

Nokia Circular Supply

Creating Value through Circular Solutions



Sunny Cui
Nokia Global Operations
Special Customer Operations (SCO)
Sep. 2019

Bio

Myself :



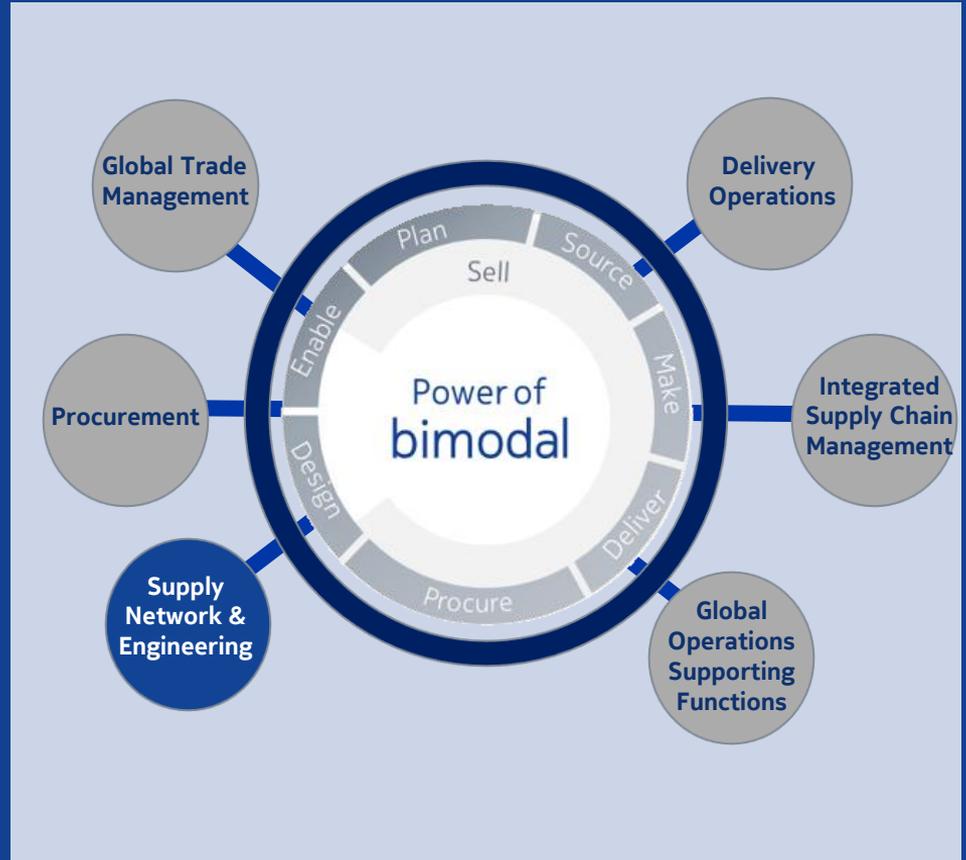
Sunny Cui

Nokia Global Operations

Special Customer Operations (SCO)

- Business Lead China Market Development of SCO for Circular Supply
- 15+ years Product Marketing, Technical Marketing, B&P Solution experience in Optical/Wireless Networks Prior roles with Lucent & ALU & Nokia
- Ph.D in EE from Tsinghua University in China

Global Operations in Nokia



Topics

Nokia Today

Nokia Support CSR from People and Planet

Circular Supply and Remanufacturing

Circular Supply Market Trends and Competition

Nokia Circular Supply

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Nokia Circular Supply

Nokia--More than 150 years of successful reinvention

Pulp,
Paper,
Rubber,
Early Bell System
products,
Mobile
phones,
...

