



KIVI Innovation Drinks Twente

Circular Economy

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October 19, 2017



Agenda

- Why do we need a transition to Circular Economy?
- Business Strategy
- Tools overview
- How to change the business culture & business models?
- Concrete examples
- Circular Economy Challenges
- Benefits of Closed Business Loops
- How can you contribute?



Why do we need a transition to Circular Economy?

Global Business Trends & Facts



Access over Ownership

- There is a clear trend that young and upcoming consumers have a greater interest in having access to the service a products delivers then actually owning the product



facebook

From Transaction to Relationship

- The channel balance is shifting in an multi-channel world. Online interaction via FaceBook, Twitter, YouTube and brand-websites is a growing global phenomenon that will be the new path to relationship for both empowered customers and companies



Increase of Middle Class Consumers

- Three billion additional consumers in the next 20 years. This will mean next to greater business opportunities, due to increase of markets, we get more consumers, higher consumption



Resource Availability

- As a result, consumer demand from emerging economies has the potential to exponentially increase the use of materials, bring about dramatic rises in input costs, and result in hard-to-manage commodity volatility. In the face of unprecedented resource demands, radical resource efficiency will no longer suffice



Resource Pricing

- Higher resource price volatility can dampen economic growth by increasing uncertainty, discouraging businesses from investing and increasing the cost of hedging against resource-related risks



Big Data

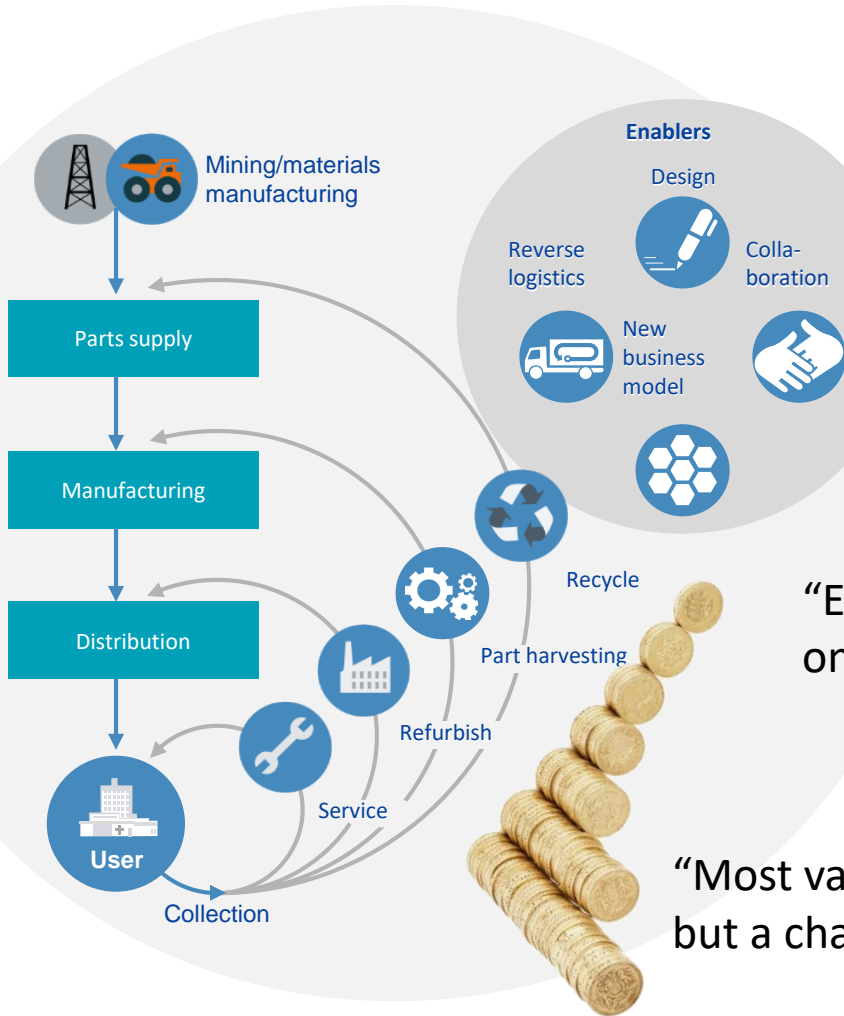
- The rise of big data and the proliferation of programmatic interfaces to new fields and industries have shifted the manner in which we solve problems. Big data will give ability to gain deep market knowledge and increase customer focused solutions



