



Feedback activities GP1

Planning GP2

COST FP1405

ACTIVE AND INTELLIGENT FIBRE-BASED PACKAGING – INNOVATION AND MARKET INTRODUCTION

4 April 2016, Munich



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General network info

COST FP₁₄₀₅

ACTIVE AND INTELLIGENT FIBRE-BASED PACKAGING – INNOVATION AND MARKET INTRODUCTION

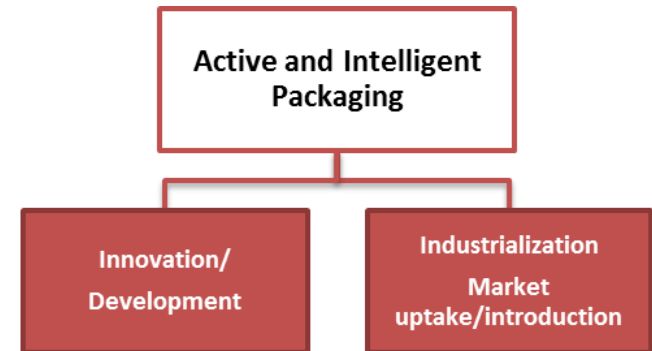


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ActInPak is:

A pan European network of leading experts of **over 100 institutes, universities, companies** from **34 countries** with **one goal**: to **define innovative solutions** and **identify opportunities and obstacles** in market introduction for active and intelligent packaging in the area of fibre-based products

March 2015 – April 2019



Why this Action?

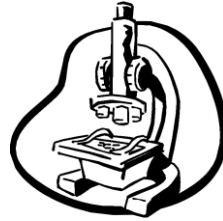


1. Most developments are plastic based.
Development of integration into paper based products.
2. So many examples, but so little evidence of successful (B2C) market introduction in Europe.
Why?

Importance of this Action



Money

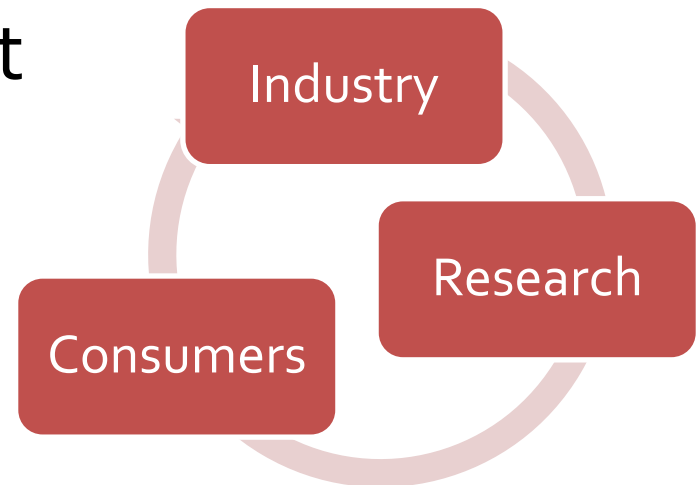


Knowledge



Our activities

The main objective of the Action is to develop a **knowledge-based network** on sustainable, active and intelligent fibre-based packaging in order to **overcome current technological, industrial, and social limitations** that hinder the wide deployment of existing and newly developed solutions in market applications.



Scientific focus



- Direct future innovations and contribute to existing development efforts into scientific/technical research into fibrebased materials, new additives and techniques for active and intelligent functions;
- Identify market demands, possibilities and any obstacles to market introduction of active and intelligent fibre-based packaging;

Secondary objectives



- Identify the technical limits and opportunities for development of active and intelligent fibre-based packaging;
- Identify market demands and supply chain challenges to ensure easy introduction of smart packaging;
- Identify sustainability, health and safety issues;
- Disseminate knowledge to industry and society;

