

High performance. **Delivered.**



Waste to Wealth

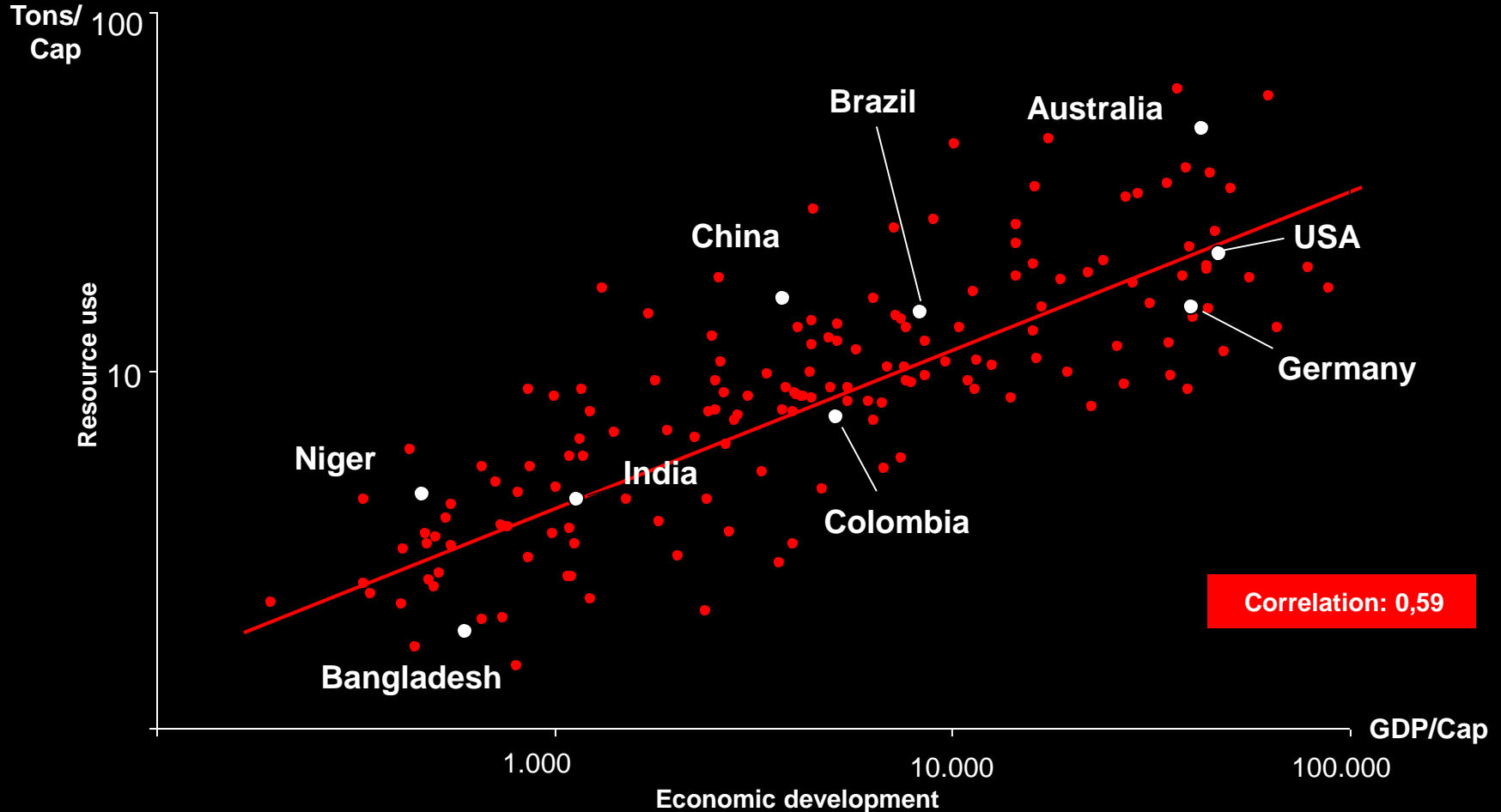
Creating Advantage in a Circular Economy



@joostbrinkman

In today's growth model increasing wealth is clearly linked to increasing levels of resource consumption...