Public

Acquired
**Motorola
Solutions
wireless
networks**

Created
**Nokia
Technologies**

Acquired
Alcatel-Lucent

Acquired
Gainspeed

Acquired
Deepfield

2011

2012

2013

2014

2015

2016

2017

2018

Launched
Networks
**transformation
plan**

Sold
**Devices
&
Services**

Sold
HERE

Acquired
Withings

Created
**Nokia
Shanghai
Bell**

Acquired
Comptel



Nokia Today We Create The Technology To Connect The World

Mobile
Networks

Fixed
Networks

IP / Optical
Networks

Global
Services

Nokia
Enterprise

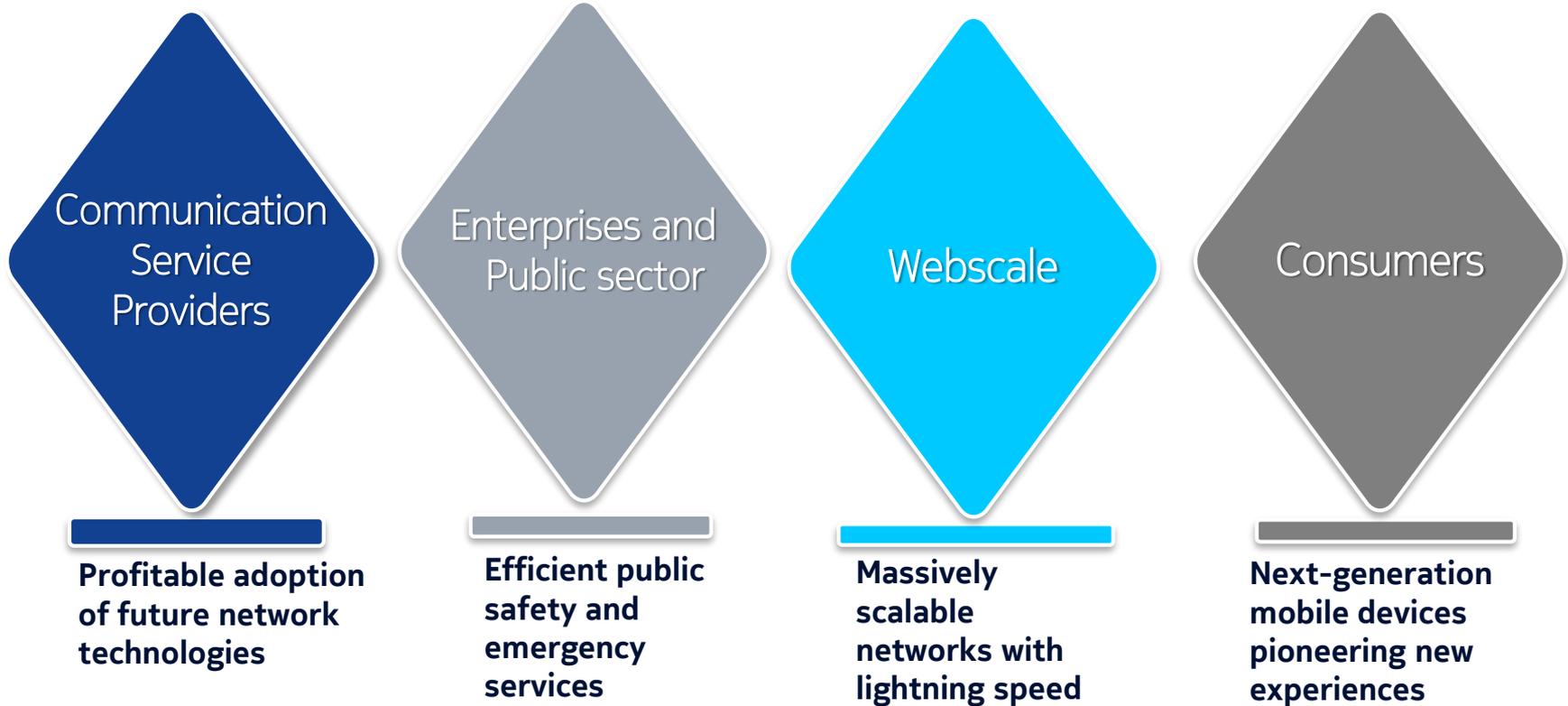
Nokia
Software

Nokia
Technologies

Nokia
Bell Labs

Nokia Today

Shaping the future of technology with our customers



Nokia Today

- We create the technology to connect the world. We develop and deliver the industry's only end-to-end portfolio of network equipment, software, services and licensing that is available globally. Our customers include communications service providers who use our solutions to support 6.1 billion subscriptions, as well as enterprises in the private and public sector that use our network portfolio to increase productivity and enrich lives.
- Through our research teams, including the world-renowned Nokia Bell Labs, we are leading the world to adopt end-to-end 5G networks that are faster, more secure and capable of revolutionizing lives, economies and societies. Nokia adheres to the highest ethical business standards as we create technology with social purpose, quality and integrity.