Working Groups



Core Group



Chair
Sanne Tiekstra
NL



Vice-Chair
Julien Bras
FR



STSM Coordinator
Marco Giacinti
IT



WG1
Selçuk Yildirim
CH



WG2
Johanna Lahti
FI



WG3
Greg Ganczewski
PL



WG4
David Ravnjak &
Tadeja Muck
SI



KTC/IIC
Johannes Bergmair &
Victoria Heinrich
AT

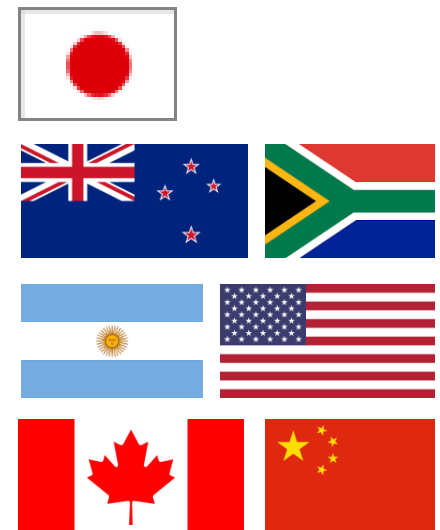


Editorial Board
Diana Gregor-Svetec
SI

Participants (end of March 2016)