Ellen MacArthur became the fastest solo sailor to circumnavigate the globe (2005)



The Circular Economy or Closed Business Loops Business Strategy

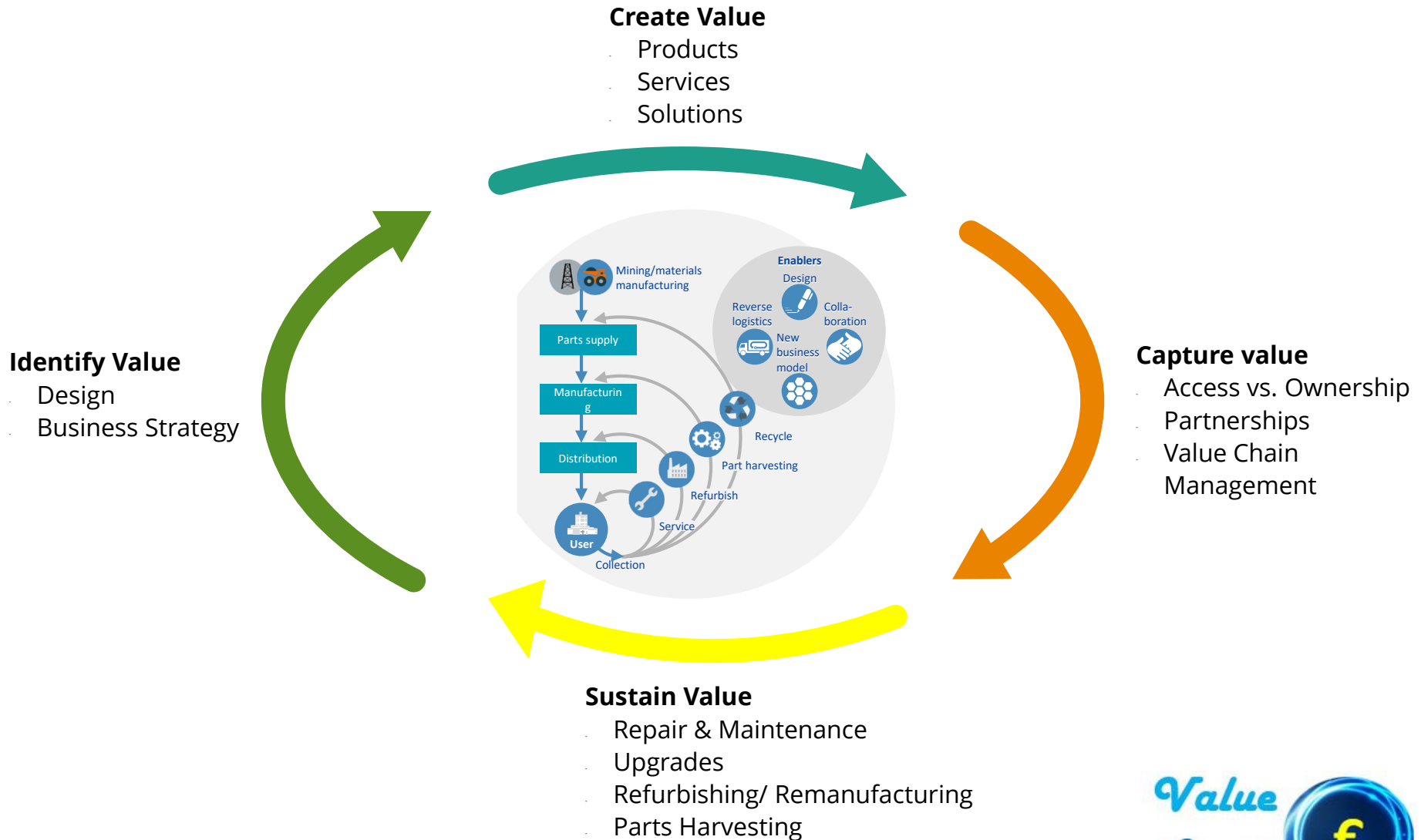


“Easiest loop” to imagine, but the least valuable one business-, social- and environmental wise!

“Most valuable loop”, easy to shift to any other loop, but a challenging one that requires a different mindset!

