Solution Architect for Global
Bioeconomy & Cleantech Opportunities

Metsäteollisuuden TKI-kehitysnäkymät ja kumppanuudet

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Etelä-Karjalan innovaatiostrategian vuosiseminaari, Lappeenranta 15.8.2018

CLIC Innovation Ltd

CLIC Innovation is:

…An ***Open Innovation platform (or a Cluster Management organization)***

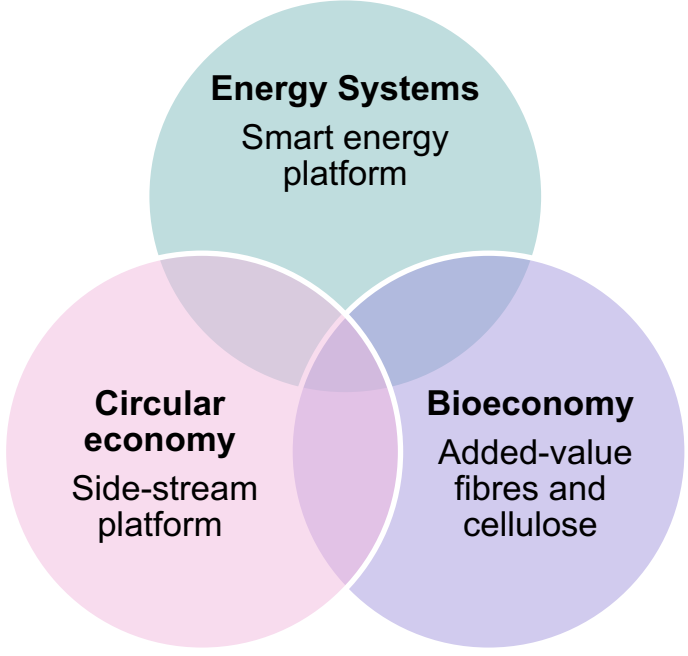
… Owned by 30 multinational companies representing ***9 industrial sectors*** and ***16 Finnish universities and research institutes***

… Co-creating ***new knowledge and competences*** for global businesses in the field of bioeconomy, circular economy and energy systems

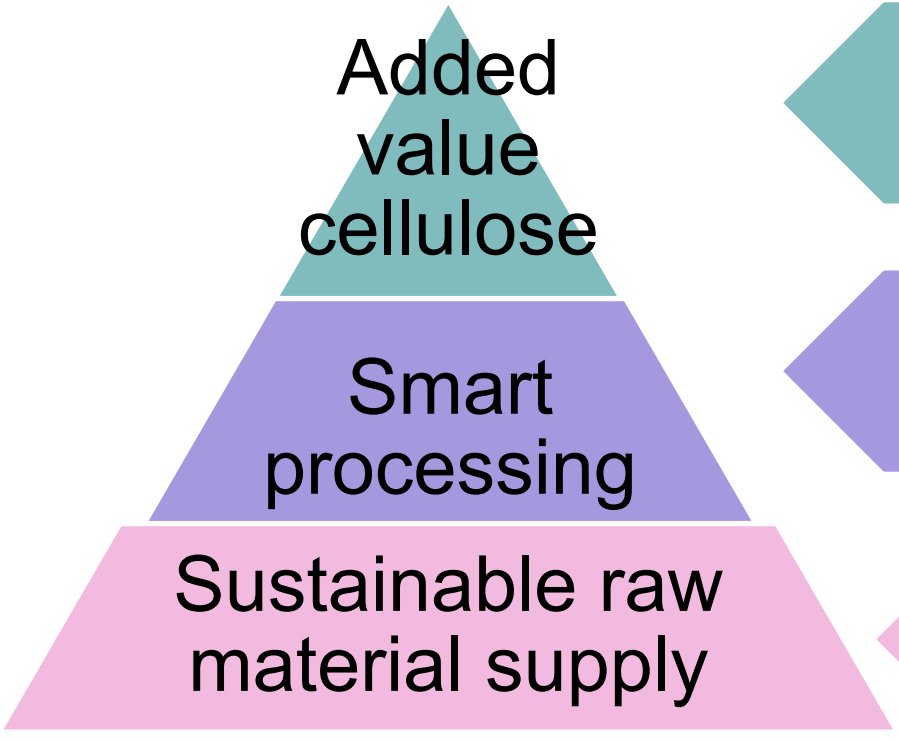
…Coordinating target-oriented ***R&D&I-project portfolios*** in the selected fields

