

WIZARD of ID



Institute for Intervention Research and Cultural Sustainability

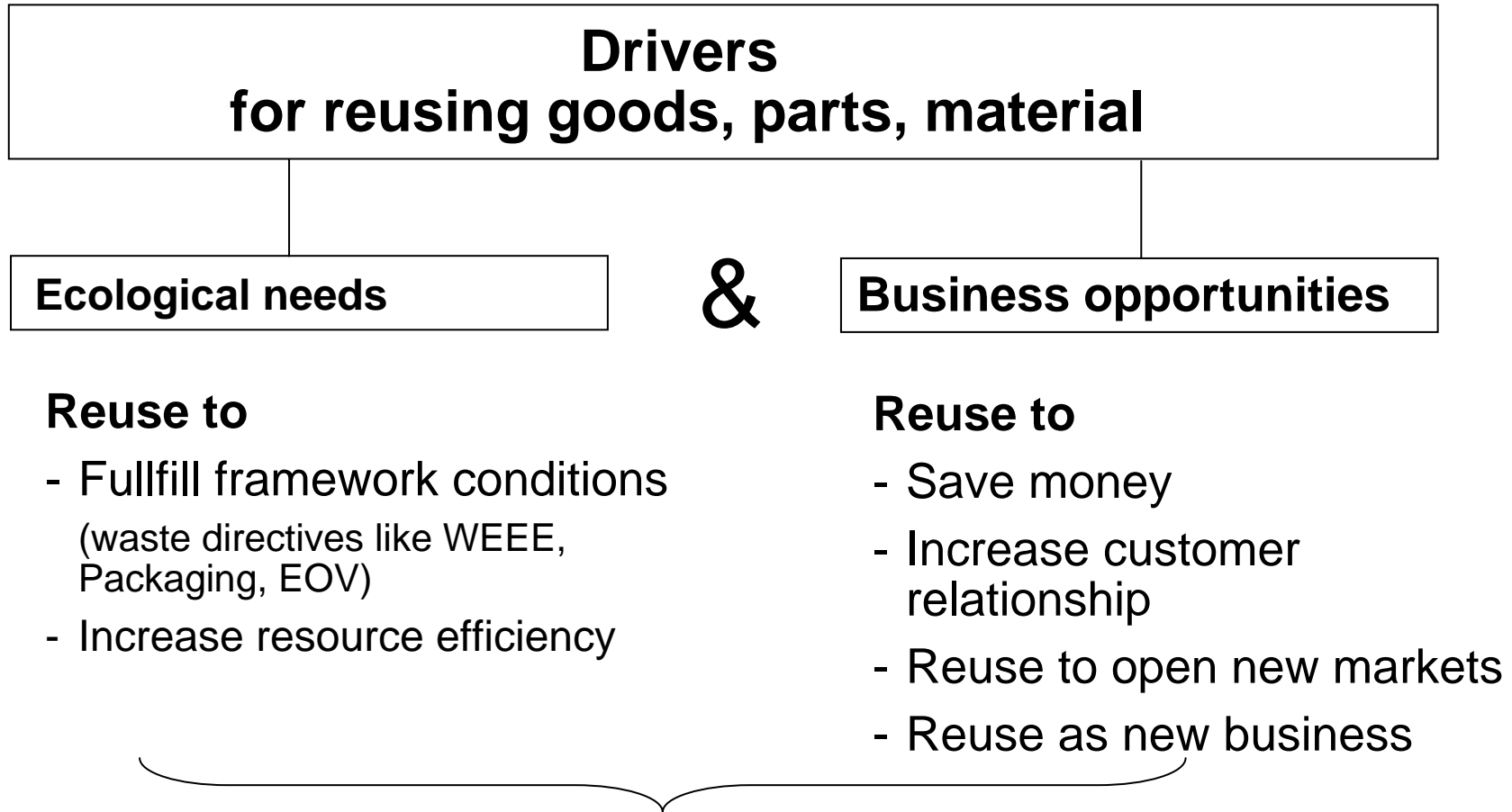
Alps-Adria University of Klagenfurt

Renate.Huebner@uni-klu.ac.at

Logistics in a Loop Economy

The Reuse of Goods and its impacts on a Supply Chain

Reuse of Goods – the Drivers



Reuse contributes to two pillars of a Sustainable Development

Reuse – Examples: Goods and Markets

1. Disposable medical devices
2. Textile leasing
3. Retreaded tires
4. Industrial oil and lubricants
5. Toner cartridges
6. Diesel train sets



(Hübner, Reprocessing, 2005)

Reuse – Examples: Resource and Cost Savings

Reusing Systems

Resource and Cost Savings

1. Disposable medical devices



- Dialysis filter: 5x reuse, in a Hospital annual savings of €210.000.-,
- Material (waste) reduction of 90% by only 10% articles being reused

Quelle: RMA, 2004

3. Retreaded tires



- Tires: 2-3x reuse, aeroplanes: 12-15x cost savings of up to 80%
- Saving of petrol (20-30l/tire)
CO2 reduction of 100kg per tire

