



PIVERT. INSTITUTE OF EXCELLENCE

The Oilseed Biorefinery of the Future

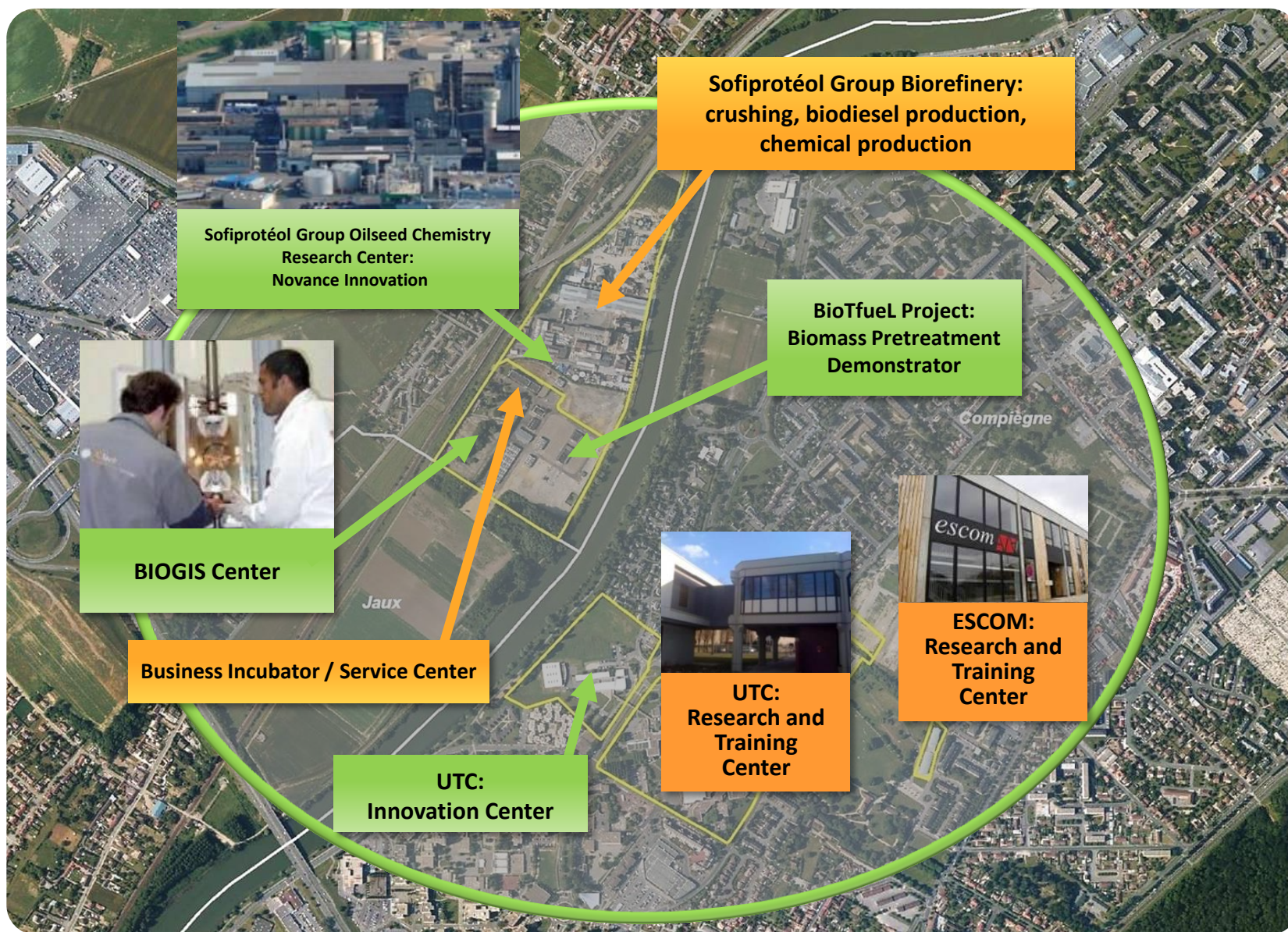
Renewable Agriculture
and Chemistry



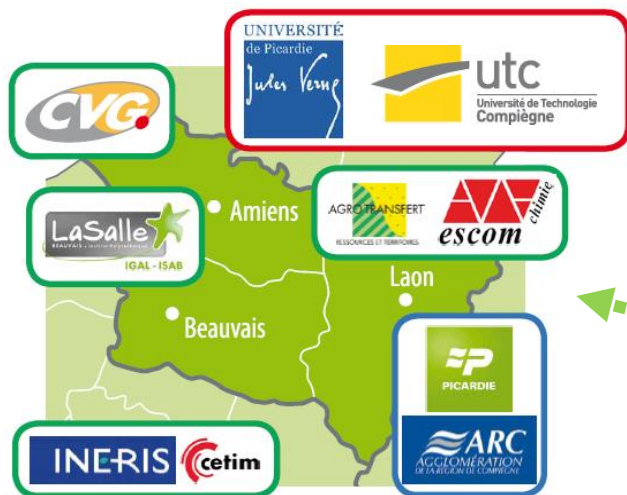


- ◆ Developing a **competitive industry** in the **plant chemistry sector**, based on a promising, competitive raw material: oilseed biomass from renewable sources
- ◆ Developing **alternatives to chemicals** from fossil resources
- ◆ Opening up sustainable **new outlets for agriculture**; structuring the rural economy
- ◆ New markets for equipment technology suppliers

P.I.V.E.R.T., a campus located in Compiègne...



...with key national and international players ...



Founders ☐

Industrial partners of P.I.V.E.R.T. ☐

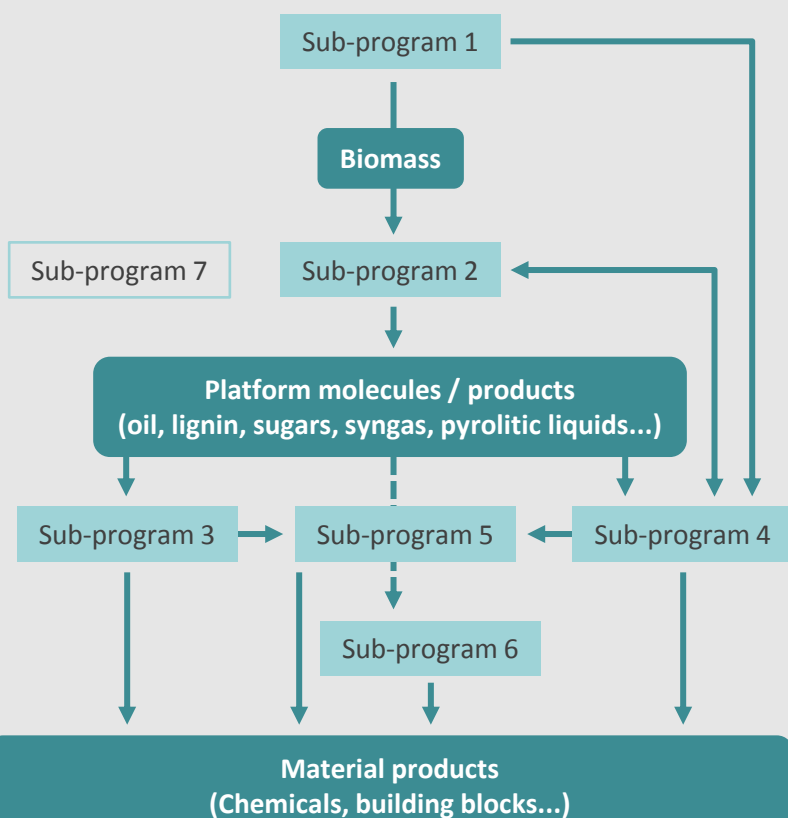
Academic and institutional partners in the GENESYS program ☐

Partner regional government bodies ☐

P.I.V.E.R.T., a strategic tool to develop the biorefineries of the future along...

- ◆ A set up managed by **SAS PIVERT**, a SME founded by **Sofiprotéol, IAR cluster, Rhodia, PCAS, SNC Lavalin, Maguin, UTC, UPJV, UTT, CNRS**
- ◆ An original public-private partnership of **32 partners** in total
- ◆ An overall budget of about **247 m€** (over 10 years) including
 - A pre-competitive R&D program: The **GENESYS Program**
 - Conducted by an nationwide based academic consortium (more than 150 public researchers over 10 years)
 - A flexible, multi technologies, open platform: The **BIOGIS Center**
 - To facilitate research-industry technology transfer by means of demonstration tools
 - Competitive demonstration projects conducted by industrial partners
 - Growing number of valorization projects
- ◆ A center for **students qualification** and **workers training**