Log plot of Resource use and Economic development (2010, 166 countries)¹

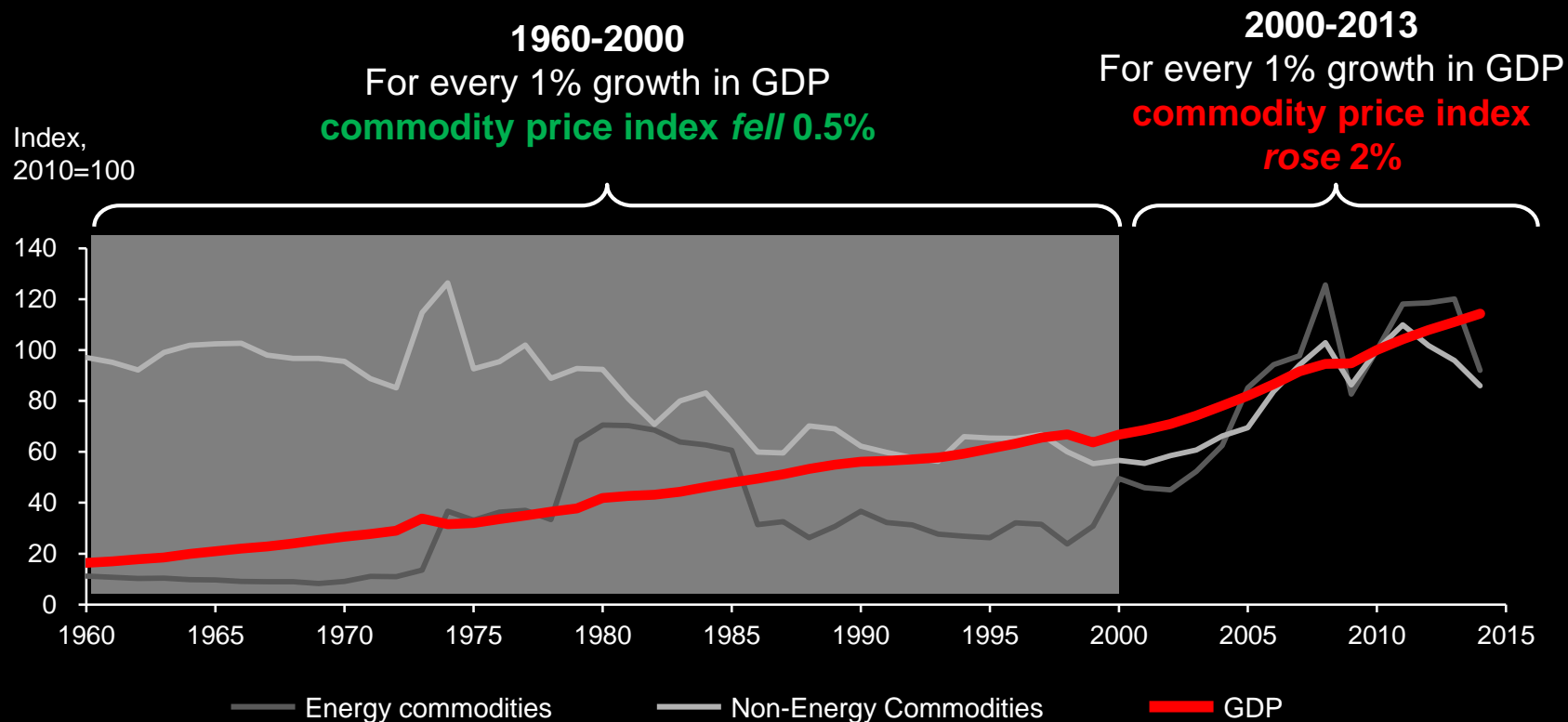


¹SERI and Dittrich, M. (2014). Global Material Flow Database, World Bank (2014) GDP per capita in current US\$ (outliers Mongolia & Bahamas removed)

²OECD Development Centre, Working Paper No. 285, The Emerging Middle Class in Developing Countries

...but the era of cheap and plentiful resources has come to an end as prices have increased by close to 2% p.a. since 2000

GDP and commodity price development 1960-2014

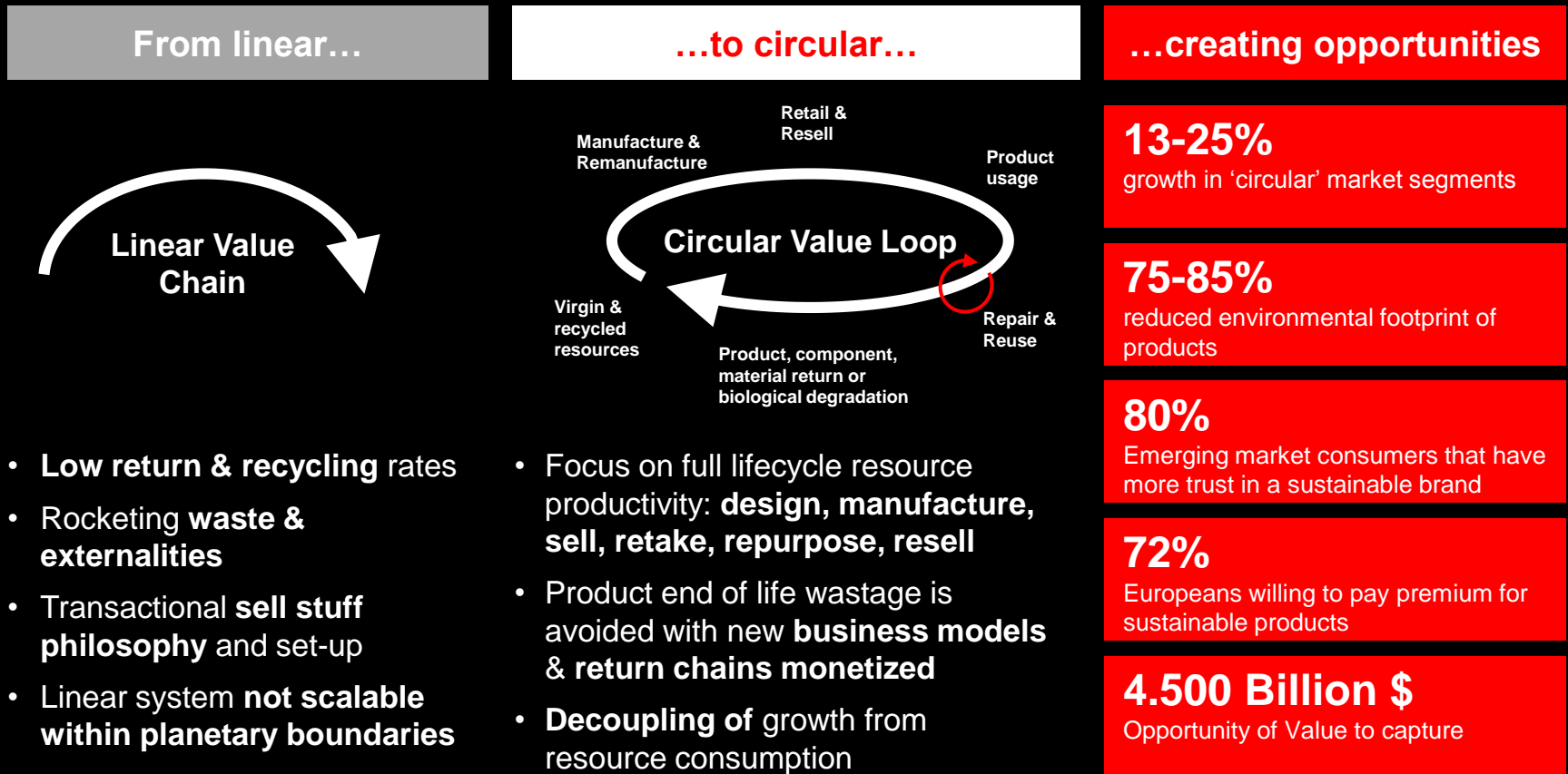




We currently use **1.5x the resources that earth supplies us with**.
2.5 billion additional consumers expected to join the middle class by 2030, so we need
4 earths in 2050. We only have 1: **We need to become 4x more resource efficient.**

Turning to circular value chains offers the ability and benefits of environmentally responsible growth in a world of finite resource

Linear vs. circular value chains and associated opportunities



To find what solutions are scalable Accenture & WEF YGL studied 120+ pioneering companies & interviewed 50+ leaders

