



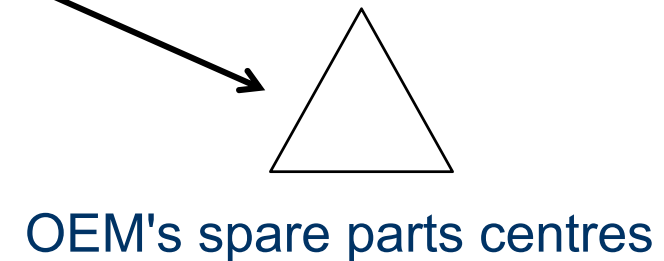
Utvikling av verdensledende reservedelsproduksjon på Raufoss

Marco Semini, NTNU
Norman konferanse 1.10.2014

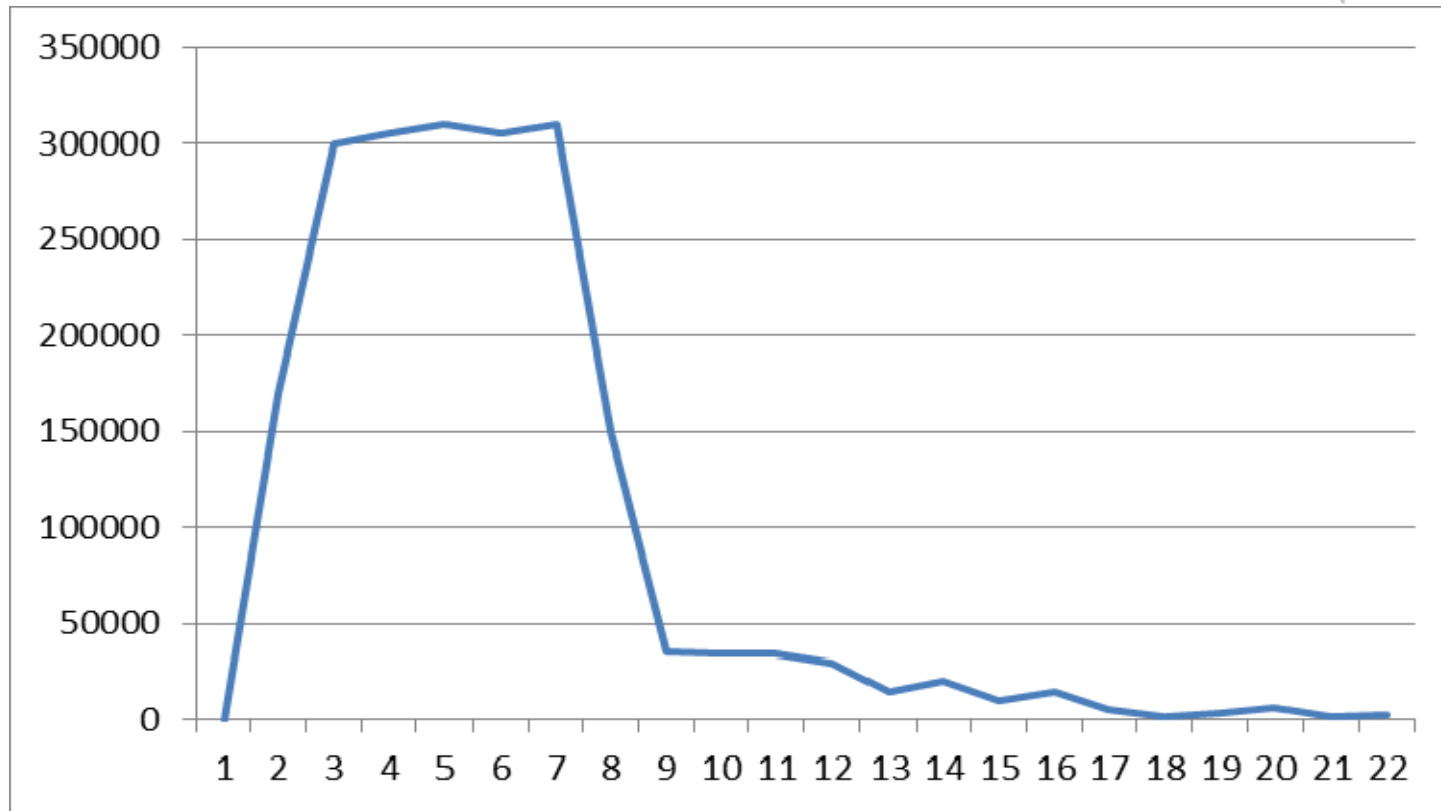
Raufoss: An automotive supplier cluster



Benteler Aluminium Systems Norway



Life cycle and volumes



Volume per variant