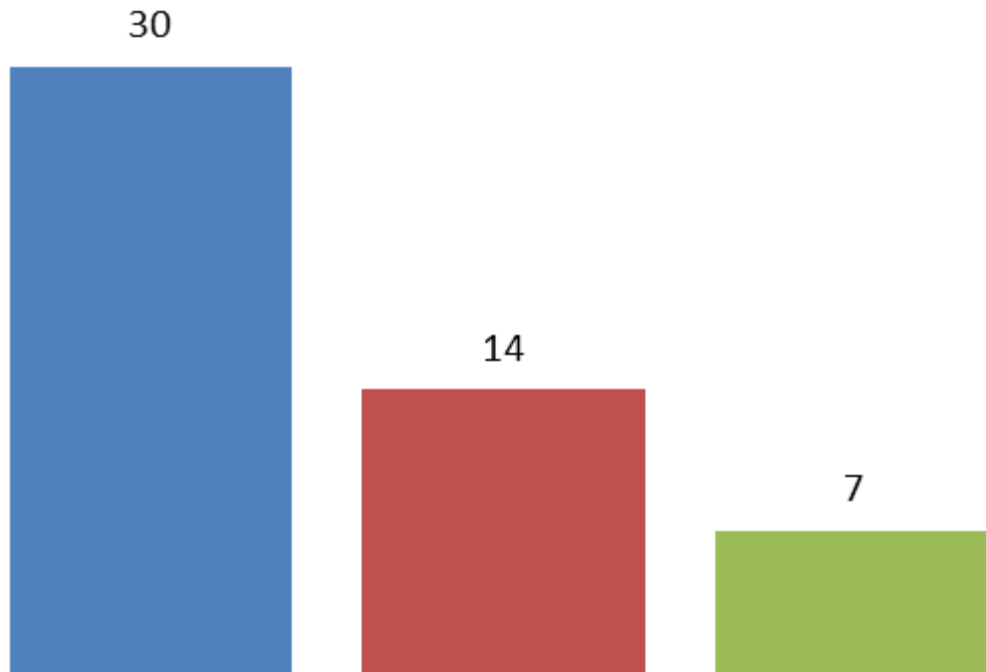


>200 participants
from 30 EU countries
and 7 international
partner countries

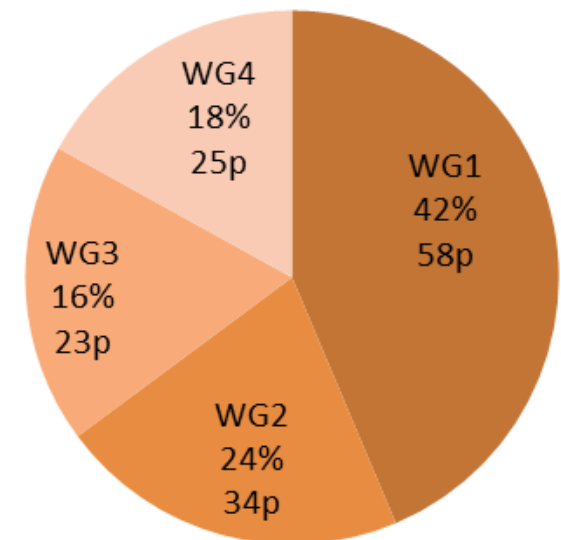


Participants

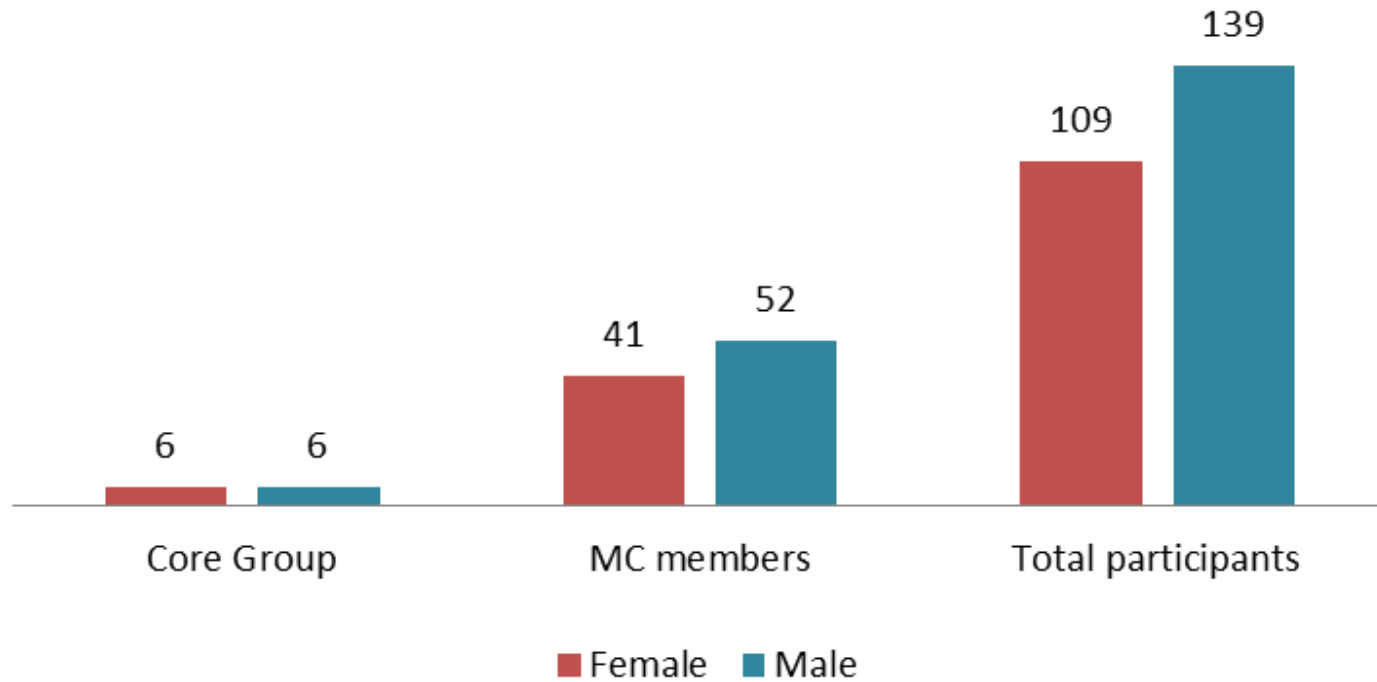
■ # COST countries ■ # ITC ■ # IPC



**# members
(not unique)**



Gender balance



Industry versus science

Action aims at active involvement of **complete value and supply chain**

- Currently: 47 companies from 16 different countries, ranging from large to small



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Grant Period 1 – feedback

GP1: 20 March 2015 – 30 April 2016

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Objectives GP₁



1. State of the art and current scientific developments will be assessed so scientific research can take into account all the boundary conditions for implementation of the developments
2. Boundary conditions (social, technological, economical, ecological, political, market demand) for successful market introduction will be inventoried and assessed
3. A first evaluation will be made of the success rate regarding acceptation and implementation of the scientific developments to be able to direct further innovation.

