



THE  
**NAVIGATOR**  
C O M P A N Y

# **How to Best Organise Science and Higher Education and their relations with Industry through Innovation**

*Workshop OECD  
Panel 2- Science, Innovation and Knowledge transfer  
in a diversified higher education landscape*

RAIZ  
**Sara Paulina de O. Monteiro**

Lisbon, 07.11.2017

- **The Navigator Company and RAIZ**
  - When private sector decides to invest in its own research and technological infrastructure
- **Vision and Practice**
  - How to best organise Science and Higher Education and their relations with Industry through innovation
- The most recent Best Use Cases in Process: **InPaCTus**, MySustainableForest Project, Cellsmartsense, E-Globulus, Valorcel
- **Call for Action and Key Values**



**The Navigator Company  
and RAIZ – *Centre of Excellence  
on Eucalyptus products and  
Technologies:***

*When private sector decides to invest in its own  
Research and Technological Infrastructure*

# The Navigator Company

*Leading Manufacturer*



European leading manufacturer of uncoated wood free printing and writing paper. Committed to improve and **protect Portuguese forests** using sustainable and certified forestry models.



**6<sup>th</sup> largest producer in the world** of bleached eucalyptus Kraft pulp.



Annual production capacity of **1.6 million tons of paper**, 1.4 million tons of pulp (integrating 1.1 million of this) and **power generation of 2.5 TWh**. **Annual turnover: 1,6 Bn € (3% of National exports and 1% of National GDP)**



The Navigator Company is the **world's best-selling product in the premium office paper segment**



The Navigator Company Is also a frontrunner in the energy sector and Portugal's leading producer of energy from biomass as renewable energy source in line with **National Plan of Biorefineries**

# When private sector decides to invest in its own Research and Technological Infrastructure



**CLOSE THE GAP**

Disadvantages

Advantages

Creation and diffusion  
new knowledge

Develop new products  
and technologies ready  
to market

Promoting cooperation  
with Universities and  
other R&D institutes

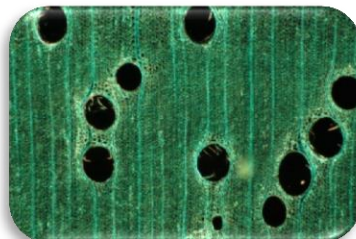
Training

New Unit Cost

New services and  
consultancy



- A private non-profit research institute, launched in 1996 by The Navigator Company (94%), and the Universities of Aveiro, Coimbra and Lisbon / ISA (2% each)
- Centre of excellence for eucalyptus products and technologies: from plant biotech, forestry, industrial process up to final product
- Staff: 50 permanent + 30 fellow researchers (including 16 PhD holders)
- Annual Budget: 6,3 M€ (25% from competitive funding)





# Vision and Practice

*How to best organise Science and Higher Education and their relations with Industry through innovation*

## Mission



To contribute to the competitiveness and sustainability of the eucalypt value chain, from forest to product:

- **Creating excelling knowledge**
- **Supplying specialized services and consulting**
- Developing **innovative solutions**, boosting the new circular & bio economy
- Promoting the **cooperation with universities and world class R&D centres**
- **Training highly qualified** and motivated human resources

## Vision



Be recognized worldwide as a reference research centre,  
promoting sustainable development and the eucalypt forest-based bioeconomy



### **1. Improve productivity of eucalyptus forest**

- New clones and seeds with productivity gains up to 50%
- Control of pests and diseases (biological, chemical, genetics)
- Knowledge transfer to private forest owners

### **2. Develop knowledge on eucalyptus forest ecosystem – water, soil conservation, biodiversity, mitigation of environmental impact**