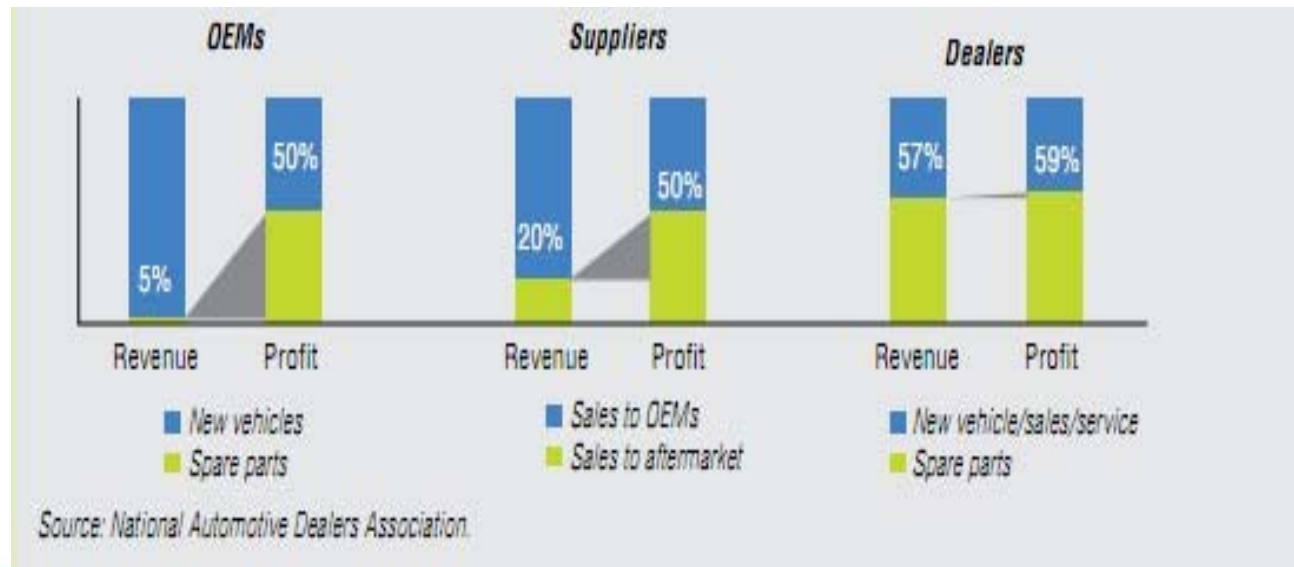
Spare Part Challenges and Opportunities

Challenges:

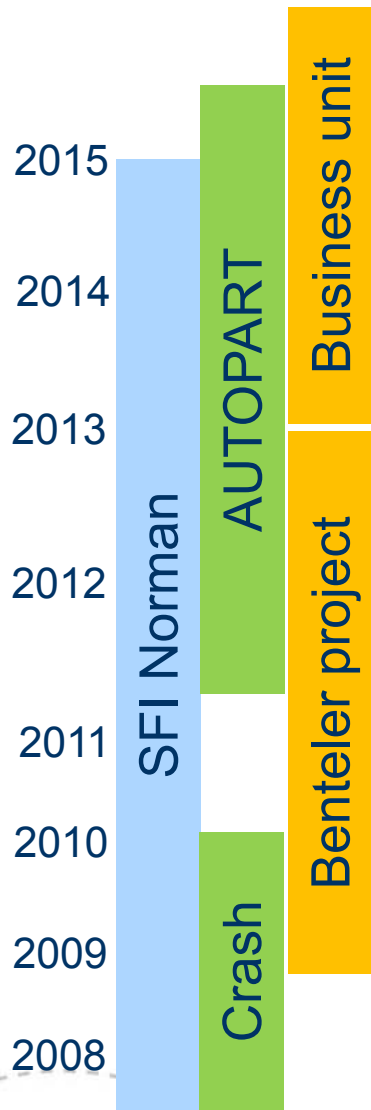
- Many variants, low volumes
- Manufacturing system adapted to high-volume, mass production
- Old, infrequently used equipment
- Knowledge goes lost
- Disturbing serial production

