

Forest-Based Sector  
Technology Platform



# The FTP Strategic Research Agenda

Value Chain: Pulp and paper



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## Value-Chain domain

- › All products, which are based on filtrated webs
- › From woodyard through pulping and papermaking to converting and end use.
- › From used product collection through sorting and processing to reuse in papermaking, (energy production) and in external applications

# Key Challenges

- ⦿ Media competition for the time and attention of consumers
- ⦿ New demands for product presentation, protection, consumer safety and information delivery in packaging
- ⦿ High energy cost and increased focus on sustainability
- ⦿ Need to combine flexible responsiveness and low cost in manufacturing



# Opportunities

- › Developing a new generation of products for the growing communication market
- › Offering the best packaging solutions for the future distribution systems using renewable and recyclable raw materials
- › Becoming the first bioenergy based industrial branch
- › Re-engineering the manufacturing value chain for increased capital efficiency, flexibility cost competitiveness and product innovation



# Research Priorities

- 1. Interactive printed communication:**  
Supporting the future knowledge based society and culture with new products for communication, education and learning
- 2. Functional and intelligent packaging:**  
Providing consumer convenience and safety with advanced packaging materials and IC-technology enhanced packaging solutions



# Research Priorities

3. **New manufacturing concepts:** Re-engineering the value chain for increasing capital efficiency, cost competitiveness and product innovation
4. **More from less:** Resource efficient processing
5. **Closing the loops:** Developing a zero waste system of recycling and reuse
6. **Bioenergy supplier:** Creating a new source of renewable energy through energy saving and integration.



# WHY Interactive printed communication

- Communication will be an increasingly important human and social need
- The learning information society will need information carriers which are well adapted to human perception
- Exploiting emerging technologies can add new dimensions to printed communication

# **WHAT from Interactive printed c...**

## **New com products and services which:**

- dramatically improve the performance of printed communication by shorter delivery times, on-demand production, very low cost and efficient information transfer
- Add new functionality by integrating conventional fibre-based printed products and digital media
- Facilitate new business models that add attractive features to newspapers, periodicals, books etc.

# WHY Functional and intelligent packaging

- Packaging will be an increasingly important feature of a sustainable service society
- Fiber based packaging has good potential for providing sustainable solutions for the future needs
- New enabling technologies offer excellent possibilities for improving the performance of fibre-based packaging

# WHAT from Functional and intell...

## Materials and solutions which:

- Provide good protection, prolonged shelf-life, consumer information and brand identity by using new material technologies and active ingredients
- Facilitate easy handling and efficient distribution chains
- Use embedded IC-technology to build new functionalities like displays, indicators, and sensors and protection against counterfeit and tampering.

# WHY New manufacturing concepts

- ④ Technology leadership needs to be strengthened and adapted to future challenges
- ④ The handicaps of the existing technology – eg. very high capital intensity – need to be corrected
- ④ Overall competitiveness of the value chains can be improved by comprehensive re-engineering

# **WHAT from New manufacturing co..**

## **A new manufacturing paradigm which:**

- Is based on lower capital intensity, small-scale production, flexible and simplified processes and integrated manufacturing concepts
- Uses IC-technology for comprehensive management of on-demand manufacturing concepts and smart logistics systems
- Facilitates introduction of new technologies for product personalisation and customisation.



## WHY More from less

- › Sustainability will be an increasingly important value and overriding goal in the society
- › The environmental footprint of our main processes can be further reduced
- › The competitiveness of fiber based products against alternative materials can be significantly improved by research

# WHAT from More from less

## New technologies will be developed for:

- Maintaining the inherent performance of natural fibres by eliminating the detrimental effects of processing
- Enhancing the performance of natural fibres by modification and functionalisation of fibres
- Facilitating creative converting and end product designs for providing the desired functionality and performance

# WHY Closing the loops

- Efficient and well optimised material recycling and reuse loops will be a cornerstone of the future sustainable society
- Forest-based sector can make total collection and reuse of all paper products a competitive advantage and a key contribution towards a sustainable, bio-based economy



# WHAT from Closing the loops

- Establishing recyclability as a product design criterion
- Improved collection systems which facilitate exploiting the best potential of recovered paper
- New dry sorting techniques and on-line characterisation methods for recovered paper
- Development of new external re-use applications for the non-paper fractions

# WHY Bioenergy supplier

- FBS can become a net energy producer and provide a significant contribution towards a sustainable and more energy self-sufficient European economy
- Energy saving has an important role in achieving the overall goal

## **WHAT from Bioenergy supplier**

### **Improving energy efficiency by:**

- Developing less energy consuming 'breakthrough' technologies to replace eg. mechanical pulping and drying
- Using advanced energy management for achieving optimum integration of energy consumption, recovery and generation
- Improvements in on-site bioenergy conversion and production (presented in bioenergy value chain)



# Impacts

- › **Consumers:** Functional and intelligent packaging, Interactive printed communication
- › **Society:** Bioenergy supplier, Closing the loops
- › **Environment:** More from less, Closing the loops, Bioenergy supplier
- › **Energy:** Bioenergy supplier, More from less
- › **Competitiveness:** New manufacturing concepts, Bioenergy supplier

## Concluding remarks

- › We have good business opportunities which can be realized with cooperation within the forest based sector
- › Research cooperation needs to be extended towards upstream operators: End use and consumers
- › Two issues run across all themes:
  - › Renewable raw materials
  - › Bioenergy
- › We need to change our mindset from raw material manufacturers to solution providers