Closed Value Loops Framework

Model based on used value and lost value (tool available)



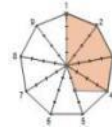
Tools created with Circular Economy principles

Sources of Value



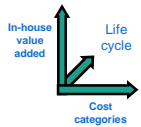
- Structure a brainstorm and identify circular economy opportunities in a three step approach.

Spider Mapping



- Add spider map dimension on customer relevance / value of circular economy

TCO Analysis



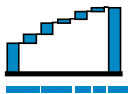
- Ensure that full system lifecycle (incl. service, refurbish, harvest and recycle) costs are considered in the TCO analysis

Feature Benchmarking



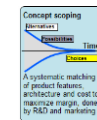
- How do you compare to your competitors in:
 - Modularity
 - Serviceability
 - Use of used parts

Clean-sheeting



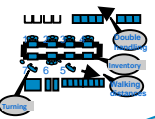
- Include life-time durability aspect to clean sheeting exercise (next to costs)
- Compare new material price versus used or recycled materials

Concept scoping



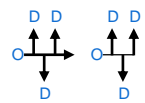
- Add dimension to show CE principles impact on the different concepts (e.g., is one option more modular than the other one)

Value-Chain Mapping



- Ensure that full lifecycle value chain (Source, Make, Deliver, Use, Service and Return) is used in the value chain mapping
- Include reverse logistics and resupply elements

Modularity / Platform Management



- What is the best modular design concept for upgrades & customization
- Create a common platform to ensure compatibility across products



Capturing opportunities at a large scale requires a systematic approach and long-term commitment

Enablers

Design

- ... for eXcellence
- ... for residual value
- ... for re-use
- Platforms
- Modular approach
- Material selection

