



6

Business Model Archetypes

Children grow; unfortunately, bicycles don't. That is why we offer a second-hand children's bike subscription, for convenience and circularity. BikeFlip offers subscriptions for second-hand children's bikes. If a child grows out of the bike, the start-up immediately offers a new, refurbished bike. When there is a problem with the user's bike, BikeFlip will repair it. *BikeFlip*, www.bikeflip.nl.

Broodfonds (Breadfunds) is a solidarity-based safety net, developed by and for entrepreneurs. It consists of groups of from 20 to a maximum of 50 entrepreneurs, who know and trust each other, where a member who becomes unwell will be supported and will receive gifts from others to live on for up to a maximum of two years. *Broodfonds*, www.broodfonds.nl.

The first B2B (business to business) marketplace to fight food waste, InstockMarket.nl is the first online wholesaler for rescued products, and has built a network of Circular Chefs. These chefs receive a daily notification with an overview of the products that must be saved from going to waste that day. *InstockMarket*, www.InstockMarket.nl.

Herenboeren is a growing civic movement and innovative approach to sustainable farming that demonstrates that the production of food can be done differently, better and, above all, more sustainably. *Herenboeren* are cooperative farms that enable citizens to share ownership of or develop their own cooperative farms, so consumers become both producers and consumers based on demand. *Herenboeren*, www.herenboeren.nl.

Roof2Roof wants to close the bitumen cycle of roofs. For this purpose, the Roof2Roof method has been developed. With this method, old bitumen roofs that need to be renovated or demolished are assessed for Roof2Roof recycling suitability. Roof2Roof processes the clean and separated bitumen roofing

material into raw materials to be used for the production of new roofing rolls. *Roof2Roof*, www.roof2roof.nl.

DutchSpirit operates in accordance with the principles of the circular economy: by charging a deposit combined with our lease concept, all suits and jackets are returned to us so that we can reuse or recycle them in a responsible manner. *DutchSpirit*, www.dutchspirit.com.

6.1 The Logic of Value Creation

The BMT provides the building blocks to develop a novel logic for a business model. In such a model the nature of multiple value creation, the way this is organized, and how transactions take shape are operationalized in such a way that it meets the proposition. Practice shows that at present business models aimed at capturing multiple value creation can be divided into three major categories: (1) platform business models, (2) community-based (or collective) business models, and (3) circular business models.

This classification is not absolute or restrictive because there are all kinds of variations and combinations. Still, it does offer guidance to work purposefully on the development of a specific archetype. When using the BMT, it is useful, therefore, to consider at an early stage which business model archetype is dominant in the realization of the intended value proposition.

The three archetypes (or basic forms) of a business model differ mainly in the way in which they create value. The mechanism through which value creation takes place is also different, while each basic form has its specific objective. Finally, each business model type differs in its infrastructural and technological requirements. In the next three sections, each archetype is elaborated on, with the factors mentioned further explained. We also present practical examples of each of these archetypes.

6.2 Platform Business Models

Much of what we own, we only intermittently or even hardly ever use. Think of the car not being used for more than 90% of the time, unworn clothes in your wardrobe, or an MRI scanner that is only operational 40% of the time. The number of examples is infinite, both among consumers and companies. So would it not be useful to make smarter use of the available overcapacity by having more people take advantage of it? That is exactly what a platform

business model seeks to do: put overcapacity to use. By *brokering* access to underutilized capacity, fewer things need to be produced. The underlying idea is that making more efficient use of existing capacity reduces the pressure on raw materials and our natural environment. The exploitation of overcapacity can be realized relatively easily using what people already have, know, and are able to do. In this way, a platform can be an accelerator for more drastic forms of eco-efficiency than may be achieved through product design efforts.

The first business model archetype is a platform model which aims to make better and more efficient use of what we have through asset or performance management enabled by datafication and digitalization. At its essence this archetype is about better functional utilization: to sit on a chair more often, smarter and longer, for example, to use a car more efficiently, or to lease lighting.