5. Toner cartridges



- Toners: 15x, cost savings of up to 50%
- Material (waste) reduction up to 90%

(Hübner, Reprocessing, 2005)

Use and Reuse – Types of Economy

One use

= Linear Economy

Profits
depend on the
number of sold goods

Goods
are new

Supply Chain
production oriented

Re-use

= Loop Economy

Profits
depend on the
number of sold utilisations

Goods
are as good as new

Supply Chain
utilisations oriented

Processes within a Supply Chain

A supply chain

is a system of organizations, people, activities, information and resources involved in **moving a product** or a service from supplier to customer.

Supply chain activities **transform** raw materials and components into a finished product that is delivered to the end customer.

(Nagurney, 2006)

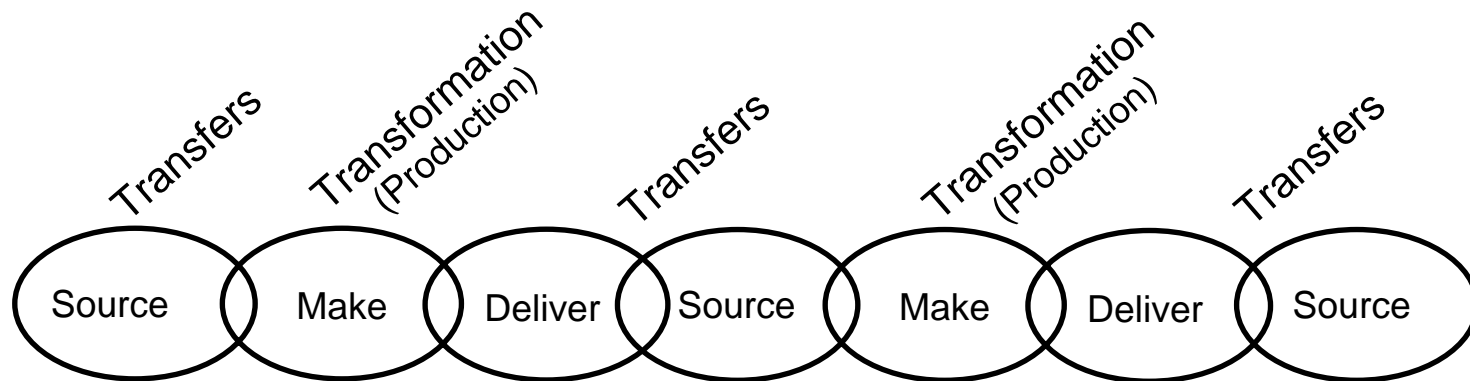
Transfer:
all processes to
change time and place
of goods

**= Logistics
from supplier to customer**

Transformation:
all processes to
change form and structure
of goods

**= Production
of new goods**

A Supply Chain (SC)