Example companies studied



5

Business models

10

Enabling technologies

5

Key capabilities

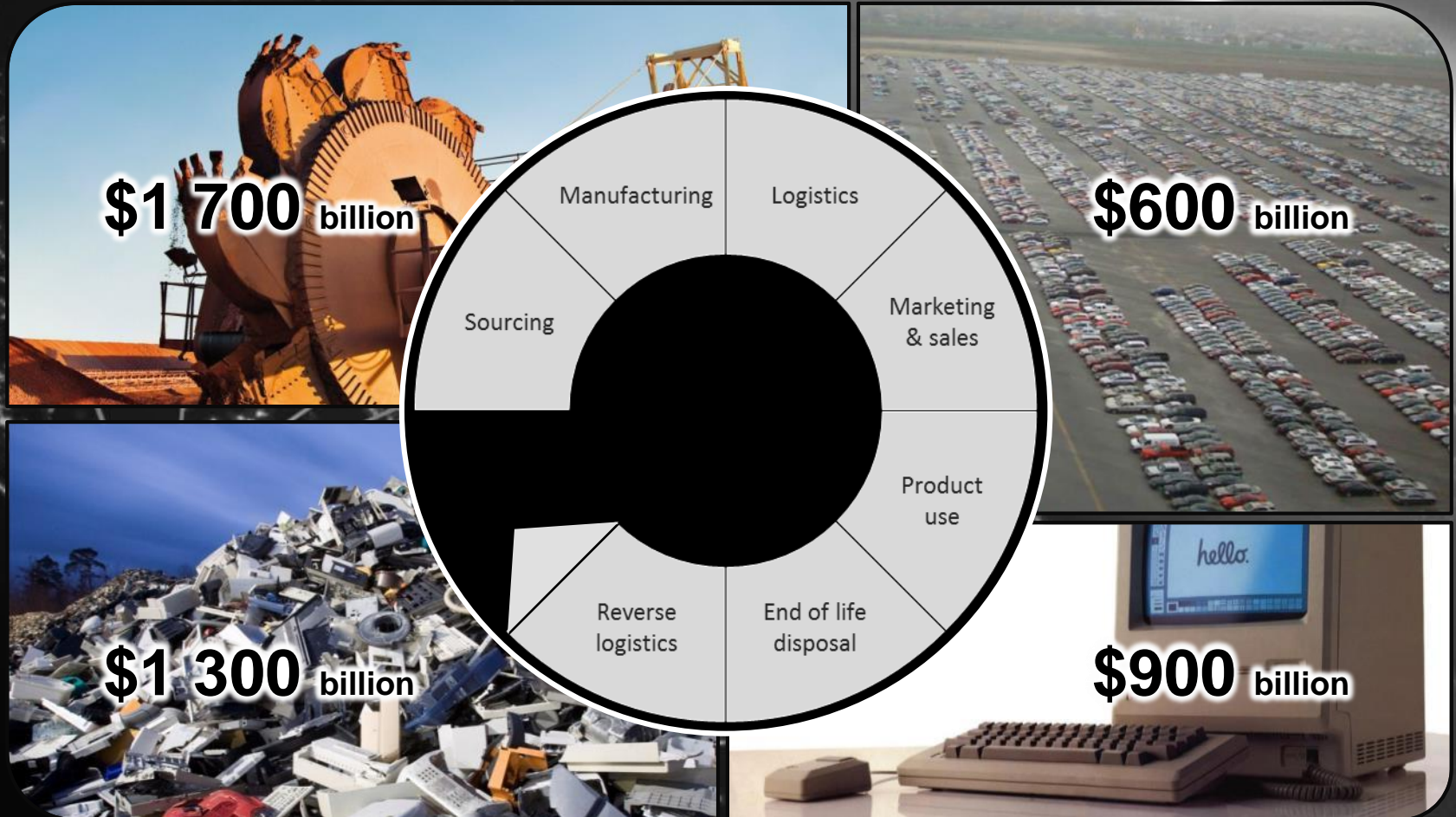
The book "Waste to Wealth" available end of September 2015

