DESIGN DRIVEN
VALUE CHAINS
IN THE WORLD
OF CELLULOSE
DWoC

Highlights of DWoC

30.5.2017 Ali Harlin, Kirsi Kataja

DESIGN DRIVEN VALUE CHAINS IN THE WORLD OF CELLULOSE DWoC

Designing Cellulose for the Future

Design Driven Value Chains in the World of Cellulose (DWoC) is an interdisciplinary Finnish research project focused on finding new and innovative applications and business models for wood-based cellulose materials.

DWoC combines design thinking, design-driven prototyping and business insight with a strong competence in technology development.


Design + Materials Research + Business
Technology leaps, business seeds and new biomaterial-focused ecosystem by multidisciplinary collaboration with design-driven approach.

DESIGN DRIVEN
VALUE CHAINS
IN THE WORLD
OF CELLULOSE
DWoC

DWoC project

Duration: 1.6.2013 - 31.3.2018

Strategic opening funded by *Tekes*, *The Finnish Funding Agency for Innovation.* Total funding 11 M€ / 5 years

Project partners:
VTT, The Technical Research Centre of Finland
Aalto University
Tampere University of Technology
University of Vaasa


DWoC Vision: Transformation of the Finnish large scale forest bioeconomy to a vivid ecosystem containing both large scale and small scale businesses based on wood cellulose

DESIGN DRIVEN VALUE CHAINS IN THE WORLD OF CELLULOSE DWoC 2.0

Main achievements of DWoC 1.0 1.6.2013 – 31.3.2015

TECHNOLOGY LEAPS
-by co-creation model based on design driven prototyping and hypothesis driven technology development

SPINNOVA spin-off
-spin-off company for production of fibre yarn directly from wood pulp (without dissolution and regeneration) started in the beginning of 2015

Fibre yarn directly from cellulose pulp or nanocellulose

Textiles from recycled paper and from lignin containing materials with intrinsic lignin derived color

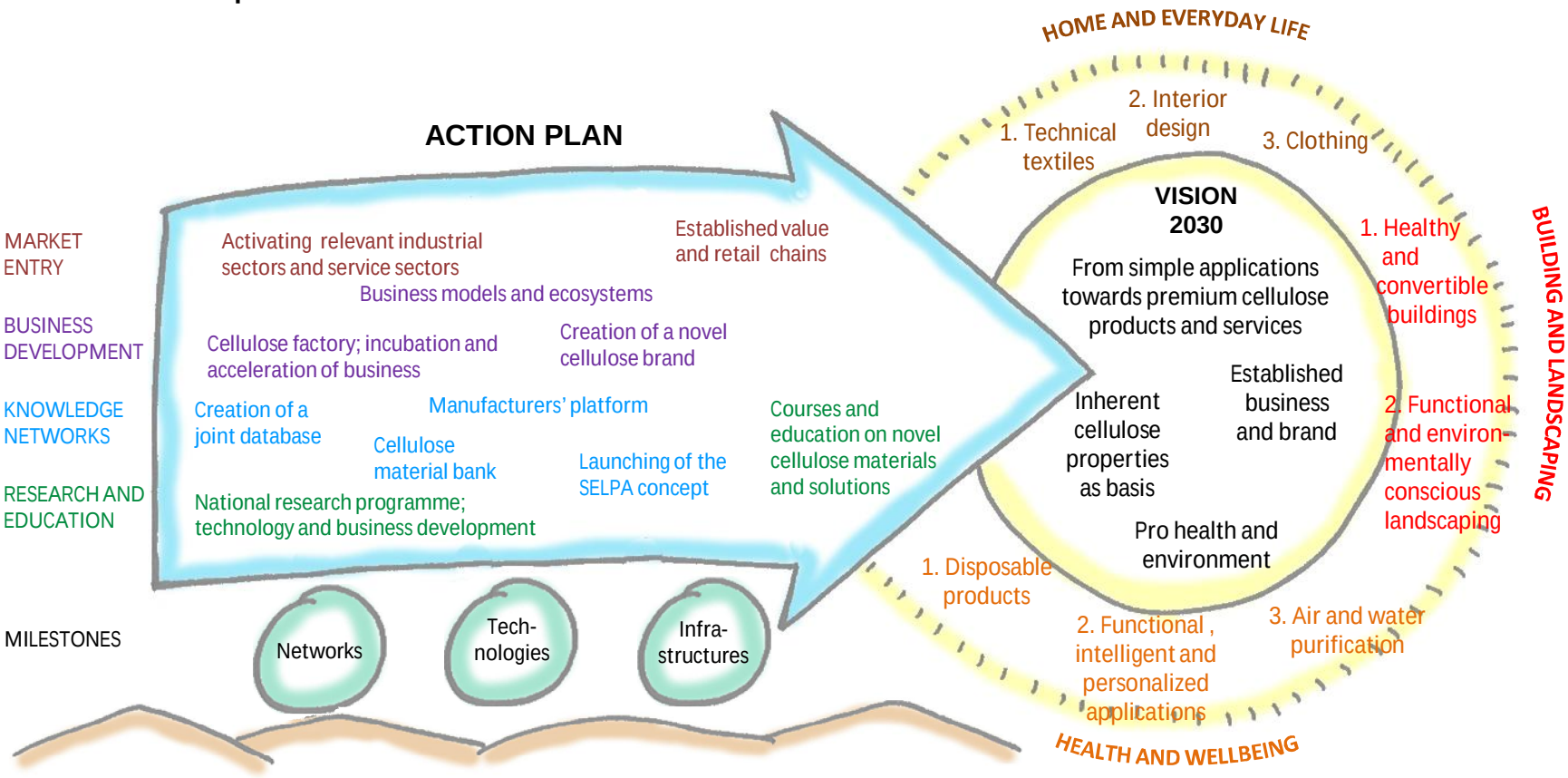
New textiles stuctures by 3D direct write printing of thermoplastic celluloseon cellulose matrix