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Sustainability

- We can achieve the greatest positive impact and help accelerate achievement of the United Nations Sustainable Development Goals by creating the technology that connects people and things. Our technology improves lives by providing access to education, information, better healthcare, and economic opportunity, and can enable a safer, smarter and healthier planet. The technology we provide can help create a more equitable society by connecting the unconnected.



Video: <https://www.nokia.com/about-us/sustainability/>

Our Approach

Our sustainability vision remains to create the technology to connect the world, **in a responsible way.**
Together.



Our sustainability priorities and impacts



Improve people's lives

Create and deliver technology solutions and products that connect people and things. Our sustainability-related products and services will help people thrive and live better and healthier lives on a cleaner planet. This is the core of our business.



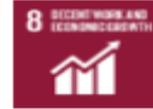
Protect the environment

- Help customers reduce energy use and emissions
- Increase product energy efficiency, develop product eco-design, and manage materials
- Reduce environmental impact of our operations (emissions, waste, resources)



Conduct our business with integrity

- Uphold the highest principles of business ethics and corporate governance
- Tackle issues related to privacy, data security, and potential technology misuse
- Ensure suppliers meet our high ethical, labor, and environmental standards



Respect our people

- Provide fair and just labor conditions in own operations
- Maintain health & safety as a priority
- Foster employee satisfaction, engagement, and development
- Strive for greater diversity, inclusion, and anti-discrimination



Make change happen together

Engage actively with our stakeholders to contribute to global efforts towards a more sustainable, socially responsible world

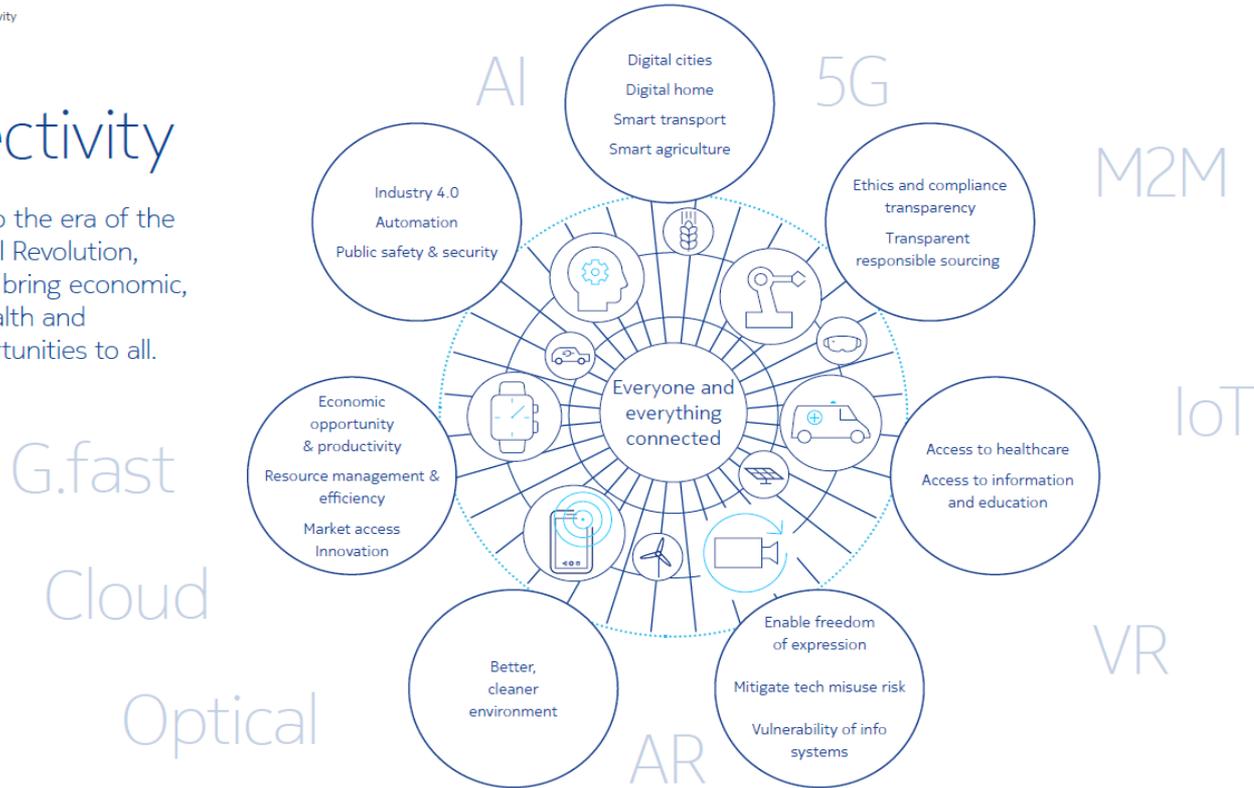
Connecting People and things via Technology and Sustainable Development

3.1

Connectivity

Connectivity

As we move into the era of the Fourth Industrial Revolution, connectivity will bring economic, educational, health and efficiency opportunities to all.



