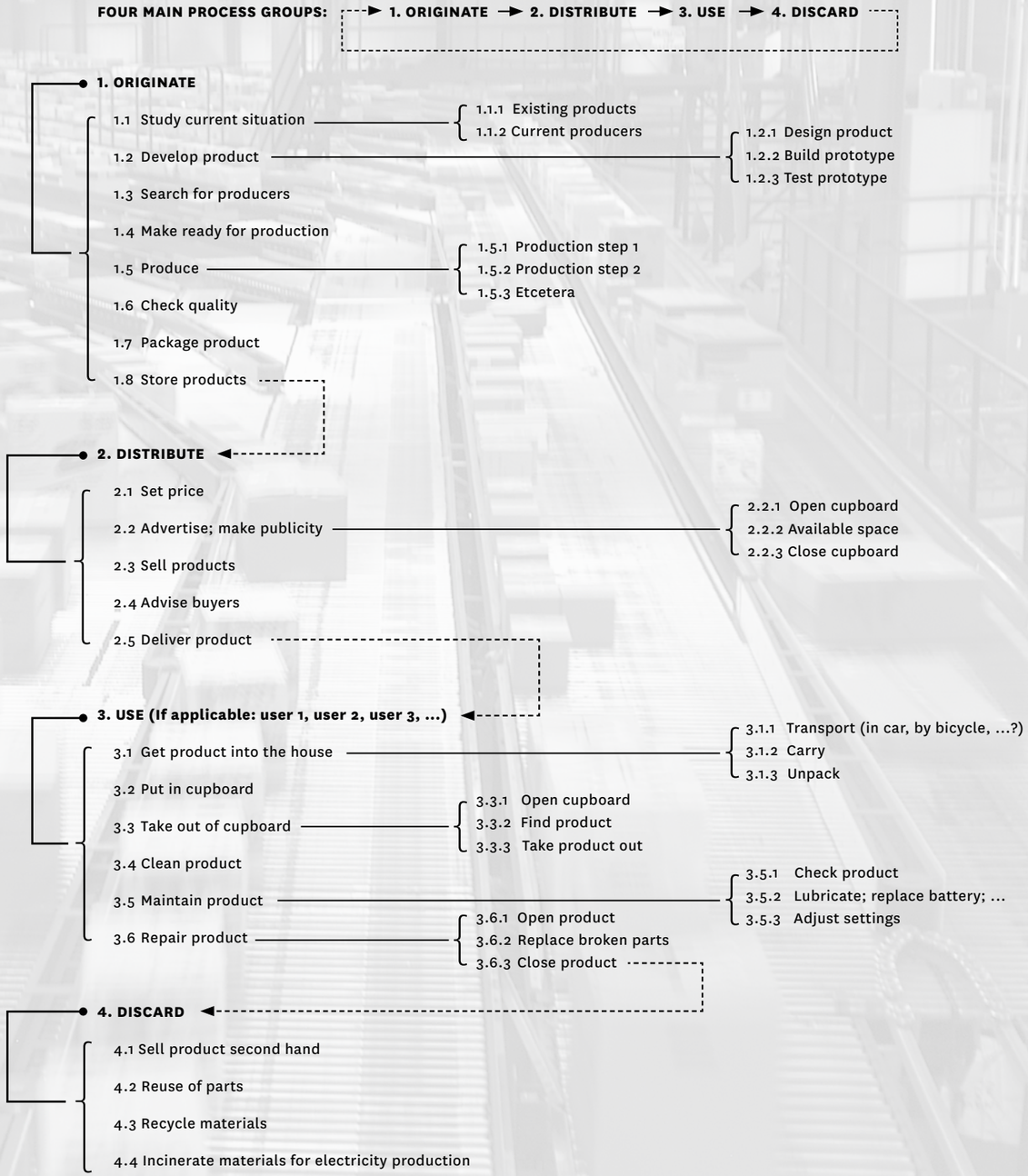

This generic Process Tree can be adjusted for any product or service. Once well structured and complete, it can be used as a framework and checklist for your List of Requirements.

PROCESS TREE

A Process Tree is a schematic diagram of the activities that a product encounters during its life cycle. The method helps you to focus on the whole product life cycle when developing criteria for product development.

When can the method be used?
A Process Tree is typically used during problem analysis and the conceptual stage of product design. During these stages, you make many decisions that influence the activities of stakeholders in later stages of the product development process. For example, your choice of a certain manufacturing technology for the product concept will influence the activities of a production engineer responsible for manufacturing the product later in the product development process. Each stakeholder activity – sub-processes like manufacturing, assembly, disposal, recycling, etc. – during the product life cycle involves certain requirements and wishes for the new product. For example, a production engineer would probably prefer you to use existing manufacturing technology and design simple parts that are easy to manufacture. Making a Process Tree for your concept design forces you to think ahead: in which situations, places and activities will the new product turn up? Who is doing what with the product in those contexts? What problems can be expected? What requirements do these situations necessitate?

How to use the method?
The starting point of a Process Tree is a product or a product group. The outcome of a Process Tree is a structured overview of the important processes and sub-processes that a product encounters. This overview helps in setting up requirements and defining functions.

Possible procedure
STEP 1
Define the product or product group.
STEP 2
Identify the relevant stages in the life cycle of the product. Use the following stages as a start: production, distribution, use, maintenance and disposal.
STEP 3
Use verbs to describe all the activities that a product goes through, using the identified stages as a checklist to generate the relevant activities.
STEP 4
Write down each activity in the form of a verb-noun combination, for example, transport product to store, place product in the store.
STEP 5
Visualise the Process Tree: Create a table for the Process Tree: The column on the left shows the general stages in the product life cycle. For example:
1. originate
2. distribute
3. use (including different users/ stakeholders)
4. discard
STEP 6
After completion, you can use the tree with its list of activities as a checklist to generate criteria.

Limitations of the method
- Although the method helps you to gain a complete picture of the life cycle, you might overlook certain activities, such as non-intended use of the product. These are your blind spots that cannot be avoided simply with a Process Tree.

Tips & Concerns
- You will sometimes identify activities that are preceded by a more important activity. It is important to break down this hierarchy into sub-activities until you have reached a level where further breakdown is not possible.
- Use is typically the stage in which the product fulfils its function. In the stage of use, you can distinguish between activities performed by the user and activities or process steps performed by the product. Ideally, activities performed by the user are user tasks and activities performed by the product are functions of the product. However, they can also be forms of misuse – or unintended use, such as 'standing on a chair' – and malfunction, respectively. It is a good idea to distinguish between these different types of activities.
- For use, do not focus on one-to-one product-user interaction, but also incorporate sociocultural aspects of products. What meaning does the product evoke from a sociocultural perspective?
- Take into account that usually there are various users. For example, when designing a park bench, you can think of loiterers, park visitors, homeless people and municipal officials.
- When identifying requirements from the Process Tree, ask yourself the following question: which criteria must the product satisfy during the process of...?

REFERENCES & FURTHER READING: Roozenburg, N.F.M. and Eekels, J.*, 1995. ***Product Design: Fundamentals and Methods.*** Utrecht: Lemma. / Roozenburg, N.F.M. and Eekels, J.*, 1998. ***Product Ontwerpen: Structuur en Methoden.*** 2nd ed. Utrecht: Lemma.