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Reference Design

A *reference design* is the baseline against which you compare concepts.

Overview

A *reference design* is an intervention that: (a) *already exists* in the real world, and (b) *is actually used* by the same users you intend to design for. It is used as the baseline against which you develop [requirements](#) (i.e., the reference design is the “design to beat”), and compare different [design concepts](#) during [concept evaluation](#).

Another way to think of it is: *We will know we have a good design if our design better for our users than design X*. This means we need to decide what *design X* is; that's the reference design.

Furthermore, the goal of [concept evaluation](#) is to find the best of many possible [design concepts](#). This involves measuring the [fitness](#) of the concepts and choosing the most fit. And this in turn requires having a fixed baseline against which you can make such comparisons.

We cannot use just any old design *concept* as a reference, because concepts can “drift” over time and become different the more you think about them.

What is needed is a baseline that *won't change*. That's why the reference design must already exist: it can't change if it's already available on the market. You can then compare each concept to the reference and get much more reliable results during concept evaluation.

How do we identify a reference design?

A reference design must (a) exist and (b) be the most reasonable “solution” for your target users.

A reference design does **not** have to be of the same product class as your design intervention. For instance, the reference used during the design of the original [Palm Pilot PDA](#) was not even an electronic product - it was a leather-bound agenda.

Other examples of reference designs include:

- the reference design of Ford's Model T was the horse-drawn buggy;
- the reference design of the first photoelectric cell was a leaf;
- the reference design of the 2017 Ford Mustang was the 2016 Ford Mustang;
- the reference design of a “vape” was a combination of a cigarette and a bong;
- the reference design of the first computer printer was a typewriter.

Of course, not every design is highly innovative. You may simply be trying to beat some industry-leading product, or whatever your client is currently using or selling, or even just trying to address one or two key shortcomings in a current product.

A reference design **must** have the following essential characteristics:

- It must already exist.
- It must be representative of the scope of the [design brief](#)¹⁾.

This means that:

- You should have reviewed in your [research](#) a range of existing products that lie within the scope of the [design brief](#).
- You need to identify the **single** existing product that best represents the “typical way” that you expect potential users will achieve the goals given design brief, such that you can defend your choice.

Deliverables

When reporting your reference design, you must include:

- descriptions, including images, of existing products consistent with the [design brief](#),
- a comparison of those existing products with respect to both objective measures (e.g., cost, functionality, environmental impact, etc.) and user needs and desired (e.g., popularity, “coolness”, etc.), and
- a rationale based on that comparison of which existing product you define as the reference design for your project.

It is important to represent the needs of your users, so your deliverable should actually mention how different users might reasonably react to the the reference design.

[Extended point form](#) should be used when reporting on your reference design.

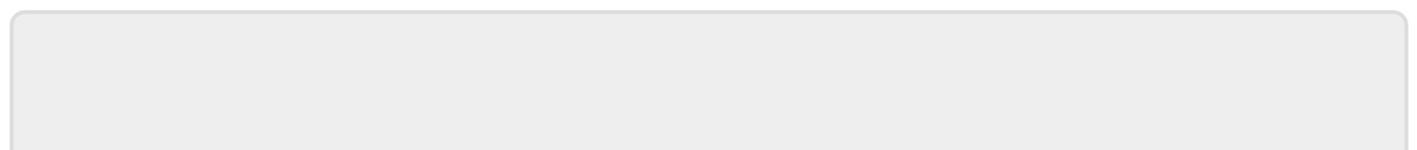
However

It's easy to become [primed](#) by your reference design such that all your new designs will tend to look like and work like the reference design. This is counter-productive. While it is possible to overcome priming, it requires effort and time. Following the [design roadmap](#) will help you overcome priming.

[analysis, balance](#)

¹⁾

That is, if the brief is about helping developing nations in areas with little water, one would not choose a reference design popular in, say, India. One would, instead, seek out products commonly used in very arid areas of the Earth.



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