

A group of fashion design students are working on a project in a workshop. They are gathered around a long wooden table, which is covered with various pieces of fabric, including a large piece of red and blue patterned fabric in the foreground. The students are engaged in different tasks: some are cutting fabric, others are sewing, and one student in the foreground is wearing a green hoodie with a graphic design. In the background, there is a white brick wall, a black folding screen, and a large open doorway leading outside. The atmosphere is collaborative and creative.

“Projects such as downloadable bags that users can make themselves with pre-owned materials showcase how the user, a key stakeholder of the circular value chain, becomes a co-designer.”

-Cristina DAN

Image Source: Wikimedia Commons. April 7, 2016. 2016 Fashion Design students.  
Photo Credit: University of the Fraser Valley. [https://commons.wikimedia.org/wiki/File:Fashion\\_students\\_2016-7\\_\(26395112985\).jpg](https://commons.wikimedia.org/wiki/File:Fashion_students_2016-7_(26395112985).jpg)





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## Practical implementation: Design as a precondition to circular value chains in the fashion industry

**Katharina Lange (KL):** Cristina, what inspired you to found SOLVE?

**Cristina Dan (CD):** I started SOLVE in 2016 to show that there are sustainable and responsible ways of creating fashion other than the fast fashion model. My aim was to be able to integrate fashion design within a circular economy framework. Our first project, Omdanne, showcased just that, as the world's first circular and multifunctional fashion collection.

**KL:** The fashion industry is known to be one of the most pol-

luting. Public pressure is increasing and major brands seem to be bowing to that by adding recycled material to their products or shifting production. Smaller and more conscious brands are popping up around the globe. What is the current state of the industry? Are we moving in a more circular direction?

**CD:** When it comes to circularity, the fashion industry is dealing with challenges that are of a structural (organizational and operational) and attitudinal (cultural and societal) character. The customer, a key stakeholder in the fashion circular economy value chain (CEVC), has a growing demand for sustainable fashion. The EU's Circular Economy Action Plan also places pressure on governments and the industry to adopt closed-loop approaches. However, moderation in consumption is a must; it has to be emphasized and addressed.

There are pockets within the global fashion industry that have started to work towards scaling up closed-loop recycling systems, and that is encouraging. However, it is difficult to recycle fabrics that are not, for example, mono-materials. Hence, the circular mindset and practice must be adopted at the design stage, where up to 80% of the environmental impact of a product is determined (European Commission, 2020).

Design dictates the set of resources, infrastructure, processes and activities that will be committed for each product. There is an impending need for knowledge within organiza-

tions on circular design strategies, means of connection to closed-loop production systems, circular business models and local circular operational framework. While on some fronts we are moving forward, it's at a painfully slow pace.

**KL:** Supply chains today are highly complex and diversified so it is a challenge to involve all stakeholders. How can we better work together?

**CD:** Collaboration, negotiation, and co-creation amongst stakeholders across the value chain are essential for a circular economy. In the last two years, we have seen logistical bottlenecks and delays in manufacturing due to long supply chains. Resilient circular supply chains are those that are formed through close collaboration among stakeholders in the value chain and that have good stakeholder management. Close proximity of the stakeholders can be a strong enabler for the capability of forming such supply chains.

Moreover, as the DRIFT report shows, the industry is fragmented and the power relations amongst actors of the supply chain are unequal. Social and environmental risk is shared disproportionately, resulting in collective irresponsibility. Carrying negotiations and making use of participatory design processes with supply chain stakeholders is one way of creating a better understanding of everybody's needs, challenges and solutions to address them.

**KL:** You have worked in and with the fashion industry for

years; you are a designer yourself. Circularity is the essence of your creations and your work, and you emphasize the role of designers as well as individuals/users in the ideation process. What is your approach towards a circular economy transition?

**CD:** My approach towards a circular economy transition is a new design paradigm, based on participatory design. I describe myself as a contextual fashion designer. In the realm of circular design, context is everything. This means that in my design process, I take into consideration all CEVC stakeholders. This offers me a holistic overview of the textile and clothing flow and how to create cascades for circular resource management. The insights provided by the fashion CEVC stakeholders are key to potential solutions. Major emphasis is placed on changing user behavior as today's society is riddled by consumerism. By engaging the user in the design and/or fabrication process, we create greater attachment towards the product, thereby discouraging over-consumption.

SOLVE projects such as Omdanne, S-bags (downloadable bags that users can make themselves with pre-owned materials) or our upcoming project, ReFashion, showcase how the user becomes a proactive participant in the design process. The ReFashion project, in particular, aims to transform multiple circular value chain stakeholders into co-designers of a fashion CEVC via a new circular design strategy and IoT.

**KL:** You mention the Internet of Things (IoT) in your approach. How can it play a role in the fashion industry with regard to circular global value chains? Can you offer an example?

**CD:** Industry 4.0 technology is one of the key enablers for a circular economy. In our case, we would make use of digital technologies to create and capture value from product-service offerings, while also connecting manufacturers with customers and suppliers to co-create value.

Together with the team from the University of St. Gallen (Switzerland) - Chair for Interaction- and Communication-based Systems - we are putting together a project that aims to scale up the concept behind ReFashion at an industry-level. Essentially, ReFashion relies on a product-service-systems business model, grounded in a novel circular design strategy and a novel approach to automated manufacturing. It integrates support for product design, supply chain, manufacturing, take-back system, and recycling/upcycling. Our proposed approach supports companies who intend to close the loop, by enabling the reutilization of products and their components in the most effective way, through an innovative product design and manufacturing process. It is implemented through automated planning of manufacturing as well as recovery processes. We expect this approach to increase servitization in the supply chain and thereby enable scalable circular economies in the clothing industry.

Understanding Solve Studio's services for circularity  
<https://www.solve.studio/>

[CIRCULAR] PRODUCT: work closely with clients towards creating a more intuitive connection between products, end-users and the ecosystem.

[CIRCULAR] BUSINESS DESIGN: business design needs to be aligned with the product design and the circularity strategy that goes in that design.

PRODUCT-SERVICE SYSTEMS: in the future via the ReFashion project.

#### References:

European Commission. Directorate General for Communication. (2020). Circular economy action plan: For a cleaner and more competitive Europe. Publications Office. <https://data.europa.eu/doi/10.2779/05068>

Buchel, S., Roorda, C., Schipper, K., & Loorbach, D. (2018). DRIFT for transition. The transition to good fashion. FINAL\_report.pdf (eur.nl)