

An aerial view of a rooftop garden. In the foreground, several large, vibrant green leaves of a plant are visible, some extending from the left side towards the center. Below them, a lush green lawn is populated by several people walking and playing. A low wall with a decorative, perforated brick pattern runs across the middle ground. In the background, a dense urban skyline with various skyscrapers is visible under a clear blue sky.

ambiance



ambiance

Advanced Manufacturing of Biobased products for urban outdoor applications through iNnovative CharactErisation, digital technologies, and circular approach.



Funded by
the European Union



ambiance

Advanced Manufacturing of Biobased products for urban outdoor applications through iNnovative CharactErisation, digital technologies, and circular approach.

10

Partners

6

Countries

48


Months

4.57M

Budget

Use and integrate advanced technologies for materials and manufacturing processes optimisation

The Vision



integrate advanced
technologies for materials
manufacturing processes
and production



Leverage optimised novel composite materials to enhance the production of a new generation of fully-recyclable bio-based products.

The Vision

A decorative background on the left side of the slide, consisting of numerous thin, wavy green lines that create a sense of movement and depth, resembling a stylized landscape or a topographical map.

and novel composite
since the production
of fully-recyclable
S.



Facilitate The
Transition To A Circular
Biobased Economy

The Vision



AMBIANCE will develop novel bio-based products for urban outdoor applications through innovative characterisation, digital technologies, and circular approach.

How



AMBIANCE promotes sustainable manufacturing models, optimises the manufacturing processes in the use case applications, and ensures the replicability of results.

How

AMBIANCE focuses on 3
manufacturing value chains:

sports facilities, outdoor furniture
as well as construction bricks and
decorative panels

How

Cut down on the environmental footprint of durable products in three manufacturing applications by 70%

Manufacture cost-effective and high-performance products with 100% biobased content.

Upgrade and develop

Objectives

Effective and
products
content.

Upgrade the manufacturing process
and product quality and reduce product
development time by 30%.

Demonstrated results
in at least 2 EU cities
pilots.

Objectives

AMBIANCE will extend the life cycle of bio-based products and increase their robustness against environmental and production changes.

The title "The Project" is written in a large, white, serif font across the bottom of the image. The text is split across the two halves of the image, with "The Pr" on the left and "oject" on the right. The background of the left half is a photograph of a rooftop garden with a city skyline in the distance, and the right half is a solid dark blue background.