Improve People's Lives with Nokia Technologies

Highlights in 2018

6.1

billion subscriptions
on our customers' networks

36

commercial 5G contracts
as of end April 2019

More than
1 000

mission critical
network references

More than
23 million

indirect beneficiaries with
UNICEF mHealth program in Indonesia

1.4 million

people have directly benefited
from our corporate community investments since 2016

Protecting Environment--Highlights in 2018

We delivered zero emission products to over

140

customers globally

SBT

Science-based targets on track

Average energy savings
for customers whose networks we modernized

43
%

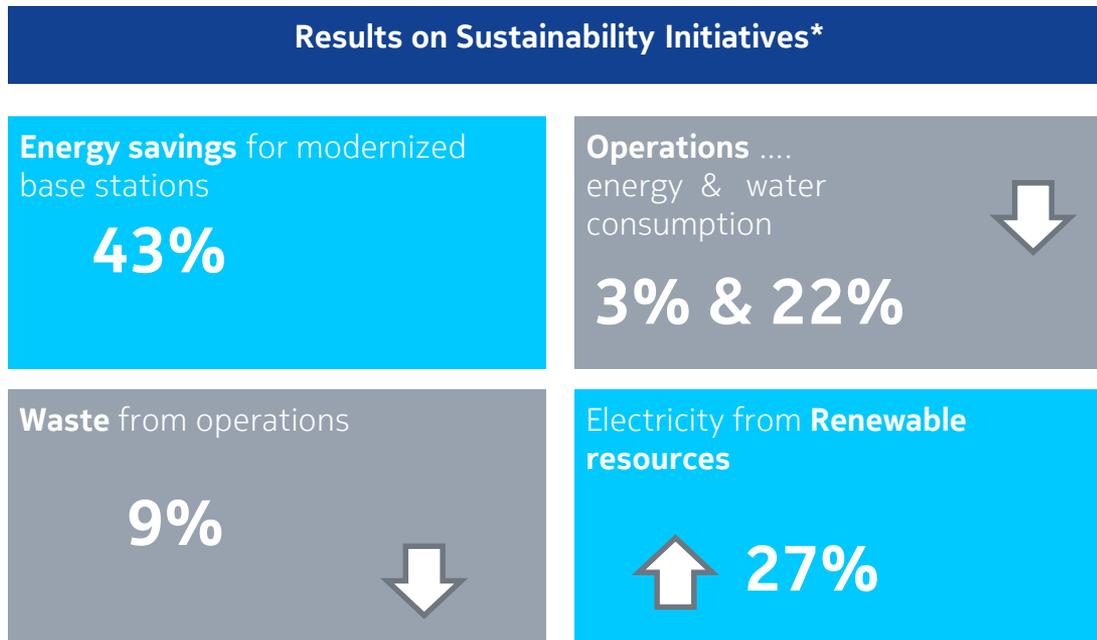
Launch of the world's first liquid cooled base station
reducing CO₂ emissions up to

80%

99.5%

Material/energy utilization
from equipment end-of-life services

Results on sustainability Initiatives



Sustainability. Our commitment to protecting the environment
Better for the planet and better for us!

