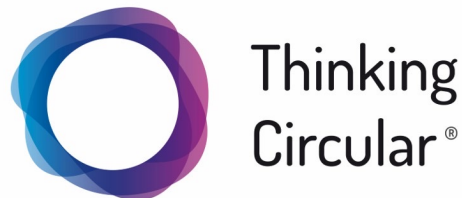# Digital Solutions for the Circular Economy

This presentation will help you to explore the role of digital tools for the circular economy. It will help you to shape concepts for circular and digital solutions.

Thinking Circular®

Introduction

The use of resources is still rising, while we experience climate change, plastic pollution and other effects of our linear economy that endanger planetary life. The circular economy is a solution to numerous crisis we experience today. But to close the material and natural cycles, we need digital tools to become faster and make the circular economy as easy as possible for all stakeholders. For the transformation of an industrialized world digital product passports, containing environmental product information, will be crucial. All information for repair and recycling or material banking will be exchanged between the stakeholders within the circular value chain in the future. Digital user interfaces, digital automation and networking platforms will be drivers of the circular development, too.

Together all these digital tools and digital solutions will drive the circular economy.

Photo by Sebastian Pichler on Unsplash

1. Circular Literacy
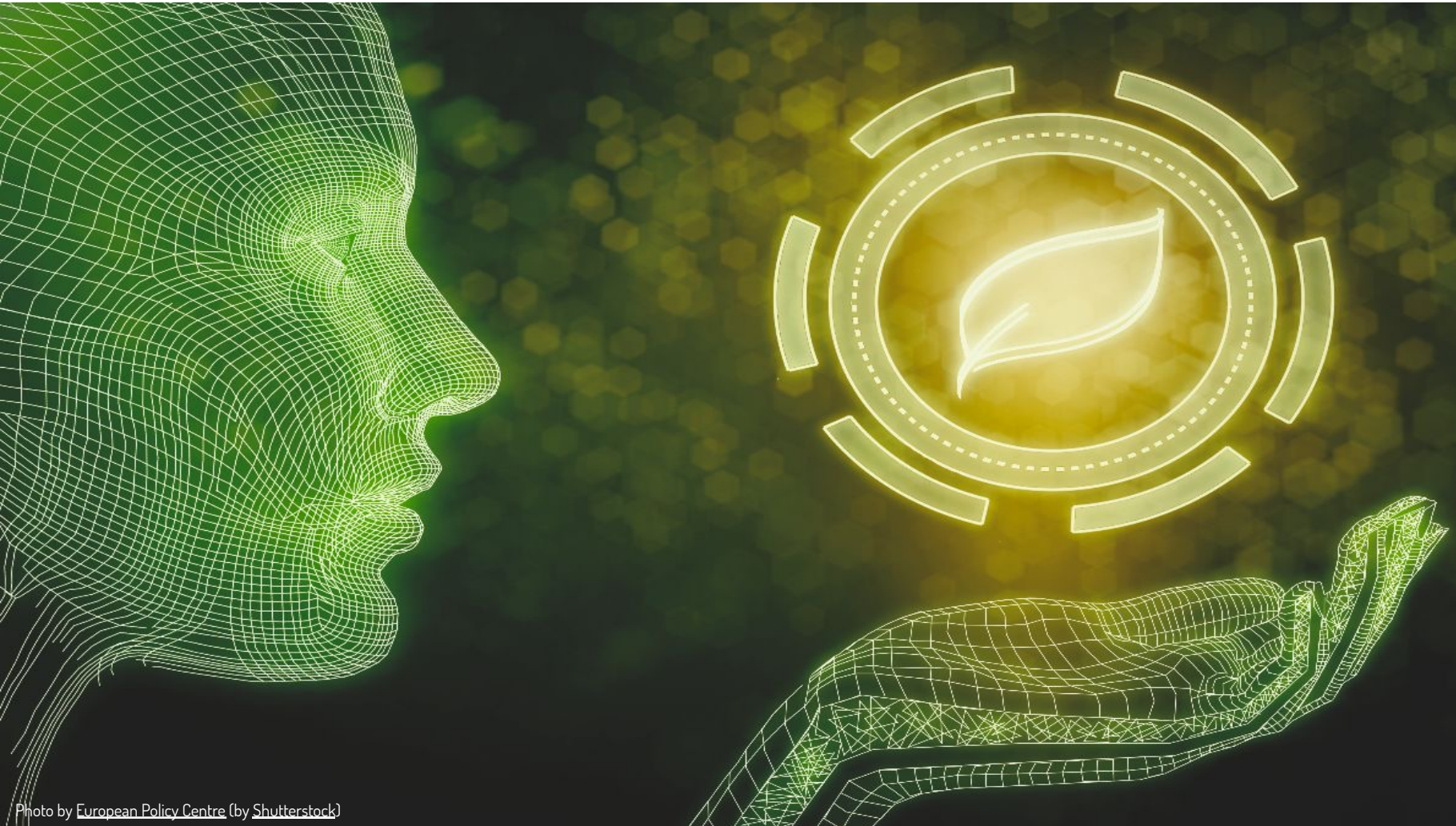
The definition of a vision and mission for a digital product that will drive the circular economy requires system, target and trans-formation knowledge, reflexivity, and innovation.[1]