Deliverables GP₁ - overall



- Integration of active and intelligent packaging solutions in the papermaking process to create next-generation functional fibre-based packaging.
- Analysis of the whole value chain in order to identify all possible bottlenecks, for an efficient deployment of available or newly developed active packaging solutions.
- Complete (circular) lifecycle analysis of the considered solutions in order to increase the sustainability of current active or intelligent packaging and to ensure the minimisation of the environmental impact of the newly developed products.

Deliverables GP₁ - WGs



- Action plans per WG, including proposals for training schools and workshops and other activities GP₂
- Review paper per WG
- Definition documents (clarifying a.o. active and intelligent packaging, fibre-based, market)
- Virtual showroom



VIRTUAL SHOWROOM about Active and Intelligent Packaging

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Virtual Showroom



- What ? An open DATABASE of development and product present in the european Market with a focus on sharing samples
- To Who ? Anybody
- Procedure? Simple, send one slide
- How Many? At least 100 at the end of the COST
- When ? 2015-2019

Antimicrobial

R&D
In the Market



NewGenPak



What ? Antimicrobial packaging for syringe, external face to limit nosocomial transfer

Where ? From an european project NEWGENPAK, demonstrator

When ? Sept 2015

More details: Julien.Bras@grenoble-inp.fr, Grenoble, FRANCE

Oxygen Scavenger

R&D
In the Market



What ? Oxygen Scavenger for cake preservation

Where ? Buy in the Supermarket "Le Carré Asiatique",
Grenoble, **FRANCE**

When ? Dec 2015

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Deliverables GP₁ - Meetings



- Workshop and conference presentations and proceedings (in electronic format), preferably to be published on the Action public website and LinkedIn page.
- Network creation
- Awareness creation amongst industry

Deliverables GP₁ - WGs



STSMs:

- At least 4 STSMs should be executed by the end of GP₁, preferably from science to industry or v.v.
- STSMs should contribute experience in the analysis of state-of-the-art, boundary conditions, and most promising scientific developments
- Reports on the STSM activities, preferably in the form of a presentation or video pod cast so that it can be presented during conferences/meetings and be published on the Action Public website and LinkedIn page or even other social media.

GP1 achieved - Meetings



- Aveiro (PT), 15-16 September 2015
 - MCM2 and WG
 - Action plan per WG
- Utrecht (NL), 17 November 2015
 - WG2+4 meeting
 - Combined with AIPIA, industrial partners invited
 - Get feedback from industry
- Munich (DE), 4-5 April 2016
 - WG meeting
 - Finalise the review papers and definition document
 - set goals for the second Action year, including a preliminary agenda for the second Grant Period.

GP1 achieved - STSMs



- Yana Petkova Olson
 - » Sweden to Germany
 - » 5 January 2016 to 31 March 2016
- Anouk Dantuma
 - » Netherlands to Portugal
 - » 6 March 2016 to 18 March 2016
- Daniele Oliveira de Castro
 - » France to Italy
 - » 15 March 2016 to 14 April 2016
- Charlène Riverdy
 - » France to Sweden
 - » 4 April 2016 to 15 April 2016
- Jinneth Lorena Castro
 - » Spain to Portugal
 - » 11 April 2016 to 30 April 2016