Platform business models are possible due to developments such as the Internet of Things (IoT), in which everyday devices are linked to the internet, so that usage can be registered and optimized (like the smart refrigerator mentioned in Chapter 2 which can keep track of exactly what goes out per week, so that purchases are made more accurately, and waste is prevented). A strengthening factor in platform business models is (1) the increasing datafication and digitalization of materials, objects and (social) networks, and to a lesser extent—but still a promising factor—(2) the increasing use of cryptotechnology. Both make it increasingly easier to convert smart utilization approaches into a working business model. Datafication and digitalization lead in turn to the development of all kinds of new services—often typified as the trend towards servitization—delivered via digital platforms such as the IoS. The platform business model archetype can often be found under broad headers such as the performance, functional, or sharing economy (Jonker & Faber, 2015).

Once you start to look around there are plenty of examples: energy cooperatives are popping up like mushrooms, so-called *bread funds*—offering a new form of insurance—are showing unprecedented growth, and children's bike subscriptions are growing in popularity—see, for example thebikeclub.co.uk. There are plenty of examples: think of the sharing website Peerby (www.peerby.com) or frequently used examples like BlaBlaCar (www.blablacar.com), Floop2 (www.floop2.com), or, mentioned with some hesitation given all the uproar they have created, Airbnb (www.airbnb.com).

Example*Excess Materials Exchange*

The Excess Materials Exchange platform is a digitally facilitated marketplace in which organizations offer excess materials and products. The platform functions like a dating site, linking supply and demand with the highest use or (reuse) value. For example, by using a QR code or RFID chip, materials are linked to a raw materials passport so that they can be monitored throughout their life cycle. The platform then calculates the best high-quality match, while considering the financial, environmental, and social values of the transaction. Excess Materials Exchange, n.d., excessmaterialexchange.com.

The value created in this business model archetype comes from facilitating transactions between two or more groups of people. These transactions can take various forms. In a standard transaction, what is of value is monetized. In other words, parties involved express the value of their product or service in money. But monetization is not necessary per se: (digital) platforms can also offer the possibility of conducting hybrid transactions. In a hybrid transaction, the parties involved in the agreement will settle the contributed *values* in different forms, for example, by setting off the use of a drill against a lift to the supermarket, or by exchanging the power produced by local solar panels into discounts on products at the local supermarket.

Furthermore, transactions do not necessarily have to take place between two parties (bilateral), but a platform can also facilitate transactions between multiple parties (multilateral). This has the advantage that a greater variety of assets can be offered. Such hybrid characteristics increase the viability of the business model, because one person is looking for mobility, the other for food, and the third sees self-produced energy as a complement to the household budget. The idea is to connect the variety of needs on a platform and turn them into transactions, or parts thereof. Platform business models are easily combined with the other two business model archetypes: community/collective and circular.

Example*The Oogstkaart (Harvest Map) Platform Model*

Oogstkaart (Harvest Map) is a Dutch online marketplace for the professional reuse of various types of excess materials from the retail and construction sectors (for example glass, metal to textile, and organic material). It aims to show available materials, elements, and components, and is mapping the urban mining potential of the Netherlands. Oogstkaart supports both suppliers and users of excess materials (Oogstkaart, www.oogstkaart.nl).

6.3 Community or Collective Business Models

The second archetype is the so-called community-based or collective business model and refers to the creation of business models in multi-stakeholder thematic communities by citizens, with the help and involvement of public entities, together with companies related to healthcare, food, insurance, mobility, or energy, for example. The main principle is that a group of people, organizations, and companies collaborate on organizing one or more needs, wishes, or problems (such as generating local energy, growing food, or organizing mobility). A whole range of *organizations* can be distinguished under this archetype, from *pure* models carefully organized by citizens, to, and at the same time, cooperation of citizens with other organizations be it not-for-profit, governmental bodies, or companies. We opt to mix these various types here. After all, it remains essential that more and more people are willing to invest in their own facilities, their own neighbourhood, their own electricity, as long as this provides forms of *profit* for the various parties involved. In this process of collective organizing, people become simultaneously a consumer and a producer—a prosumer. This means that they play an active role in organizing decentralized modes of production, and therefore no longer rely solely on centralized distribution systems (think of electricity and food, but also mobility) enabled by communication and other technologies which are becoming more accessible and cheaper every day. These technologies not only make it possible to connect people in different ways but also install community apps with various functions, from lost-and-found, to the actual availability of shared cars, to managing local energy grids in a neighbourhood.