4 TYPES OF WASTE TO ADDRESS

\$4.500 BILLION TO CAPTURE

WASTED
RESOURCES

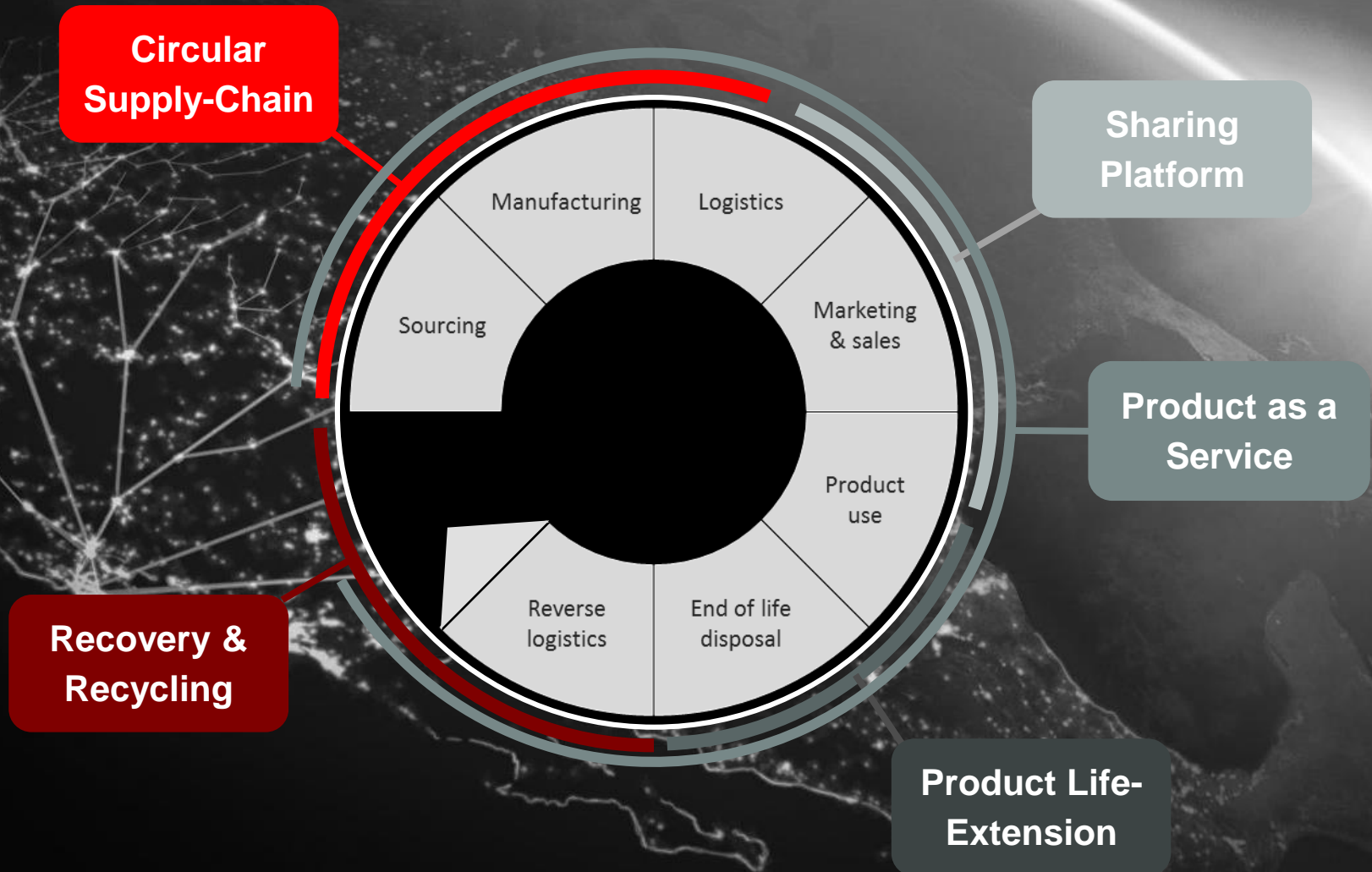
WASTED
CAPACITY



WASTED
EMBEDDED VALUES

WASTED
LIFECYCLES

5 BUSINESS MODELS TO LEVERAGE



Recovery & Recycling

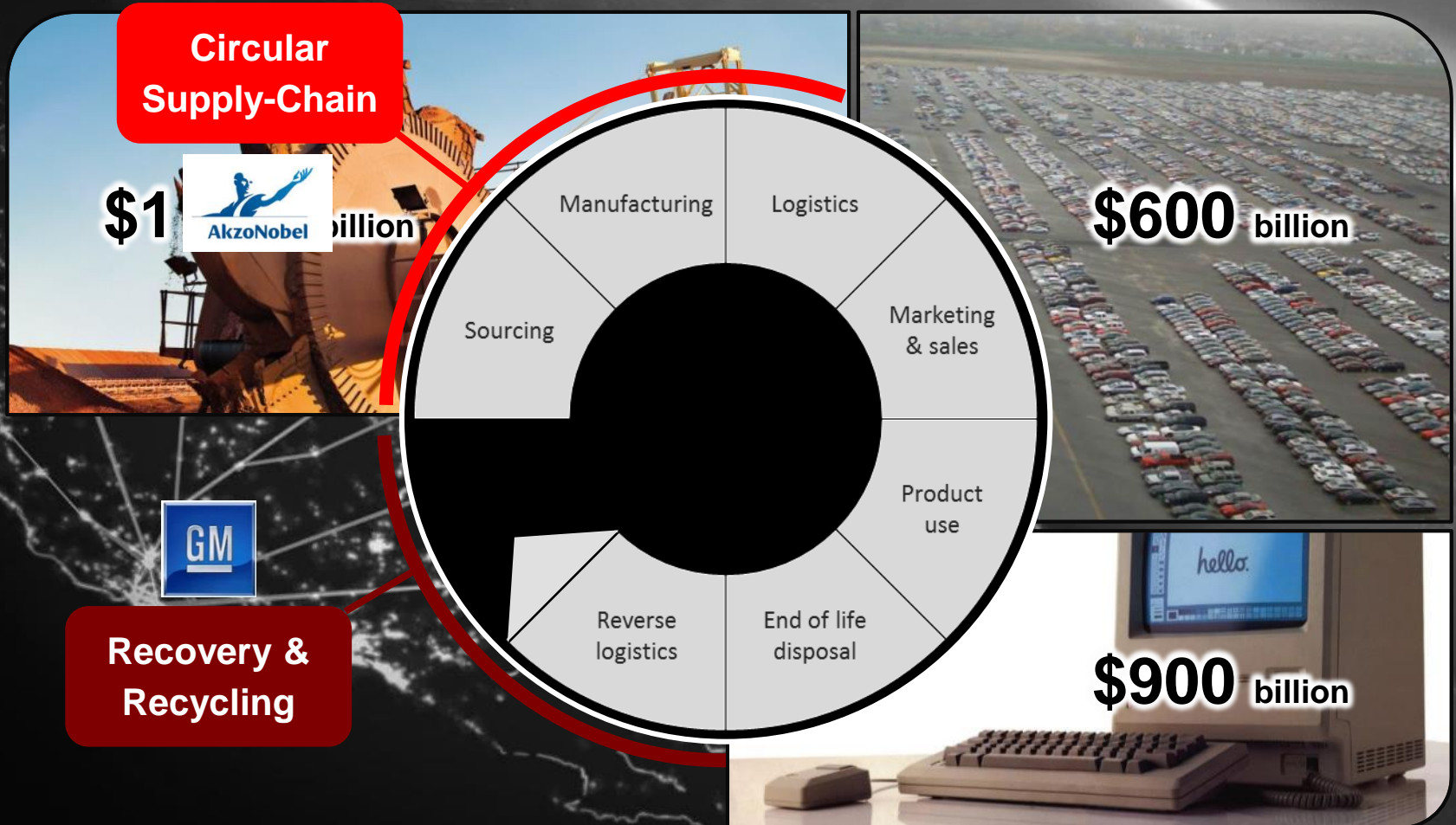


- GM makes \$1B each year through its recycling efforts
- GM first reduces waste and then focuses on recycling and reuse. The materials that GM can't reuse, they convert to energy
- When GM started its landfill-free program in the United States, it invested about \$10 for every ton of waste reduce, over time program cost has decreased by 92%
- GM encourages its workforce to find new ways to operate leaner and more efficiently
- GM says it recycles 90 percent of its worldwide manufacturing waste and has 102 landfill-free facilities ; GM wants to reach 125 landfill-free facilities globally by 2020

5 BUSINESS MODELS TO LEVERAGE

WASTED
RESOURCES

WASTED
CAPACITY



WASTED
LIFECYCLES

Circular Supply Chain



- AkzoNobel researched megatrends and translated those into a sustainability-anchored strategy of “more value from fewer resources.” It is enacting this strategy on many fronts, including being both a customer and supplier of Circular Supply-chain.
- AkzoNobel is working closely with customers to identify emerging sustainable end-market segments in which it can support its customers and deliver the solutions they need.
- A great example of AkzoNobel’s work in this area is its development of a new coating made from plant-based oils and recycled PET bottles. The yearly 200 billion paper cups used today are coated in petroleum based film
- Currently, 20 percent of the organic materials that AkzoNobel uses are bio-based, and the they are working to increase that share
- AkzoNobel estimates that 30% of its revenues will come from Eco-premium products in 2015