The creation of a storyboard, framing the impact that a special digital tool might achieve, can be assisted by digital tools itself and drive the circular literacy forward once a solution has started its journey. Possible digital tools might be artificial intelligence (AI), machine learning or virtual reality.

[1]Jakob Zwiers, Melanie Jaeger-Erben & Florian Hofmann (2020): Circular literacy. A knowledge-based approach to the circular economy, Culture and Organization, DOI: 10.1080/14759551.2019.1709065, https://doi.org/10.1080/14759551.2019.1709065

2. Circular Bookkeeping
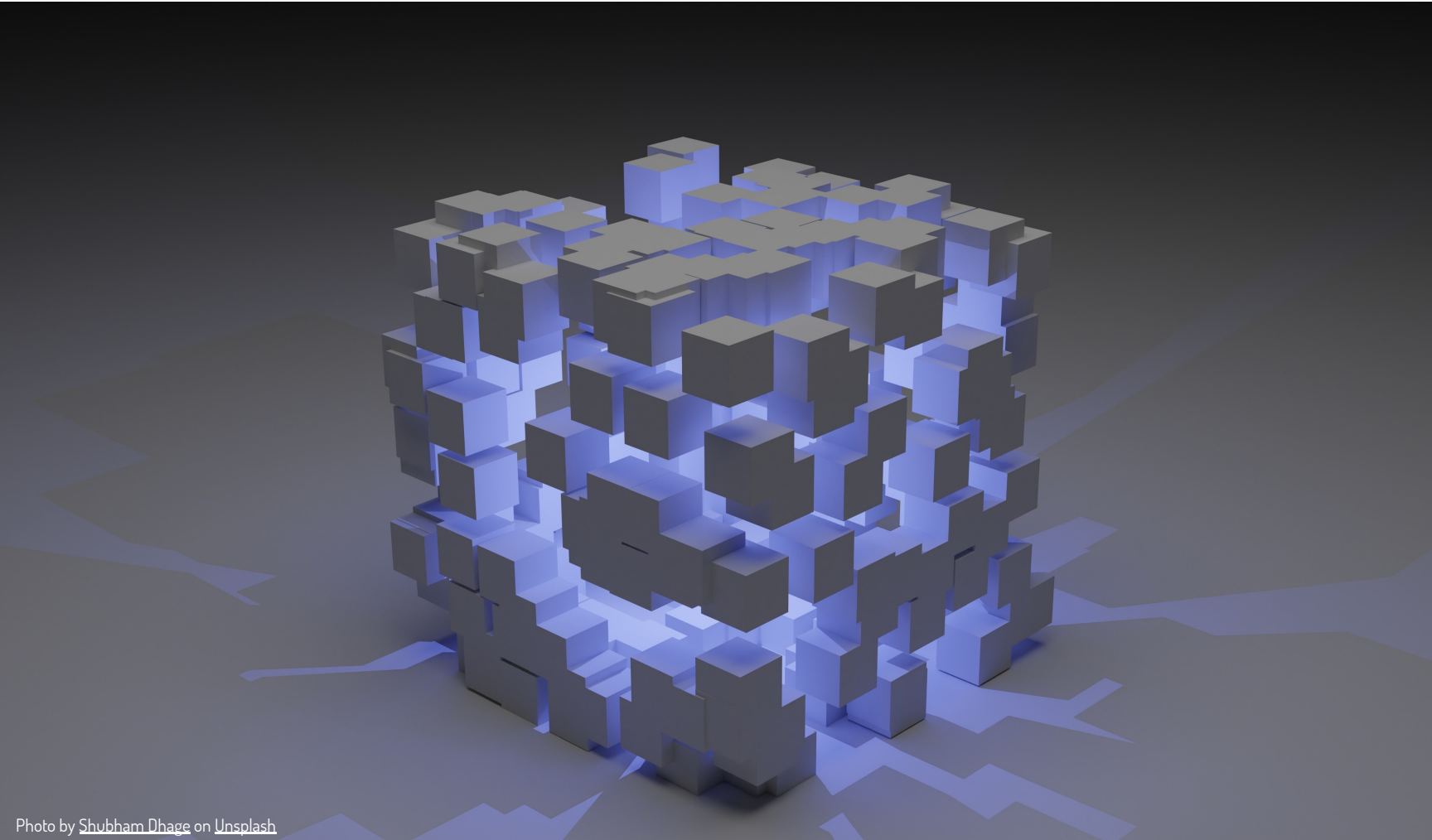
The idea that every resource is bound in material products or in nature, enables us to understand material banking. This general idea allows us to identify resources as elements on a bank account that will be kept in a digital book. It also allows the documentation of environmental data, which can derive from life-cycle-assessments, balance sheets or scientific studies. It might also be generated as an outcome of ecommerce platforms and it can be visualized, used for predictive analytics, or augmented reality. Thus, the use of the data helps to understand the consequences of today's action in the future.

