




Is your biobased
process (almost)
ready to scale up?



This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No. 745667 | Topic: **BBI-2016-S02**

www.biopilots4U.eu





Take a look at the
Pilots4U asset database
and discover an open
access pilot facility
that suits your needs!



**353 different entries,
from 99 organisations
located in 19 different
countries**



www.biopilots4U.eu



This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No. 745667 | Topic: **BB1-2016-S02**

www.biopilots4U.eu



VTT pilot facilities in bio and circular economy

Pauliina Tukiainen and Mika Härkönen
VTT Technical Research Centre of Finland Ltd

Pitch perfect and boost the European Bio-Economy Cross-border matchmaking and networking event 7 November 2018, 10am-6pm
Sheraton Brussels Airport Hotel



From laboratory via piloting to markets

- **Piloting enables crossing the “valley of death” for commercialization.**
- **New process industry innovations often require extensive piloting.**
- **Open access Shared Pilot Facilities:**
 - Competence in piloting and scale-up
 - Time saving with ready-to-use facilities
 - Cost savings by sharing the investment and operation costs

VTT pilot plants for bio and circular economy 2018

Regional innovation hubs with national, European and global impact

Key features for VTT pilots

- Covers the development chain from raw materials to end products
- Two types of pilots: Process specific and multi-purpose
- Scale-up of own and customers technology development

Pilot operations figures 2015-17 (annual averages)

- 125 customers
- 45 foreign customers
- Contract commissions ~40%
(varies by pilots 20-80%)
- SME:s 10-50%



VTT Bioruukki Pilot Centre

An integrated enabler to accelerate higher value business in bio and circular economy



Bioruukki Pilot Centre – Connecting industries

1



THERMOCHEMICAL CONVERSION PLATFORM

Gasification and pyrolysis technologies for biofuels and biochemicals. Recycling concepts. Carbon re-use and energy storage.

Started in Bioruukki
2015

2



BIOMASS PROCESSING and TEXTILE FIBRE PLATFORM

Innovative biomass processing and fractionation.
Cellulose based textile fibres.

Started in Bioruukki
2018

3



GREEN CHEMISTRY PLATFORM

Sustainable chemistry for tailored biobased chemicals and materials, new processes, and recycling concepts.

Starts in Bioruukki
2020

Our innovation ecosystem partners

- Process industry
- Technology companies
- SMEs, Start-ups
- RTOs and universities
- Regions and cities
- European pilot networks

The logo for Neste, featuring the word "NESTE" in a bold, blue, sans-serif font.The logo for Fortum, featuring a green circular icon with a white dot inside, followed by the word "fortum" in a green, lowercase, sans-serif font.The logo for Valmet, featuring the word "Valmet" in a bold, black, sans-serif font, followed by a green and white geometric icon.The logo for Siemens, featuring the word "SIEMENS" in a bold, blue, sans-serif font.The logo for Chemigate, featuring the word "Chemigate" in a white, italicized, sans-serif font, set against a green rectangular background.The logo for The Infinited Fiber Company, featuring a stylized, black, interlocking loop icon, followed by the text "The Infinited Fiber Company®" in a black, sans-serif font.The logo for VTT, featuring the letters "VTT" in a bold, sans-serif font, with the "V" in orange and the "TT" in blue.The logo for Aalto University, featuring a large, bold, black letter "A" followed by a yellow question mark, with the text "Aalto University" in a smaller, black, sans-serif font below.The logo for Espoo ESO, featuring a blue circular icon with a white dot inside, followed by the text "ESPOO ESBO" in a blue, sans-serif font.The logo for SmartPilots Interreg Europe, featuring the text "SmartPilots" in a bold, black, sans-serif font, with a yellow geometric icon to the right, and "Interreg Europe" in a smaller, blue, sans-serif font below.The logo for Pilots4U, featuring the text "Pilots4U" in a green, sans-serif font, with a blue icon of three connected dots to the left.



Thank you!

TWB

BIOSCIENCES &
BIOPRODUCTION



30/10/2018



twb
White Biotechnology
center of excellence

ANR



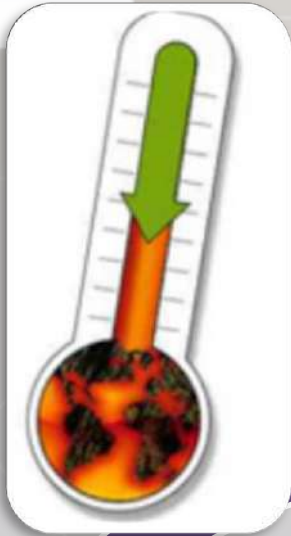
INRA
SCIENCE & IMPACT

INSA

INSTITUT NATIONAL
DES SCIENCES
APPLIQUÉES
TOULOUSE

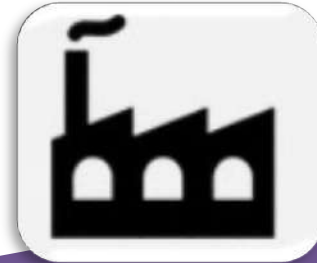
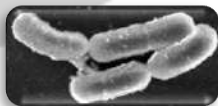


OUR MISSION



FACING THE CLIMATE CHANGE CHALLENGE

ACCELERATE PUBLIC/PRIVATE
COLLABORATIVE R&I PROJECTS
INDUSTRIAL BIOLOGY



SUPPORT FOR START-UP DEVELOPMENT

Hosting & Support

- use of technological equipment
- administrative, scientific & business support
- networking

Technological services

- European project "SuperBIO"
- European SMEs

« TWB Award »

- annual contest
- technological services
- 4 months, 50 000€

Award 2018



At TWB,
today

EnobraQ



micropep
technologies



BFC



A multicultural ecosystem

- > Scientific excellence
- > Entrepreneurship
- > Industrial interface
- > Combined financing
- > Institutional culture

CONSORTIUM 2018



OUR STRENGTHS

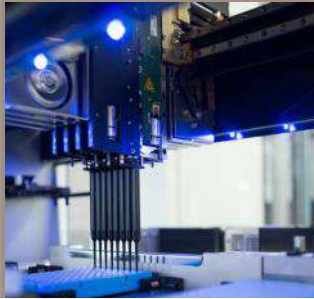


OUR STRENGTHS

- > Simplifying the public/private interface
 - **SIMPLICITY**
- > Federating a network of experts
 - **EFFICIENCY**
- > Fostering scientific creativity
 - **CREATIVITY**
- > Integrating ethics and sustainable development vision
 - **RESPONSIBILITY**
- >> CREATING VALUE AND EMPLOYMENT