5 BUSINESS MODELS TO LEVERAGE

Circular Supply-Chain



Recovery & Recycling



WASTED CAPACITY



Sharing Platform

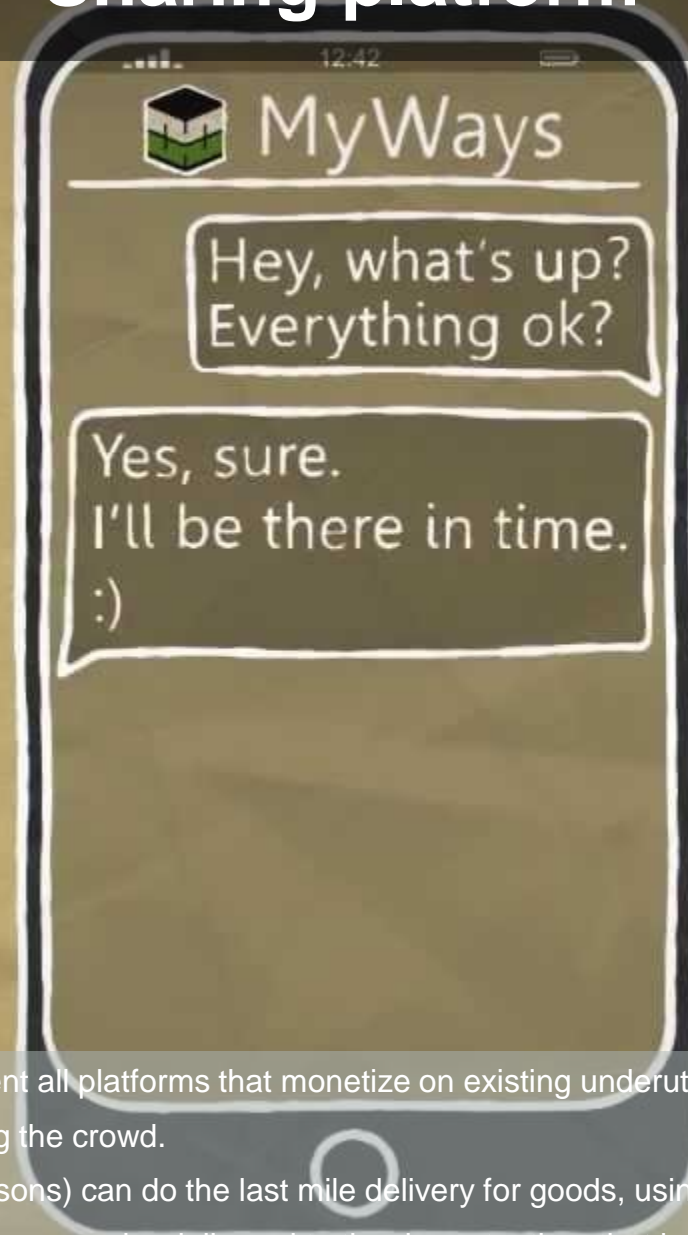
\$100 billion
DHL

\$900 billion



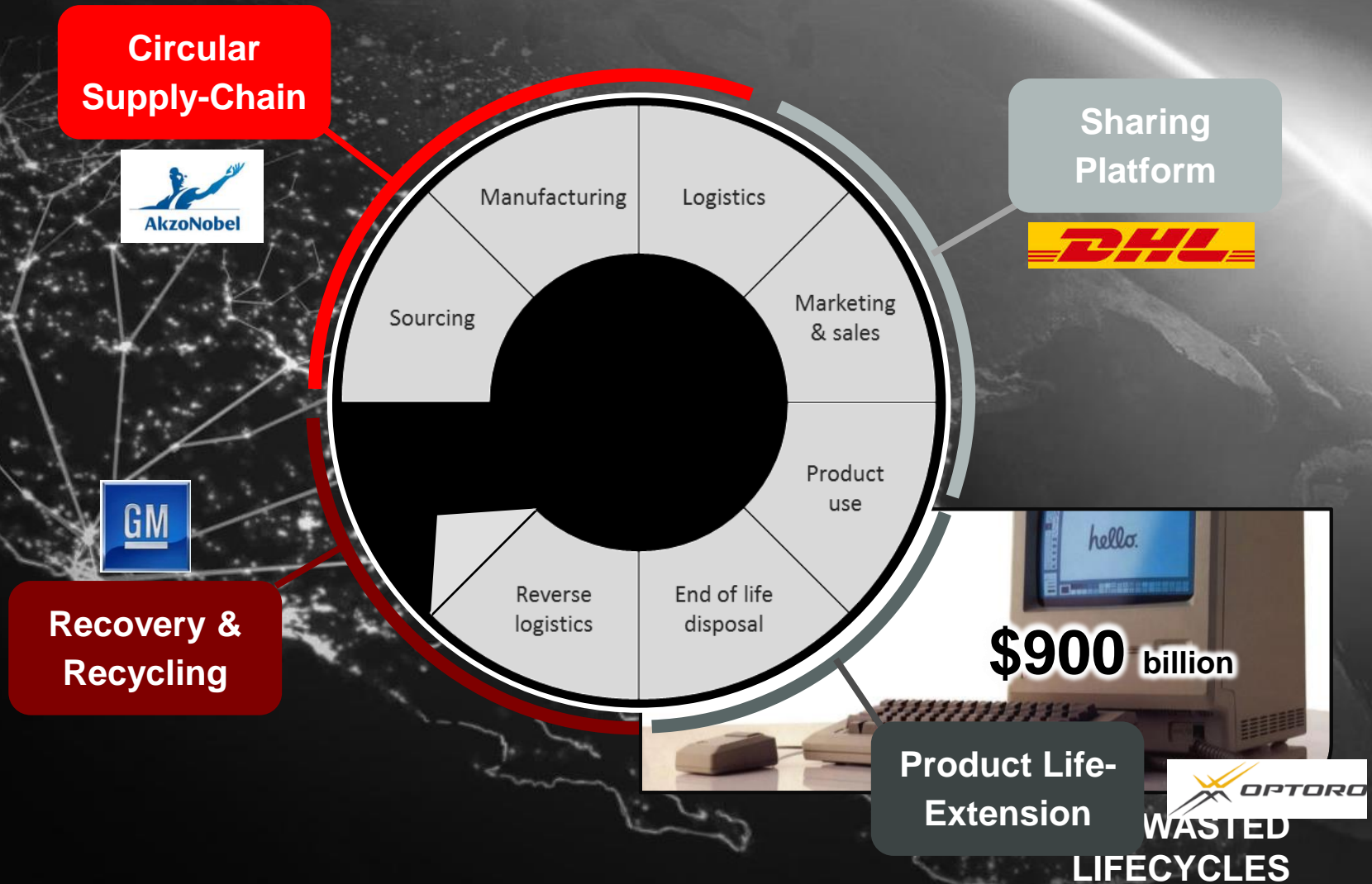
WASTED LIFECYCLES

Sharing platform

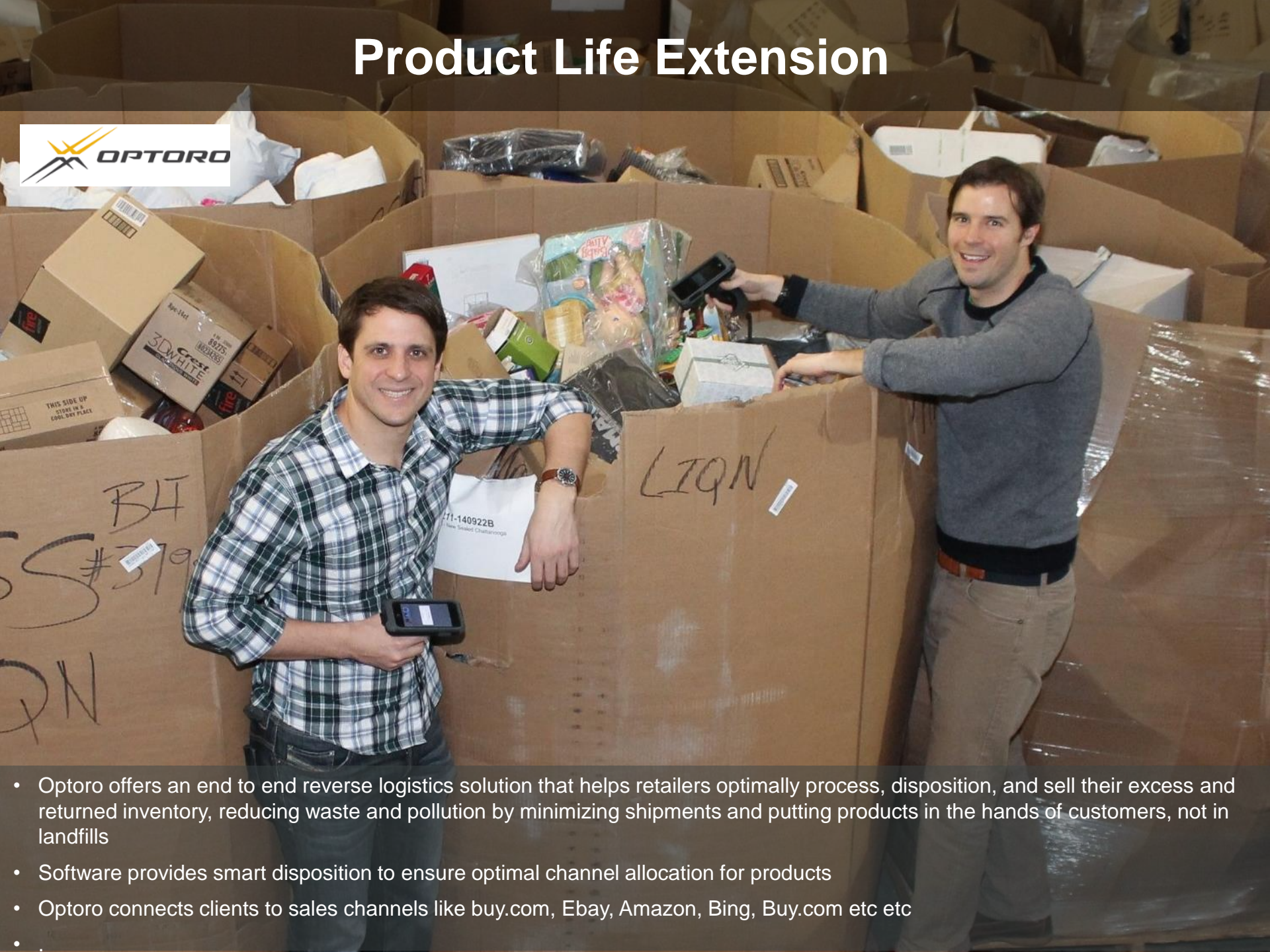


- AirBNB, Uber, Lyft, Peerby, ParkFlyRent all platforms that monetize on existing underutilization of assets
- Also DHL sees the opportunity of using the crowd.
- Via the 'MyWay App, third parties (persons) can do the last mile delivery for goods, using already available cars and people
- Increased customer value, all parcels can now be delivered to the door at a time that is convenient for the customer