Reverse logistics

- Smart logistics
- Incentives
- Legislation

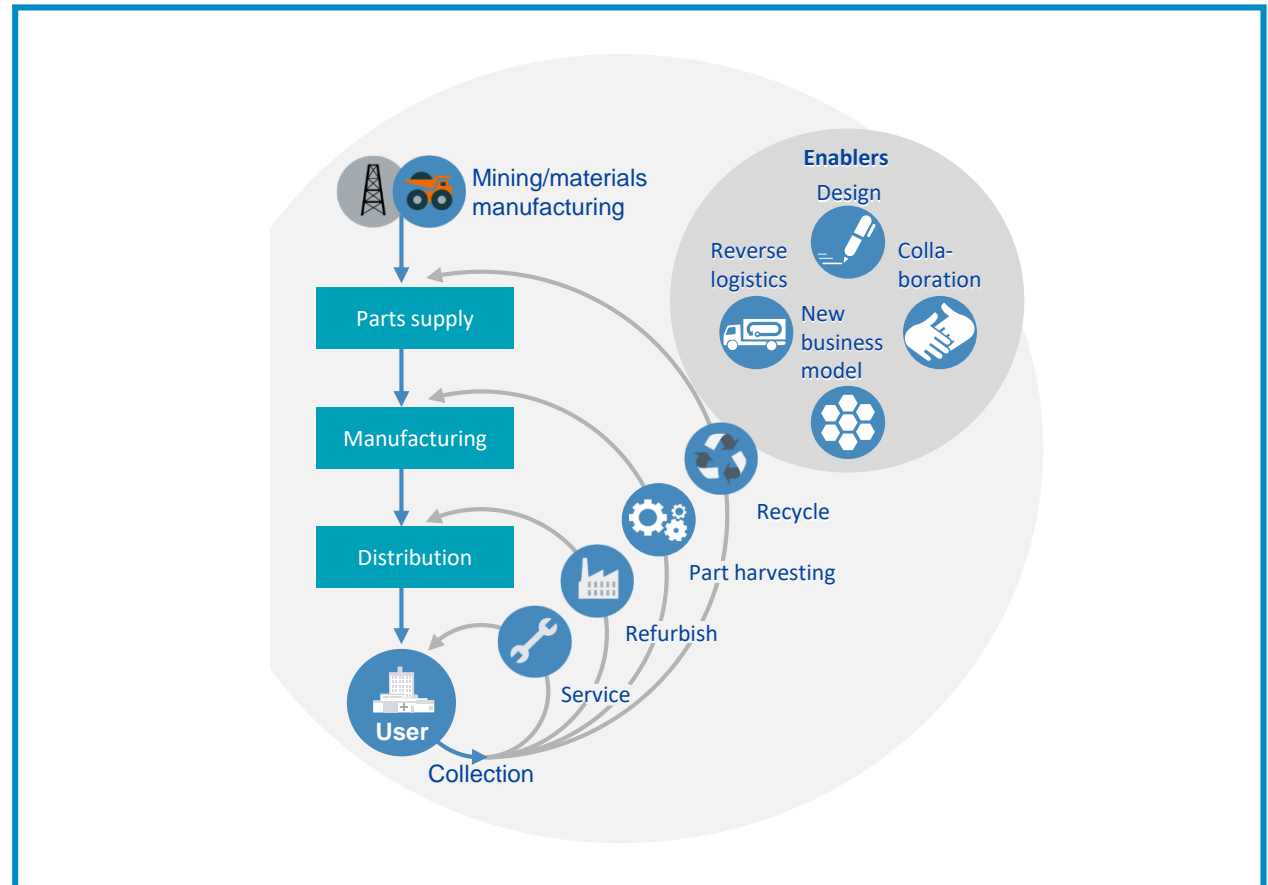
New business models

- Service propositions
- New alliances/partnerships
- Performance measurement

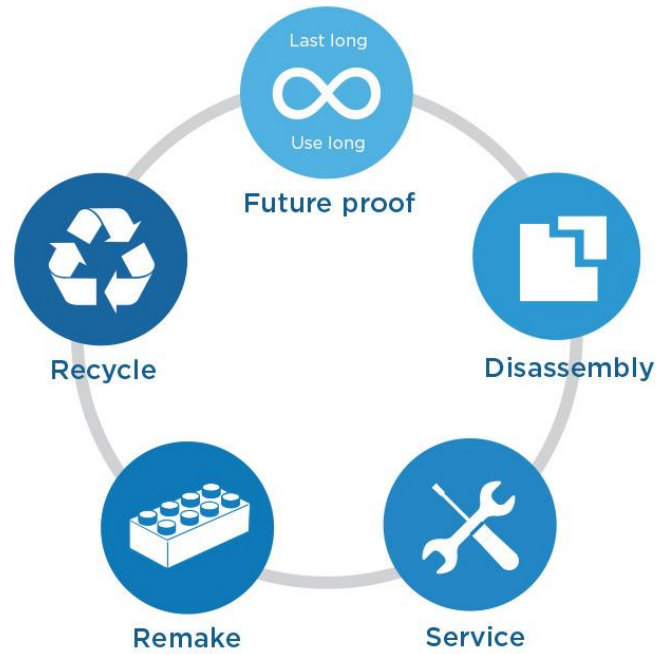
Collaboration

- Capacity/skill building
- Identify, prioritize, follow up
- Long-term commitment