* 2018 Nokia
People & Planet
Report

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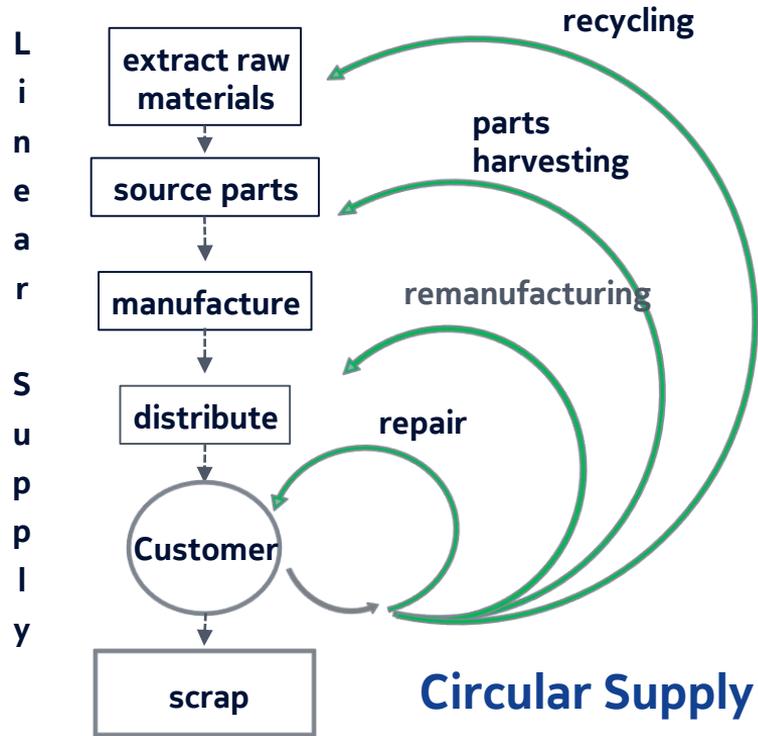
Why do we recycle?



There is **VALUE**
to be mined
and utilized



Linear and Circular Supply



Circular Supply is an aspect of the Circular Economy (CE). CE “builds economic, natural and social capital” by employing three principles:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural resources.

Ellen MacArthur Foundation, 2018

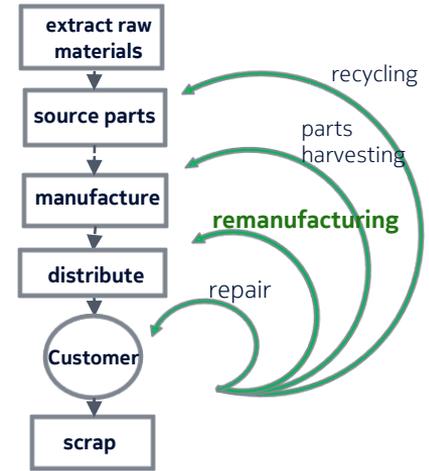
This Circular Supply diagram is adapted from one used by the *Ellen MacArthur Foundation*

