



# Concept 2020 – Roadmap for high volume RAIN tag manufacturing



- Owner-managed independent group
  - More than 3200 employees
  - than 400 engineers for R&D
  - 32 sites worldwide
- 
- Global company with market leadership in the fields of
    - Parts & Systems
    - Semiconductor Related Products
    - Document Solution Related Products
    - Security® Solutions

# The Story of 25 years RFID: 1995 - 2020

Experience drives Innovation

## Concept 2020

### RFID Market Update

► Growth in Size & Applications

*Strap*



*Inlay*



### Mühlbauer & RFID

- Your Partner for Smart ID
- Customer References

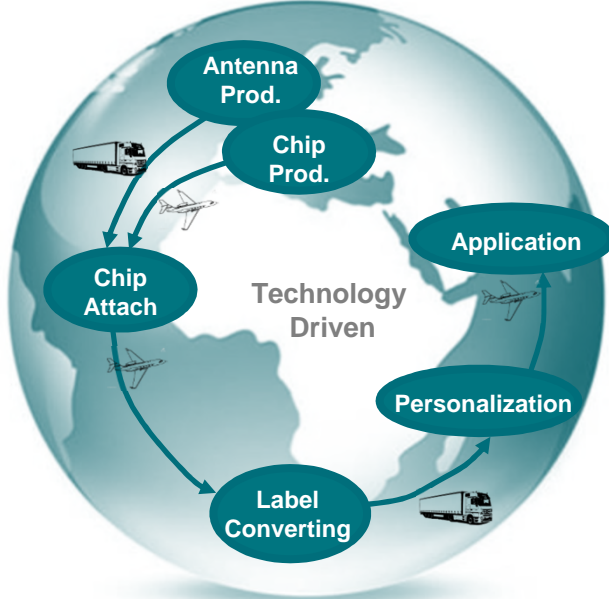
# The Big Picture

... needs to be optimized

High UPH

vs

High Speed



Speed ↑  
Flexibility ↑  
Costs ↓

**Supply Chain  
Compression**

WIP ↓  
Integration ↑  
Localization ↑  
Simplification ↑



Weeks – around the world

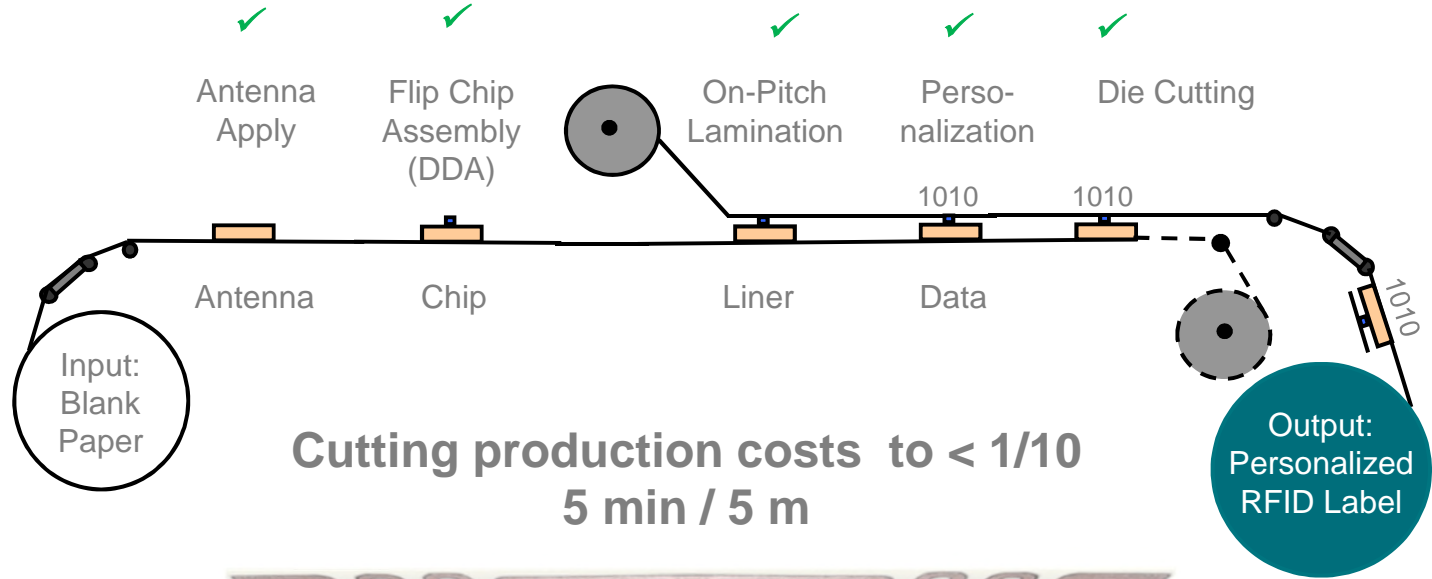
vs

Minutes – within one room

# Our Vision – in extreme



The most efficient  
AUTOMATION  
for the most  
efficient  
PRODUCT  
DESIGN!



**Cutting production costs to < 1/10**  
**5 min / 5 m**



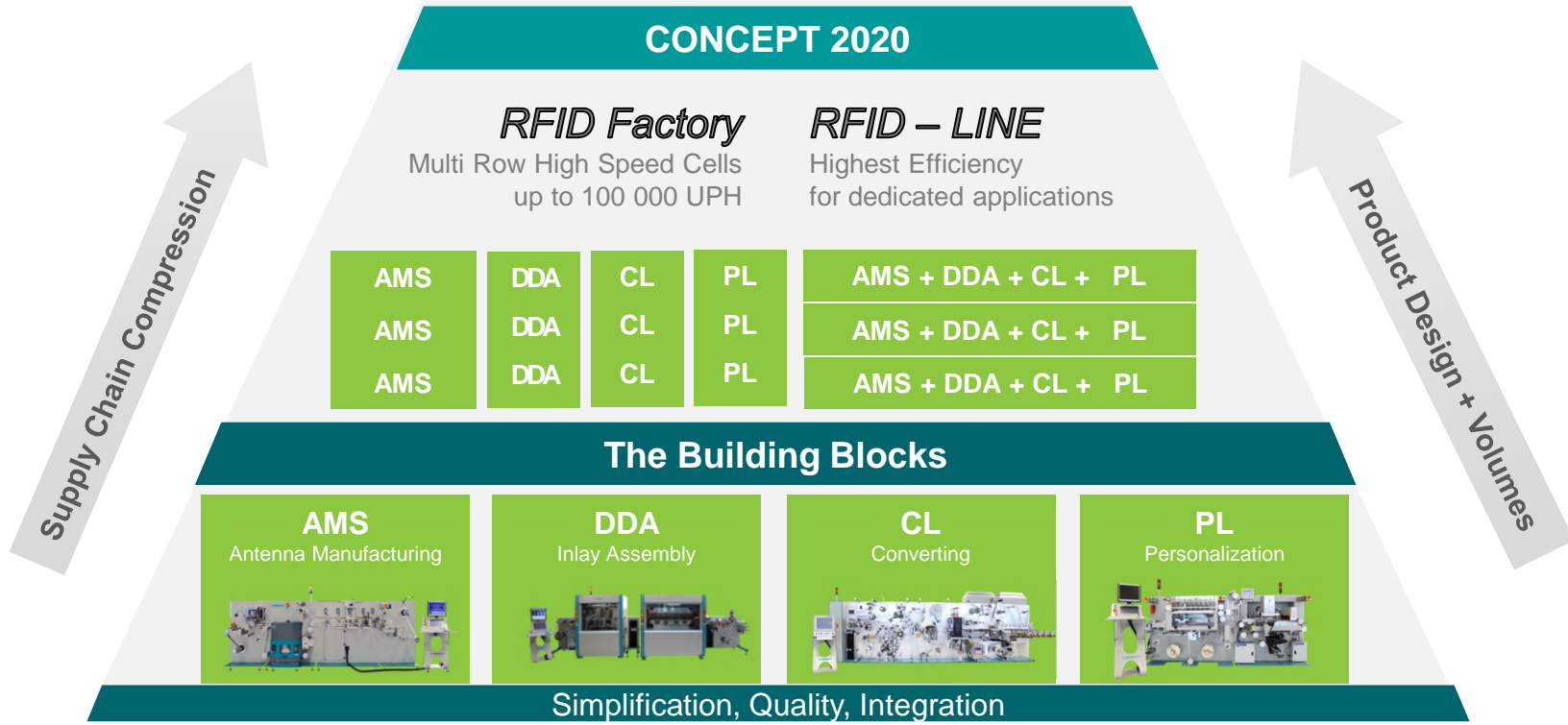
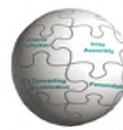
# The Mühlbauer *RFID Factory*