GENESYS



Key objectives: To determine the foundations for future oilseed biorefineries

- Biomass production (agronomy, harvesting, logistics)
- Fractionation and processing of biomass
- Delivery of industrial bioproducts for the chemical, cosmetic, food and health industries

Work packages

- WP 1: New crop systems, from the field to industrial units
- WP 2: Biomass fractionation processes
- WP 3: Catalysis and biocatalysis for oilseed chemistry
- WP 4: Lipid metabolism: from the plant to micro-organisms
- WP 5: Lipid self-assembly: formulation and nanostructures
- WP 6: Nutrition and health
- WP 7: Biorefinery: towards the industrial metabolism

Detailed description of the GENESYS program

WP1. New crop systems: from the field to industrial units

Adaptation and mobilization of agricultural resources, chiefly oilseed, complemented by lignocellulose crops

WP2. Biomass fractionation processes

Acquisition of expertise for integration of new, alternative or optimized biomass pretreatment processes and 'primary' processes into a combined system

WP3. Catalysis and biocatalysis for oilseed chemistry

Developing chemical reactions from lipids using oil and biomass pretreatment process co-products as the raw material. Setting up new sequential or combined catalyzed reactions in a single reactor

WP4. Lipid metabolism: from the plant to micro-organisms

Gaining a better understanding of the cell, molecular and metabolic factors controlling synthesis and accumulation of usual and unusual lipids in oilseed plant embryos and yeasts

WP5. Lipid self-assembly: formulation and nanostructures

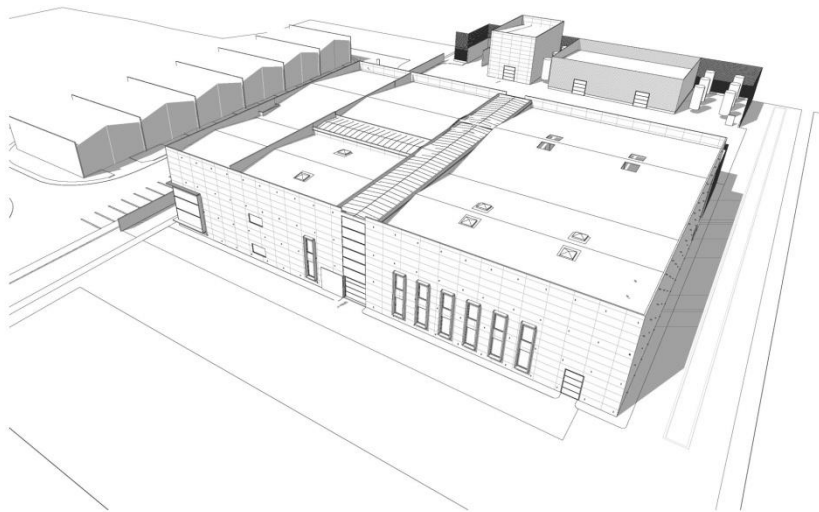
Physical chemistry, self-assembly and biological analysis of the properties of BDL (Biorefinery Derived Lipids)

WP6. Nutrition and health

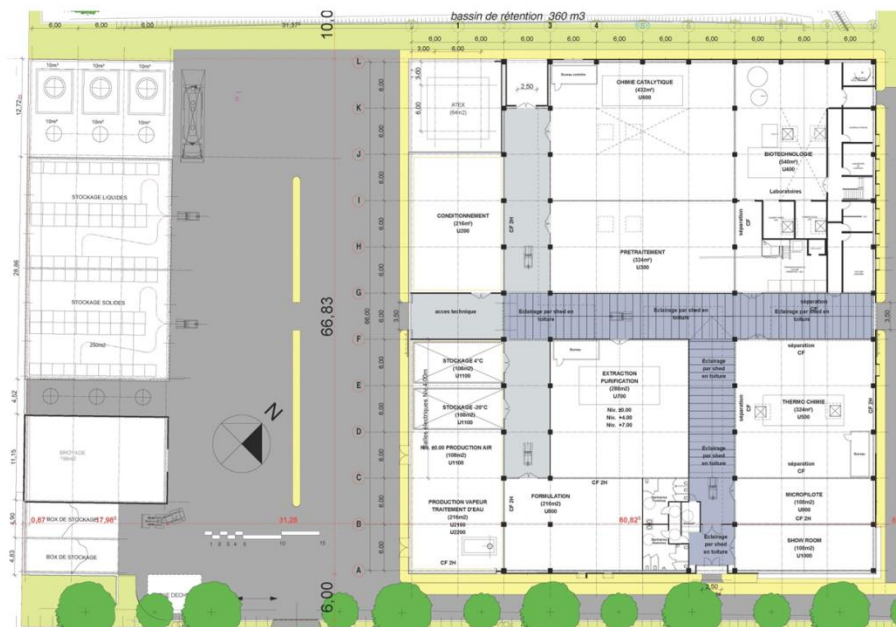
Development of alternatives to pressing/refining. Recovery and improvement of lipid components to preserve and enrich the minor components and co-products. Structured lipid design. Impact on obesity and cell ageing.

