

**Development of innovative  
and sustainable paper and  
board packaging.**



# Trends in European packaging industry



Additional functions supporting efficiency demand in the supply chain



Intelligent / Active / Smart packaging



(c) TetraPak, Acreo, BASF/CIBA, Markem-Imaje

# Trends in European packaging industry



Design for recovery



More advanced print



Functions appealing to consumer demands



Lighter materials with even better performance

(c) Pakit, VTT, KCPK

# Slim and Smart Supply Chains

Supply Chain optimization through **integration of information and communication with existing components of the supply chain** to continuously **monitor and visualize the location and quality of goods** combined with **reduction of quantity packaging material** and simplifying supply chains to **gain multiple sustainability.**



# Expected impact SSK activities

4 supply-chains:

- Dried grocery goods
  - Chilled, processed and fresh food
  - Frozen goods
  - Luxurious goods and Pharmacy
- 
- Stakeholder issues via “STEEP” factors
  - 3 time lines (2011, 2015, >2020)



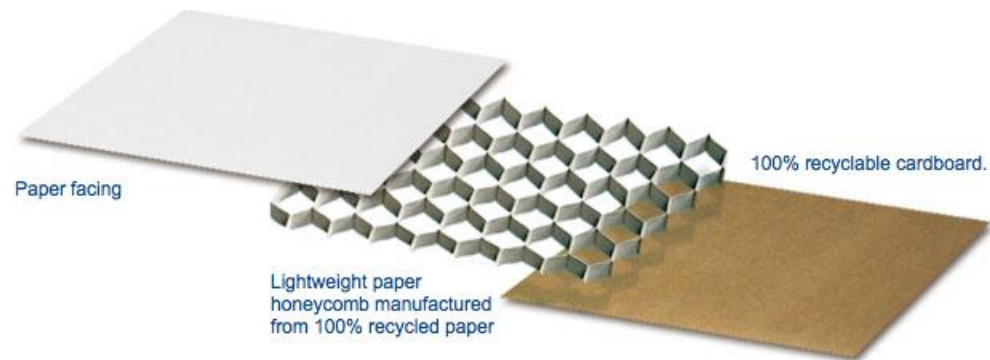
Paper and board as base combined with (possible) bio-based surface finishing (coatings, laminates, etc.) on product level packaging

**Final result is an overview of feasible business cases at various moments in time for 4 involved supply-chains**

# Slim

The reduction of quantity of packaging material for each product, and simplifying logistics paths to more efficient supply chains:

1. Lightweight paper and board (dematerialization)
2. Material efficiency throughout the chain (energy efficiency)
3. Fitness-for-purpose packaging (design)
4. Chain optimization (Shorter chains or reduced handling via ICT / management)
5. Monitoring and supply-chain management



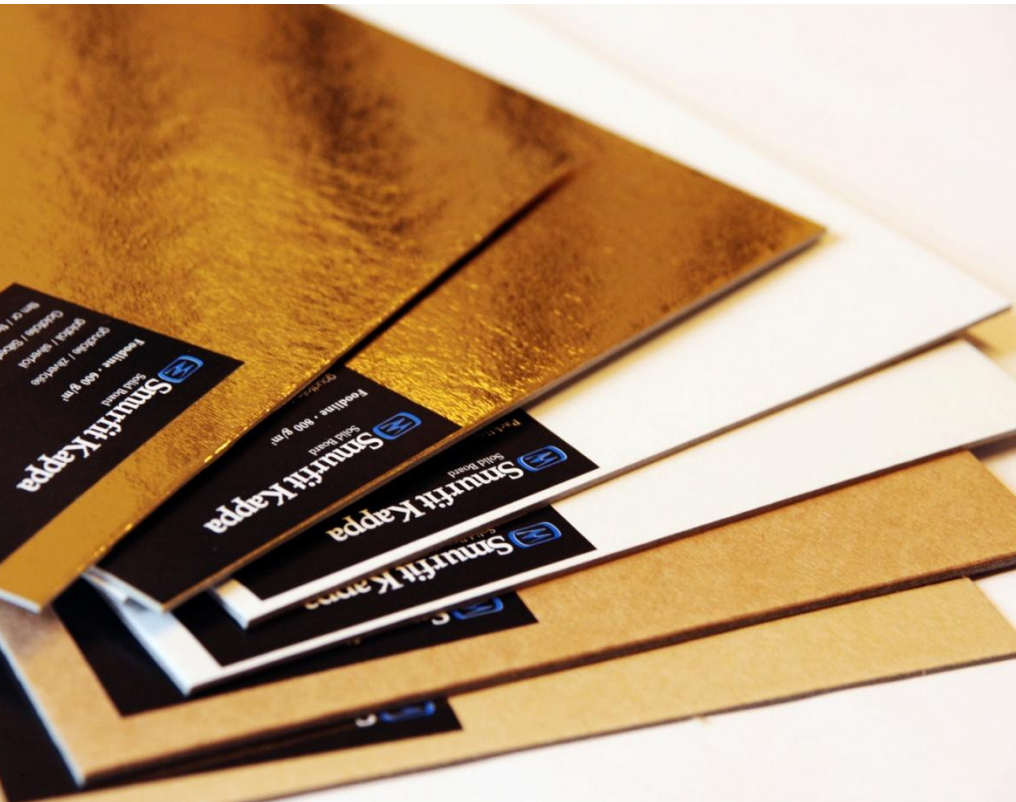
# Smart

Through printing different types of intelligence can be added to packaging:

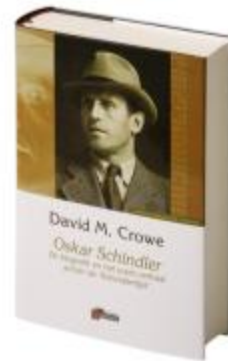
- Indicators
  - Time / Temperature / Time – Temperature
  - Humidity
  - Freshness
  - Bio-indicators
  - Shock (G-forces / Impact)
- Communication via 2D codes (Datamatrix, QR, ...)
- Communication via RFID
- Electronics / simple electronic circuits
- Anticounterfeit



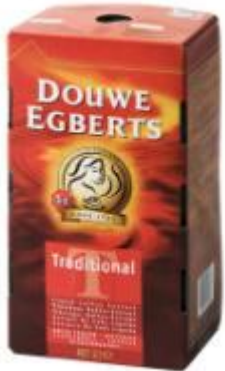
# Solidboard packaging



# Applications



# Heavy duty applications



# Current developments

Thinner, lightweight

© Eska Graphic Board

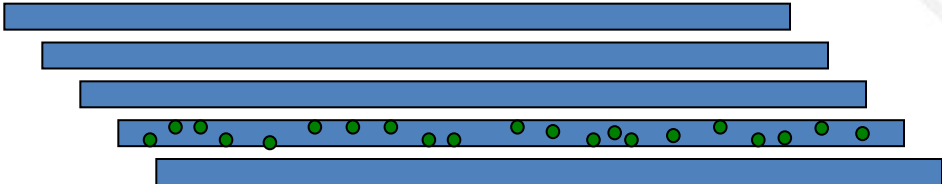


Organic raw materials

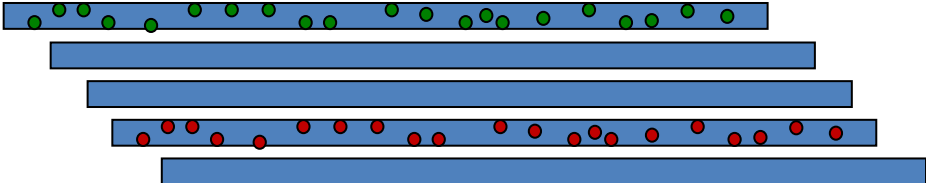
© Solidpack

# Innovation: Active solidboard

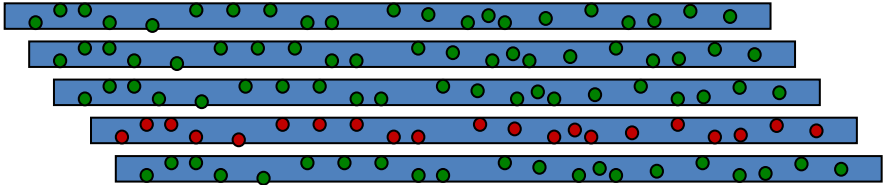
Incorporation directly into structure of solidboard