The idea of doing things together as a group of people is, of course, as old as humanity itself. This idea is also known as *the commons*. We are inspired by Ostrom (2010),¹ in addition to Restakis (2017) and Bollier (2016), who defined the commons as a (set of) shared resource(s), material and non-material, maintained or co-created by a community and governed by that same community's norms and rules. Intentionally creating and distributing collective value can be seen as a particular property of the commons. Collective and shared value creation can be seen as a process based on open contributory systems that govern work through participative practices, and create shared resources that, in turn, can be used for further developments (Kostakis & Bauwens, 2019). When the aforementioned trends in information and communication technology such as the IoT and the IoS and the idea of the commons are combined, they form a breeding ground for collective or

¹Read Ostrom's synthesis of a life's work: Beyond Markets and States: Polycentric Governance of Complex Economic Systems (*American Economic Review*, Vol. 100, No. 3, June 2010).

collaborative² business models: enterprising citizens setting up energy cooperatives, smart carpooling, food co-ops, or jointly looking after local green areas. Participants invest money (e.g. locally through crowdfunding) and time (time banking), and thus arrive at a what can be labelled as a neighbourhood business model, or a community-based or even an *urban* business model. Despite these linguistic differences in labels, the essence remains the same.

Example

Windpower Nijmegen

This project concerns an energy cooperative that operates four wind turbines to the north of Nijmegen. In 2016, over 1,000 members of the cooperative invested in wind shares to finance the construction of the turbines. Cooperative members get a return from the profit from selling the electricity that is generated. Part of the proceeds also go to an environmental fund which helps realise projects in the area, such as the construction of a fibre optic cable in the hamlet that is right next to the wind farm. This ensures that the local residents, who were initially quite critical about the construction of the turbines, also benefit from the wind farm. The cooperative is now expanding electricity production with the construction of solar parks. Because solar panels mainly produce electricity when the windmills do not produce much, and vice versa, cable pooling is used. For example, one single cable is needed to connect the windmills and the solar panels to the electricity grid. (Windpower Nijmegen, www.windparknijmegenbetuwe.nl).

Key Points

Value creation in collective and collaborative business models is based on three principles:

1. **Collective and Shared Investment:** Possibly with hybrid means (time, money, energy, waste, mobility).
2. **Collective and Shared Returns:** Sharing in the revenues of the business model (e.g. the electricity generated by an energy cooperative is distributed in proportion to the investment).
3. **Multiple Value Creation:** Working simultaneously on tangible and intangible multiple values that are of value to the community or the collective at hand.

²The intertwined use of the words *collective* and *collaborative* can be a bit confusing. The first term refers to the commons—to a group of people linked together by (for example) principles, values, and a shared aim, in addition to maybe a physical location such as a village, neighbourhood, or project site. The second term refers to the fact that this group is deliberately collaborating to achieve this goal.

As the interests of the group of people who are part of the community take central importance, this type of business model offers the opportunity to involve a variety of people as well as their skills. This is also referred to as the pursuit of inclusivity. In collective business models, value creation is therefore linked to the formation of an active community. The value that is realized with the community business model therefore exceeds the value of the visible products or services, such as mobility, electricity, or vegetables. Despite all these different labels, the essence remains the same: a diverse group of people, often combined with institutional parties and companies and driven by various motives, join forces to organize a specific (common) function. A successful collective business model contributes to creating and sustaining communities.

Example

The Grootstal Estate

The Grootstal Estate on the border of Nijmegen in the Netherlands has been a family estate for a hundred years, where stewardship equals caring for cultural history, landscape, nature, and wellbeing. In the last century, the context has changed drastically. The rural area is now a city, vastly influencing the way the estate functions, but what persists is the search for a balance between people, ecology, and economy. For the Grootstal Estate, value creation is not only creating value for oneself, but also for one's environment, which leads to multiple value creation with a large number of (entrepreneurial) partners who are active on the estate. This takes a variety of shapes, including (among others) sheep herding, sustainable agriculture, growing a vineyard, selling the produce grown on the estate, or organizing sustainability workshops. In the spirit of the integral character of the estate, they work from their complementary strength within the whole (Grootstal Estate, www.landgoedgrootstal.nl).