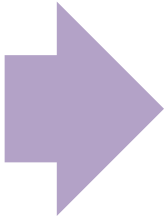
MEANS : INTEGRATED TECHNOLOGICAL PLATFORMS



Strain engineering
molecular biology,
synthetic biology,
picking and screening
low & high-
throughput,
libraries construction

Biotransformation & culture process
microbial cell culture,
microbial & enzymatic
process optimisation,
screening *in situ*,
kinetic characterisation

Process development
scale-up,
up stream process,
down stream process
process transfer,
robustness study,
batch supply



Analytical / Bio-informatics

Environmental evaluation / Ethics



OUR AMBITION



OUR AMBITION

>>> BEING A KEY PLAYER IN THE EUROPEAN BIOTECH ENVIRONMENT BY 2025

Create a **15,000m²**
biotech complex on
the INSA campus
(University of Toulouse)

Validate **pilot-scale**
bioproduction
projects

Stimulate
entrepreneurship

Develop
international
activities

Strengthen
scientific &
technological
excellence

WORK WITH US AND BECOME A WOLRD CHAMPION 😊

Follow us!



@TWB_Biotech



TWB



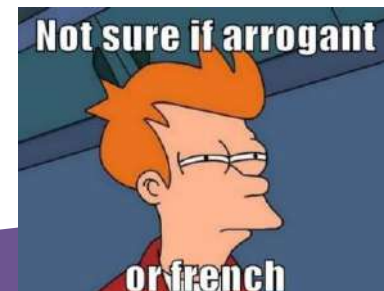
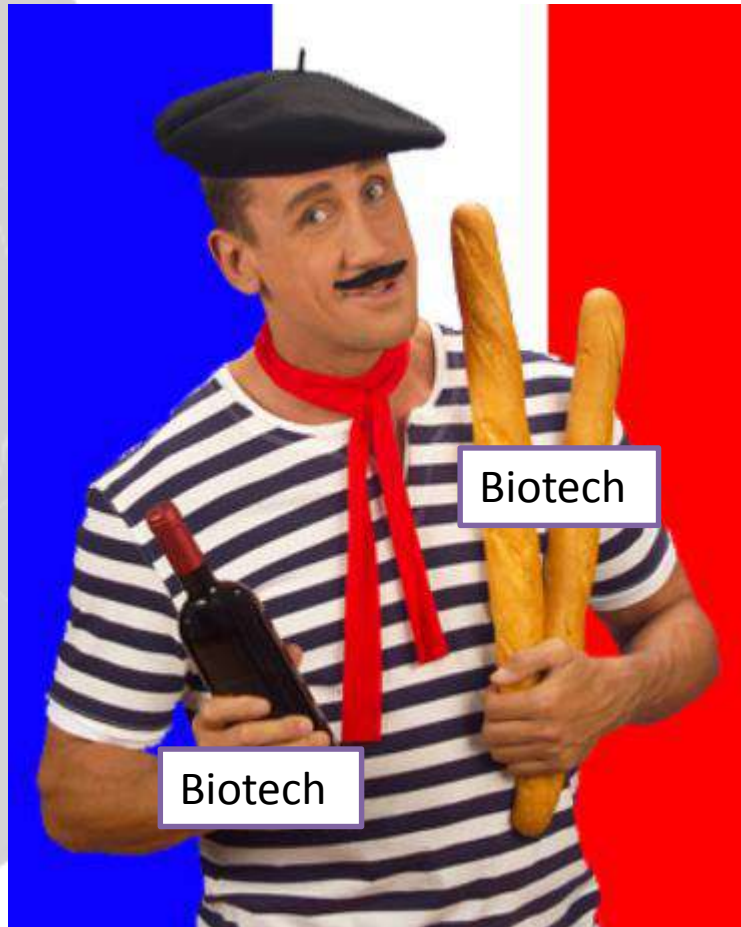
With the support of:



ANR-10-DPBS-08-01



PROJET COFINANCÉ PAR LE FONDUS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL





CENTRO DE **INVESTIGACIONES**
CIENTÍFICAS Y TECNOLÓGICAS
DE EXTREMADURA

Your Smart Partner in Research and Testing
in Food Production and Forestry
in Southern Europe

irene.palomino@fundecyt-pctex.es

CICYTEX: What and where it is



CENTRO DE INVESTIGACIONES
CIENTÍFICAS Y TECNOLÓGICAS
DE EXTREMADURA

- **Scientific and Technological Research Center of *Extremadura* (CICYTEX)**

CICYTEX was established to improve the coordination of research work related to agriculture, livestock farming, agri-food industry and the *dehesa**.

CICYTEX head office:
Finca La Orden

**Dehesas*: sparsely forested, Mediterranean grasslands of Southwestern Iberian peninsula





Instituto de Investigaciones Agrarias Finca La Orden - Valdesequera



Research Units

HORTOFRUTICULTURE

- Agronomy of irrigated crops
 - Fruticulture
 - Horticulture
 - Viticulture
 - Olive growing
 - Technology for sustainability of irrigated lands
- Fruticulture
 - Vegetal material
 - Crop technology
 - Reproductive biology
 - Micropropagation and sanitation
 - Fruit quality
- Malherbology
- Genomic
- Biotechnology
- Management and use of agricultural and forest land

EXTENSIVE AND HERBACEOUS CROPS

- Food crops
- Non Food Crops

FOREST PRODUCTION AND PASTURES

- Pastures and forage crops
- Biodiversity

PHYTOPATHOLOGY

- Pests and diseases
- Phytopathogenic fungi

ANIMAL PRODUCTION

- Production and pig breeding
- Pig reproduction, feeding and welfare
- Animal health
- Production and reproduction of sheep
- Genetic improvement Extremadura hen



Instituto del Corcho, la Madera y el Carbón Vegetal (ICMC)



Research units

MEDITERRANEAN FOREST SYSTEMS

- Applied ecology and forestry
- Forest uses

FOREST RESOURCES TECHNOLOGY

- Cork industry
- Charcoal industry

Working lines

- Characterization and technology of lignocellulosic products
- Applied ecology and forestry of the dehesa and forest crops
- Management and exploitation of natural masses and forest crops
- Environmental, Energy and Technology Optimization of the Agroindustrial Processes of Transformation

Facilities

Experimental land fields

- 95 hectares of irrigated fields and 110 hectares of dryland fields
- 718 hectares of *dehesa*



Laboratories

- General
 - Phytopathology
 - Biotechnology
 - Edaphology
 - Water resources
 - In vitro culture
 - Meat quality
 - Fruits and vegetables
 - Oenology
 - Oil
 - Dairy products
 - Quality cork and natural resources
- dehesa**



