

InEDIC Ecodesign Manual

Tool 13: Morphological box

When searching for ways to improve an existing product or solve a particular problem it can be particularly beneficial to use the “morphological box” technique.

Morphological analysis builds upon attribute analysis by generating alternatives for each attribute, thereby producing new possibilities. These attributes are specific features, and might be components, assemblies, properties, qualities, dimensions, colour, weight, style, service efficiency or design elements of a product, service or strategies.

The product being considered for improvement is first analysed. A list is then made of all its attributes in such a way constituting a full product description. The question then asked is: can alternatives be found for the various attributes? If, for example, a certain part is made from aluminium, could it also be manufactured from a different material?

Next, a table is drawn using these attributes as row headings. Write ahead as many variations of the attributes as possible within these rows. The table must show all possible variations of each attribute. Now select one entry from each row. Either do this randomly or select interesting combinations. By mixing one item from each row, you will create a new mixture of components. This is a new product, a new service or a new strategy.

Finally, evaluate and improve that mixture to see if you can imagine a profitable market for it. In short, the rules are simple:

- List the attributes of the problem, (product, situation, service, strategy) as you would do according to a standard attribute analysis.
- Ahead each attribute, list all the alternatives you can imagine.
- Choose an alternative from each row at random and assemble the choices into a possibility for a new idea. Repeat the selection and assembly many times as it is necessary; this process will yield ideas that can be examined for practicality.

Sample problem: The redesign of an existing packaging solution for ceramic products is required. A good starting point would be to carry out a morphological analysis. The current attributes of a packaging solution might be packaging material, shape and color, means of protection and so on. In the table below the attributes are listed in the first column; the second column depicts the solutions identified in the existing product, while in the following columns the alternatives ahead of each attribute are listed.

MORPHOLOGICAL BOX (Filled out to provide a solution regarding packaging for ceramic products)

Attribute	Existing product	Alternatives			
packaging material	cardboard	bio plastic	plastic	cardboard	
means of protection	compartments	pre-shaped foam	paper shred	airbag shavings	chips
packaging shape	square with cuts	cylindrical	square without cuts	hexagonal	triangular
packaging color	various colors	natural	same as company	local coloring	



idea



improved idea

A morphological box can also be used to improve the ideas that have emerged during a brainstorming or a brainwriting session.

Sample Analysis

Analyze the product and identify the attributes to be improved. Use morphological analysis to improve your product. List at least six attributes and at least six alternatives for each of attribute. Then choose one set of attributes and alternatives that forms a practical, useful improvement to the problem at hand.

Attribute	Existing product	Alternatives					