Closed Business Loops



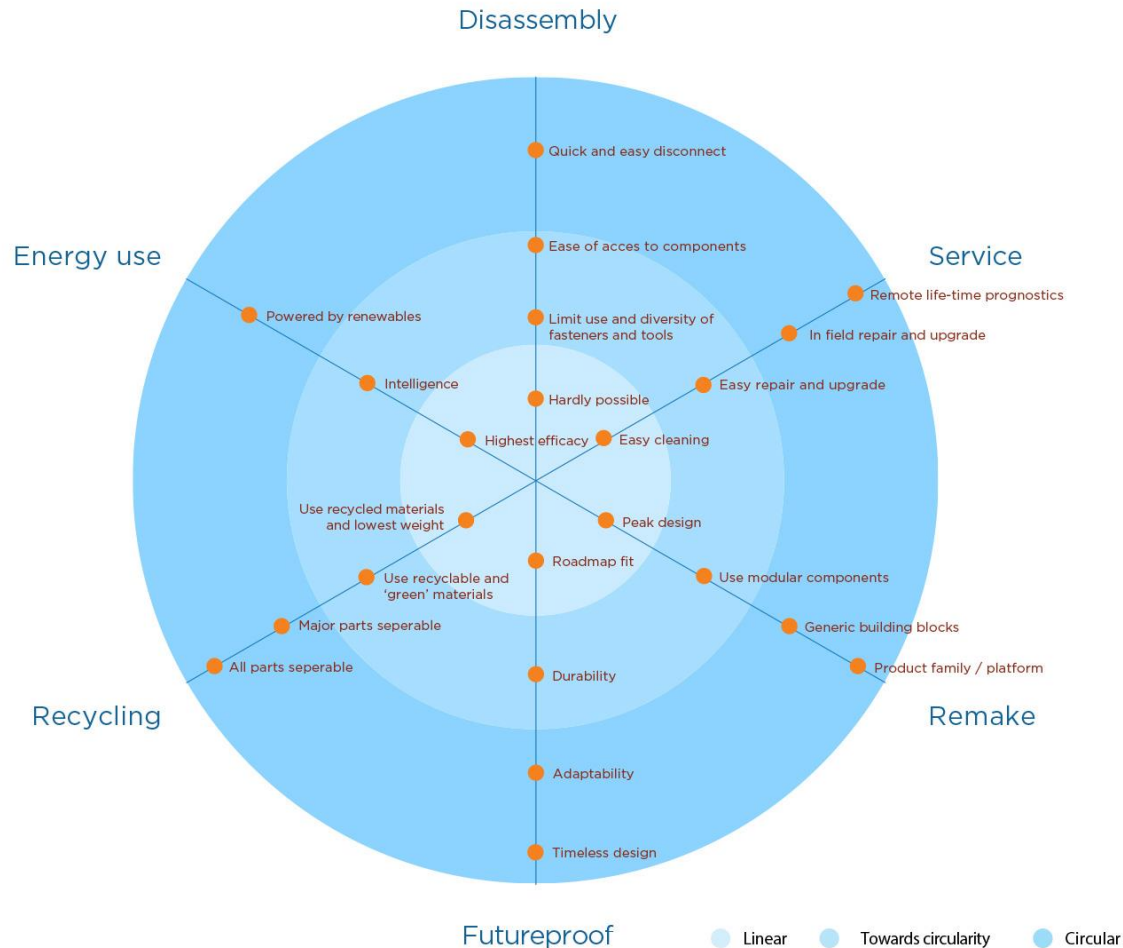
Design Products and Systems for closed loops



make it **future proof** for endless performance and adaptability
with design for **disassembly** to allow
easy **servicing** for optimal performance
modular design to **remake** products
and optimizing for **recycling** at end of life

Source: Maarten van den Berg, TU Delft

A way of plotting circularity performance



Source: Maarten van den Berg, TU Delft

How to change the business culture?

- Define ***company values*** considering value loops.

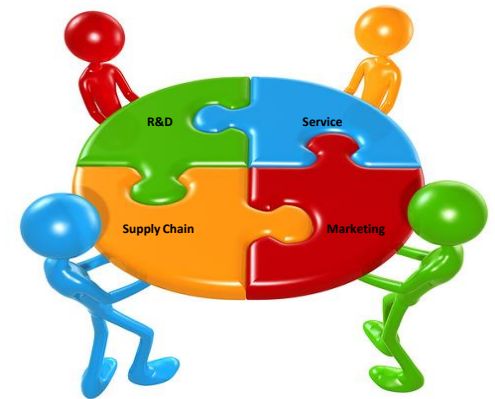
- ***Economical incentives*** for circular businesses.

- ***Measuring transformation*** of business results.

- Encouraging ***long term value creation***.

- Designing products and services based on relationship management.

- Defining circular business processes.

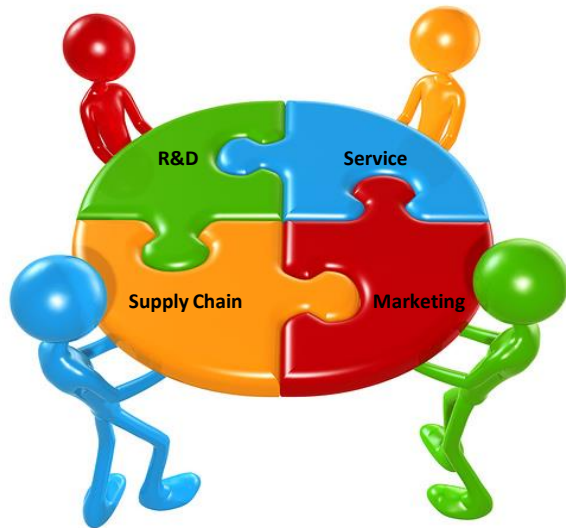


How to change the business models?

