



05. Design

Design Approaches

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What makes a building futureproof? Why do some buildings become outdated only a couple of decades after they were built while others remain functional and relevant even after centuries? In this video we will look at design approaches that can help extend the functional life of buildings and building components. We can roughly distinguish three design approaches: *design for longevity*, *design for disassembly* and *design for adaptability*. Although each of these three has distinct characteristics, they are certainly not mutually exclusive and can be very efficient if combined in one building design.

Design for Longevity

Design for longevity aims at designing buildings that can withstand the test of time. Apart from selecting materials that have a long technical life, it requires spatial layouts that are fit for different uses. In many cases, this leads to over-dimensioning of the building structure or technical spaces. While this can increase the reuse potential of the building, it is important to also consider the environmental impact of this additional material use.

Unfortunately, extending the functional life of a building is often complicated by the shorter technical life of building products or materials. Design for longevity should therefore allow easy maintenance, repairs and replacements,

for example by providing access to the most vulnerable building layers.

Design for Disassembly

A different approach is design for disassembly. In many cases, building products last longer than we have a need for them. Even if they are still functional at the end of their use, they often become damaged during the demolition of a building. Connecting products in a reversible way should allow dismantling them without reducing their remaining value. This also requires access to the components, which ideally would be independent from each other in such a way that one can be removed without having to remove or damage another. Finally, if we want disassembly to also be practically and financially feasible, the process should be simple and fast enough.

Design for Adaptability

For buildings to remain fit for changing needs and requirements, they sometimes need to physically change. That is where design for adaptability comes in. An adaptable spatial layout is designed to allow reconfigurations but also extensions or even partial dismantling of a building. Smart positioning of the vertical circulation and technical services, adequate floor to ceiling height but also the dimensions of the structural grid and the grid



Circularity for Educators

of the façade all have an impact on this. Evidently, no building design will allow adapting to all uses or configurations. Scenario planning can help to visualise potential future uses, select relevant ones and shape a design that can facilitate them over time.

To conclude, it should be clear that there is not one way of designing circular buildings. The three approaches of design for longevity, design for disassembly and design for adaptability are all related to a wide range of different design principles and can be combined according to the context and concept of a project. Designing future scenarios can help test the efficiency of a design concept in facilitating future building reuse or changes.