5 BUSINESS MODELS TO LEVERAGE

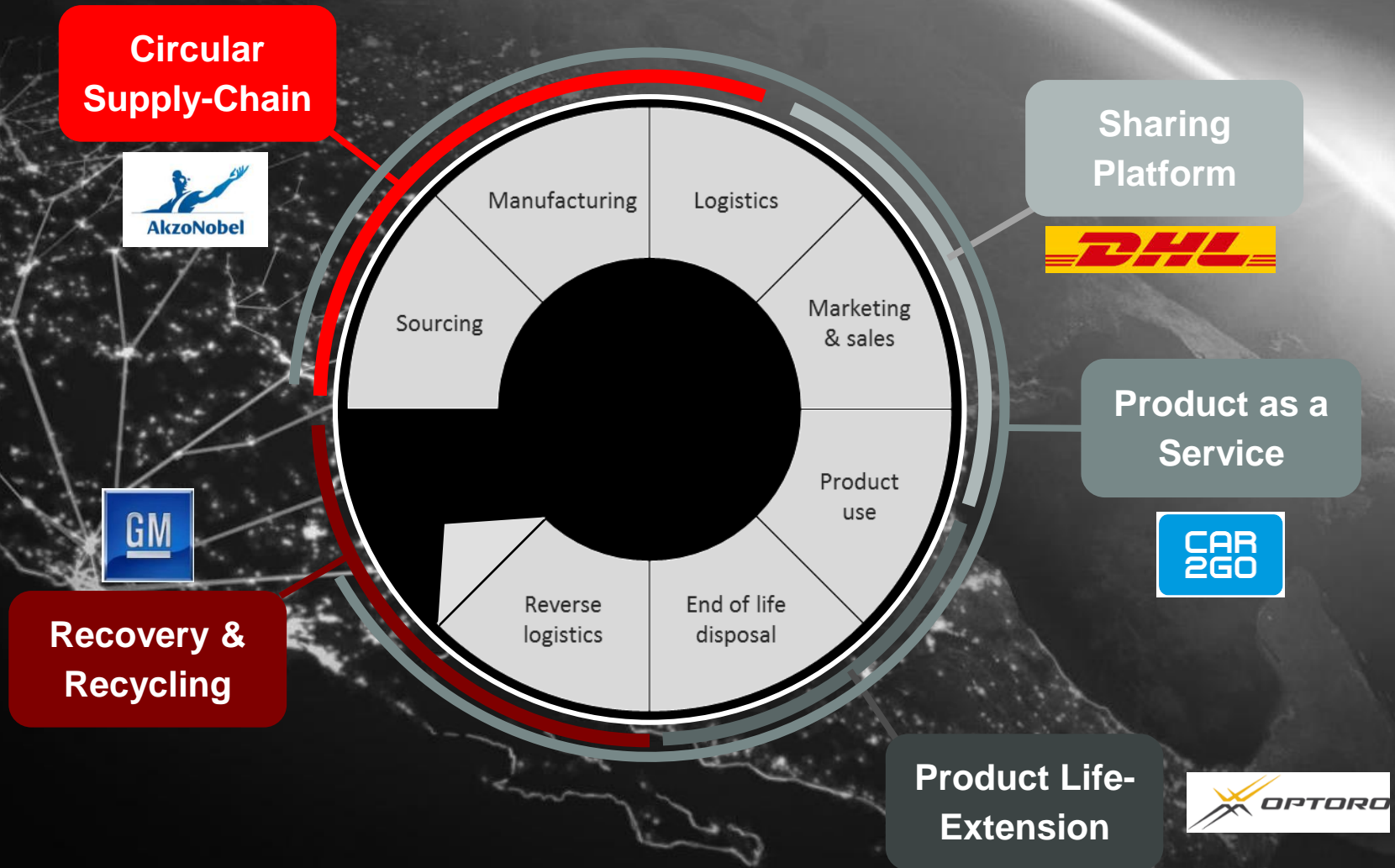


Product Life Extension



- Optoro offers an end to end reverse logistics solution that helps retailers optimally process, disposition, and sell their excess and returned inventory, reducing waste and pollution by minimizing shipments and putting products in the hands of customers, not in landfills
- Software provides smart disposition to ensure optimal channel allocation for products
- Optoro connects clients to sales channels like buy.com, Ebay, Amazon, Bing, Buy.com etc etc

5 BUSINESS MODELS TO LEVERAGE



Product as a Service

CAR
2GO



- *Product as a Service:* What if manufacturers and retailers bore the 'total cost of ownership'? Many would immediately adjust their focus to longevity, reliability and reusability. When consumers lease or pay for products by use through the Product as a Service model, the business model fundamentally shifts – in a good way. Performance trumps volume, durability tops disposability, and companies have an opportunity to build new relationships with consumers.

Product as a Service



- Michelin Fleet Solutions. Enable customers to lease tires and pay per mile (use) instead of units (ownership). This way Michelin gets the incentive (same as customer) to optimize the tire for longevity, make sure it can be recycled in value creating way and also a closer customer relationship whereby they can invest in sensors to make the tire “intelligent” and sell other services to the customers (and reuse sensors at tire end of life).