- Visionary **partnerships** economically attractive for all stakeholders.
- **Integral life cycle management**, where value is updated and upgraded.
- Creating common platforms and modular systems.
- **Rewarding customers access and usage vs. ownership.**
- CAPEX vs OPEX can ease the access to technology in emerging markets.
- Hassle free installation, usage and maintenance.
- **It is about the customer needs** rather than the device itself.
- **It is about the functionality** rather than the age of the equipment.
- **It is about the benefits for the eco-system** rather than the ownership.



Collaboration is key to succeed in closed business loops!



Light as a service - “Pay per Lux”

Business model innovation



- Visionary partnership, with an economic interesting perspective from both sides.
- Pay for use, instead of pay for possession (“Performance Lease”)
- State of the art installation with LED and dynamic lighting.
- Materials stay in possession of Philips, re-use of returned materials is included.
- Lighting energy bill will be paid by Philips to stimulate further innovation
- Turnkey solution, including maintenance
- Contract period of 60 months



Refurbished Systems: as good as new!

- Systems rebuilt and tested according to manufacturers specifications
- New vacuum components
- Customized configuration
- Latest software upgrades
- Latest hardware upgrades
- Original parts



PHILIPS



Rochester Institute of Technology

The screenshot shows a web browser window with the URL www.rit.edu/gis/cesm/about.php. The page header features the R.I.T. logo and navigation links. The main content area includes the Center of Excellence in Advanced & Sustainable Manufacturing logo, a search bar, and a navigation menu. The main text describes the COE-ASM's mission and contact information.

Rochester Institute of Technology

Center of Excellence in
**ADVANCED & SUSTAINABLE
MANUFACTURING**

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Center of Excellence in Advanced & Sustainable Manufacturing

The Center of Excellence in Advanced & Sustainable Manufacturing (COE-ASM) at the Rochester Institute of Technology is a New York State Center of Excellence supported by Empire State Development's Division of Science, Technology and Innovation (NYSTAR). The Centers of Excellence program was established by New York State to foster collaboration between universities and the business sector in order to promote the development and commercialization of new products and technologies.

A primary goal of the COE-ASM is to help New York State manufacturing companies improve their competitiveness through partnerships developing and deploying innovative technologies for more efficient and sustainable products and manufacturing processes. Sustainable manufacturing applies "systems thinking" to the design, distribution, production, use, and end-of-life handling of products, leading to greater energy and resource use efficiency and greener products that offer a competitive edge.

If you are interested in learning more about working with the Center of Excellence in Advanced & Sustainable Manufacturing, contact Dr. Mark Krystofik at 585-475-4246 or makgis@rit.edu.

Focused on Eco-Innovation

Development of Breakthrough Product and Process Technologies



FinanCE project

The screenshot shows a web browser window with several tabs open. The active tab is titled 'De rol van geld in de tr...'. The address bar shows the URL: <https://www.pggm.nl/wat-vinden-we/Paginas/De-rol-van-geld-in-de-transitie-naar-een-meer-circulaire-economie.aspx>. The browser's taskbar at the bottom shows icons for Windows, Edge, File Explorer, and other applications. The system tray in the bottom right corner shows the time as 11:11 AM on 10/3/2017.

The website content includes the PGGM logo with the tagline 'Voor een waardevolle toekomst'. Navigation links include 'Wie zijn we', 'Wat doen we', and 'Wat vinden we'. A search bar with the text 'Zoeken' and a magnifying glass icon is present. The main heading of the page is 'De rol van geld in de transitie naar een meer circulaire economie'. Below this heading, the text reads: 'De kern van de strategie van PGGM is de ambitie van haar pensioenfondsklanten waarmaken, ten behoeven van hun deelnemers.'



Circular Economy Challenges



Organization

- Ownership @ P&L business responsible
- Linear Processes vs. Closed Loops
- Delivering Boxes vs. Delivering Services and Solutions
- Shareholders, Management and Sales Incentives

Governments

- Increase public procurement of circular businesses.
- Exercise influence on EU level legislation and international trade issue.
- Stimulate purchases by lowering VAT for refurbished/remanufactured products.
- Promote and develop a reverse logistics infrastructure.