Opportunities:

- The spare parts market is not as price sensitive as the serial parts market
- Can be the most profitable part of the business



Key activities, results, and plans



Continuing efforts to implement strategy
 Effective production and inventory planning
 KPIs for spare parts manufacturing
 Layout concept 2020
 Pricing negotiations

Development of spare parts manufacturing strategy

Establishment of spare parts unit

Success factors for effective spare parts manufacturing

Analysis of production, market, and state-of-the-art

Application AUTOPART project

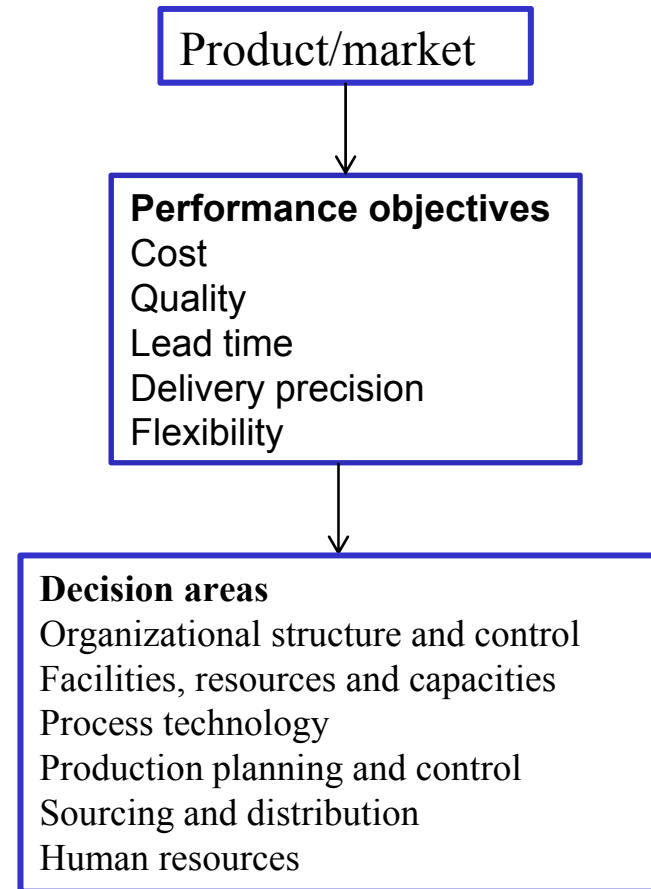
Database improvement
 Relocation of equipment
 Initial steps

AUTOPART Vision

Establish Raufoss as a "spare parts cluster" with world-wide leading competence in the production and delivery of automotive spare parts