### **3. Develop new IT tools to support forest management & decision process**

### **4. Anticipate the future of forest: new uses, climate changes and societal challenges**

### **5. Contribute to efficiency and sustainability of pulp and paper production**

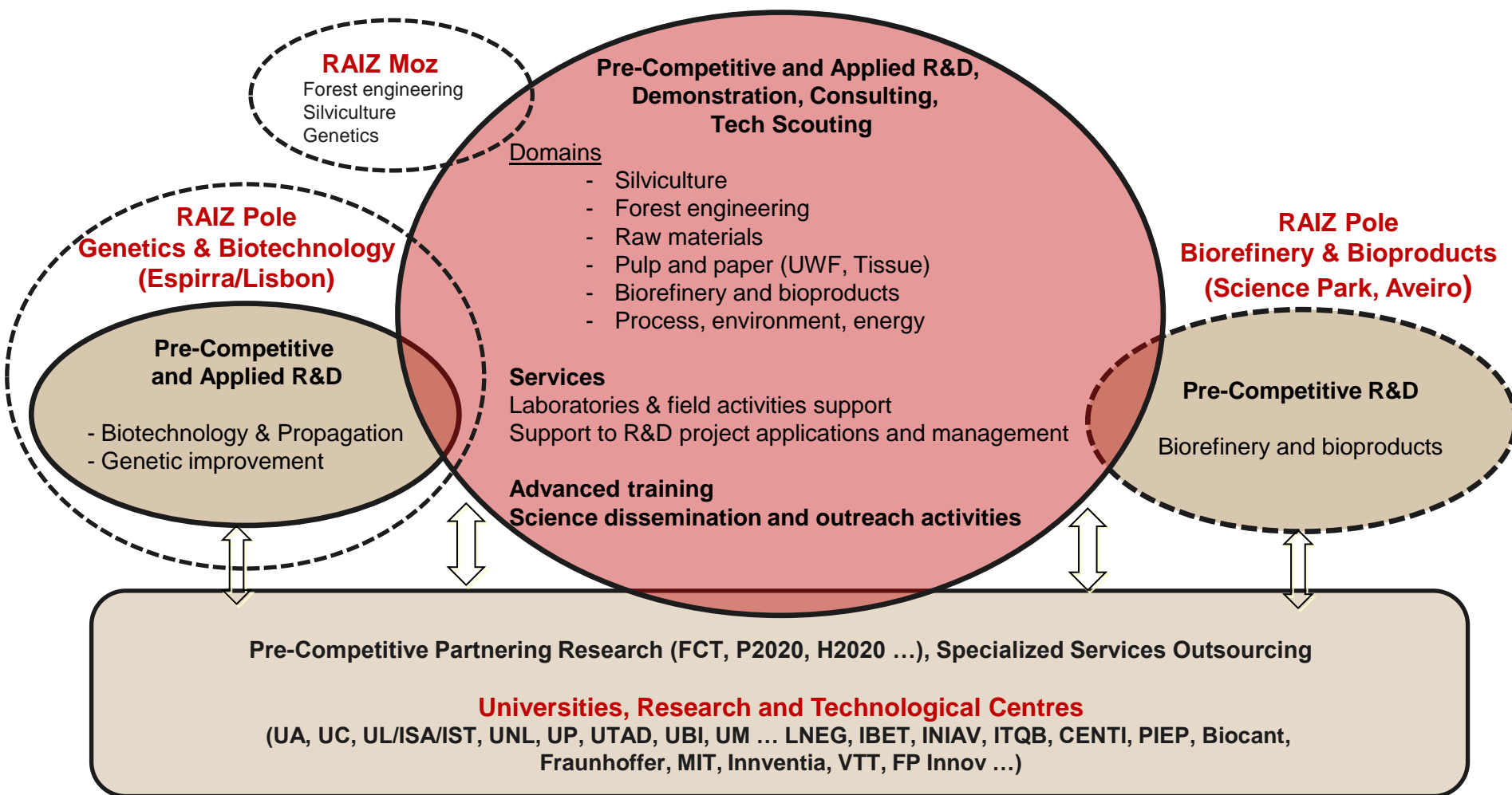
- Alternative wood raw materials, process improvement, efficient usage of water and energy
- Accomplishment with environmental legislation
- Boosting circular economy approaches