Circular Supply & Remanufacturing

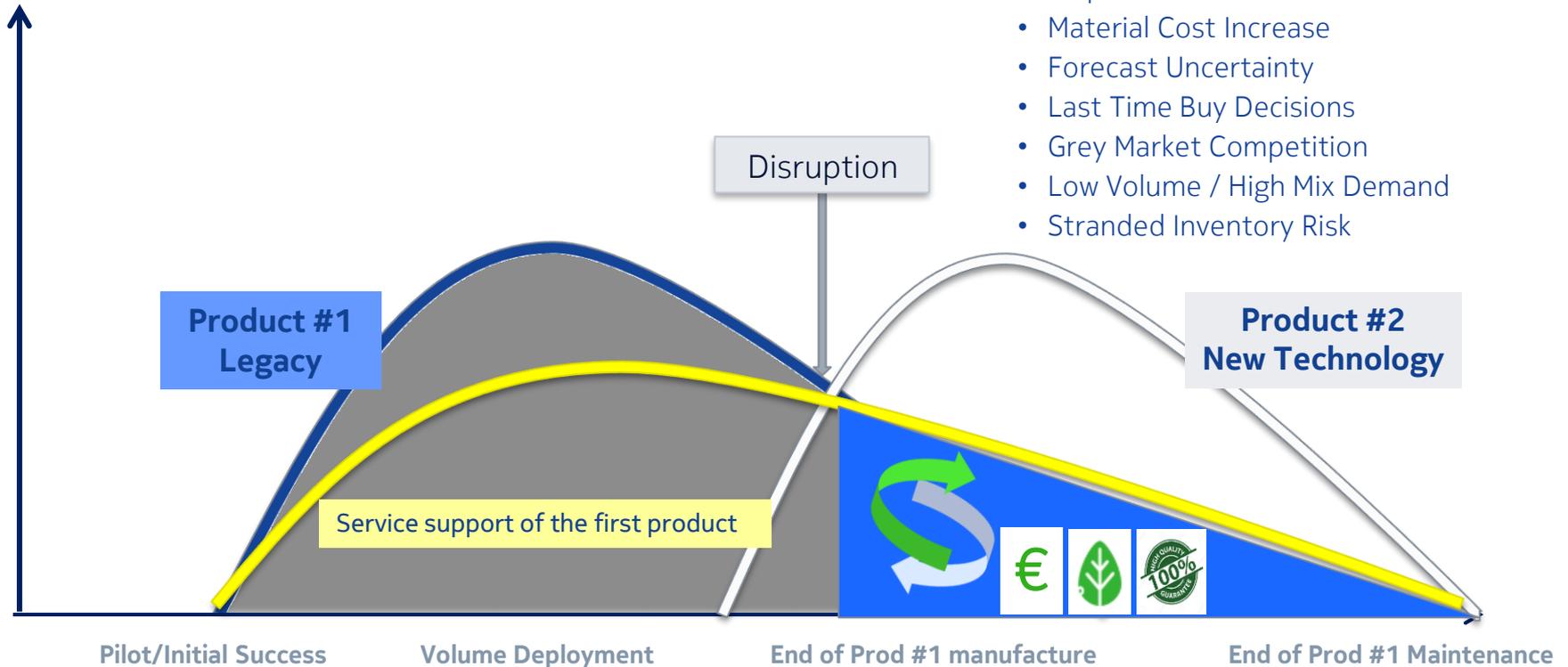


Remanufacturing is a comprehensive industrial process by which

- a previously sold, leased, or used product
- is returned to like new, or better than new, condition
- from both a quality and performance perspective,
- through a controlled, reproducible and sustainable process.