10 ENABLING TECHNOLOGIES

Engineering



Modular design technology

Digital

Cloud

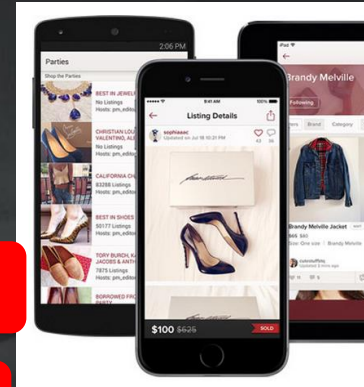
Analytics

Mobile

Social

M2M Communication

3D Printing



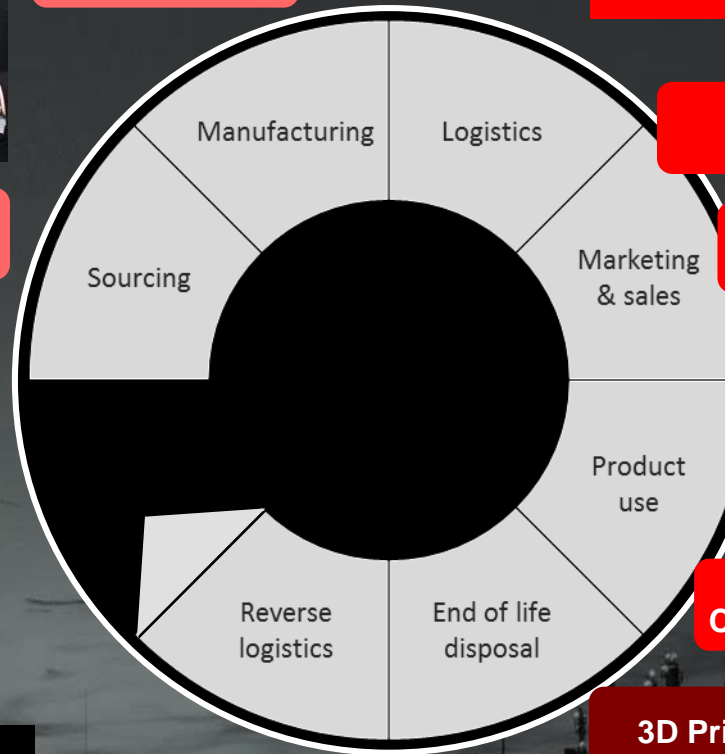
Life & Material sciences

Advanced Recycling



Trace and return systems

Hybrid



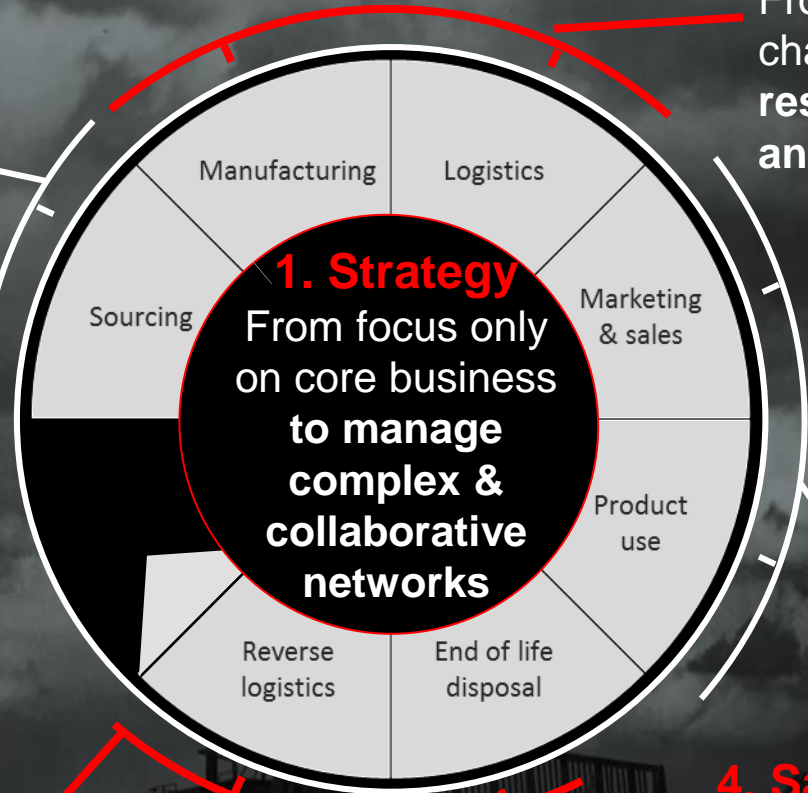
Ten supporting technologies are maturing fast and provide concrete benefits to enable circular economy businesses

		Most important benefits already available today	Example
Digital (information technology)	Social	Enables the creation of trust within a digital community necessary for sharing at scale	 Link to Facebook and reviews
	Mobile	Enables individuals and businesses to access (proximate) goods and services everywhere and any time	 Finding and accessing nearby cars
	Cloud	Supports dematerialization and enables access to powerful applications and large databases from any connected device	 On-demand music
	M2M Communication	Provides real-time insight in the status of assets and makes it possible to remotely and automatically manage them	 Remote optimization of lighting appliances
	Big Data Analytics	Recognizes patterns and helps to optimize the performance of large collections of assets based on analysis of complex data sets	 Dynamic ride sharing
Hybrid	3D Printing	Enables local, customized and resource-efficient production on demand, thereby eliminating the need for transportation and stocks	 Biodegradable 3D printed clothing
	Trace and return systems	Enable cost-effective collection and sorting of used goods at a scale	 Sensor-based sorting solutions
Engineering (physical technology)	Advanced recycling tech	Makes effective separation and recycling of more materials feasible and financially attractive	 Precious metals from complex waste
	Modular design technology	Allows for easy upgrades and repairs of products and enables quick and cost-effective reuse of components at end of life	 Modular phone
	Life and Material sciences	Enable the creation of high quality 'circular' (fully recyclable, biodegradable or renewable) alternatives to traditional inputs	 Biodegradable shirts and shoes

5 CAPABILITY SHIFTS TO EMBRACE CIRCULARITY

2. Innovation & product development
From designing for single use to designing for many life cycles and users

3. Sourcing & manufacturing
From homogenous supply chain to heterogeneous resource flow innovation and cascading



5. Return chains
From compliance to opportunity driven take-back

4. Sales & product use
From never seeing your product again to customer and asset life cycle management

Right, but how to get started?



1. Identifying and concentrating on the actual **opportunity**
2. Rethinking how **value** is created and delivered to **customers**
3. Putting in place a focused set of new **capabilities**
(and not trying to implement the 'perfect' circular setup, at least not initially)
4. Investing in **technology** to make value chains circular
5. Timing the **balance** between capturing near-term, low-hanging fruit and engendering long-term, large scale change

How governments accelerate the circular economy can be found at govsgocircular.com

wbcSD global network

De Groene *Zaak*
ondernemers over een duurzame economie

Governments going circular

A global scan by De Groene Zaak,
Dutch Sustainability Business Association

www.govsgocircular.com

In cooperation with our partners Accenture, EY, IMSA and Royal HaskoningDHV.

accenture
High performance. Delivered.

EY
Building a better working world

IMSA

Royal HaskoningDHV
Enhancing society together

Action 1. Understand the circular necessity

The first step is to truly understand the necessity of the circular economy. Get to know the basics: why our current model can't be sustained, and the fundamental changes that need to take place to abandon the linear economy. But more importantly, comprehend the opportunities that a circular approach will deliver.

Action 2: Lead by example

The most powerful way to show the need for circularity is to start acting. Therefore, it is strongly advised to become the leading circular organisation, yourself. By transforming your own processes and using governmental procurement power to stimulate suppliers, the government can learn how to implement and become aware of the practical challenges. A government will also learn which regulations it should be adjusting in order to take the circular path. It gives a strong signal to the market that the government takes the transformation seriously.

Action 3: Map circular economy principles to your local context

Circular economy principles should be placed in your local context. Define which sectors and policy areas are most affected. This may be within Waste, Resources, or Spatial Planning. Think in terms of overcrowded landfills that are bursting at capacity; materials that are susceptible to price and supply fluctuation; or overpopulation in urban areas causing traffic and high residential pressure. Based on this first local context assessment, certain "hotspots" can be identified.

Action 4. Create a comprehensive vision or strategy

Although not all implications and changes will be clear at this stage, it's important to draw a long-term vision on circularity. Define long-term goals and a clear roadmap for the next couple of years.

Action 5: Engage stakeholders: Start the dialogue

To facilitate the transition, engage all stakeholders and involve them in an early stage. Challenge them to bring ideas and solutions themselves, and provide input for the overall vision, strategy and policy instruments. This will create involvement, buy in, and produce the most promising solutions.

Action 6. Choose instruments & Start initiatives.

After the identification of the hotspots and stakeholder engagement, one should find the most effective policy instrument. To change and promote a circular economy, a government has multiple instruments at its disposal: laws and regulations, fiscal measures, grants, partnerships and public procurement. The government can decide which instrument is most effective in its own context. Remember, inspiration and details from experts worldwide can be found via the website.

Once it has been decided where and with what instrument, the circular economy will be implemented, and it is time to put effective initiatives in place. At the beginning, these can be standalone projects. This is not the final goal but the first step towards a circular economy, in which the "Start Small, Scale Fast" approach can be used. Of course the results should be measured and evaluated over time.

Action 7. Monitor, adjust and scale

The transition towards the circular economy will take several years, during which the progress should be measured and the roadmap adjusted. Initiatives that prove to be successful, will be implemented on large scale. Step by step the circular economy will be put in practice.

High performance. Delivered.

Thank You and Remember:

WHY: Society needs it and it is good business

WHAT: 5 business models, 10 technologies, 5 capability shifts

HOW: Get started !

Thank you
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