON
GRAVES

(?)

PRIORITY LEVEL

Compress your downloadable files.



GARD' BON
GRAVES

PRIORITY LEVEL

(III)

You should compress all your files if it significantly reduces their weight.

Here is a list of files that can be easily compressed.

- Textual documents (.doc, .docs, .rtf, .txt, etc)
- Spreadsheet (.xls, .xlsx, etc)
- Presentations (.ppt, .pptx, etc)
- PDF