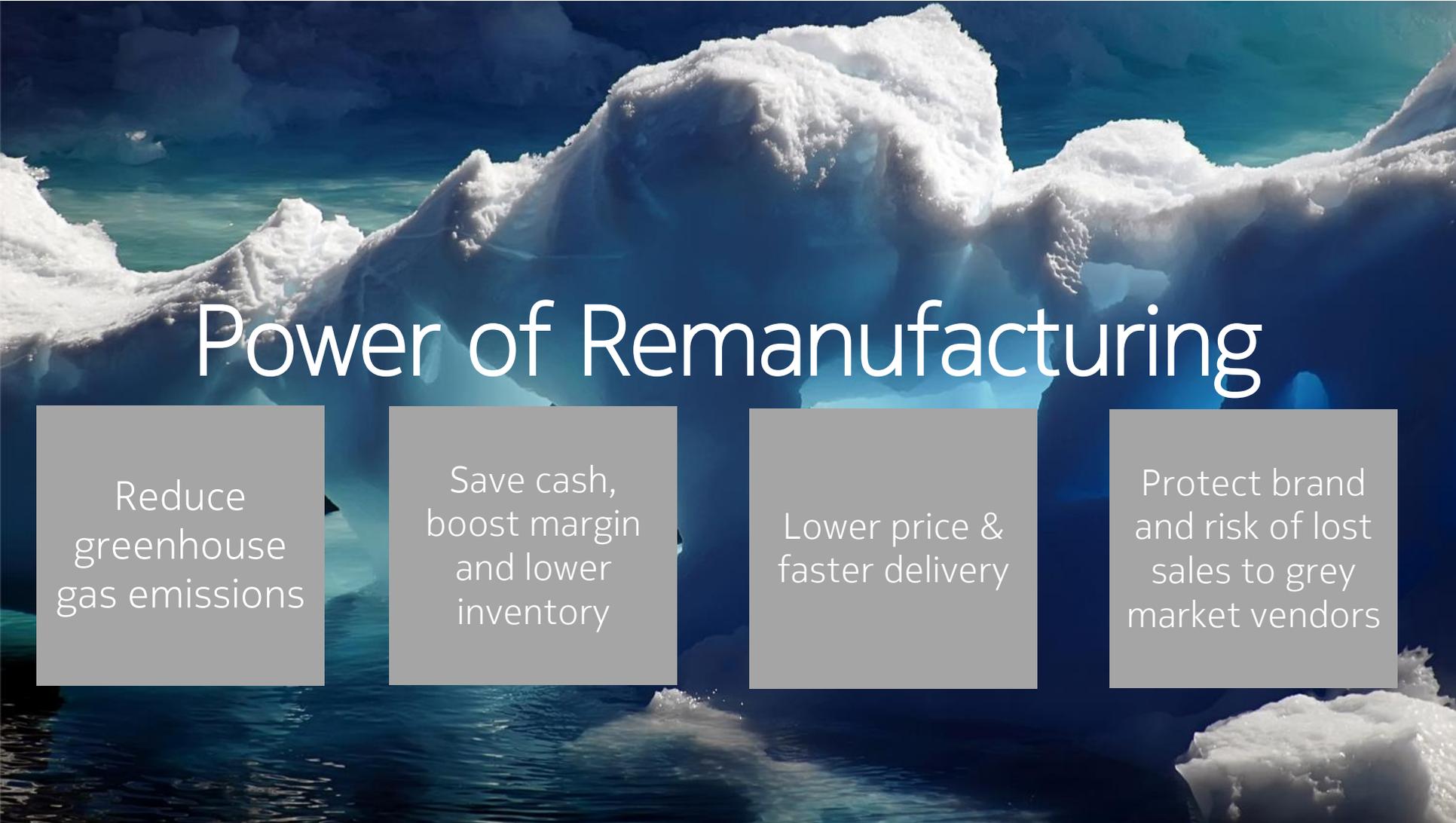
Product life cycles and remanufacture



EOL Market Conditions

- Disrupted Technology
- Displaced Embedded Base
- Material Cost Increase
- Forecast Uncertainty
- Last Time Buy Decisions
- Grey Market Competition
- Low Volume / High Mix Demand
- Stranded Inventory Risk

Technology disruptions actually create circular supply and remanufacturing opportunities.

A large iceberg floats in deep blue water. The top of the iceberg is white and textured, while the submerged part is a dark, translucent blue. The water around the iceberg is a vibrant turquoise color.

Power of Remanufacturing

Reduce
greenhouse
gas emissions

Save cash,
boost margin
and lower
inventory

Lower price &
faster delivery

Protect brand
and risk of lost
sales to grey
market vendors

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Market Trends



A non-profit that “works with business, government and academia to build a framework for an economy that is restorative and regenerative by design.”



“...triple the value of Europe’s remanufacturing sector to €100 billion by 2030 by bringing businesses together to share knowledge, and seek changes to policy with the aim of making remanufacturing a normal part of the product life cycle.”



中国循环经济协会

China Association of Circular Economy

The market size by the end of the 13th Five Year Plan [2020] is expected to be 24.3B€, and it is the fastest growing market

Some of the global industries promoting remanufactured products are : Aerospace, Automotive, Electrical & Electronic Equipment, Furniture, Heavy Duty/Off Road, **Information & Communications Technology**, Internet of Things, Heavy Machinery, Marine, Medical Equipment, Rail, Oil & Gas Equipment

ICT Market Activity

“Windstream acquired Broadview Networks...
and then Mass Communications”

“Telefonica completed the purchase of Digital+”

“Orange acquired Jazztel”

“Century Link acquired Level 3 Communications”

“Verizon acquired XO Communications....
and then Straight Path Communications”

“Zayo acquired Electric Lightwave (InTEGRA Telecom)
and then Neutral Path Communications”

“Vodafone’s €18.4 billion acquisition of Liberty Global assets in
Germany and eastern Europe targeted to close 2019”