**Dehesas*: sparsely forested, Mediterranean grasslands of Southwestern Iberian peninsula

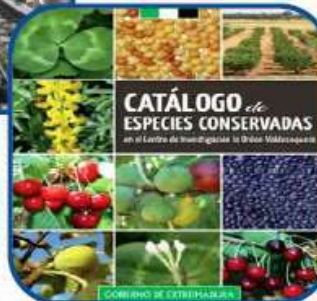
Pilot plants

- Meat
- Vegetables
- Experimental Oil press
- Dairy products
- Oenology
- High pressures
- Room IV Range
- Biofuels
- Experimental Lamb Barrow
- Unit of digestibility "in vivo" and ovine voluntary ingestion
- Sheep and goat milking units



Germplasm banks

- legumes for pastures
- Lupinus
- Fig trees
- Medicinal and aromatic species
- Cork oaks
- Olive trees



Others ...

- Plant and insect culture chambers
- Ship cleaning and seed processing
- Greenhouses
- Nursery
- Herbal collection
- Fungus collection
- Cork collection
- Libraries



PRIORITY CALLS

CALL	NAME
SFS-23-2019	Integrated water management in small agricultural managements
SFS-04-2019	Integrated health approaches and alternatives to pesticide use
LC-SFS-17-2019	Alternatives proteins for food and feed
SFS-11-2019	Antimicrobial and animal production
SFS-08-2019	Climate-smart and resilient farming (B) Efficiency and resilience of mixed farming and agroforestry systems
RUR-15-2019	Thematic networks compiling knowledge ready for practice
RUR-01-2019	Building modern rural policies on long-term visions and societal engagement
RUR-16-2019	Fuelling the potential of advisors for innovation



**Thanks you for
your attention!**

Fundecyt Science and Technology Park of Extremadura
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@Cristina_g_rey

Fondo Europeo de
Desarrollo Regional
"Una manera de hacer Europa"

JUNTA DE EXTREMADURA
Consejería de Economía e Infraestructuras


FUNDECYTPCTEX


Unión Europea



Calignis
Analytical

**With Accurate Data
the Opportunities
are Limitless...**

Pitch Perfect

Brussels, Nov 7th 2018

Daniel Hayes

dan@celignis.com

www.celignis.com

Celignis Biomass Analysis Lab



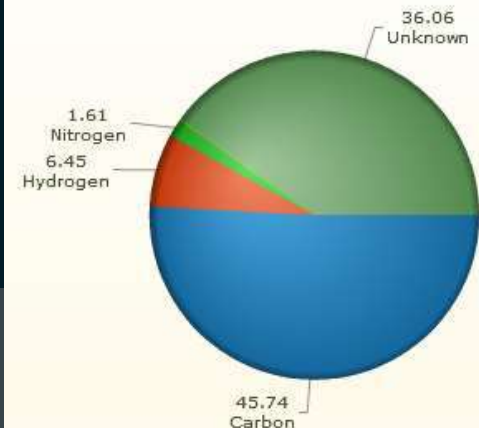
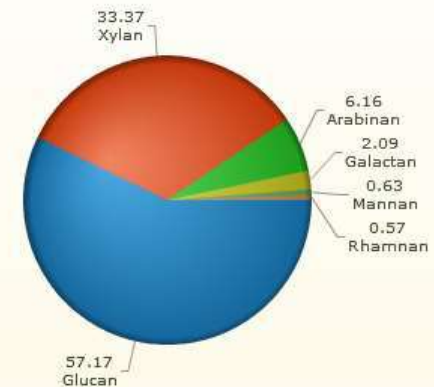
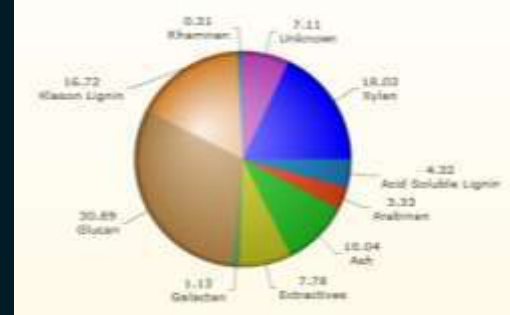
- Dedicated analysis laboratory for the bioeconomy.
- Based in Limerick, Ireland.
- Spin-out from university research and EU biofuels project.
- Focus on catering to the needs of the bioeconomy.
- Launched 2014 → experience (15 yrs).



Services:

1. Analysis for Biorefineries

- Hydrolysis process (e.g. enzymatic).
 - Cellulose content (structural glucose).
 - Hemicellulose content (constituent sugars).
 - Lignin content (acid soluble and insoluble)
 - Extractives
 - Ash.
 - One-day analysis with our NIR models.
- Enzymatic hydrolysis tests.
- Thermochemical (e.g. pyrolysis).
 - Elemental analysis (C, H, N, O, S)
 - Heating value
 - Ash, anions and cations.