3. Circular Logistics

The management of resources in circular systems requires track and trace technology. This knowledge is the basis for institutional turnover of value, for example on platforms for extended producer responsibility.

The example of smart mobility, including apps to book transport services makes clear, how much knowledge and living data is necessary to present solutions for each service or resource request.
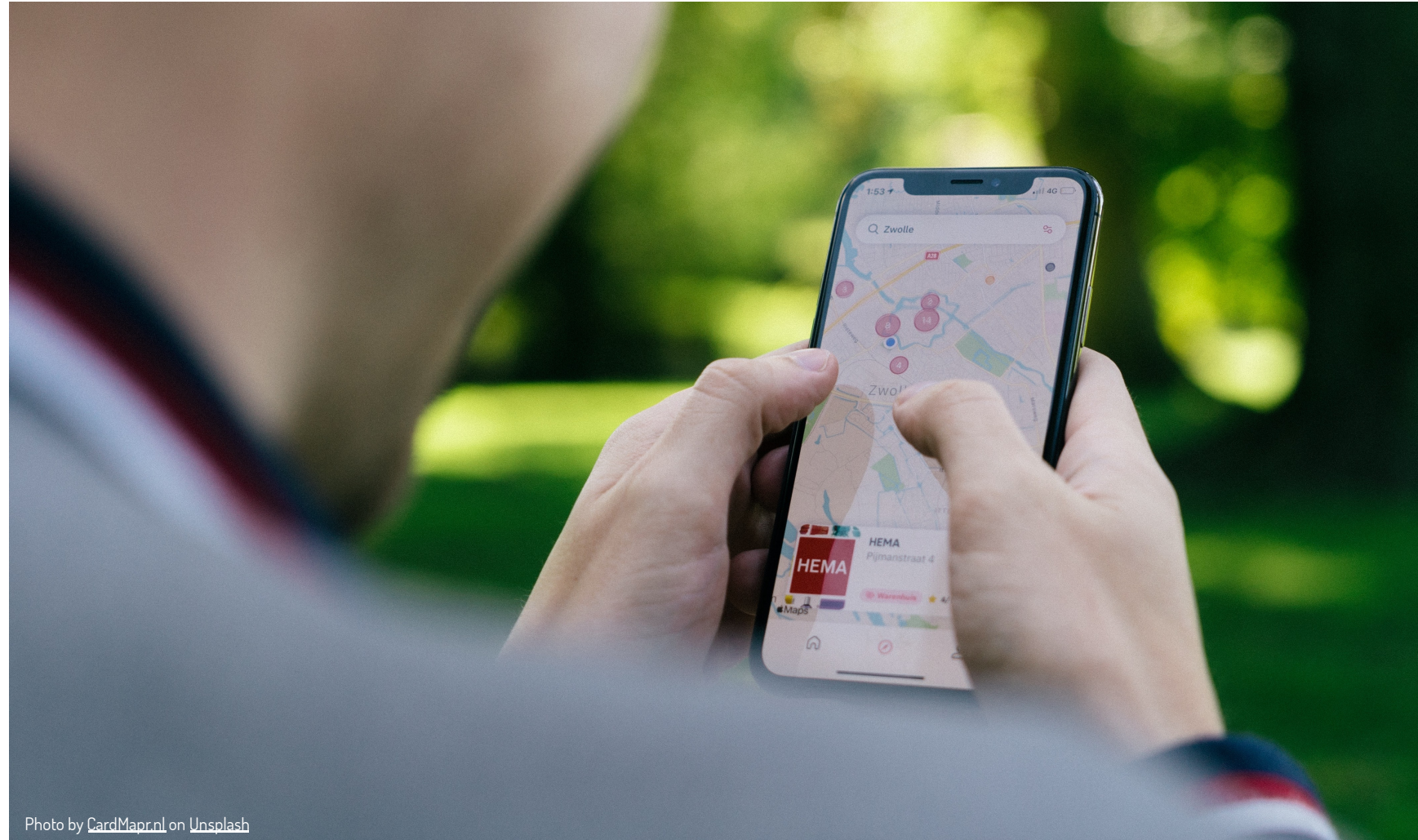
4. Circular Systems – easy tools

Modelling is the use of mathematical models to make calculations or predict what might happen. When planning a circular service or product the modelling results are useful tools from which well sourced decisions derive.

Where climate modelling predicts climate change, agile modelling accepts fast changes within the mathematical model and can adapt real time behavior or changes. This makes scenario planning possible, it enhances risk management and other mechanisms for better planning. To give insights into the unique differences of circular systems. Here you will be introduced into basics of circular models and be enabled to design a first deployment matrix for circular modelling. It can be used without a program but enables the learner to understand the instrument and circular USPs. It also introduces the SWOT-analysis and a balanced scorecard as easy-to-use tools to define the system boundaries of the system being modeled.