The Basis for CONCEPT 2020



# Our Vision:

## Building Blocks for „CONCEPT 2020“

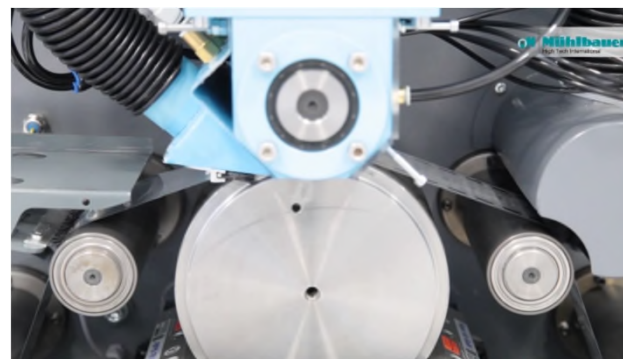


# Inhouse Antenna Production

... a milestone for „Concept 2020“

## Why developing an Antenna System?

- ▶ **Supply Chain Compression**  
ship your new RFID label in 24 hours!
- ▶ **Just in Time Production**  
for rapid prototyping &  
high volumes up to 1 Billion / year
- **50% cost reduction**
- **75% time saving**
- **100% environmental friendly**





# Antenna Printing: APS 100 / 350

... for a RFID pure paper label

Strategic  
Partner

Copprint

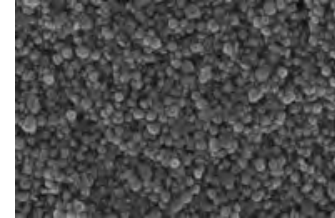


Mühlbauer  
High Tech International

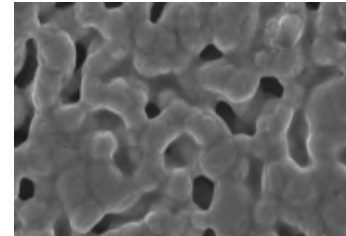


- ▶ Save one layer
- ▶ Environmental friendly product  
... pure paper!

Picture Scale 500nm ( After Printing )



Picture Scale 500nm ( After Sintering )

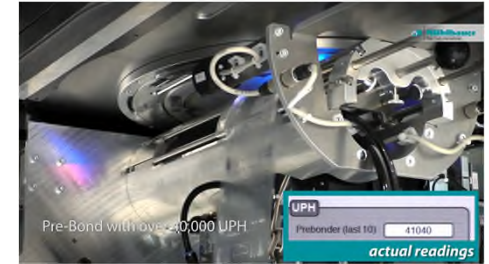
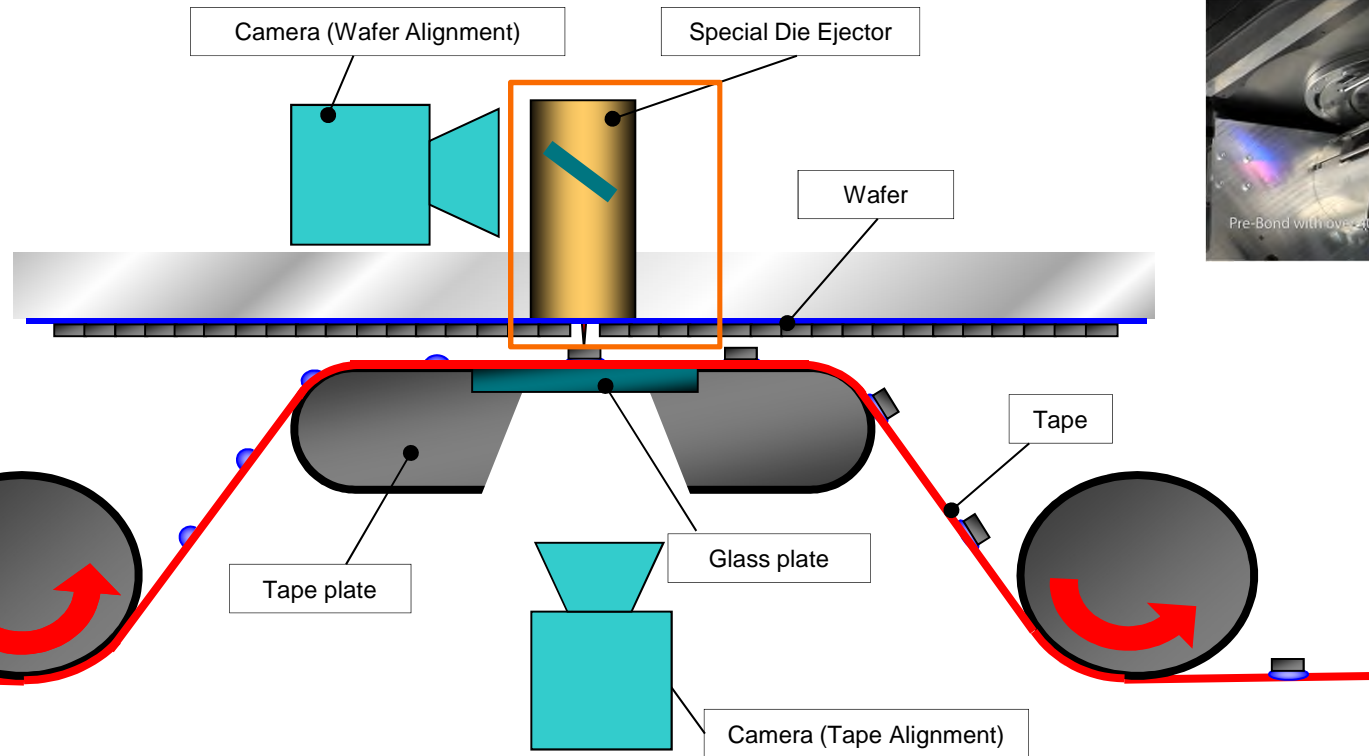