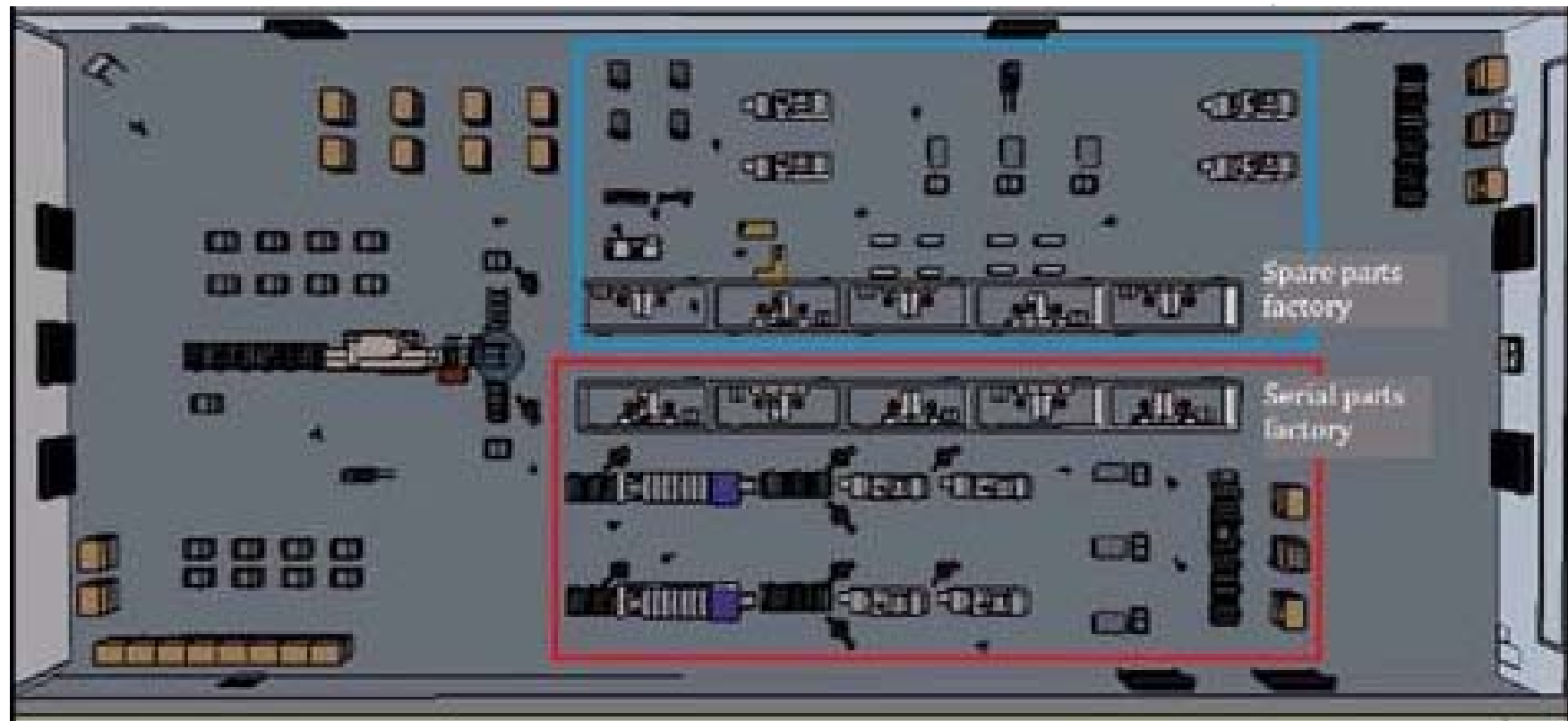
Manufacturing strategy