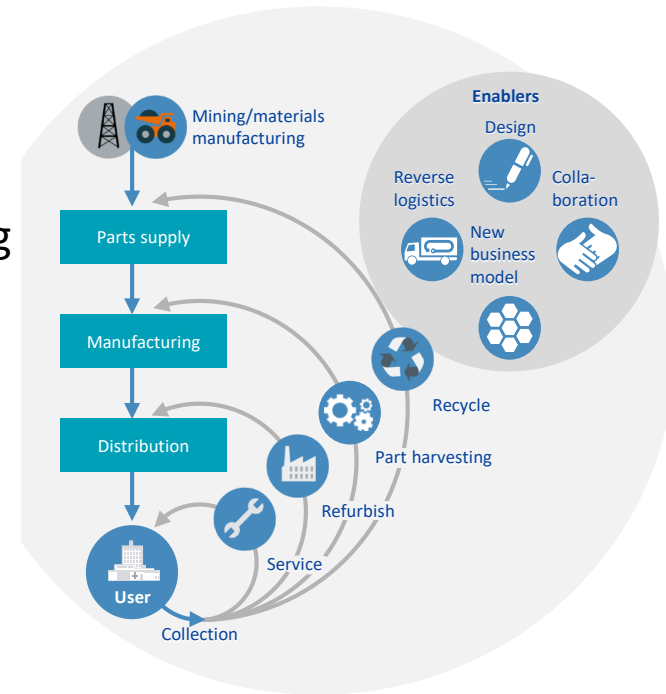
Industry

- Promote closed business loop partnership within and beyond.
- System thinking based on services and solutions across industries.



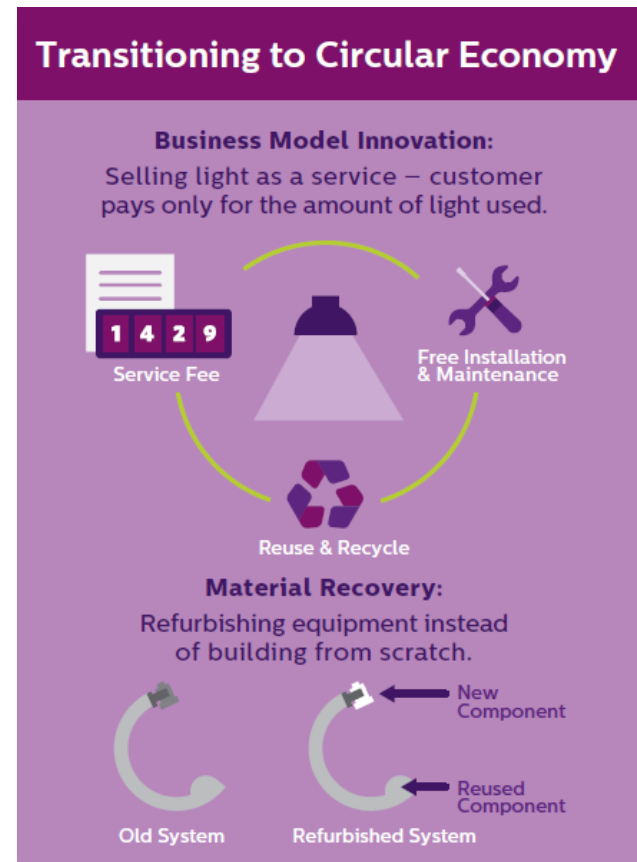
Benefits of Closed Business Loops

- Increased revenues due to product life cycle management as part of your business strategy.
- Additional revenues thanks to traded-in/returned products.
- Faster R&D designs and equipment maintenance by using platforms and modularity.
- New business models (CAPEX vs. OPEX) can ease the access to technology in emerging markets.
- Focus on the service to the customer and the device functionality, rather than the age of the equipment.
- Cost reduction in BoM, SCM and customer service operations.



How can you contribute?

- ✓ *Think out of the box.*
- ✓ *Develop technology, processes and business opportunities to close loops.*
- ✓ *Explore new business models.*
- ✓ *Define ways of creating, maintaining and increasing value in the long term.*
- ✓ *Avoid value leaks through the value chain, including users.*
- ✓ *Collaborate across disciplines creating modular systems and common platforms.*



Thank you!

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