Designed 3D foams from cellulose fibres

DESIGN DRIVEN VALUE CHAINS IN THE WORLD OF CELLULOSE DWoC 2.0

Main achievements of DWoC 1.0 1.6.2013 – 31.3.2015

Roadmap 2030



Tekes · Aalto University · Tampere University of Technology · University of Vaasa · VTT

DESIGN DRIVEN VALUE CHAINS IN THE WORLD OF CELLULOSE DWoC 2.0

On-going DWoC activities

NEW DESIGN DRIVEN TECHNOLOGY DEVELOPMENT

- Applications of nanocellulose (coatings, tubes, hard objects, layered structures, functional films)
- All-cellulose structures and materials
- Various filament (fibre yarn) forming technologies
- New machinery for continuous filament production
- Textile fibers from paperwaste with Ioncell-F
- 3D printing with paste-like cellulosic materials

COMMUNICATION & PROMOTION

- Refreshing the image of cellulose to a trendy raw material for a wide variety of end-uses and and as a sustainable supermaterial for the future

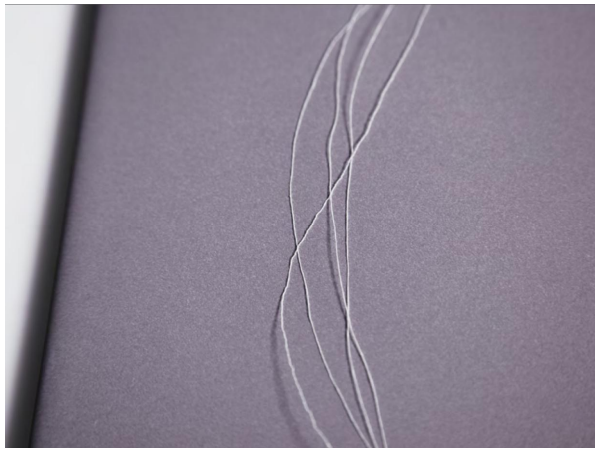
CONCEPTS & PROTOTYPING

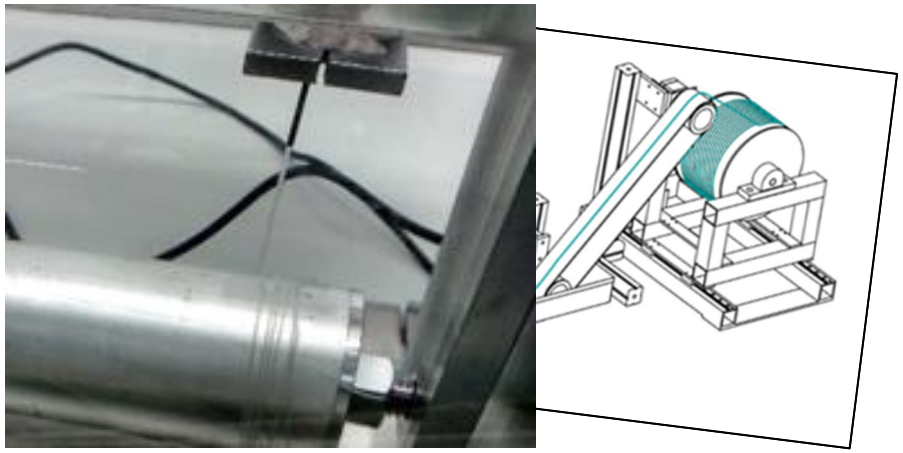
- Future oriented and user focused concept design and prototyping