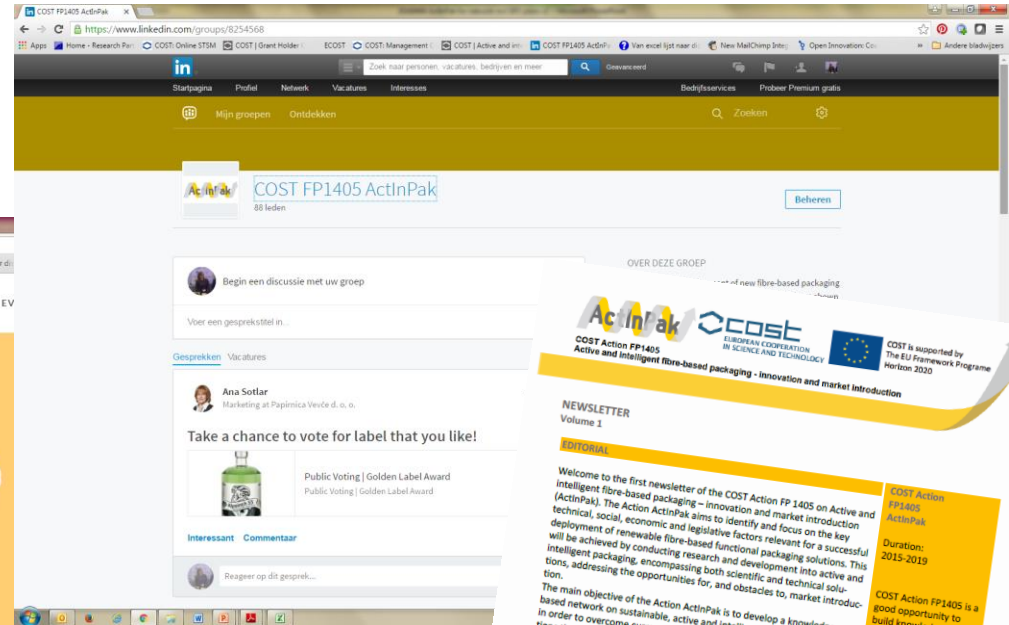
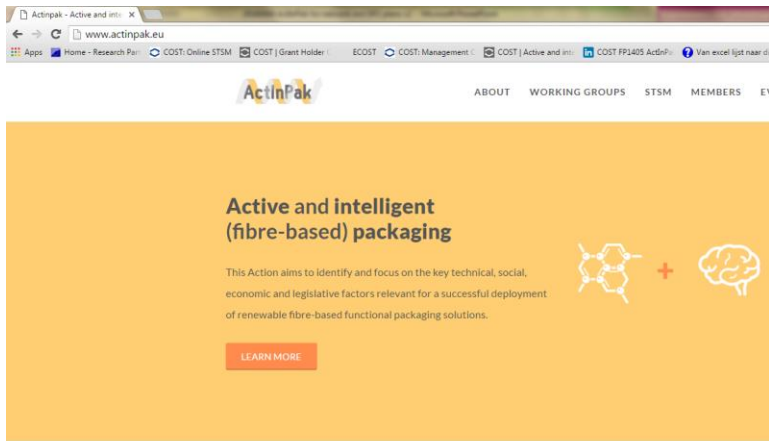
GP1 achieved - STSMs




- Students will be invited to present their STSM at the November meeting
- Topics:
 - Determination of microstructures in starch temperature responsive mixtures by microrheology
 - Manufacturing and measurement of superhydrophobicity for paperbased active packaging
 - Measurements of shelf life and anti-fog properties of functionalized cellulose nanocrystals materials for food packaging application
 - Scaling up the antimicrobial polyhydroxyalkanoates production
 - Researching the antimicrobial effects and application areas of biobased active coating for paper-based packaging applications of various fresh products

GP1 achieved - Dissemination

- Website + LinkedIn
- Newsletter 1




GP1 achieved – Network (MC)



- At kick-off (20 March 2015): 25 countries
- At this moment: 30 countries
- *Increase of 20%*
- Latest additions: Israel, Bosnia and Herzegovina

GP1 achieved – Network (IPC)



- At kick-off (20 March 2015): 2 countries
- At this moment: 4 countries
- Latest additions: USA, South Africa
- Under validation: Argentina
- Template completion: Canada, China

What have we learned by now?