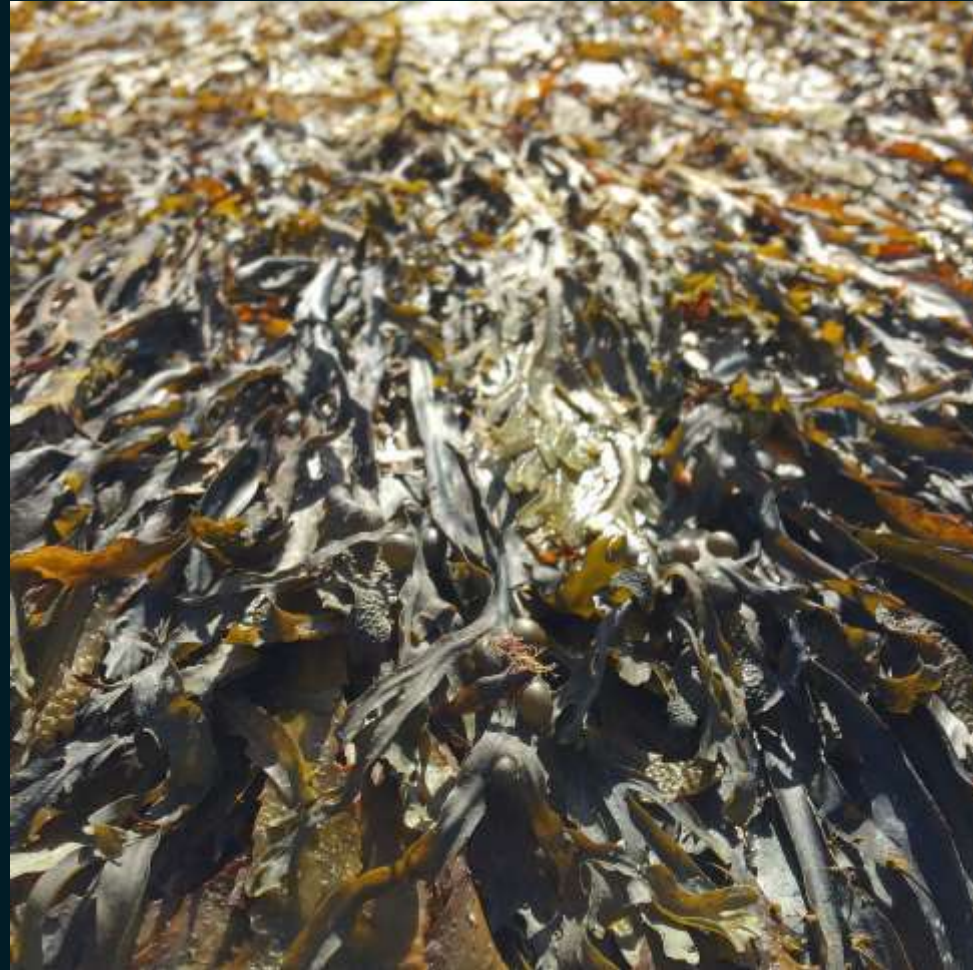
2. Process Liquids Analysis

- Analysis of liquid products of pre-treatment and conversion.
- Can determine the amounts of each sugar that are in the oligomeric form (e.g. LHW pretreatment).
- Can characterise anhydrosugars, uronic acids, sugar alcohols, sugar degradation products (e.g furfural, HMF, levulinic acid etc.).
- Fermentation tests and analysis for products.

Services:

3. Marine Biomass

- “3rd generation biofuel”.
- Carbohydrates in seaweed.
- Mannitol, fucose, glucuronic acid, mannuronic acid, guluronic acid.
- Amino acids in seaweed.



4. Thermal Properties

- Proximate analysis.
- Ultimate analysis.
- Heating value.
- Chlorine content.
- Ash and ash composition.
- Ash melting temperature.
- Also look at physical properties (e.g. particle size distribution of wood chips).



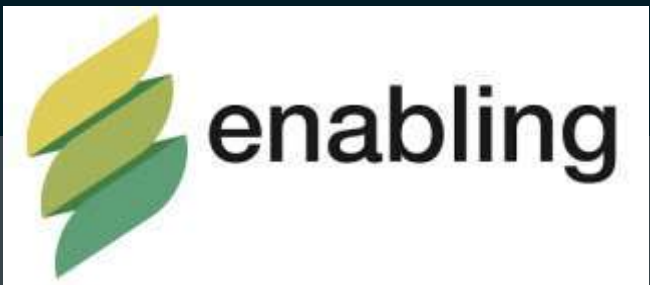
5. Anaerobic Digestion

- Biochemical methane potential.
- Analysis of composition of the biogas.
- Digestate analysis.
- Detailed lignocellulosic analysis of feedstock and process residues allows greater understanding of efficiency of digestion.



Horizon 2020 Projects

- BIOrescue: BBI (2015) focuses on valorisation of spent mushroom compost.
- UNRAVEL: BBI (2017). Project on biomass pre-treatment with Celignis's focus on the characterisation, removal, and recovery of biomass extractives.
- ENABLING: RUR (2017), Supporting the spreading of best practices and innovation in the provision of biomass for the Bio-Based Industry



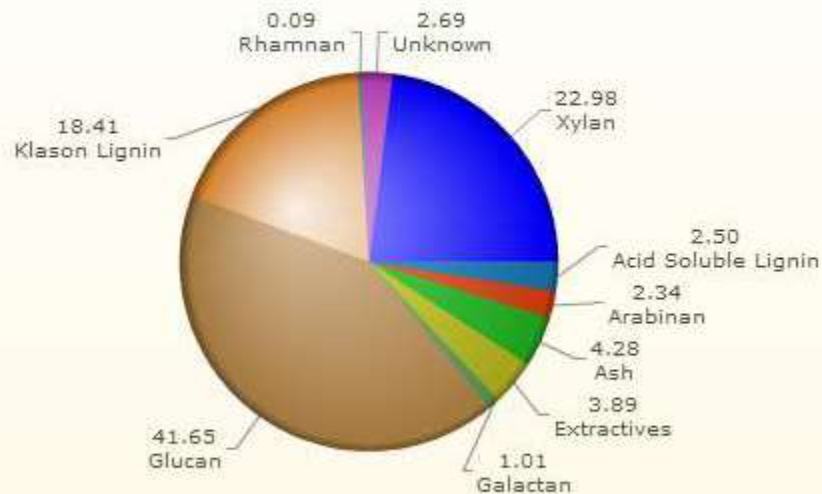
"One-day analysis of biomass"



Individual Sugar

	Glucan	Xylan	Arabinan	Galactan
Wet-Chemical Data (% Dry)				
AV.	41.65	22.98	2.34	1.01
Rep 1	41.70	22.99	2.31	1.01
Rep 2	41.61	22.97	2.36	1.01
SD	0.06	0.02	0.04	0.01
Near-Infrared Predicted Values (%)				
Pre.	41.97	23.39	2.27	0.99
Dev.	1.28	0.70	0.24	0.01