Bio-based Materials Optimisation



Bio-based Materials Blending & Optimisation



Bio-based materials Simulation



Mechanical Properties Characterisation



Circular Properties Characterisation

Bio-based Product Manufacturing Process



Product Quality Enhancement



Physics based Simulation of Manufacturing Process



Manufacturing Process Data Collection

Demonstration & Assessment



Artificial grass pitches



Outdoor Urban Furniture



Decorative & Construction Products

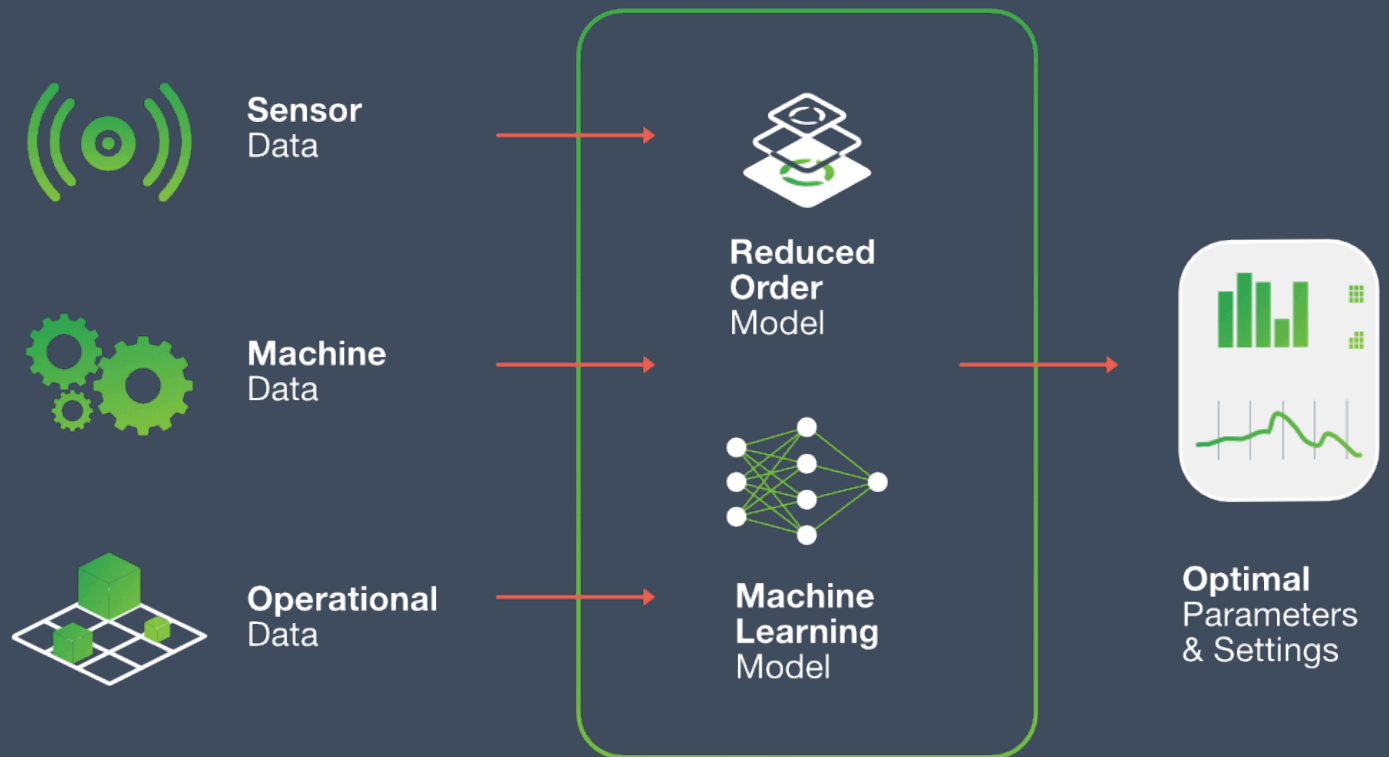
1. Manufacturing processes

Bio-based materials demand innovative and adaptable manufacturing processes, responsive to the characteristics of the feedstock in each manufacturing stage as well as to the end-product requirements.



1. Manufacturing processes

To respond to the process optimisation needs, AMBIANCE will employ several advanced digital technologies, both for data acquisition as well as simulation models.



2. Novel Materials



Bio-based Materials
Optimisation

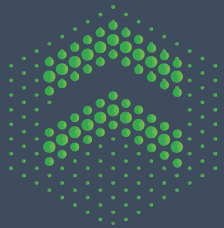


Bio-based Materials
Characterisation



Bio-based Materials
Recyclability Assessment

2. Novel Materials



Bio-based Materials Optimisation

DoE - Experiments

with all possible parameters, to achieve the required material properties. To accelerate the production of results, experiments will be combined with statistical techniques in a Design of Experiment approach.

Molecular Dynamics (MD)

This simulation tool will be used to predict the biobased material properties and the mechanical and thermal properties of the biobased composite materials.

2. Novel Materials



Bio-based Materials Characterisation

Extensive material characterisation, conditioned by existing standards and requirements covering both the physicochemical and mechanical aspects.

A biodegradability characterisation will be carried out too since the novel materials strongly rely on biomass.

2. Novel Materials



Bio-based Materials Recyclability Assessment

How are the material's final properties affected by the recycling process and how can they be improved utilising fillers, modifiers, and compatibilisers.

The number of recycling cycles that the new bio-based materials can tolerate will be assessed.

The solutions developed within the spec of AMBIANCE, will be showcased, and integrated in three demonstration sites.

The text '3 Use Cases' is written in a large, white, serif font across the bottom of the image. The background of the entire slide is a photograph of a rooftop garden. In the foreground, a green lawn is visible with a few people walking. A decorative wall with a brown, perforated metal pattern runs across the middle ground. Above the wall is a raised garden bed with various green plants. In the background, a city skyline with several tall buildings is visible under a clear sky.

3 Use Cases

Optimising the parameters of the manufacturing processes of artificial grass pitches in sport facilities. The operations will cover the filament extrusion and the infill pellet mixing as well as the whole production process.

A close-up, low-angle shot of a person's legs and feet walking on an artificial grass pitch. The person is wearing green socks and blue athletic shoes. The background shows a blurred outdoor sports field with other people in the distance.

Lower abrasion, better durability, and higher performance.

Reduced production costs.

Lower environmental impact.

Large-scale 3d printing production of outdoor furniture, using recyclable biobased polymers optimised with additives for higher performance.

Better endurance of materials against climate and human factors.

Better recyclability and biodegradability properties.

Reduced lifecycle costs.

