DESIGN FOR MANUFACTURING
and ASSEMBLY

Design for manufacturability (DFM) is the process of designing parts, components or products to facilitate their manufacture with the ultimate goal of **making a better product at a lower cost**.

Design for Assembly (DFA) gives priority to the ease of the process of assembling an object, and is concerned with reducing **the cost of assembly**.

DFMA, or Design for Manufacture and Assembly, in general, aims to reduce the number of parts and typologies, which is achieved by simplifying, optimising and refining the product design.

Elon Musk, the founder of Tesla, Starlink and Space X, proposes 5 suggestions for defining DFM:

1 **Make the requirements less silly** (especially if a smart person has given it to you).

2 **Delete the part or process** - you can always argue to include anything. But always choose simplicity.

3 **Simplify or optimise** - not optimise something that should not exist (convergent thinking).

4 **Accelerate cycle time** - move faster.

5 **Automate** - allow technology and/or machines to do the work.

https://www.youtube.com/watch?v=t705r8ICkRw

The benefits of this model are connected to the #Lean trend.

The opportunity to apply DFMA arises from previous activities. Sometimes contingent, such as discontinued parts, renegotiations with suppliers. At other times they are the result of measurements, sometimes even of intuition. Thus, DFMA is an alternative to be considered when:

1. It thinks it can or needs to reduce production costs.
2. It has observed that, in general, its competitors are able to reach the market earlier.
3. It has concluded that an adaptation/change in components makes it possible to shorten assembly steps.
4. You want to reduce the time spent on quality checks.
5. Introduce faster quality improvements.
6. It aims to reduce inventory.

To name but a few of its advantages.

There are different approaches to making the process simple to implement. One of them, versatile and simple, is based on the definition of tables. The following diagram shows a model using 12 tables.