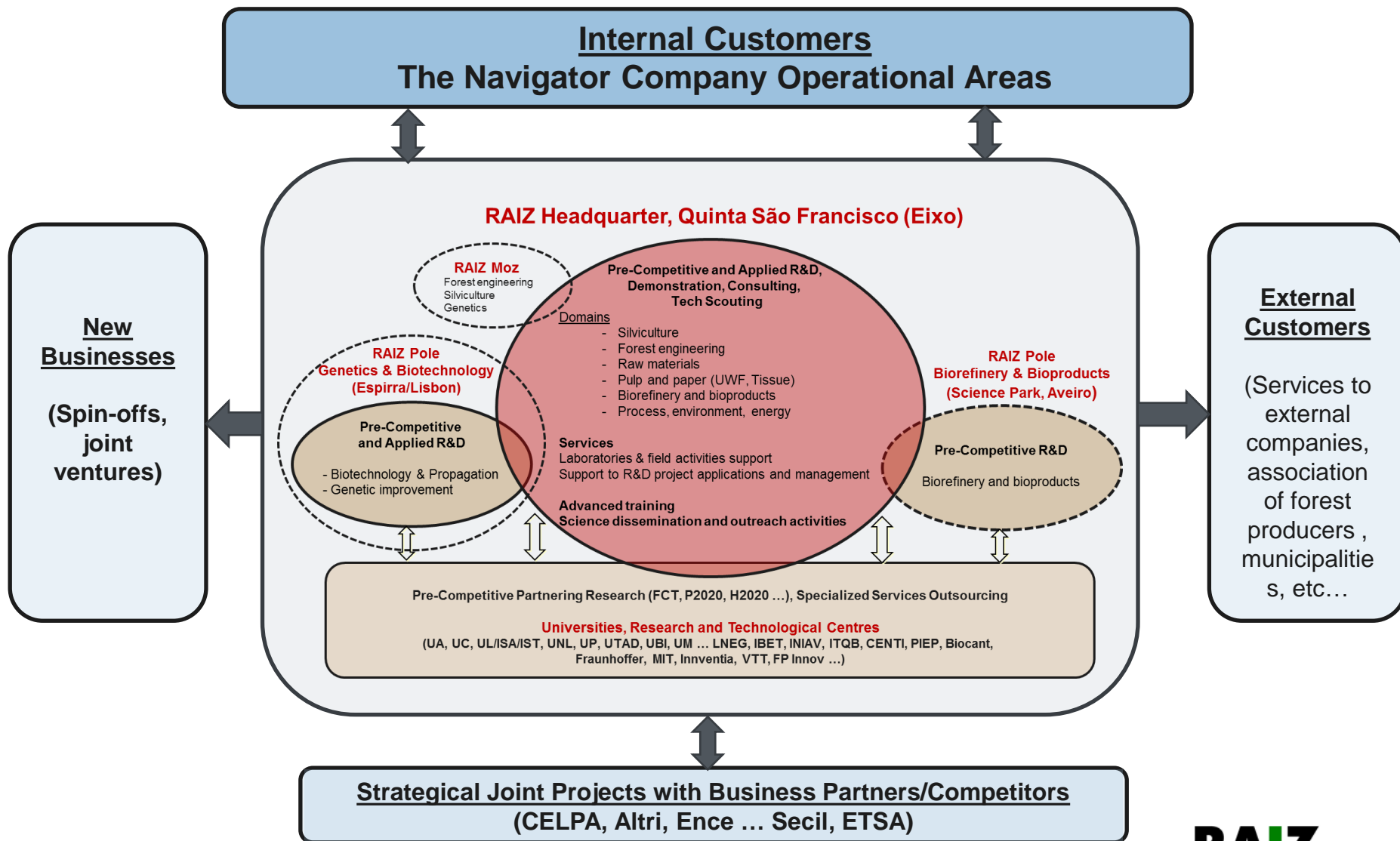
### **6. Promote / boost NVG products differentiation: pulp, UWF, tissue, new fibre/paper applications**

### **7. Promote the implementation of biorefinery concept in eucalyptus pulp mills: new bioproducts, bio-based materials, biofuels**