6.4 Circular Business Models

The third business model archetype is based on the idea of designing and manufacturing raw materials, components, and products in such a way that they can be kept in circulation quasi-indefinitely (within the constraints of thermodynamics). The question central to a circular business model is therefore how we can preserve the value embedded in specific material(s), component(s), or product(s) such as electronics, lithium batteries, car tyres, bricks, paper, concrete and other building materials, plastic, or glass for as long as possible. Key to circularity is identifying material flows with the aim

being to close material loops and realize value retention through reducing the use of raw materials and production waste that arises during the manufacturing and packaging of products, but also extending the lifespan of products through repair, refurbishment and remanufacturing such that the products can have multiple users. Moreover, circular business models may involve, for example, building materials, metals, packaging, wastewater, or (residual) heat. This can be done on a large scale, for example by using residual flows from one company as a commodity for another company (referred to as industrial symbiosis), but also on a small scale, by creating local markets for plant cuttings, peer-to-peer clothing swaps, or repair shops in a neighbourhood.

Example

Buurman

Buurman (meaning neighbour) stands for local reuse. Instead of dumping, burning, or low-grade recycling of waste, Buurman gives residual materials – particularly from the construction and built environment – a new life through their shops and workshops. The workshops are open to both groups and individuals: for example, you can participate in courses to learn more about working with reclaimed materials or rent a workbench for your own DIY projects (Buurman, www.buurman.in).

It is quite a challenge to create a truly circular business model where commodities remain in the loop for as long as possible and are of the highest possible quality. Refurbishing materials and spare parts requires additional energy, transport, labour, and often the use of additional virgin materials in order to sustain a specific level of quality. The carpet tile manufacturer Interface, for example, takes back used carpet tiles, recovers useful raw materials, and reuses them in the production system. To be able to close a material loop completely, several parties are needed in almost all cases. They will have to jointly arrive at a conclusive, circular business case aligned with a collective revenue model which in most cases will require entering into long-term relationships. Establishing and maintaining longer-term relationships is, by definition, more likely to make the realization of a circular business model a strategic challenge.

Important

The Circular Potential of Resources

Annually an estimated 92.8 billion tons of resources (not including water) are used in the global economy, equalling approximately 33.4 kilograms of resources per person per day. This total is broken down as follows: 37.8 billion

tons of minerals used in construction, 28.7 billion tons of biomass used for food, construction materials, and firewood, 16.6 billion tons of fossil fuels burned for the generation of energy, transportation, and input for the chemical industry, and 9.5 billion tons of metal ores used for energy production and various metals. The global economy is only 9% circular, highlighting the significant opportunity that is currently uncaptured (De Wit et al., 2019).

So a circular business model is essentially a description of the way in which value creation and retention are organized among parties—at a given moment, in a given context, and given the available resources. However, circularity raises several challenges with regard to materials. To maintain materials of the same quality, it is not uncommon to add a certain percentage of virgin material into the loops. In a linear economy, this is predominantly based on materials obtained from mined ores; in a circular economy, on the other hand, the emphasis is on transforming waste by-products into secondary raw materials which can be utilized as material substitutes.

Furthermore, it is not yet sufficiently known what materials are contained in existing products. Consider, for example, the concrete that is *trapped* in buildings or copper in electronic equipment. A company such as *SlimBreker* uses, among other things, the cement from the demolition of concrete, which can be used, for example, for printing houses by yet another party (Slimbreker, n.d., www.slimbreker.nl).

Up until recently the demand for the reuse of materials was much less prominent, so information was not systematically collected about the amount of materials in circulation. As a result, this complicates the planning supplies of recycled materials of a specific type and a specific quality. Building such a library of materials, the products in which they are present and their quality will, therefore, be an essential step in further closing material loops. The Madaster Foundation has taken up the challenge of developing such a library (www.madasterfoundation.com).

That said, circular business models are not only about raw materials. Retaining the embedded value of products also requires a full commitment to the maintenance and repair of goods which in turn necessitates adapting the design of products and the use of materials to enable circularity.

Moreover, some nuance is required with regard to circularity—the circular economy is aspirational and constrained by limits to thermodynamics, thus most circular business models will result in some residual and/or waste flows. However, by making processes as circular as possible, this can be considerably reduced relative to the dominant linear economic model. One example that illustrates this point is Bundles, a Dutch company who have partnered with

Miele and Koru beds to provide subscription to everything from white goods to beds (www.bundles.nl). The Bundles proposition is based on the concept of product as a service (PAAS) or product–service systems (PSS).