- Feedback from Aveiro network meeting
- Feedback from Utrecht meeting with industry

Challenges to work on



Costs

No existing European legislation

Retailers barrier

Paper and board need barriers

Create demand

Complicated and long supply chain

Understand consumer needs

Consider supply chain benefit

Printable barriers

Difficult to estimate possible market share

Measure impact and added value throughout value chain

Consumer education

We are all consumers: if you will never buy this packaging, forget it

Opportunities for paper and board



Bio-based solutions

High volume
production

Reduce packaging
weight and material

Gamification

Printability

Low-cost integrated
technologies

Move P&B from
secondary to primary
packaging

*Save production costs
and speed, and thus
money*

Flexibility

Interactivity

Integrated approach

End-of-life solutions

Communication

I want a printable water barrier, a
printable oxygen barrier

Opportunities for AIP



Pharmaceuticals

Guarantee, predict and extend shelf life, also after opening

Save production costs and speed, and thus money

Limit over-packaging

Printability

Low energy sources

Integrated approach

Save high value material: the food

Reduce packaging weight and material

Sachet = freshness (Japan)

Industry feedback on WG1:



- Battle: Fibre vs. plastics.
 - Plastics have all the barrier properties
- Fiber-based packaging as primary package:
 - barrier and shelf-life challenges
- To show really the potential of A&I solution, to show that the extra cost is worth it
- Presenting of current solutions for industry, showing case-studies/success stories
- Defining parties involved:
 - Retailers/brandowners
 - Food producers
 - Consumers (e.g. importance of social networks)
 - Packaging producers
 -

Industry feedback on WG1:



- What is the benefit to each party:
 - Retailer/Brandowner: PR benefit, sales...
 - Consumer: product safety, "something fun"....
 - Can be beneficial for several parties or targeted just for one party
- Bulk products vs. Unit package
 - Different value chains
 - Different challenges and needs
- Implementation of a solution: in which step of production process?
 - manufacturing/converting/printing/label...
- Will consumers pay extra for a package with A&I function? Added value?

Industry feedback on WG2



Barriers to market uptake:

- Paper lacks barrier properties
- Consumer doubts the protection paper and board give to the food, even though they love the paper-look
- Providing constant quality (industrial scale)
- Consumers, producers, brand owners all don't want to pay extra for AIP

Industry feedback on WG2:



How to prove the advantages outweigh extra costs?

- Express the less obvious benefits such as faster production, reduced material usage, etc
- Crucial to know who will benefit, to decide who needs to be convinced
- Who is the key decision maker in the value chain?
- Decide on the focus area, as effects might be different >> eg focus on replacing plastics in niche applications first
- Start with proven developments
- Focus on push-strategies that engage the consumer (eg health and safety)
- Way of communication with consumer (social networks)



Grant Period 2 – proposal

GP1: 1 May 2016 – 30 April 2017


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Scientific Goals – GP2 proposal




1. First analysis of three demonstrator cases on new materials (WG1), and sustainability, health and safety (WG3).
2. Exhaustive understanding of current situation in research and development
3. To increase awareness about active and intelligent packaging through whole value chain

Meetings – GP2 proposal



- COST topical integration in program of Nanotec2016 conference (26-27 September 2016)
- MC + WG meetings during Paper Makers seminar in Bled, Slovenia (21-22 November 2016)

Training schools – GP2 proposal



- Training schools:
 - Printed Electronics, Swansea, United Kingdom, 11-15 July 2016
 - Active packaging and application technologies, Tampere, Finland, August 2016
- STSMs
 - 6-8 STSMs (total budget €15.000)

Student contest - proposal



- New idea (to be discussed):
- proposed an european student contest

- What ? Open call for: (i) Innovative demonstrator in A&IP; (ii) Market study about a topic,
- For Who? dedicated to Master students group (min 2 pers)
- How ? Via website- call
- When? From Sept 2016 to June 2017
- What For? Visibility, Education, Communication
- Results expected? Invite best students in a meeting (and a price ? : 500€?)

GP₃ very early discussions



- Meeting and training school in Turkey, summer/autumn 2017
- Conference in cooperation with iarigai, September 2017



ACKNOWLEDGEMENT

This work is based upon work from COST Action FP1405 ActInPak, supported by COST (European Cooperation in Science and Technology)

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