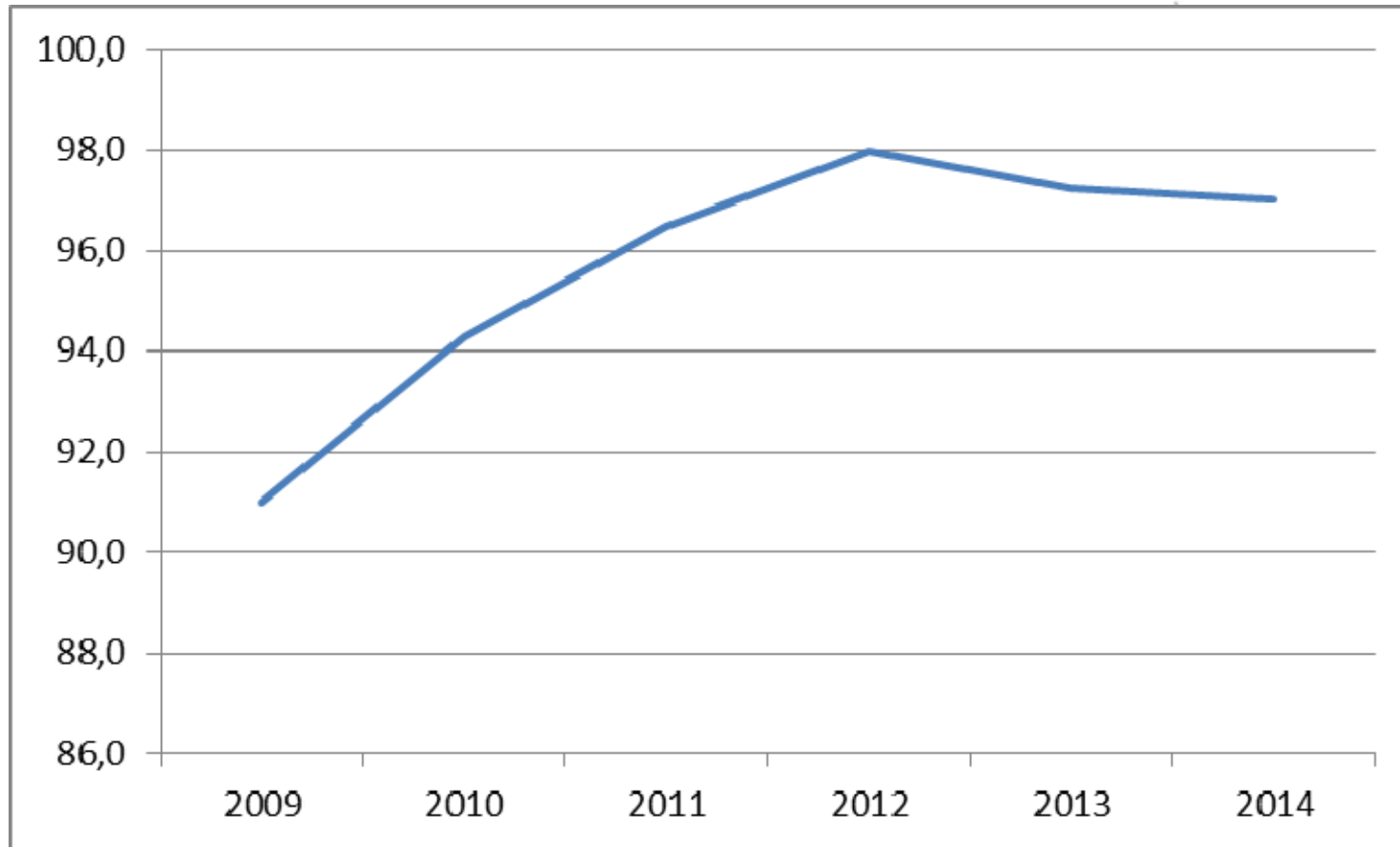
(Based on Hill 2000 and the Platts-Gregory procedure)