CLIC project portfolios

- ***Create competitive edge and new business opportunities for global bio- and circular-economy as well as cleantech businesses***
- Consist of R&D&I-projects covering the whole innovation value **chain from fundamental research to demonstrations**
- The projects are aimed at **shared targets to ensure deep and wide cooperation** within the projects
- The portfolios aim at **new knowledge and competences** for global businesses and/or novel **holistic solutions** addressing global challenges arising from resource scarcity
- The portfolios are based on **industrial relevance** complemented by **scientific opportunities** and **societal demand**



The bioeconomy portfolio



Resource scarcity
Carbon neutrality
Sustainability

Circularity
Utilization of side-streams
Digitalization

Multifunctional uses of forests
Sustainability
Acceptability

Added-value cellulose

VISION

Added value cellulose is the preferred, sustainable material choice in the growing materials market

TARGETS

- Increase the net value created in Finland by the cellulose value network.
- Developing new high-value products with longer lifetime (acting as carbon sinks)
- The global hub in cellulose based innovation

Turning the Finnish Cellulose Competence into global market success

CLIC is coordinating a market-driven cellulose ecosystem with the goal to speed up the market access of New Finnish Cellulose Products, Systems and Services

Tasks for the ecosystem:

- Strengthening the knowledge platform
- Building the demonstration platform
- Boosting the entrepreneurial ecosystem
- Establishing the international connections platform

The Ecosystem for Added-value Cellulose

aqvacomp · DESIGN FORUM FINLAND · exel COMPOSITES

Lumir · marimekko · PAPTIC

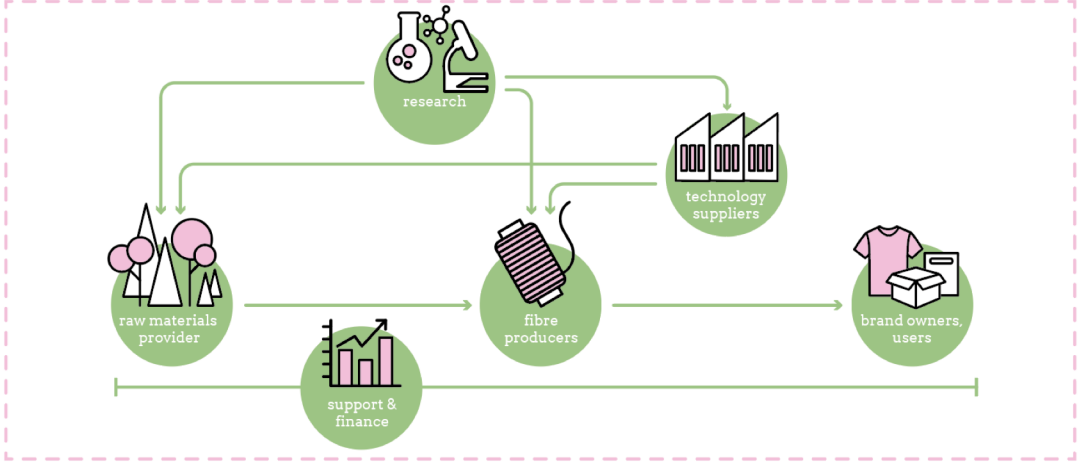
Puutuoteteollisuus · Samuji · Snowcone & Haystack · SUOMEN TEKSTIILI & MUOTI