Photo by Matt Seymour on Unsplash

5. Circular Modelling
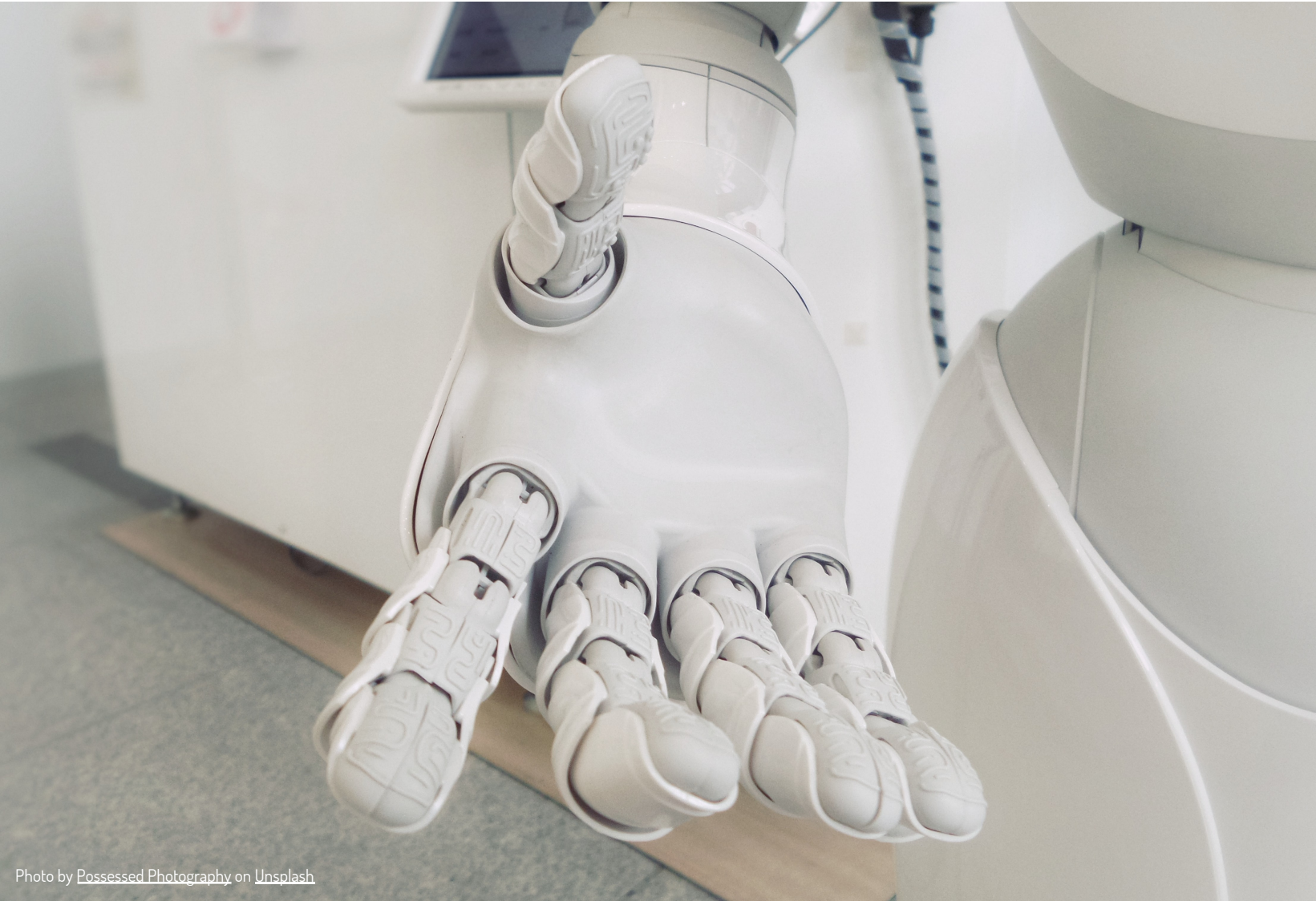
One of the benefits of AI for circular business is that it handles repetitive tasks across an organization so that employees can focus on creative solutions, complex problem solving, and impactful work. One example of that is chatbots. Applying AI and machine learning, automation of processes can increase gradually. Gamification and virtual reality applications can show possible impact of behavior, technical and digital changes within the systems that must be managed.

The unique difference between a linear or circular use of a digital application is, that the measured impact must be circular and avoid rebound effects. The origin of the circular economy requires complex systems thinking and an application of either the Cradle-to-Cradle (C2C) design and/or the ReSOLVE principle.

Abbreviations:

    AI – Artificial intelligence

    C2C – Cradle-to-Cradle

    ReSOLVE – Abbreviation for Re – reduce, regenerate, reuse, refurbish, recycle, S – share, O – optimize, L –loop, V – virtualize, E – exchange

    SWOT – Abbreviation for strengths, weakness, opportunity, threat

    USPs – Unique selling propositions

The [Glossary on Circular Economy](#) can be used to look up terms and abbreviations of the Circular Economy.