Spare parts manufacturing strategy	
Organizational structure and controls	Separate business unit (profit centre) for spare parts and low-volume serial parts (mixed model).
Facilities, resources, and capacities	Flexible low-volume, high-variety factory with some excess capacity
Process technology	Functional/cellular layout with direct flow (no intermediate storage in warehouse)
Distribution	Vendor-managed inventory with OEM's service parts centres
Production planning and control	Make-to-stock (the vendor-managed inventories at the service parts centres)
Human resources	Multi-skilled "set-up experts"

A flexible low-volume factory

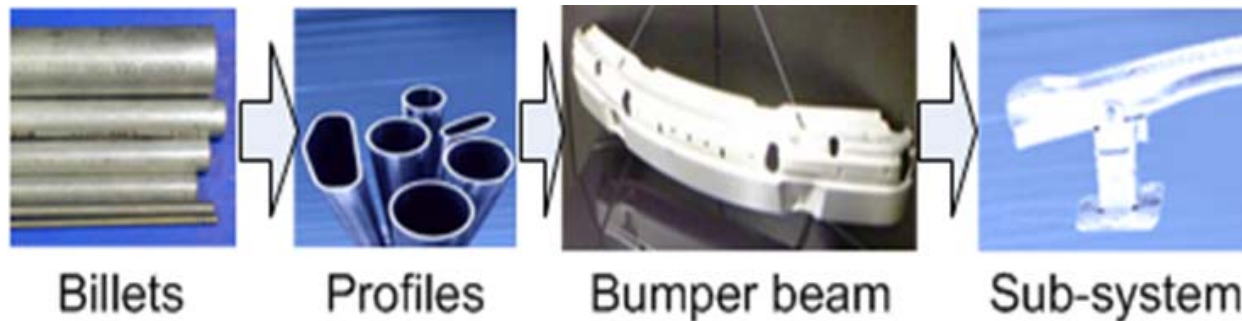


Spare parts OTD development 2011-2014

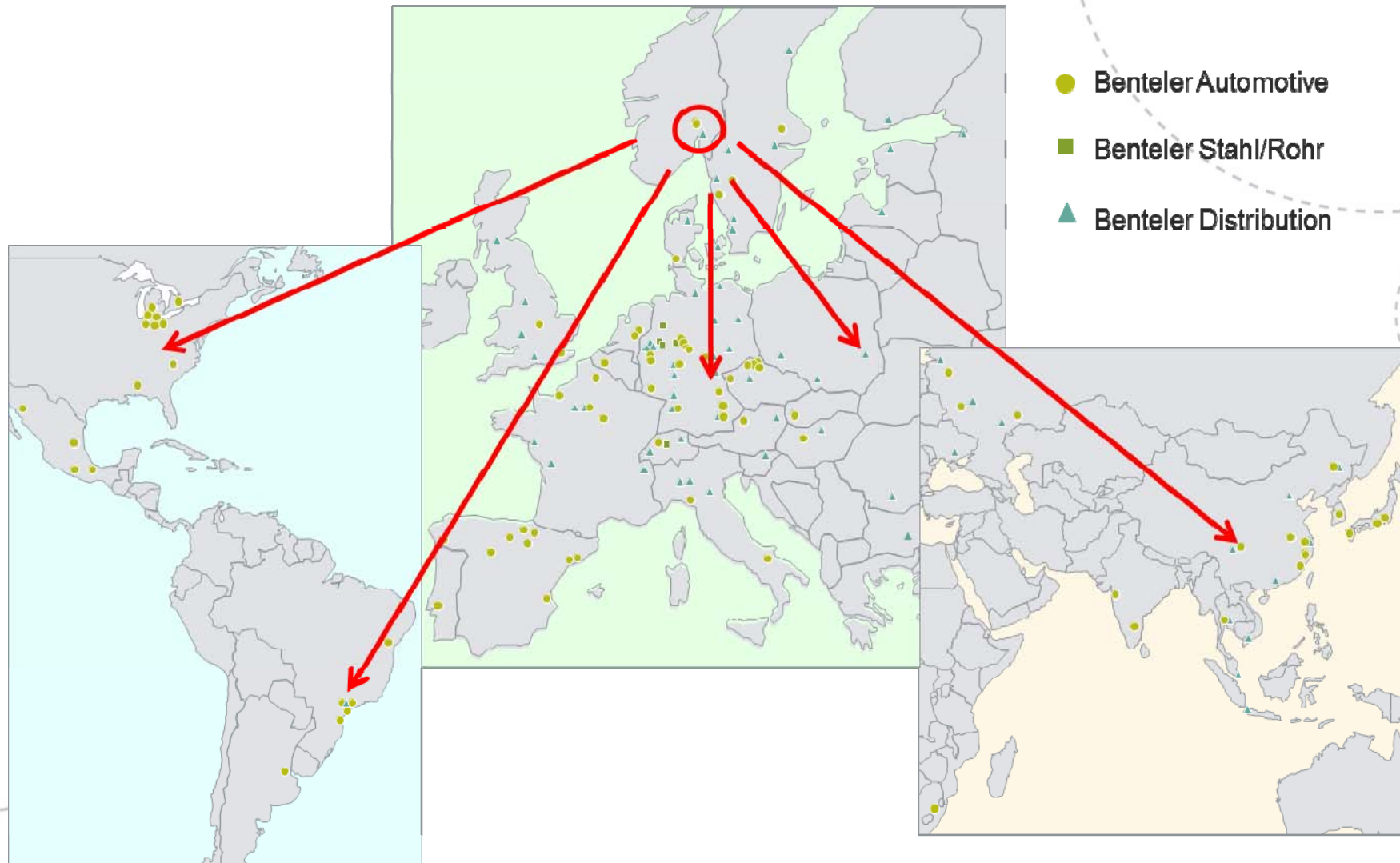


Benteler Raufoss' competitive advantages

- 40 years of experience in spare parts production and delivery
- Process capabilities
- Logistics capabilities
- Part of automotive cluster
- Separate business unit



Raufoss – global spare parts hub



Raufoss – global spare parts hub

- **Management and responsibility**
- **Market knowledge and analysis**
- **Strategy** formulation and implementation
- **Centre of competence**
- **Takeover of spare parts production from other plants**
- **Distribution to dealers**

- Benteler Automotive
- Benteler Stahl/Rohr
- ▲ Benteler Distribution



Conclusions

- Unexploited opportunities in spare parts production
- Norway a globally competitive manufacturing nation
- Collaboration between industry and academia an important contributor