### **8. Encourage business diversification, based on innovation and R&D results**

## RAIZ Headquarter, Quinta São Francisco (Eixo)







# **Our Best Use Cases In Process**

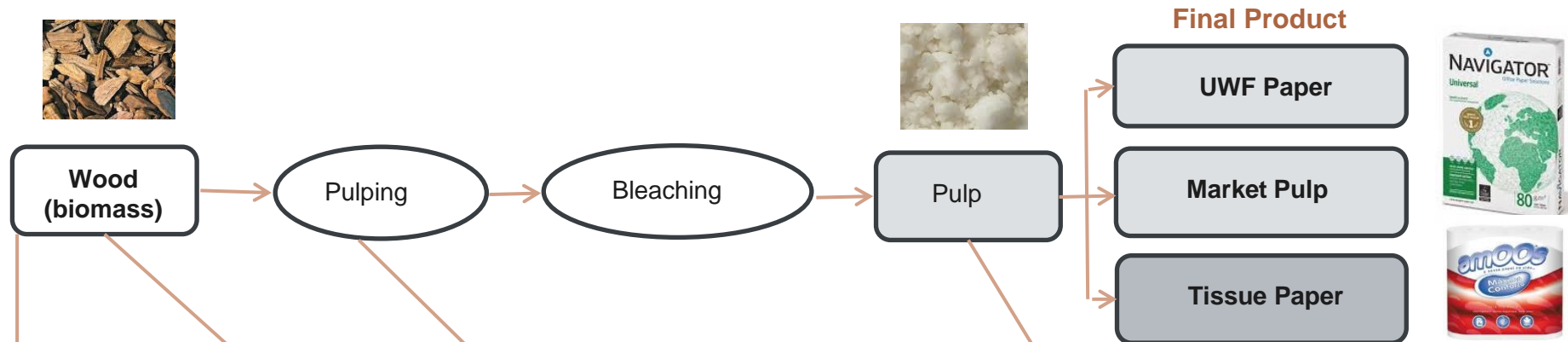
## **InPaCTus**

## Innovative Products and Technologies from Eucalyptus

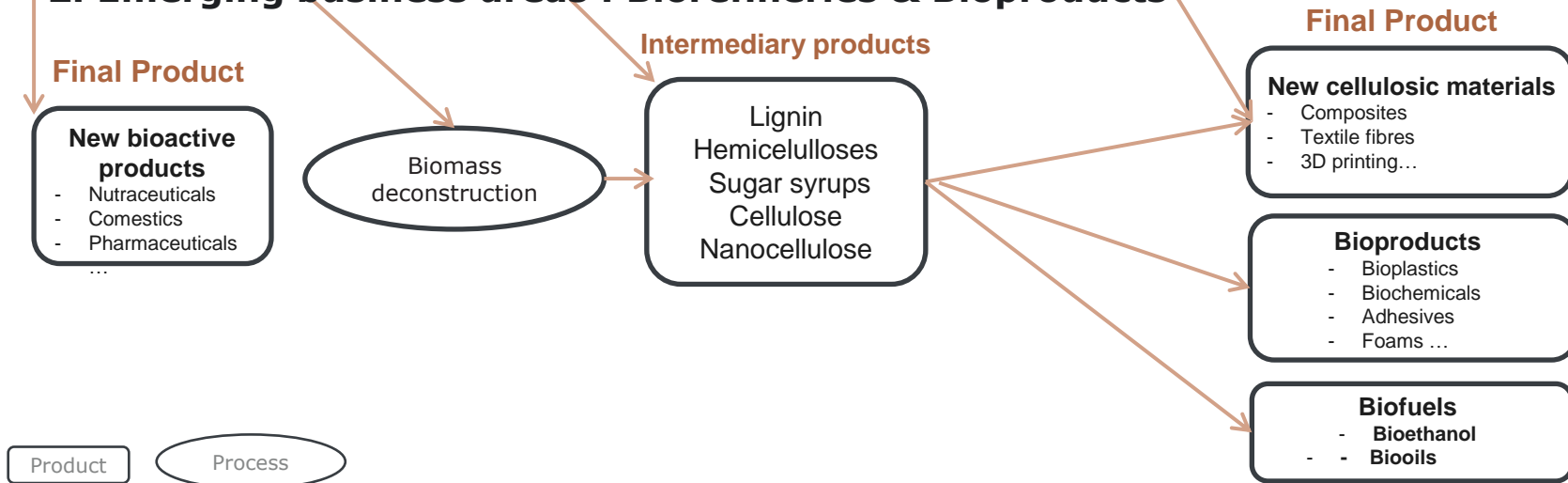
- 2017-2021;
  - 13.3 M €
- (Total budget Centre of Excellence: 15.3 M€)
- 180 staff;
  - 50 researchers (MSc, PhD)
  - 2 international invited chairs
  - 41 sub-projects
  - 10 patents
  - Publication of 100 scientific articles
  - Holding of 50 presentations at conferences and congresses
  - Creation of 4 new spin-offs
  - Advanced training of researchers and future professionals related to Sector
  - Creation of 38 highly qualified jobs.