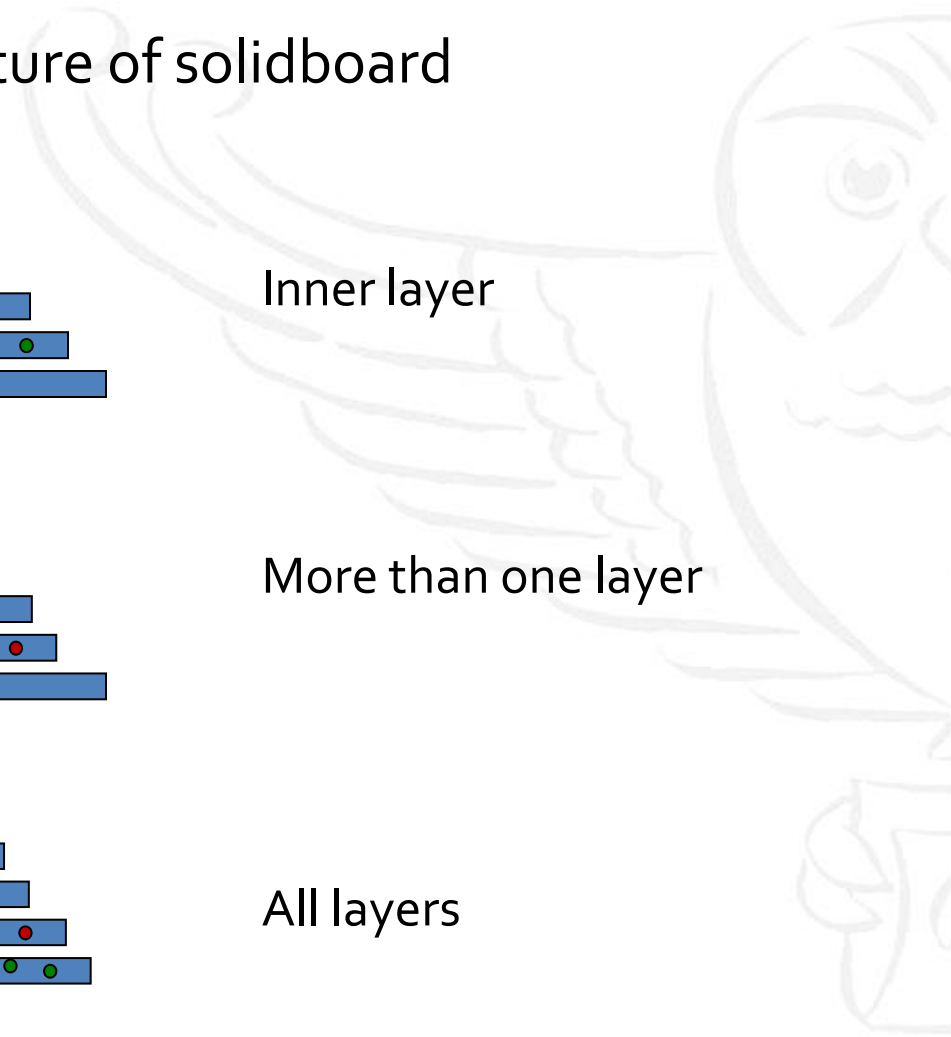
Inner layer



More than one layer



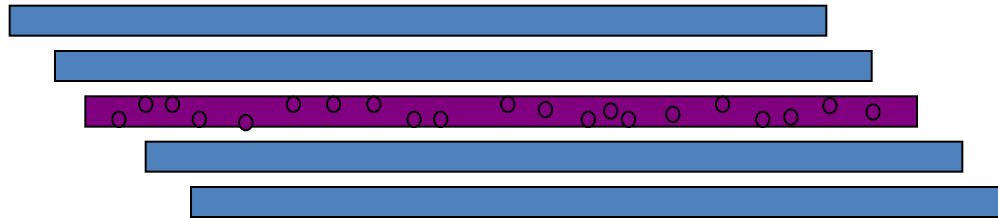
All layers



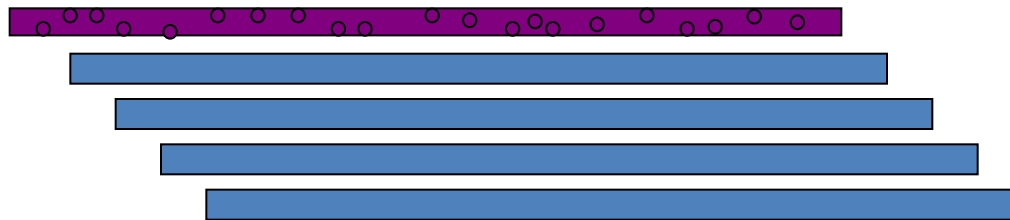
# Innovation: Active solidboard

Incorporation as one of layers of solidboard

- Top layer
- Inner layer
- During process
- After e.g. by lamination



Incorporation as inner additional layer



Incorporation as topcoating or outside additional layer

# Concept example: barrier properties

Reinforcement in biopolymers / basematerial

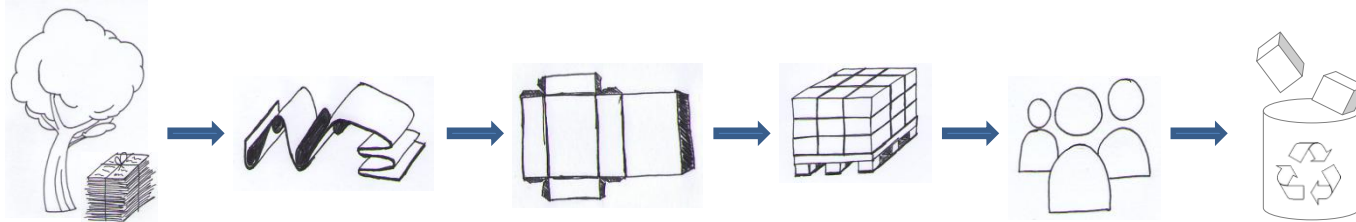
- Improvement barrier properties (e.g. moisture, oxygen, grease)

Chitosan whiskers or nanoclays modified e.g. by other biopolymers



# Challenges

- Waste issues, recyclability of disposable smart packages, environmental regulations
- Balance between costs and benefits
- Complexity and possible mistrust/confusion of technology
- Unreliability of indicating devices
- Food safety issues
- Privacy issues
- Involving complete chain



Thank you for your attention!

More questions?  
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