BUSINESS

- New cellulose-based business ecosystem research and creation
- Generation of future business seeds for new design-driven cellulose business concepts

DESIGN DRIVEN
VALUE CHAINS
IN THE **WORLD**
OF CELLULOSE
DWoC 2.0



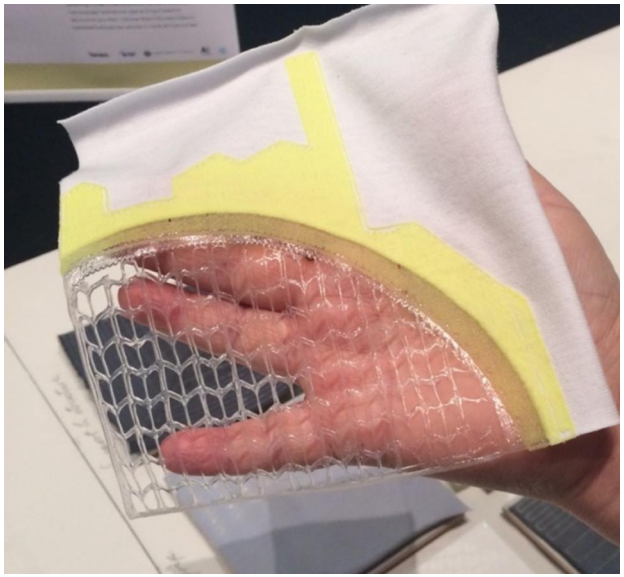


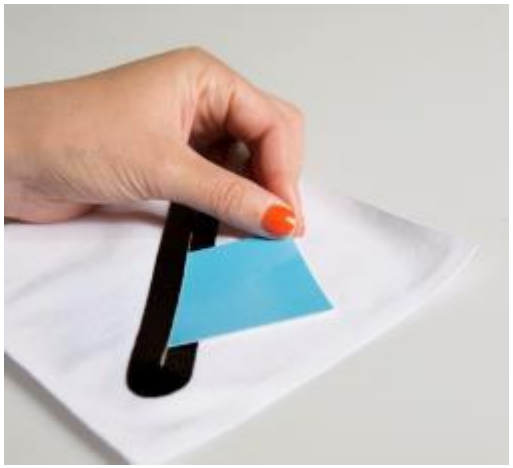
Photos: Eeva Suorlahti, Ville Klar, Sanna Siljander, Kirsi Kataja,

Tekes Aalto University TAMPERE UNIVERSITY OF TECHNOLOGY University of Vaasa VTT

DESIGN DRIVEN
VALUE CHAINS
IN THE WORLD
OF CELLULOSE
DWoC 2.0

3D/2D printing on textile / Soft structuring





Photos: Eeva Suorlaht, Tiia Tenhuneni

Tekes Aalto University Tampere University of Technology University of Vaasa VTT

DESIGN DRIVEN
VALUE CHAINS
IN THE **WORLD**
OF CELLULOSE
DWoC 2.0

Photos: Eeva Suorlahti, Anne Kinnunen

Tekes Aalto University TAMPERE UNIVERSITY OF TECHNOLOGY University of Vaasa VTT

DESIGN DRIVEN VALUE CHAINS IN THE WORLD OF CELLULOSE DWoC 2.0

Main dissemination events 2017

Supermaterials exhibition, January-April 2017 Building Centre London.
www.buildingcentre.co.uk

Enter and Encounter – Kutsu huomiseen, 24.3.–24.9.2017, Designmuseum Finland; DWoC with New Biomateriality team
→ Design meets Cellulose, seminar 13.6.2017 in Design museum,
contact: kirsi.kataja@vtt.fi

Milan International Furniture fair, April 2017
DWoC participated an exhibition organized by Department of Design, Aalto ARTS

Designing Cellulose for the Future III, 23.11.2017, seminar + exhibition, Finland


DESIGN DRIVEN
VALUE CHAINS
IN THE WORLD
OF CELLULOSE
DWoC
Visit us – Thank you!
www.cellulosefromfinland.fi