## 1. Consolidated and new business areas



## 2. Emerging business areas : Biorefineries & Bioproducts

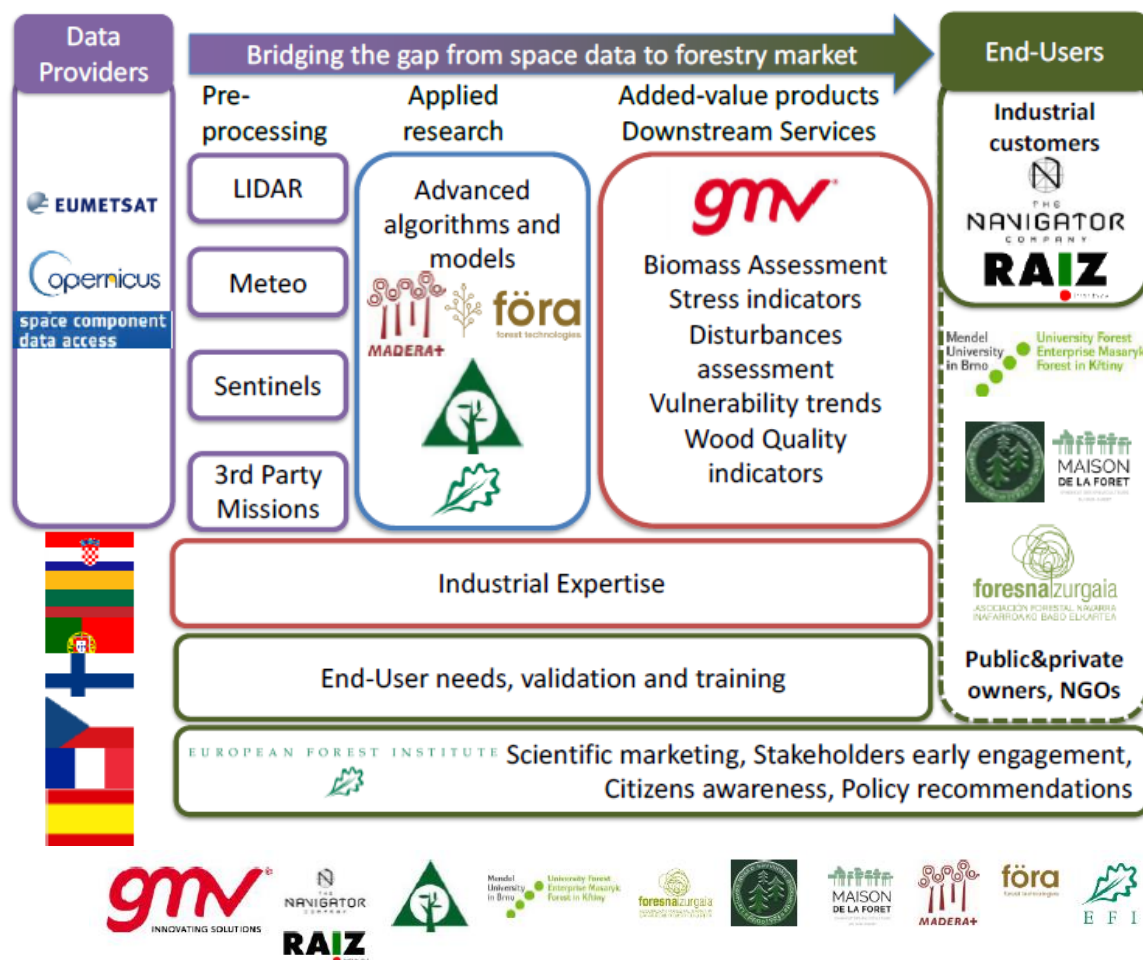




# MySustainableForest Project

*Raising recommendation to policy makers*

Partners from Spain, Portugal, Croatia, the Czech Republic, Lithuania, France and Finland:





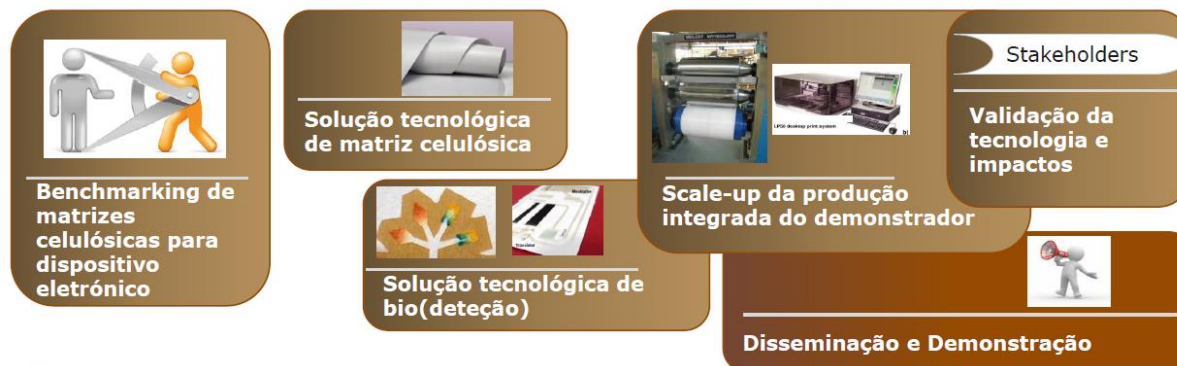
## Other Projects in Place

**Duration:** 18 months (1.10.2016 - 31.03.2018).

**Funding programme:** FEDER, COMPETE, PT2020.

**Partners:** The Navigator Company, RAIZ and CENIMAT/i3N (Universidade Nova de Lisboa).

**Goals:** The demonstration of flexible electronic platforms on cellulosic matrices for pH detection by colorimetric and electrochemical methods. It also addresses the technical and the economic assessments of the biosensor platforms produced and the validation of the new products in real applications, particularly in the agri-food sector.



## E-GLOBULUS

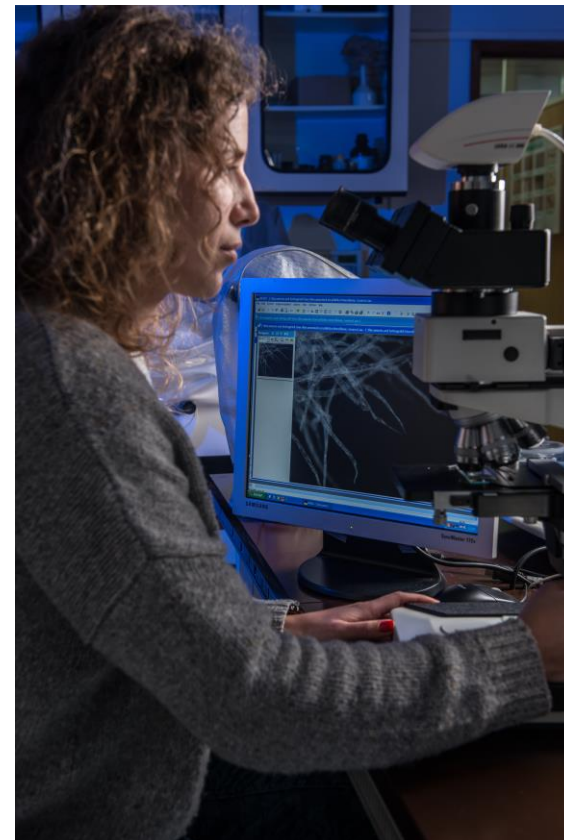
*Online platform for knowledge transfer from RAIZ to the forest management of eucalyptus stands*

