Circular Economy and Value Retention Products (VRP)

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The Circular Economy

Linear
Current product design & business models

Circular
Keeping products and materials at highest use and recirculating them at end of life

Only 9% of the 92.8 billion tons of minerals, fossil fuels, metals, and biomass that enter the economy each year are re-used.
Value Retention Processes are a Gateway to Recycling

VRPs are a gateway to recycling:

- **Value Retention processes** retain *material value* and *functionality* within the product;
- **Recycling** retains *material value* within the system, once functionality is degraded;
- VRPs *and* recycling are both essential aspects of circular economy.

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Process-level: Value-Retention Processes (VRPs) are not equal
Remanufacturing in the United States generates $53 billion in annual sales.

There are 73,000 remanufacturing firms operating in the United States.

The U.S. Department of Defense is the single largest remanufacturer in the world.
History of U.S. Remanufacturing

• The origins of the U.S. remanufacturing industry go back to the 1920’s and 1930’s, with the emergence of mass production and standardization in American industry.
  • Economic and resource constraints of the Depression era also served as a stimulus for remanufacturing.

• Henry Ford established first remanufacturing facility in 1932 for automobile engines

• 1940’s automotive parts remanufacturing

• World War II was a major source of growth for remanufacturing, as a scarcity of raw materials such as steel drove the need to reuse durable goods, including automotive and truck parts.
Thank you

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