Final Antenna



# DDA - Direct Die Attach

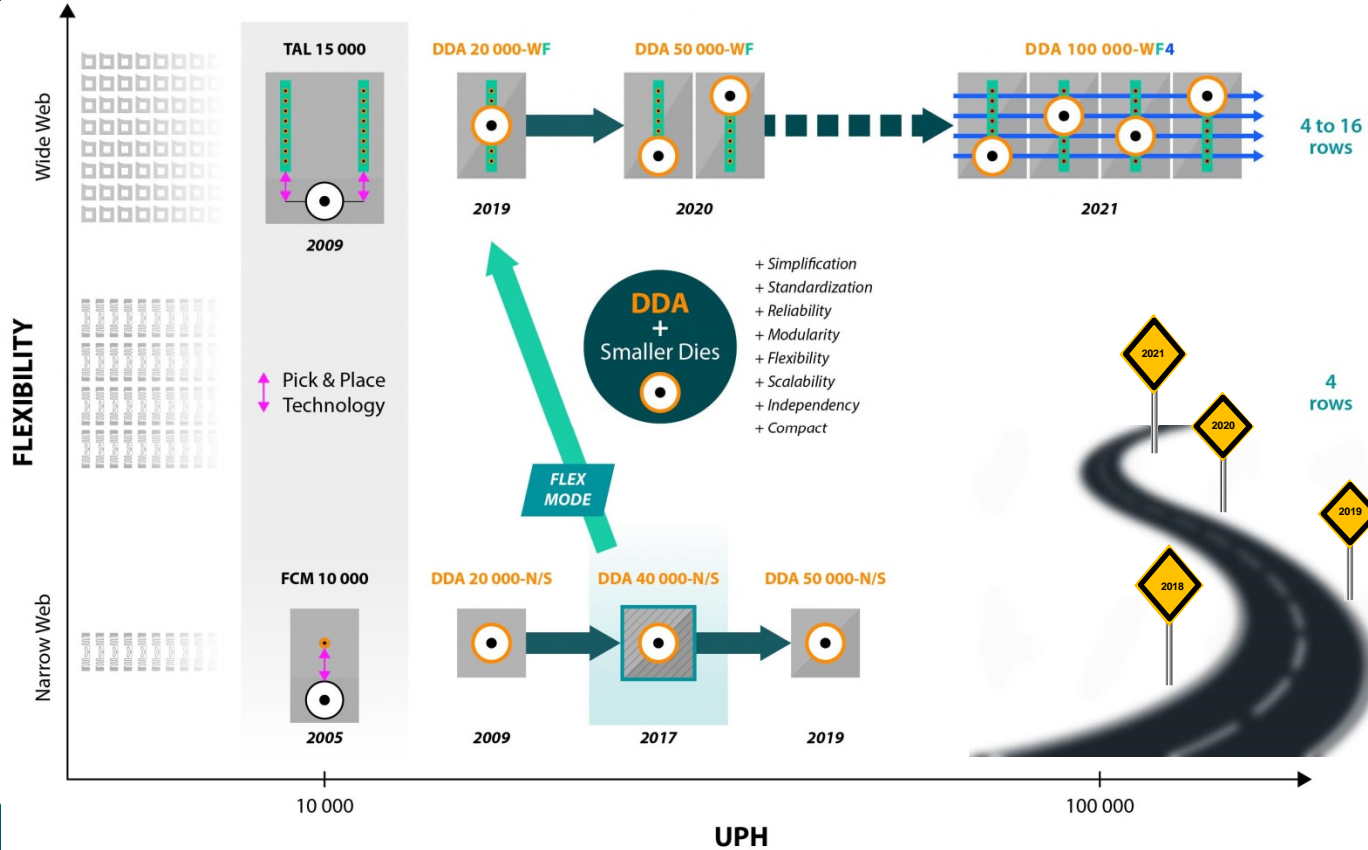
The revolution in flip chip die attach



**SIMPLIFICATION IS THE ULTIMATE SOPHISTICATION!**

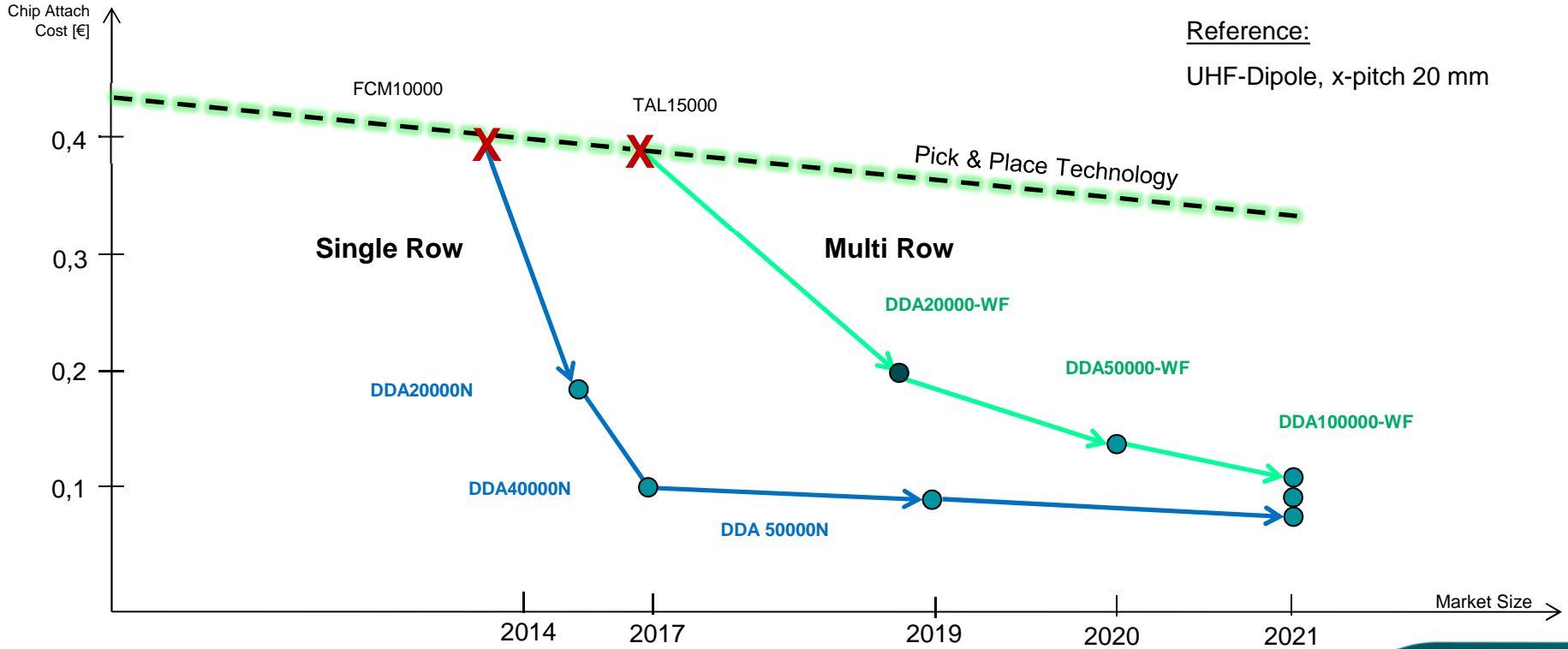
# Mühlbauer RFID Chip Attach Roadmap

## The Future Potential of DDA



# The Future Potential of DDA

## Cost / Performance Roadmap



# CL Wide