**Duration:** 24 months (01.11.2017 - 31.10.2019).

**Funding programme:** PT2020 (SIAC).

**Partners:** RAIZ - Forest and Paper Research Institute.

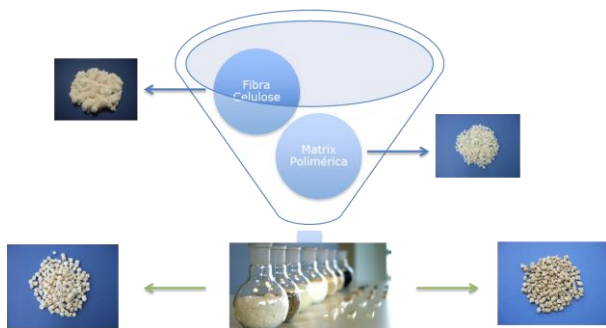
**Goals:** Communication project and knowledge transfer of research from RAIZ – Forest and Paper Research Institute through the free provision of an online platform to assist the planning of forestry operations aiming at sustainable forest management case by case.



**Valorcel- Cellulose-based composites for automotive industry**  
*Development of polymeric systems reinforced with cellulose fibers, valuing the application in eco-sustainable products.*

**Partners:** The Navigator Company, RAIZ and Pólo de Inovação em Engenharia de Polímeros (PIEP).

**Goals:** Development of a polypropylene composite reinforced with cellulose fiber. The developed composite can be used in the production of products through the plastic injection process. The results obtained will enable the creation of a new business area for the company: Bio Composites;