Suominen · TALES BY TREES · WALL+ · woodio

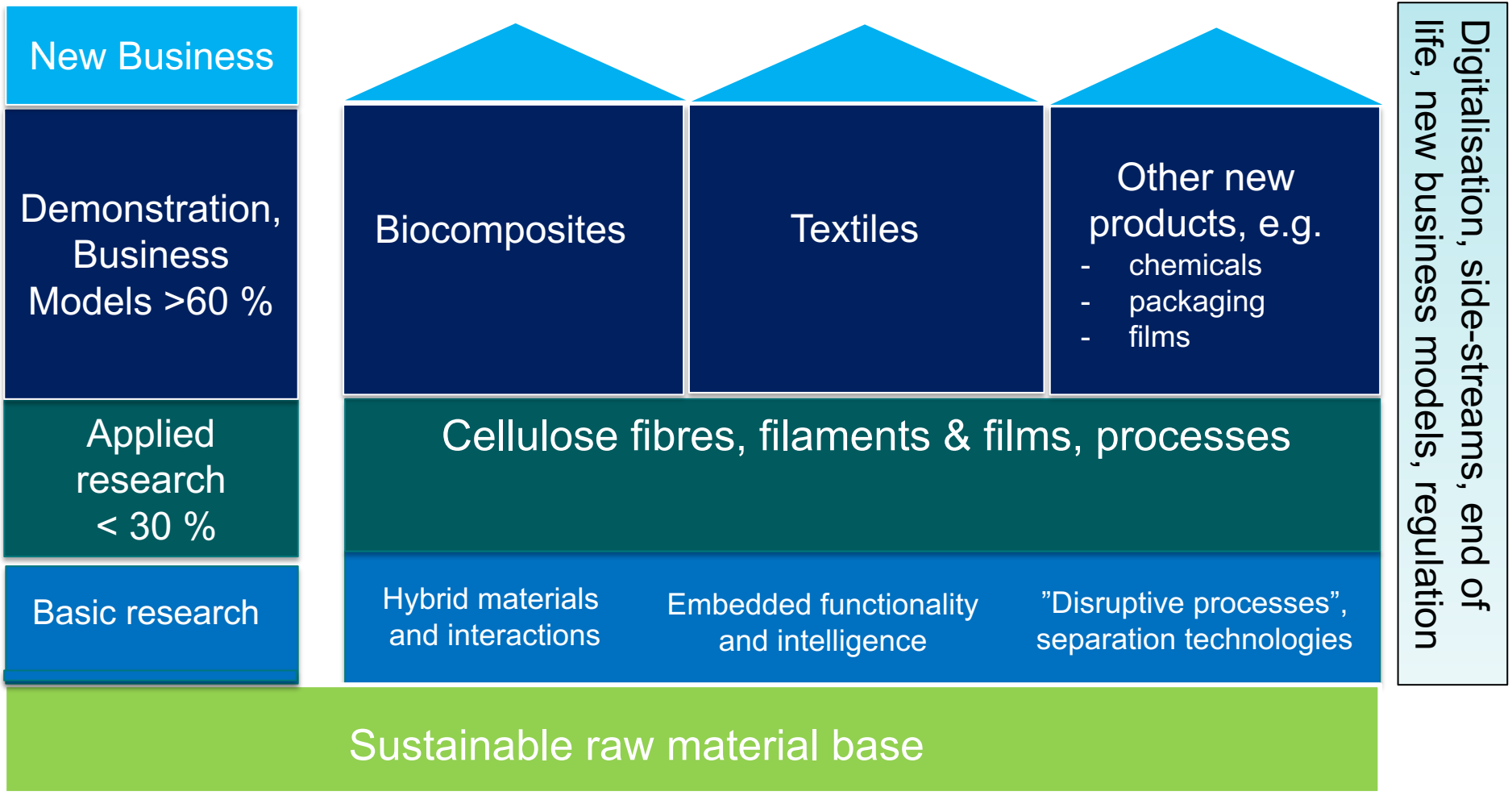
The Infinited Fiber Company® · Spinnova · ANDRITZ

orneule · Aalto University · VTT

Metsä · storaenso · The Biofore Company · UPM



Strategic Research and Innovation an Agenda, Core Structure



Biocomposites

Worldwide wood plastic composite (WPC) production is estimated to grow rapidly in the coming years.

New biocomposites with an attractive appearance, better long-term and short-term properties are sought for in the marketplace.

Lightweight, strong, durable materials that are also functional in terms of appearance, acoustics, tactility, and segment-specific properties are particularly desirable.

The next generation of biocomposites should be tailor-made to suit intended applications.

Biocomposites- objectives

- Biocomposites will become a major material alternative in the markets currently dominated by plastics and non-natural fibre composites and surpassed the projected market value for 2030 .
- The fiber ecosystem will open up completely new ecological application fields for biocomposites utilising also innovative business models to increase the value for the whole value chain.
- Use of raw materials from sidestreams as part of a biocomposite will become a lucrative alternative approach for reducing the environmental footprint of biocomposites

Biocomposites - actions

Joint research topics:

- To increase the functionality of biocomposites
- To develop design and planning tools to match the biocomposite properties with its end use requirements
- To develop
  - new materials and their combinations,
  - material modification methods
  - Processability of the materials and material combinations
  - biocomposite production processes to be tailored for the requirements of biocomposites (not for plastics)

Demonstration projects:

Company led **demonstration projects** involving a different size of businesses in one project to demonstrate:

- the technological viability of a business case
- the economic viability of a business case
- new business models

All actions need to assess the life cycle effect of the approach applied and turn the LCA information into business value.