WP7. Biorefinery: towards an industrial metabolism

Promoting the sustainability and controlling the risks of the biorefineries of the future. Exploiting the systemic vision of industrial ecology, developing and applying flow and impact analysis methods on an industrial and regional scale. Developing predictive analysis taking into consideration the environmental, socio-economic and regional dimensions of biorefineries



View of the BIOGIS Center as it will be delivered for beginning-2015



It will include:

- A fermentation line
- A biomass treatment line (thermal, fractionation)
- A catalysis line
- A small formulation plant
- Utilities and renewable energy facilities



PIVERT SAS, member of IAR Cluster

A world class Industrial cluster
dedicated to
biobased products
and **Biorefinery**

- 240 members
- 40% SMEs
- 120 R&I projects
- Total R&I budget: > 1 bn €

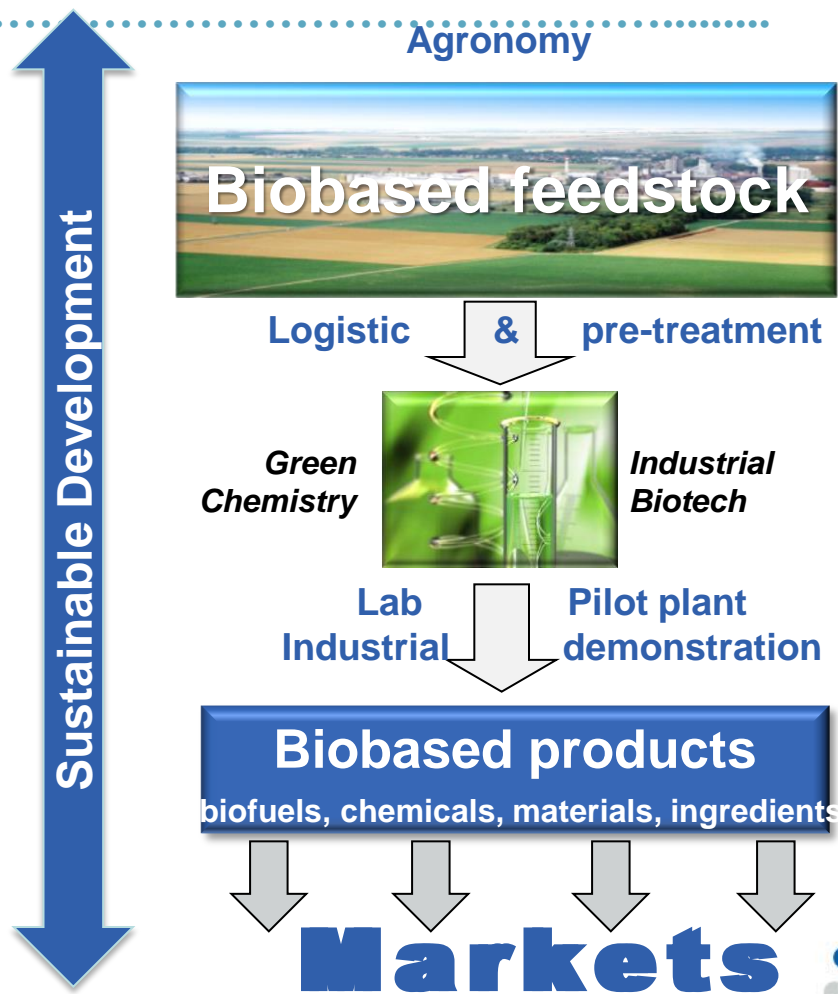


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Enseignements et
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Thank you for your attention

Jean-François ROUS
PIVERT SAS
President

SAS **PIVERT**