Injection



Molding



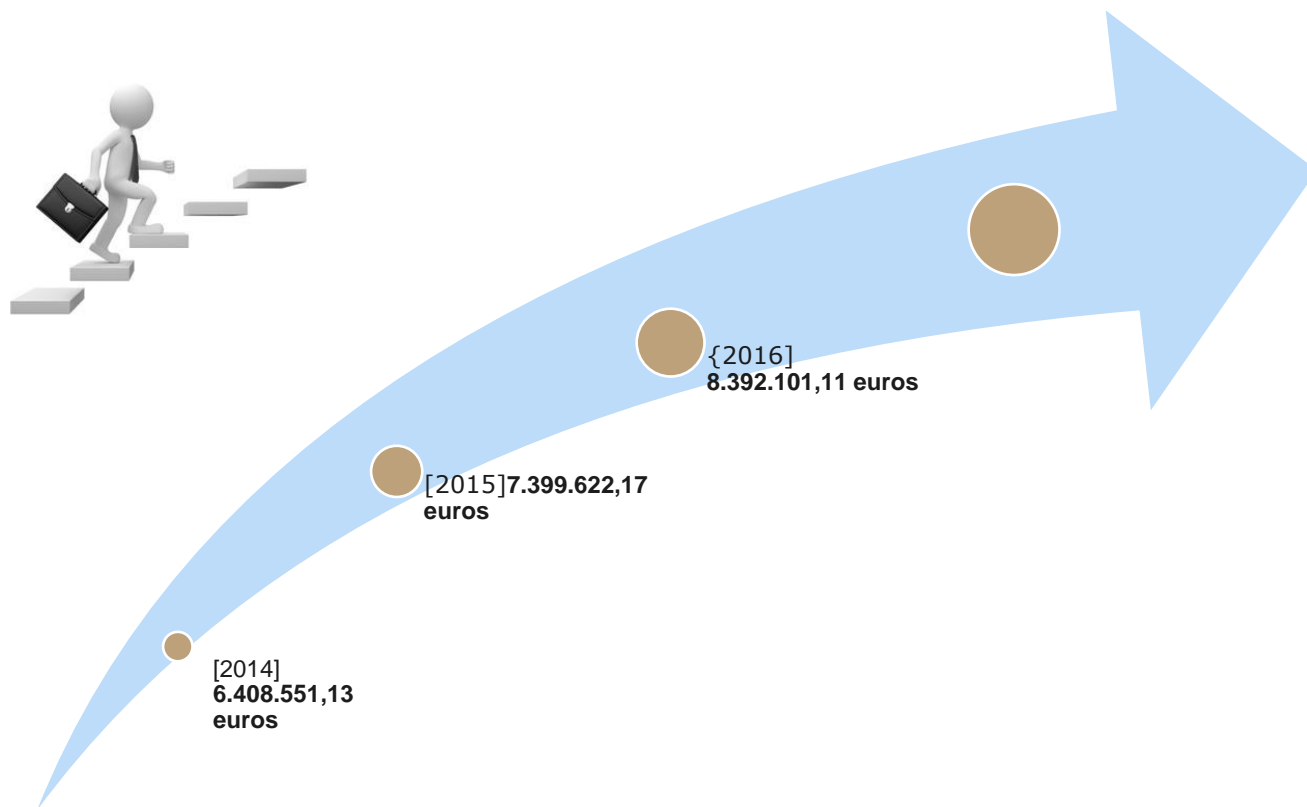


## Call for Action



# Our reality

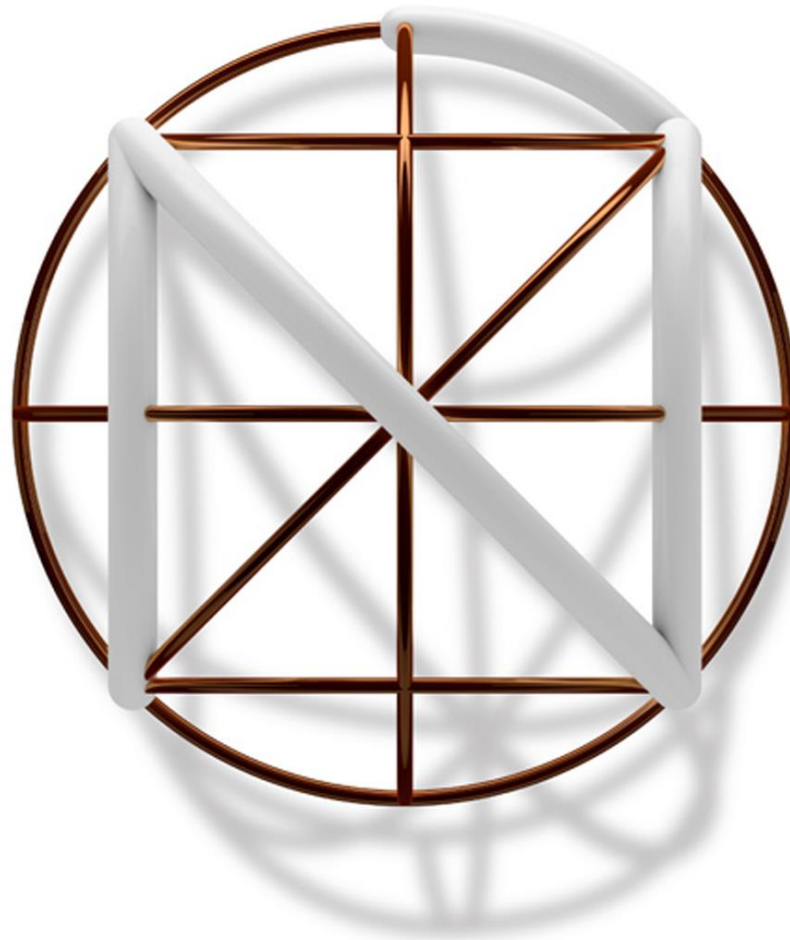
*increasing the Investment on R&D*



# Call for Action

- Innovation programmes should focus on **linkages and collaboration** between different actors in innovation systems.
- In Innovation, public and private organisations and institutions collaborate with and compete between each other, generating innovation through **continuous interactions of multidisciplinary knowledge**.
- The NVG follows the so called **Quadruple Helix Nexus** presenting new evidences on the linkages between all actors of innovation and on the links between Knowledge production, innovation and productivity growth.
- Under the “**New Cycle**” Program, RAIZ as a new “**Green Infrastructure**” working on regeneration and valorisation of resources in benefice of Circular Economy.





**Thank you!**