Web

## RFID Converting Line for High Volume Label Production



Highest flexibility



Highest output



# Small Footprint UHF Personalization Equipment

PL light – Reel-to-Reel



Electrical & Graphical  
Personalization



Secured data handling incl.  
validation

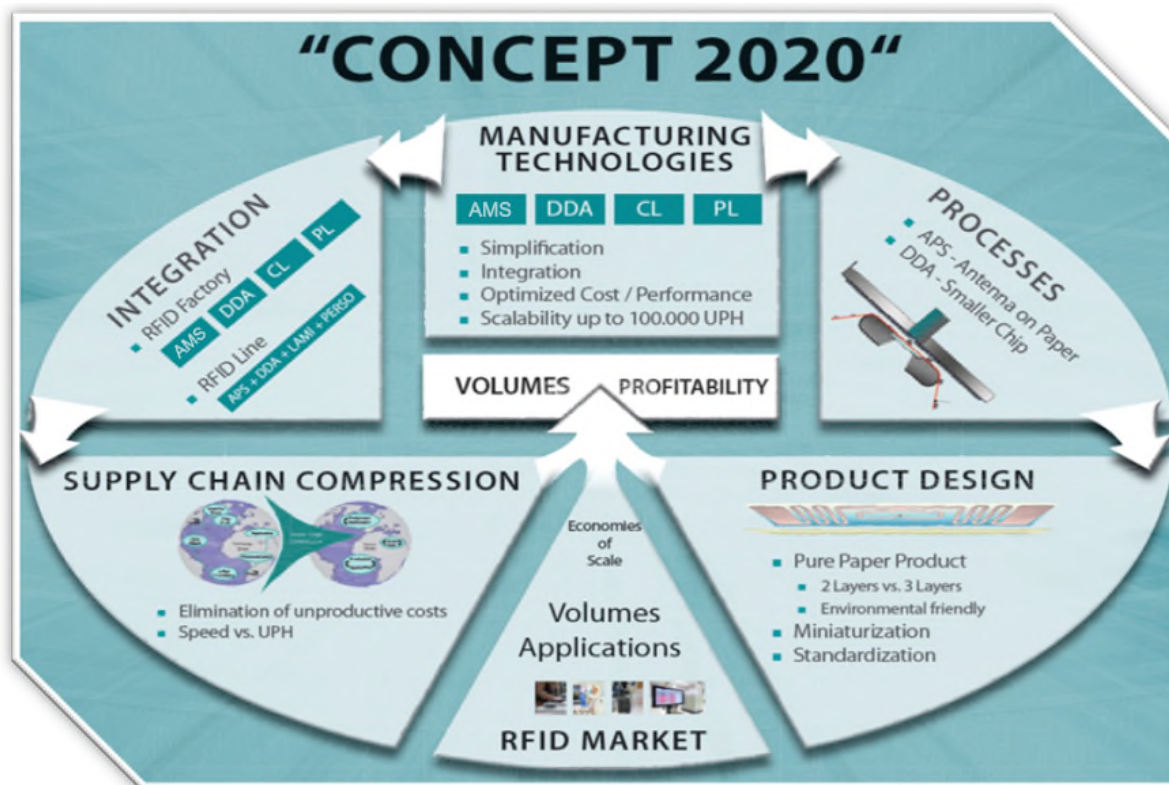


Suitable for selected NFC  
and HF chips

# Summary: Mühlbauer CONCEPT 2020

## The Future of RFID Manufacturing

The most efficient  
AUTOMATION  
for the most  
efficient  
PRODUCT  
DESIGN!



# Thank You

MÜHLBAUER GROUP  
Josef-Mühlbauer-Platz 1  
93426 Roding

Phone: +49 9461 952 0  
Fax: +49 9461 952 1101  
Mail: [info@muehlbauer.de](mailto:info@muehlbauer.de)  
Web: [www.muehlbauer.de](http://www.muehlbauer.de)