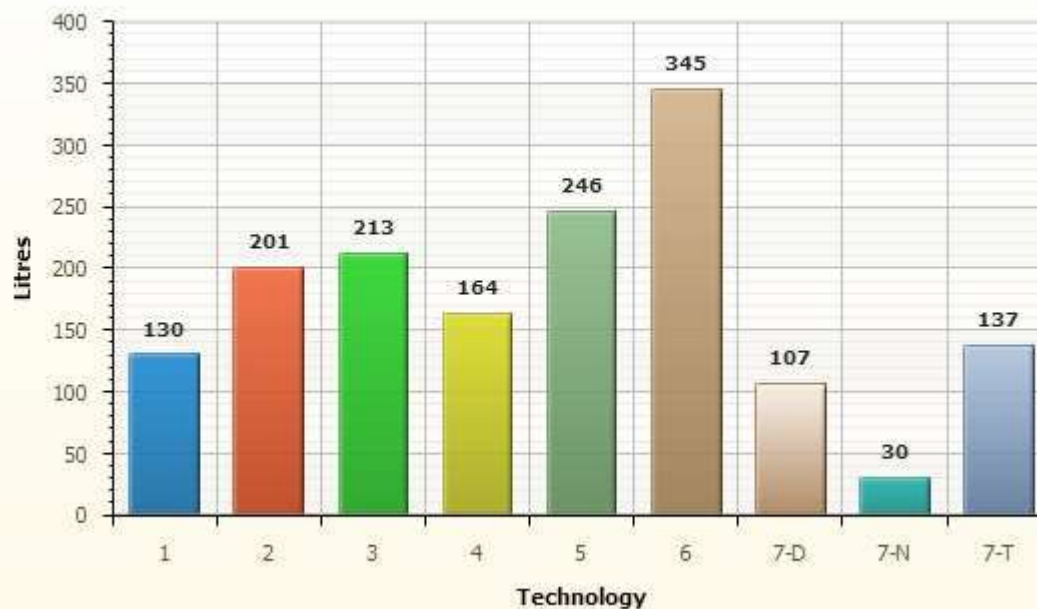
Pie Chart for Mass Constituents



Yields Chart

View	<input type="checkbox"/> Pie Chart	<input type="checkbox"/> Sugars Chart	<input type="checkbox"/> Yields Chart	Miscanthus leaf #2
View	<input type="checkbox"/> Pie Chart	<input type="checkbox"/> Sugars Chart	<input type="checkbox"/> Yields Chart	Sugarcane bagasse #2
View	<input type="checkbox"/> Pie Chart	<input type="checkbox"/> Sugars Chart	<input type="checkbox"/> Yields Chart	Compost #2
View	<input type="checkbox"/> Pie Chart	<input type="checkbox"/> Sugars Chart	<input type="checkbox"/> Yields Chart	Compost #3
View	<input type="checkbox"/> Pie Chart	<input type="checkbox"/> Sugars Chart	<input type="checkbox"/> Yields Chart	Bark #1

Potential Litres of Biofuel



5.2	9.5	9.9
2.5	4.3	3.9
4.2	22.3	5.3
2.2	25.8	2.4
0.9	3.1	5.2

BioBase4SME

- Funding for SMEs in developing their company.
- Vouchers available, 50% from EU programme with possibility of national bodies providing remainder of costs.
- Services:
 - Techno-economic evaluation.
 - LCA.
 - Business planning.
- Now Celignis's analytical services available via TCBB.



“One-day analysis of biomass”



Celignis
Analytical

Thank You!

www.celignis.com

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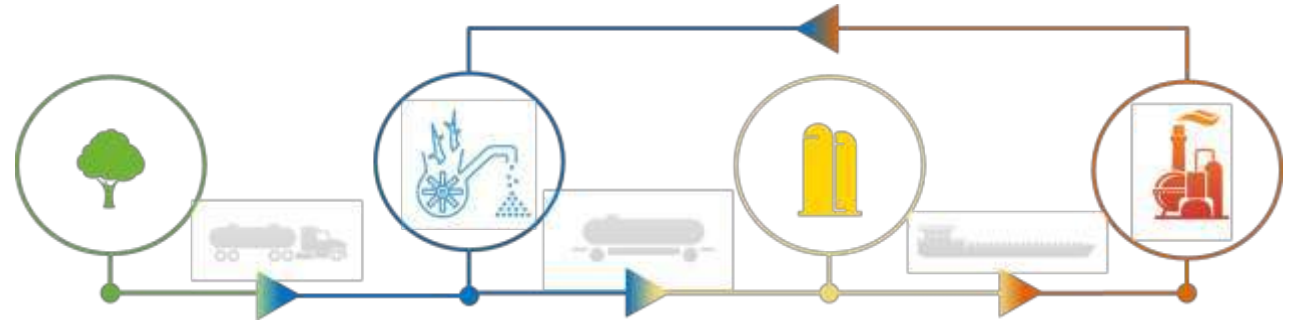
MOBILIZE AND OPTIMIZE YOUR VALUE CHAIN

YOUR CHALLENGE ?

**Innovative value chain
&
Viable business case**



guaranteed supply of feedstock



YOUR CHALLENGE ?

**Innovative value chain
&
Viable business case**

OUR SOLUTION !



**Design and analyze
your optimal chain
configuration(s)**



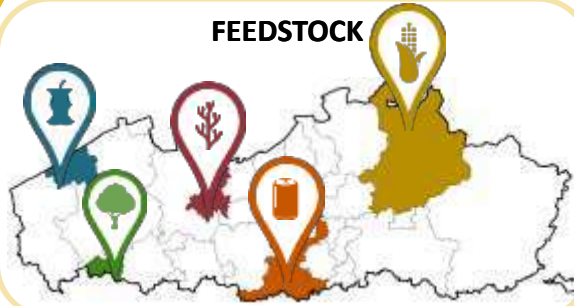
INPUT

ANALYSIS

OUTPUT

In a
nutshell

FEEDSTOCK



INFRASTRUCTURE



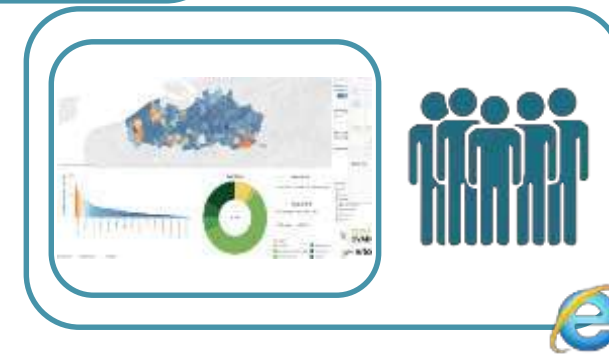
LOGISTICS



OPTIMISED VALUE CHAINS



INTERACTIVE DASHBOARDS



ADDED VALUE

Whole value chain



Resource efficiency
Mobilisation rate

Transport costs
Environmental impact
Material losses



Actors

De-risk strategic decisions
Unique insight
Improve economic viability
Opportunities - bottlenecks
Visually attractive results

Contacts



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ECOSYNTH
CHEMICAL CONTRACT RESEARCH



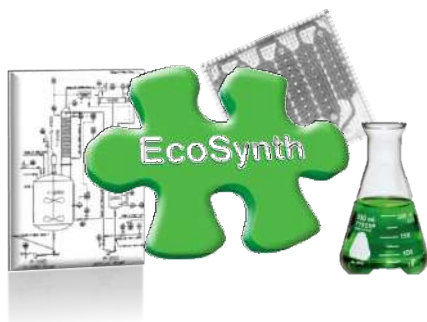
*Clean chemistry
for advanced green chemistry challenges*