Characteristics:
Linear, production-oriented, new goods

Material flow: B2B or B2C

(SCOR Modell, Supply Chain Council)

Impacts of Reuse on a Supply Chain

2. Input goods

- used, worn out
- competition with waste markets

3. Reprocessors

- replacing production

1. User as supplier

- not only end but also start of SC
- different patterns between private and industrial users

Supply Chain (SC)

4. Output goods

- warranties
- principle „as good as new“
- competition with new goods

5. Logistics

- Return Logistics
- Redistribution Logistics

Impacts on Transfers and Transforms

Reusing Goods

- Closing the Loop -

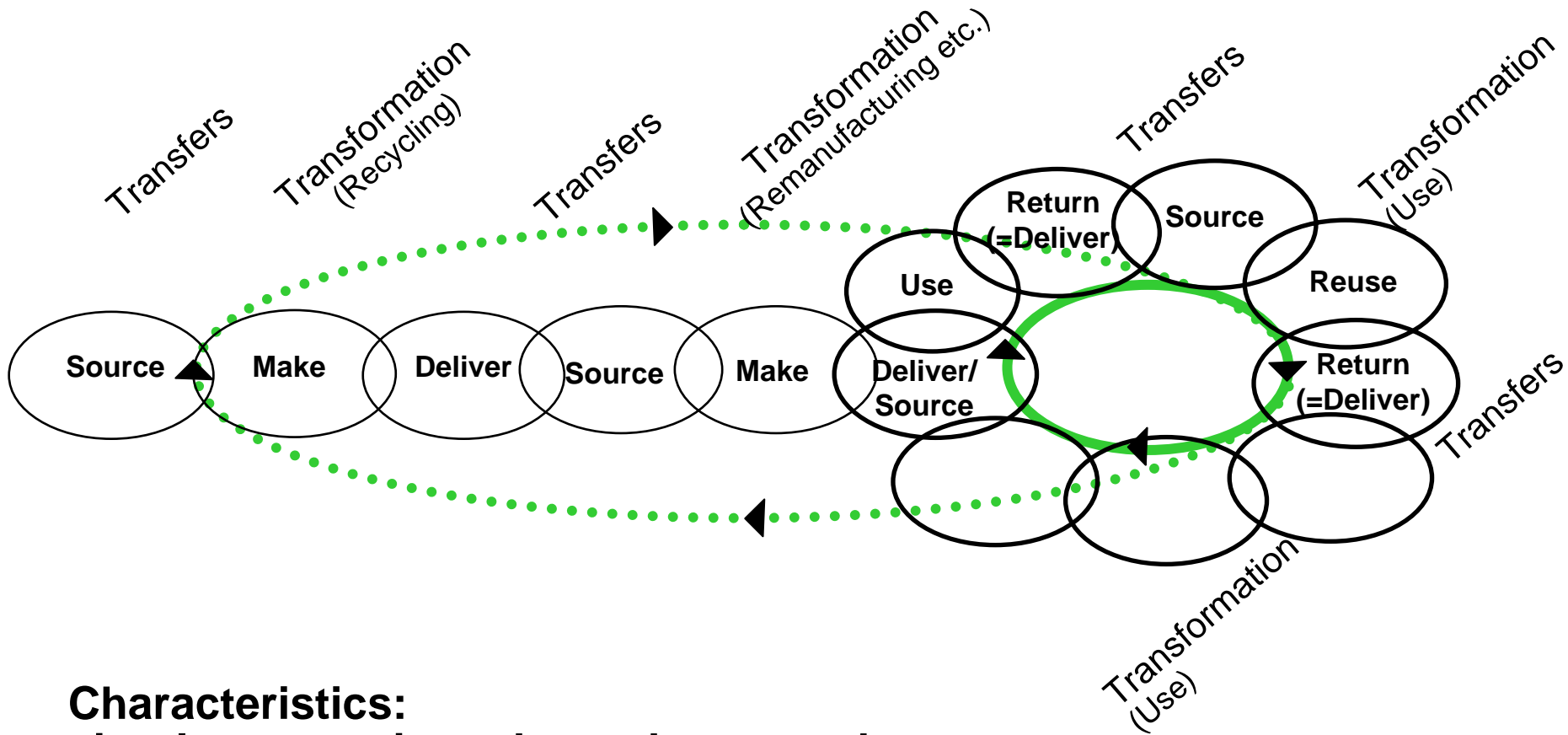
Transfers

- 1) User as supplier (C2B)
- 2) Industry as customer
- 3) Return and Redistribution Logistics

Transformations