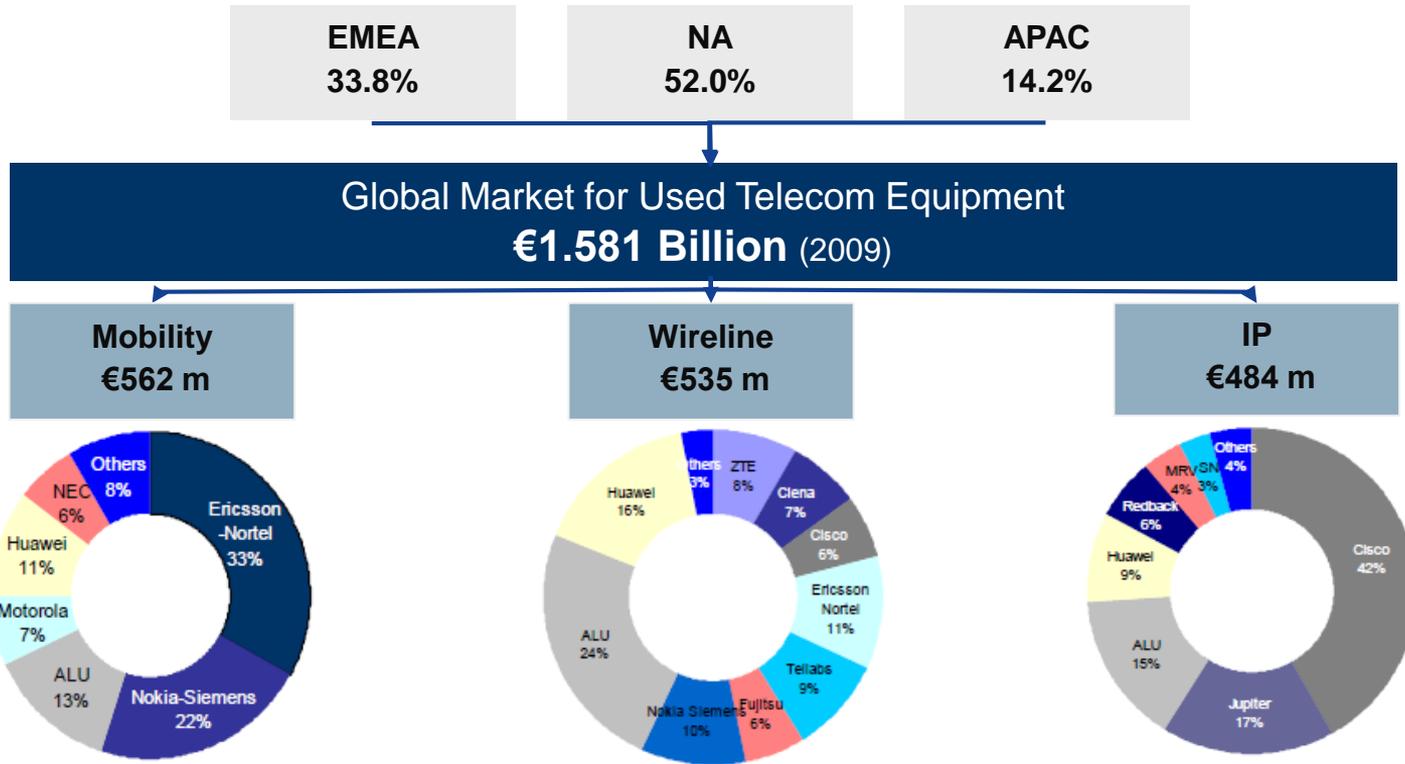
“AT&T acquired Time-Warner”



verizon^v



Global Market Size for Used Telecom Equipment



Global IoT Market for Refurbished equipment = +10B €

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Nokia recognizes, recaptures and reapplies the value of its products for

- the benefit of our customers**
by providing product alternatives
- the benefit of Nokia**
by ensuring the integrity of our brand
- the benefit of the environment**
by improving resource usage.



Nokia has more than 25 years of experience in remanufacturing, and has delivered

- millions of units,
- of hundreds of types,
- worth billions of euros
- to both large and smaller customers around the globe.

Products that were used for network growth, labs, trials, first office deployments, spares and disaster recovery.....for short intervals, unforecasted demand, budget constraints and legacy supply.

Products that made customers come back for more because of the value.

Nokia Circular Supply

Won EUCCC 5th CSR Award--Excellence in Responsible Value Chain in Y2018

“Nokia has shown leadership and ambition in sustainability by embedding circular economy principals in their vision and operation model as well in business development.”

Jyri Arponen, Senior Lead, Business development, Circular Economy, Sitra The Finnish innovation Fund

Over the past 5 years, by supplying 387,442 Nokia-branded circular products for customers, internal repair and labs

33,174 metric tons of CO₂ emissions were avoided

equivalent to :

- 7,104 passengers vehicles taken off the road for 1 year, or
- 130M km driven by a car, or
- 859,742 tree seedlings grown for 10 years

Good for Customers

Good for the Environment

Good for

NOKIA

For additional information....

About Nokia Circular Innovation:

<https://www.nokia.com/blog/circular-innovation/>

Oct 09 2017

When technology overlap meets Circular Innovation: a love story

by [Donald J. Olson](#)

About Nokia Sustainability:

<https://www.nokia.com/about-us/sustainability/>



Nokia Circular Supply
delivering integrity with flexibility and a reduced footprint