Dr. Jean-Baptiste Joos, COO
EcoSynth NV

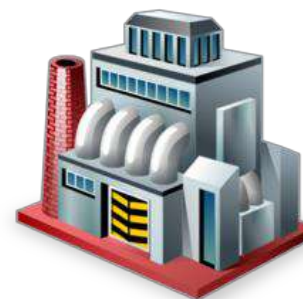
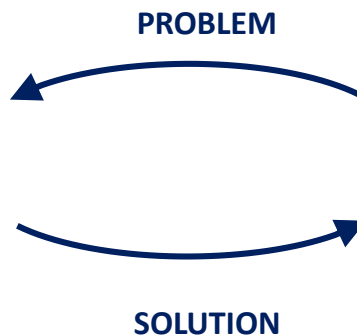
Pitch Perfect and boost the European Bio-economy

Brussels Airport, Belgium
November 7th, 2018

Chemical Contract Research



Contract research



Industry
*Chemistry, Pharma,
Energy, Food, ...*

CORE BUSINESS

NEW MOLECULE DEVELOPMENT

- *Organic molecules*
- *Up to kg scale*
- *All industries and applications*

PROCESS DEVELOPMENT

- *Side stream value adding*
- *Industrial process intensification*
- ***Biomass feedstock***

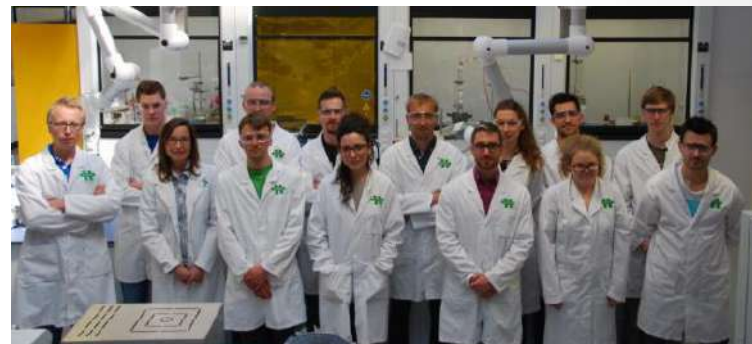
PRODUCT STABILITY

- *Pharma, food, chemistry*
- *Oxidation, photodegradation, hydrolysis, ...*

Resources

SKILLED SCIENTIFIC STAFF

19 PEOPLE: PHD'S IN CHEMISTRY, PHARMACY, BIO-ENGINEERING
CHEMICAL ENGINEERS, MASTERS AND BACHELORS IN CHEMISTRY



STATE OF THE ART LABORATORY

INSTALLED 2017
DEINZE, BELGIUM



SCIENTIFIC INSTRUMENTS

LITERATURE

SCIFINDER

SYNTHESIS

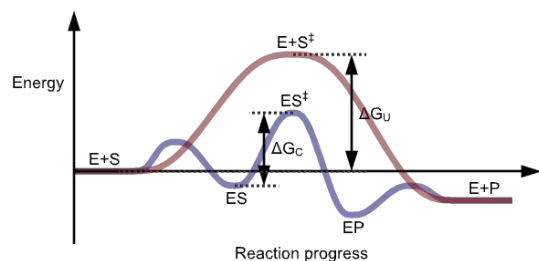
Batch 5L reactor, pressure reactor, ozone
Flow Automated module, photochemistry
(incl. innovative HANU flow reactor),
electrochemistry, hydrogenator, gas/liquid
interface

ANALYSIS & PURIFICATION

Chromatography UPLC, HPLC, GC, prep flash
Detection MS, UV, ELSD, FID
Spectrometer IR, UV-Vis, EPR, NMR *remote*
Wet analysis

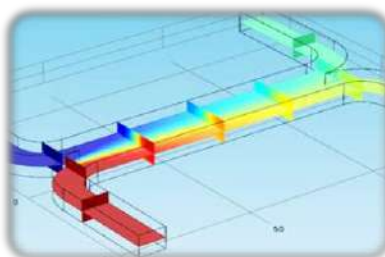
Expertise

CATALYSIS



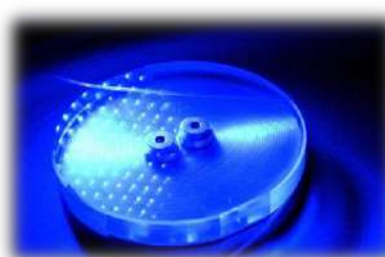
Higher selectivity
WO2011157645A2

FLOW CHEMISTRY



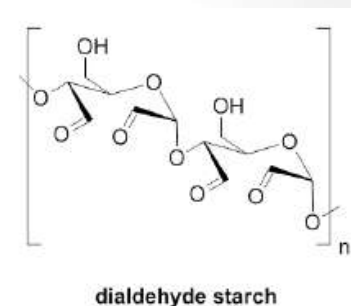
Safety and efficiency
Shorter time to market

PHOTOCHEMISTRY



Unexplored chemical space
Shorter synthetic route

BIOBASED CHEMISTRY



Chemical modification
of biomaterial

CASES

NEW BUILDING BLOCKS FROM PHOTOCHEMISTRY OF RENEWABLES

GREEN OXIDATION METHODOLOGIES DEVELOPED FOR APPLICATION ON BIO-BASED COMPOUNDS

USE OF OZONE FOR TARGETED AND CONTROLLED MODIFICATION OF SUITABLE BIO-SUBSTRATES

Collaboration possibilities

CONTRACT WORK

Quotation ad hoc

Deliverables timely, as agreed

Flexible project adjustments in course

IP clear agreements on transfer

Subcontracting in funded, subsidized projects

PARTNERING

Projects as partner, on scope with research interests and expertise

Experience regional, national, international (European, e.g. Marie Curie)

SME status interesting funding benefits

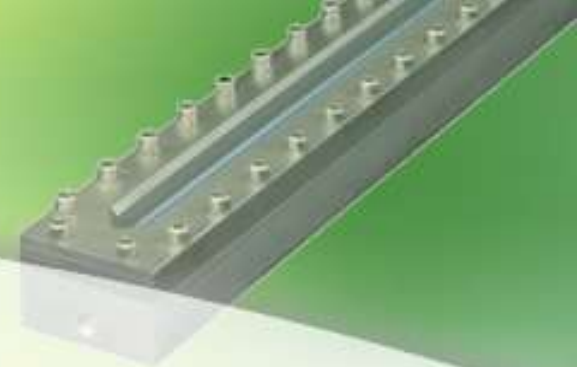


ECOSYNTH
CHEMICAL CONTRACT RESEARCH

CONTACT

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Photochemistry as an innovative and scalable technology for biomass processing

Pitch Perfect and boost the European Bio-economy

7 November 2018, Brussels Airport, Belgium

Photochemistry



The “chemistry of life”



The “chemistry of vision”

Photochemical processing of biomass

- ❖ **Huge potential:** new reaction pathways can lead to diversification of products
- ❖ **Underutilized:** thermal reactions dominate
- ❖ **Major hurdle:** scalability
- ❖ **Solution:** the HANU-reactor

Meet the HANU-reactor



<http://www.creaflow.be/video-hanu-reactor>

Photochemistry and beyond?