- 1) Utilisation as additional transformation process
- 2) Reprocessing of used instead production of new goods
- 3) 100% of goods quality proved
- 4) Warranty on the function of the good

Closing the Loop – „closed loop supply chain“



Characteristics:
circular, use-oriented, goods as good as new

Material Flow: B2B or C2B

Scope of decisions

Elements necessary to close a Loop

Goods/Material

- Reusable
- Durable
- Upgradeable
- Repairable
- Remanufacturable
- Recyclable



Ecodesign-Concept

Partners

- User
- Operator
- Reprocessor, Producer
- Logistic partner



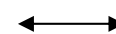
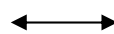
A) Type of loop

Relations

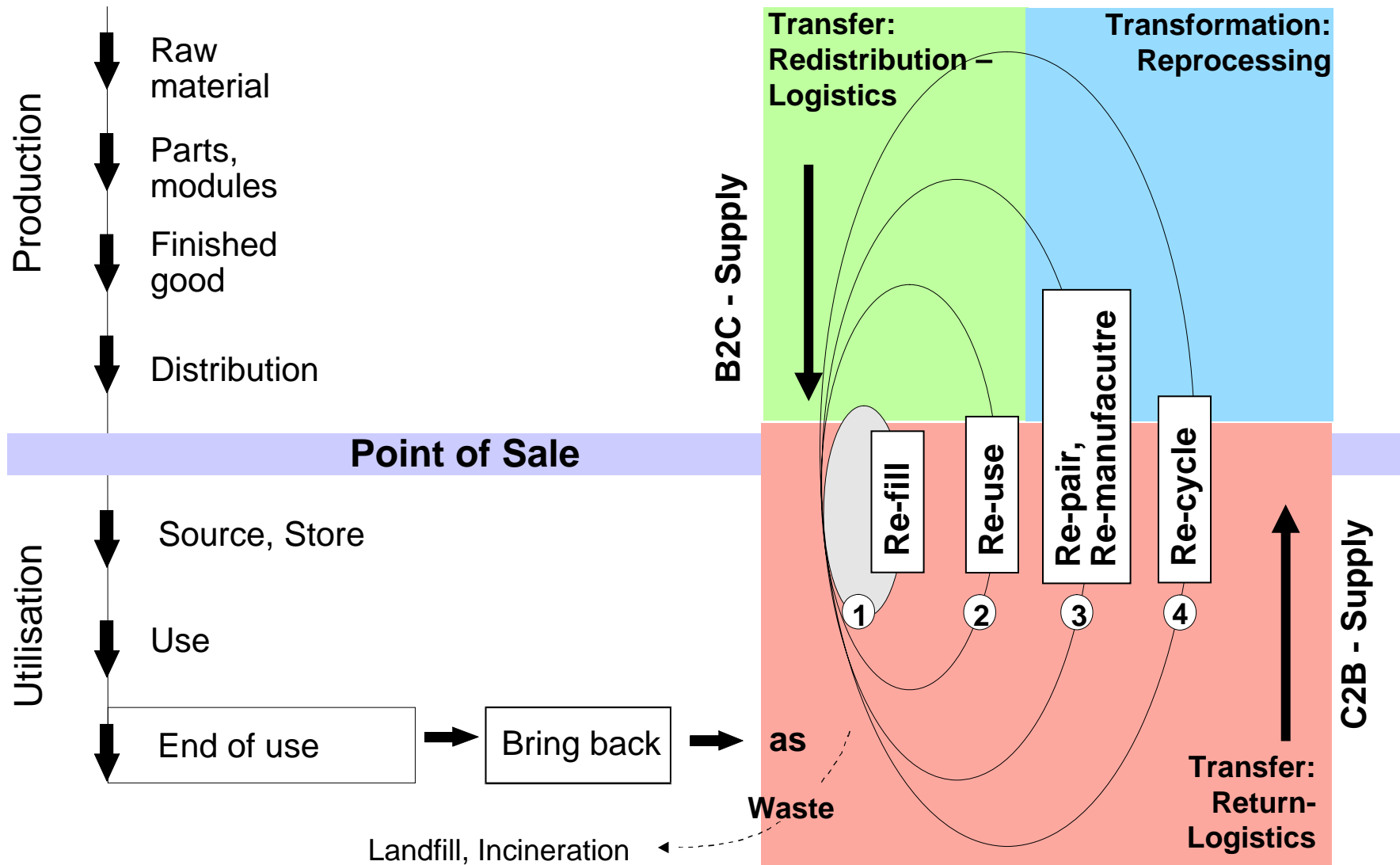
- Between partners
- To markets
- To products