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New business from sustainable utilization of side streams

- Circular Economy service platform for industrial ecosystems

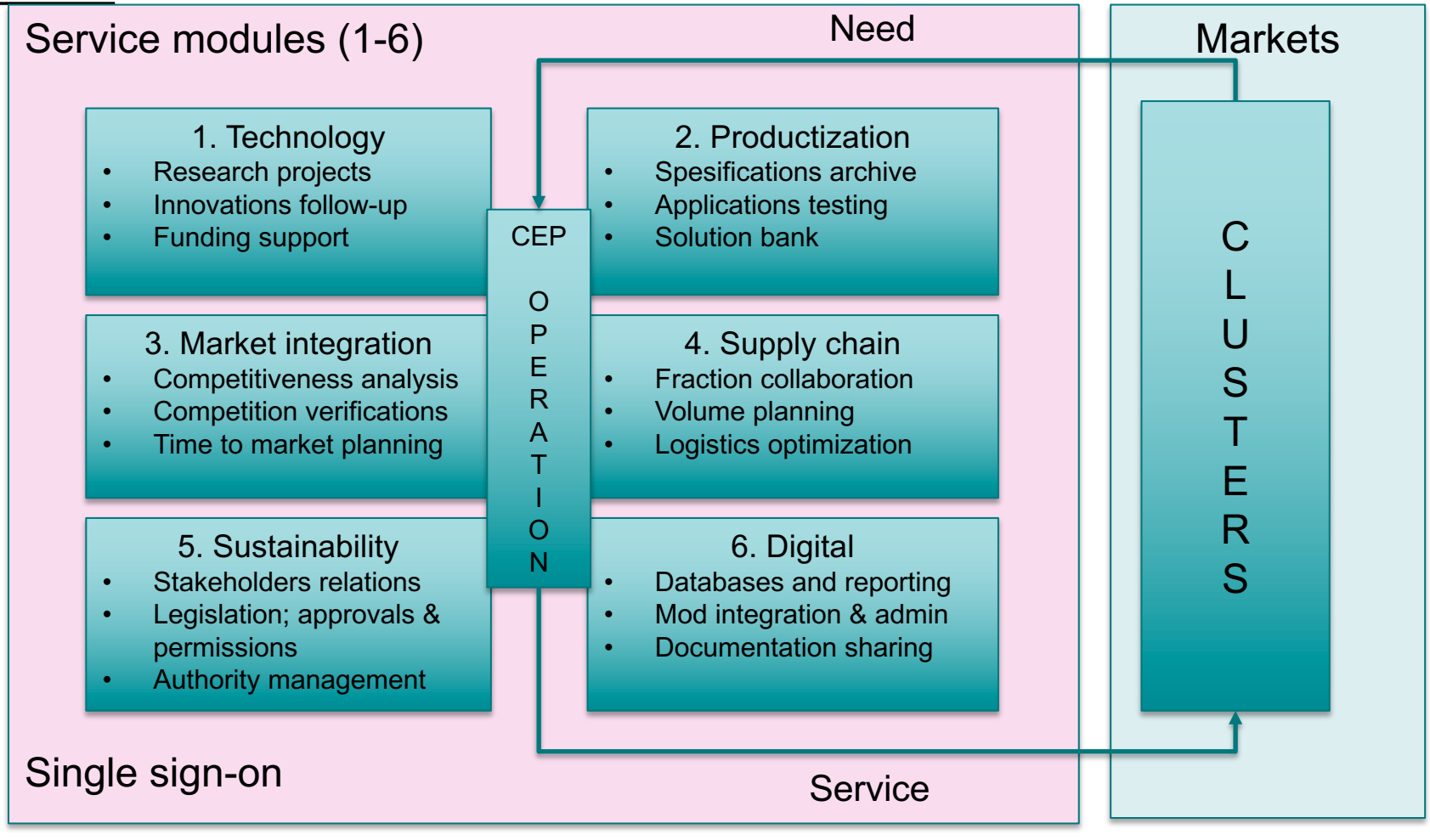
Objectives

- **To build ‘One Stop Service Platform for CE Clusters’ which**
    - Identifies essential **research needs and innovations**, and finds them the best implementation forms and funding instruments
    - Brings together **cost-efficiently** existing and future solutions
    - Combines **critical** mass enabling investments for new business opportunities
    - Prevents **silos** between different parties and enhances commercializing of innovations
    - Enables **continuous** development and resource efficiency
    - Maximizes **added value** of reuse and enhances objectives of circular economy

Project execution

- The CES platform will be demonstrated in Southeast Finland where most of the ecosystem key players are already present.
- Focus will be on forest industry’s side streams and waste fractions in the region
- The project has four phases
- Development of service platform for the cluster
  - Value creation and business models
- Technology pilots
  - Utilization of existing technologies and solutions
- Development of identified emerging technologies
  - Co-innovations and technology collaboration
- Enhancing sustainability of the CE platform and cluster operation

CEP integration- DRAFT



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