It is possible to grow an economy with less impact on the environment. With less impact on resources. And with lower costs. That's good news for shareholders. But most of all, it's good news for the next generations! Stientje van Veldhoven, Minister for the Environment and Housing, The Netherlands, 'Global Entrepreneurship Summit', 5 June 2019.

Example

Increasingly we are drinking more and more fresh fruit juice. In the Netherlands alone, 250 million kilograms of peel are discarded each year (mainly orange peel). PeelPioneers extracts the components present in orange peel so that they can then be used as raw materials for making new products. The raw materials are extracted from the citrus peel in two steps. In the first stage, the essential oils that are used in food (for example) are extracted. In the second stage, the citrus pulp is retained to be used in animal feed. The ultimate goal of PeelPioneers is to achieve the fullest possible value of this former waste stream. PeelPioneers, www.peelpioneers.nl.

After you have identified the type of business model you want to realize, it is important to think about the parties you can do this with. Which collective of partners is needed, and how can you arrive at your value proposition? This is developed further in Chapter 7—Parties Involved.

6.5 Selecting a Business Model Archetype

Choosing a business model archetype might look straightforward, but it can be quite a tricky task. Often, in practice, it turns out that a single business model type is insufficient, and that a combination is required to realize one's dream or proposition.

For instance, a circular business model can be combined with a platform business model very well, by linking circularity to a so-called Product Service System or PSS (Tukker & Tischner, 2006) or to one of the many PAAS models. The Bundles case, as discussed earlier, exemplifies this combination of a circular business model and PSS. In PAAS, providing access to the function of a product through a service is central rather than owning it. Payment for accessing the product is based on the use of it which can be related to time, availability, deposit, replacement (including upgrading and refurbishment), or intensity. For example, time refers to the total time that the product

is accessible to a user, like renting a car. The claim to functionality is related to use. The intensity of use is linked to having access to the function of the product. This is done, for example, when offering cloud services, whereby in addition to storage capacity, monthly data throughput also depends on the type of chosen subscription.

Similar observations also apply to the platform and collective business models. Seeking to make more efficient use of overcapacity is also central in a platform business model, which can be a combination of PAAS with the IoT or the IoS. Also, in community-based or collective business models, simplification of the settlement of mutual transactions can be facilitated on the same basis. This means the IoT and other digitalization strategies associated with platform business models can be deployed by collective business models to enable value capture and value exchanges based on different transaction modes (e.g. money/time/energy/food).

To further determine which business model archetype or combinations thereof apply to your specific dream or proposition, we present additional business model archetype classifications. Tukker (2004), for example, distinguishes between different PSS business models (see Table 6.1), which make explicit the spectrum of platform-based business model archetypes. Central to this classification is the question of where the balance is when creating value: is it more product-oriented, service-oriented, or an equal division of both?

Central to PSS business model archetypes is the choice regarding whether or not to transfer ownership of a product from the producer to the customer. PSS business model archetypes are central to Walter Stahel's (1982) framing of the circular economy whereby the producer remains the owner of the

Table 6.1 Product–service system archetypes (based on Tukker, 2004)

| Archetype | Product-oriented | Usage-oriented | Result-oriented | Product–service balance |
|------------------------|------------------|----------------|-----------------|-------------------------|
| Product-related | ■ | | | Product |
| Advice and consultancy | ■ | | | Product |
| Product lease | | ■ | | Equal share |
| Product hiring/sharing | | ■ | | Equal share |
| Product pooling | | ■ | | Equal share |
| Activities management | | | ■ | Service |
| Pay per unit | | | ■ | Service |
| Functional result | | | ■ | Service |

Table 6.2 Sustainable business model archetypes (based on Bocken et al., 2014)

| Group | Strategic objective |
|----------------|---|
| Technological | Maximising material and energy efficiency |
| | Value creation from waste |
| | Substitution with renewable raw materials and natural processes |
| Social | Providing functionality instead of transferring ownership |
| | Stewardship |
| | Promoting satisfaction |
| Organizational | Attributing new social/environmental functionality |
| | Develop solutions for upscaling |

product and is therefore incentivized to invest in necessary improvements as well as repair and remanufacturing to capture the benefits of prolonging the life cycle of the product.