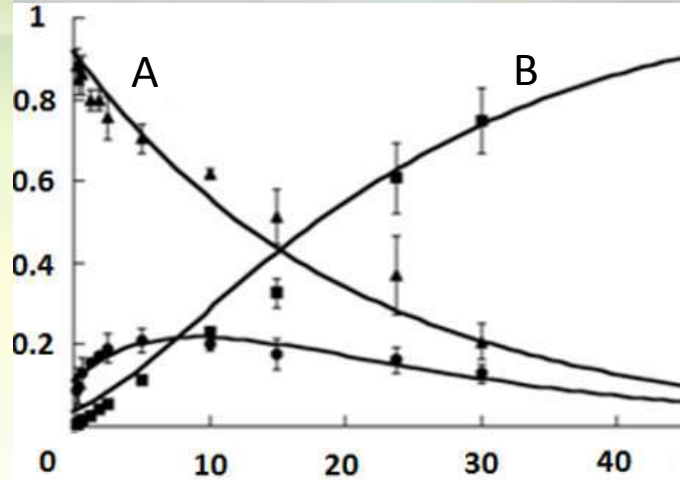
Design requirement for photochemistry	Advantages for all types of chemistry
Intense mixing	Mass transfer Heat transfer Residence time distribution Pulsation: frequency and amplitude
Large transparent window	Visual inspection at every conversion point (color change, precipitation, behavior multiphase reactions, ...)
Assembled unit	Precipitation (clogging) is noticed and remediated by disassembling and physical cleaning

Scalability (1)

Tool for process development



Conc (M)



Distance (cm)

A → B

Scalability (2)

From Lab to Pilot



Lab version in skid
EcoSynth
Deinze, Belgium



Pilot version
Ajinomoto Bio-Pharma Services
Wetteren, Belgium

Customization

Reactor can be custom designed to adjust to:

- ❖ Critical process parameters
- ❖ Chemical compatibility (Stainless steel, Hastelloy, ...)
- ❖ Physicochemical properties (Multi-phase, viscosity,)

Contact

Creaflow

Industrielaan 12
9800 Deinze
Belgium

Koen Van Aken
kvaken@creaflow.be
+32 492508061
www.creaflow.be

Creaflow can act as a partner or subcontractor

Waste back to Food!?

Who are we?

Business led Contract Research company

***Specialised in Polysaccharide Chemistry
Focussed on Food Texture and Nutrition
Active in Open Innovation for 16yrs***



**One third of the world's food is wasted
– 1.3 billion tonnes per year**



**enough to feed 3 billion people,
or 10 times the population of the USA**

source: Tristram Stuart/FAO

GLOBAL TARGETS

- food security
- **minimising food loss & waste**
- **sustainability**
- smart use of under-utilised resources
- meeting reduction targets

CONSUMER DRIVERS

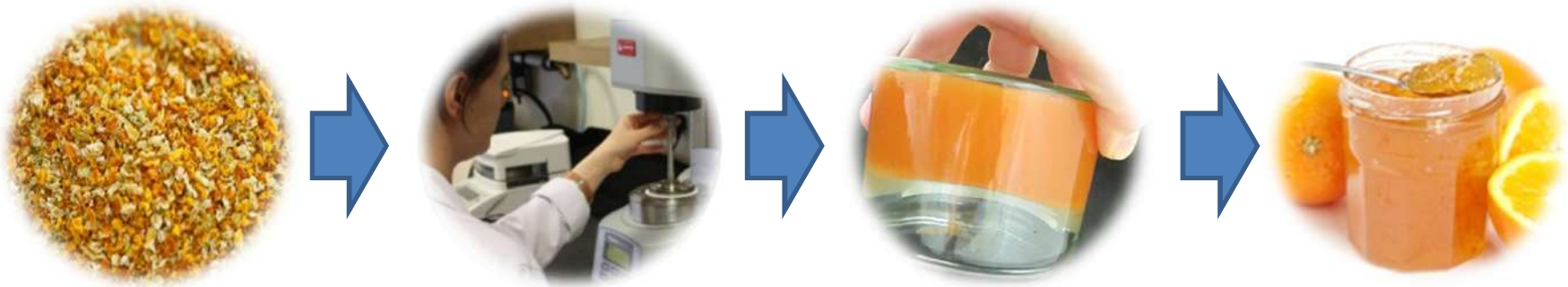
- “naturally functional”
- fewer & simpler ingredients
- “free from”
- less additives
- intrinsically healthy
- **less processed**
- **Eat more Fibre**