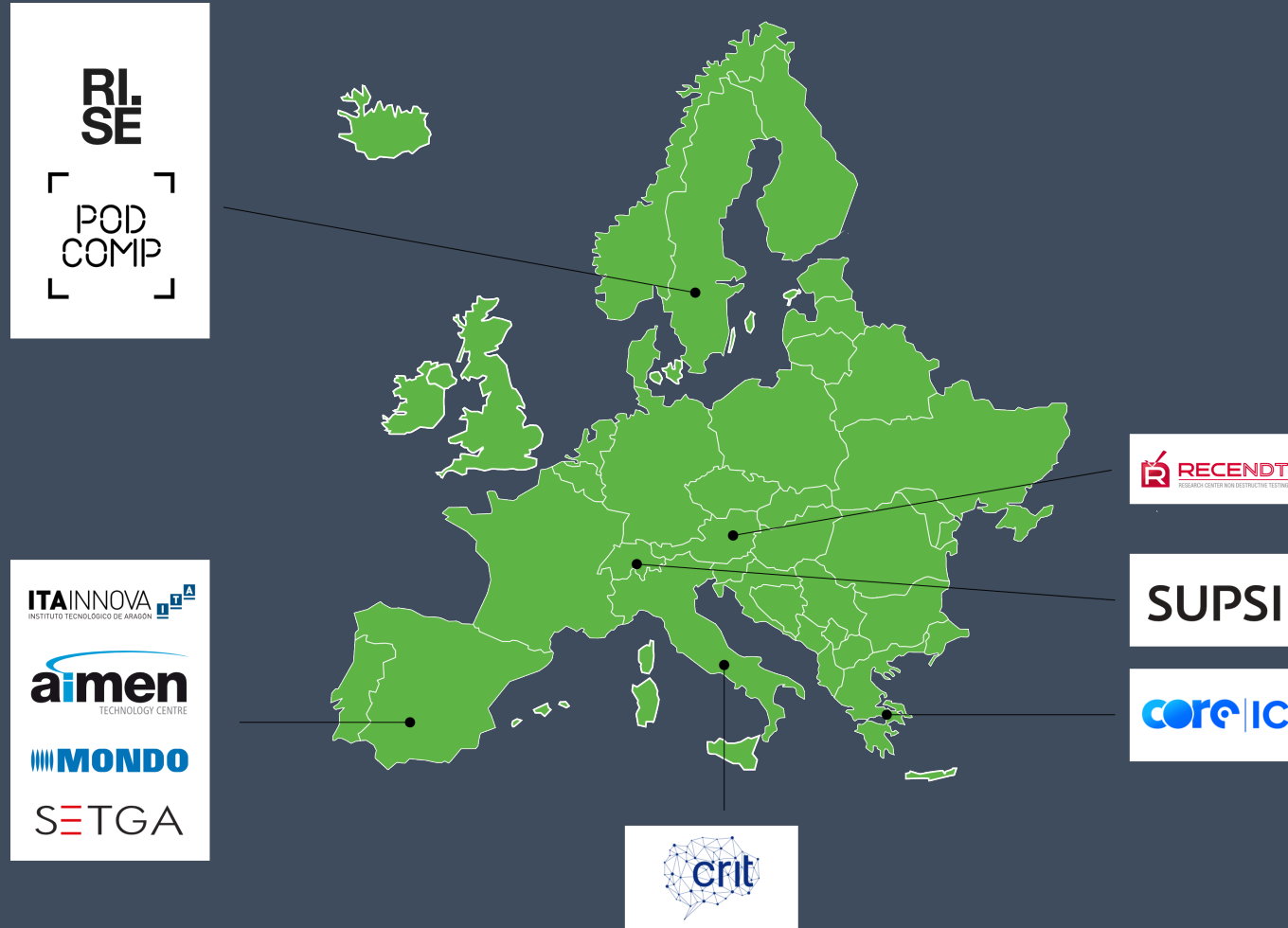


Research on processing certain agricultural side streams to obtain durable composite materials for construction bricks and decorative panels, while optimising their manufacturing process.

Lower environmental impact.

Lower waste during the material processing.

Increased recyclability and reusability.



We are a cluster of
10 partners
across 6 countries

Who we are



WEB www.ambiance-project.eu

LINKEDIN [AMBIANCE Project](#)

TWITTER [@AmbianceEu](#)

A photograph of a park with a green lawn, a brick wall, and a city skyline in the background. The text 'Keep in touch' is overlaid on the bottom of the image.

Keep in touch