Bocken et al.'s (2014) sustainable business model typology highlights the diversity of sustainability and circularity strategies which they group into three types of sustainable business model archetypes (see Table 6.2). This typology can be related to and overlaps with the three business model archetypes discussed here: platform, community, and circular.

Key Points

1. **Technological archetypes** are oriented towards deploying technology-related innovations to enhance resource efficiency, material substitutions and circularity.
2. **Social archetypes**, in contrast, emphasize the role of social innovation in sustainable business models. Here the question arises regarding access to rather than ownership of products and the role of the end-user and their consumption habits.
3. **Organizational archetypes** concern the re-evaluation of the role of the organization in society with regard to its significance as well as how an initiative can be scaled up and thus increase its impact.

We hope that the Tukker (2004) and Bocken et al. (2014) typologies will provide inspiration when developing Building Block #4—Business Model Archetype and working with the BMT more generally.

6.6 Case Studies: Business Model Archetypes

Case Study: SourceForge—Platform Business model archetypes

SourceForge is an online platform for sharing open-source software. Programmers can put the software that they make and want to offer as open-source on this platform for free. The website provides a wide range of software products. Next to applications for domestic use, including games, applications are also offered for the business environment. In addition to complete applications, the source code of a lot of the software is also made available. People can use these to further develop or to incorporate solutions of their choice into their programs. Earnings to keep the platform running come from advertising revenue.

Case Study: Eendenkroos—Circular Business model archetypes

In this business model, the main focus is on closing material loops and value retention of raw materials. The captured CO₂ is not the only residual stream that is reused as a resource: the manure surpluses of local farmers also get a new function in this BMT (Hofs, 2019). As a result, this business model closes nitrogen and phosphate loops and reduces costs for farmers. The manure and CO₂ are converted into high-quality duckweed. Local farmers may purchase duckweed as protein-rich food for their animals.

Case Study: Herenboeren—Community Business model archetypes

Herenboeren is a movement to encourage citizens to start a nature-driven country farm. The idea is that individual citizens buy a cooperative farm together to produce food for themselves but pay a professional farmer to manage it. Every year, members of the cooperative collectively determine what food the farm will produce in the cultivation plan. The members collect food from the farm every week. The farm also promotes contact between the members by organizing various activities such as excursions, cooking workshops, or nature activities. The community is the hub of the Herenboeren business model.

6.7 Laying a Logical Foundation

The choice of business model archetype for the BMT is a fundamental one. It allows you to decide on the main direction of your business model as later design choices follow from the business model archetype(s) selected. For example, a platform business model will always lead to a discussion about the formation of a group of customers and a group of providers. A community/collective business model automatically leads to the identification of a specific community that will build, maintain, and use the business model. A circular business model requires that you clarify which material cycle is central to the business model. Hybrid combinations of the three archetypes are also possible, assuming that one archetype is leading (Fig. 6.1).

When working through the BMT, it is valuable to sense-check the choice of business model archetype at various stages in the process given its iterative nature. Given the fundamental nature of this design choice, further fine-tuning or revision may be required. For example, an initial decision to organize a circular business model focusing on closing the loop might change and evolve into a platform business model if matching the supply and demand of materials appears to be more critical in realizing your dream or proposition. It is not always possible to get these kinds of choices right at the start. Refining comes from continually sense-checking your choices and making changes to the design as necessary.

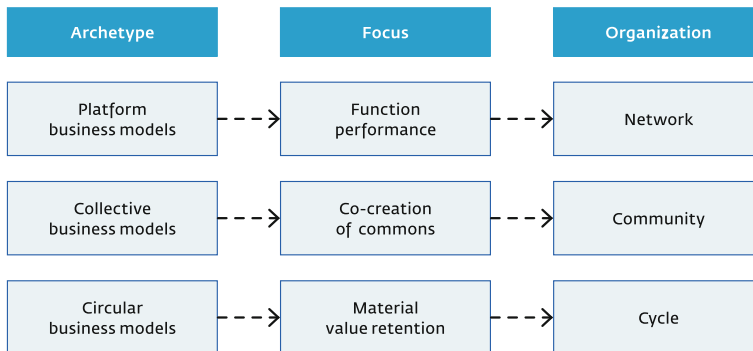


Fig. 6.1 Overview of key business model archetypes

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