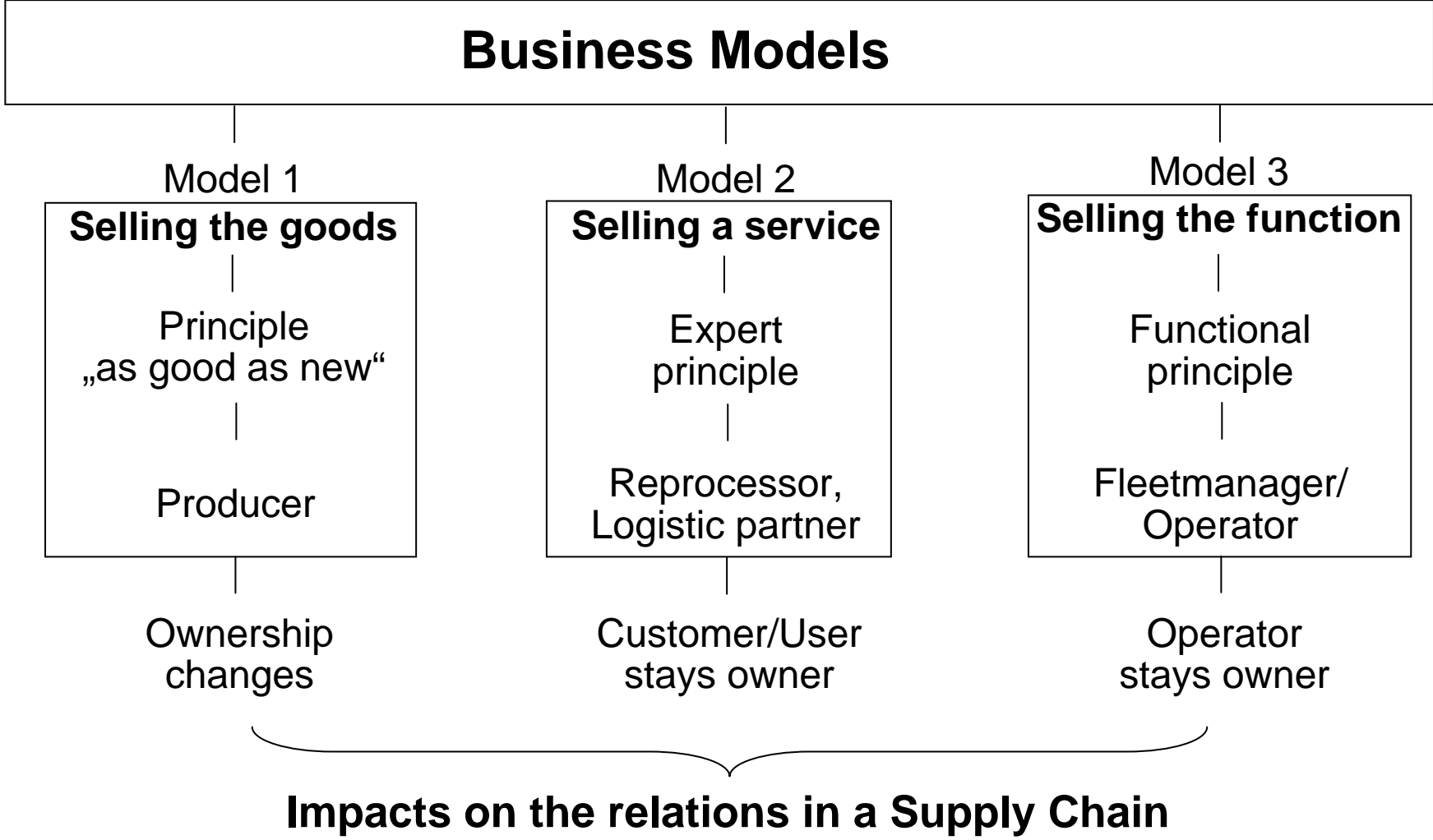
B) Business Model



A) Four Types of Loops – Flow of Goods



B) Business Models - How the Business is made and by whom?



Discussion and Outlook: Reuse and the Supply Chain Concept

- 1. Do the impacts of reuse-systems on a Supply Chain blust the SC-concept ?**
- 2. Is the SC-concept ready to optimize reuse-systems?
Can the SC-concept help to increase competitiveness of reuse-systems?**
- 3. Can the Supply Chain Concept contribute to sustainability or is it necessary to develop a new supply concept?**

Flipchart

For Discussion

The Supply Chain Management (SCM)

Ad 1)

➤ **SCM is a philosophy**

- going beyond one company and
- integrating the activities of partners along a value-added chain.

➤ **SCM aims the coordination and synchronization of information and material flows**

- to optimize costs, time and quality

➤ **SCM has a strategic and a operative nature.**

(Wildemann, 2005)

Reuse-systems do not go beyond the concept of SCM, if

- the user is seen as supplier and
- the return-logistics are integrated in sourcing strategies.

EMA and Supply Chain Management

Ad 2

How can EMA contribute, to make reuse competitive and supply chains sustainable?

Challenges

- How long / how often can a good be reused
 - From the economic point of view?
 - From the ecologic point of view?
 - From the technological point of view?

Key Questions

- Which factor helps to bring both in one line?
 - Concept of service-unit should be improved and enlarged to become a tool
- Which business model contributes best to
 - Increase Resource efficiency?
 - Increase Profits?
 - Increase competitive advantages ?

Discussion and Outlook: Reuse and the Supply Chain Concept

- 1. Do the impacts of reuse-systems on a Supply Chain blust the SC-concept ?**
 - No, if the user is seen as supplier and the return-logistics are integrated in sourcing strategies.
- 2. Is the SC-concept ready to optimize reuse-systems? Can the SC-concept help to increase competitiveness of reuse-systems?**
 - Future Challenges of the SC-concept, support of EMA necessary.
- 3. Can the Supply Chain Concept contribute to sustainability or is it necessary to develop a new supply concept?**
 - Future Research questions, Regional Development, Res. Effizienzsteigerung da weniger Transporte,

Sustainability, Logistics and Supply Chains

Aims of Sustainable Logistics

Making Logistics more sustainable

Challenge:

How to make technical systems sustainable?

Logistics making the Economy more sustainable

Challenge:

How to make Supply Chains sustainable?