INDUSTRY BENEFITS

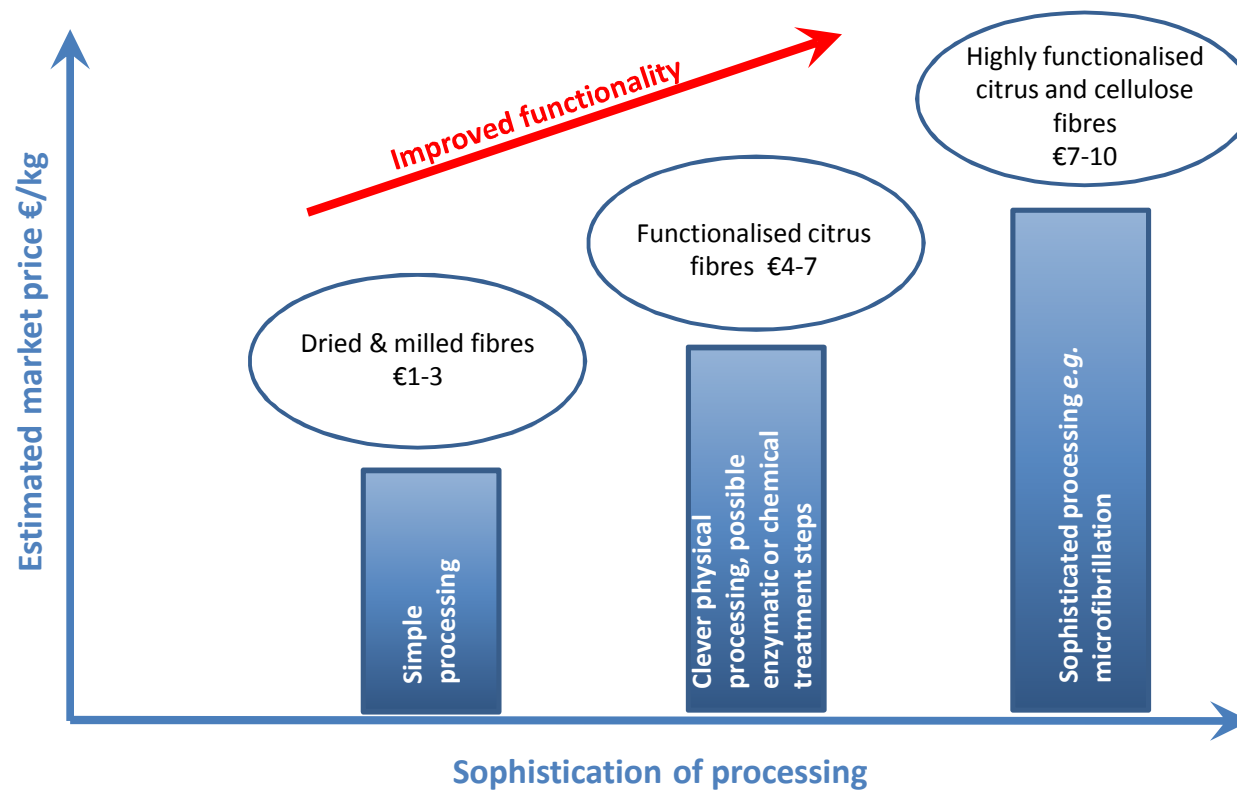
- **reduced waste burden**
- added value
- diversification in offerings
- **clean label**
- cost

Developing new food fibres

- **Stop thinking like chemists and think like CHEFS!!!!**
- **Holistic approach** – *in situ* activation or improvement of function properties.
- **Intelligent processing** methodologies to **upgrade** new or under-utilised raw materials and downstream materials.
 - processing **waste from fruit & vegetables**, cereals, seeds, herbs, spices and seaweed.
 - **Sustainable** sources of **label friendly** water binders/gelling agents



Potential value for fibres



Challenges in dealing with Food waste



- Stabilisation of waste streams- How to stop the rot!
- Efficient dehydration to maintain the goodness
- 'Milling' to very fine particle size OR micronization

All opportunities to collaborate

The role of the agro-food industry in the circular bio-economy

Hilde Muylle

Pitch perfect and boost the European bio-economy

Cross-border matchmaking & networking event

Brussels, 7 November 2018

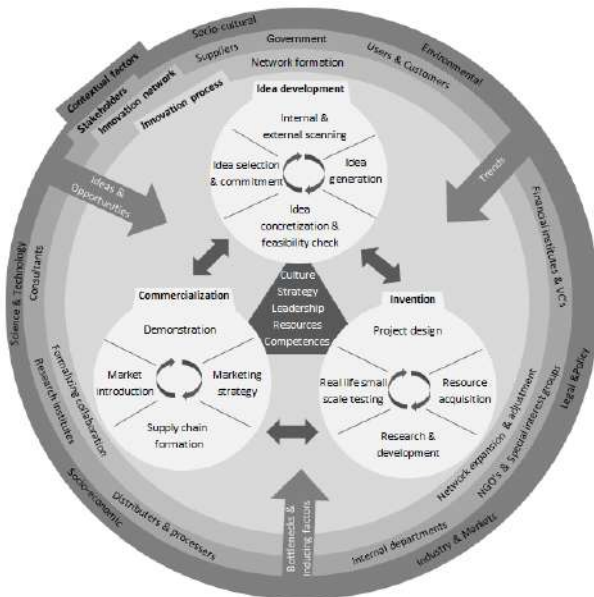
ILVO – a partner in the circular bio-economy

- ❖ *Multidisciplinary , independent research*
- ❖ *Specialized service provision in all fields related to agriculture, fisheries and food*
- ❖ *Regional agrofood – industry*

ILVO services related to bio-economy

- *System approach in the transition to the bio-economy*
- *Sustainability analysis of the primary biomass sourcing*
- *Matchmaking biomass sources*
- *Optimizing the biomass processing*

System thinking in the transition to the bio-economy



Sustainable sourcing and use of biomass

❖ *System oriented analysis*

- *LCA*
- *Resource efficiency of systems*
- *Economic-ecological trade-offs*

❖ *Process oriented analysis*

- *Resource efficient systems*
- *Re-use/recycle principle*



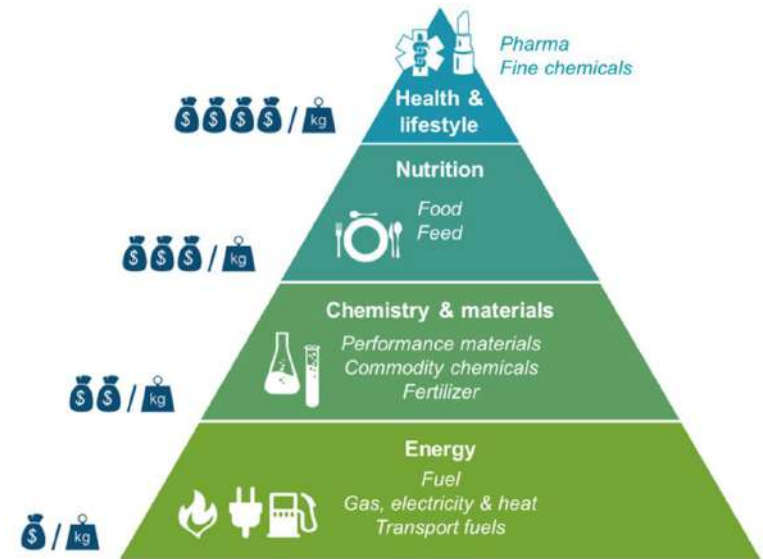
Sourcing biomass

- ❖ *Sourcing :*
 - *new crops*
 - *blue economy, insects*
 - *side streams*
- ❖ *Characterisation*
- ❖ *Upscaling to pilot scale*



Optimal processing of the biomass

- *Characterization*
- *Stabilization*
- *Valorisation*



Thank you

Flanders Research Institute for
Agriculture, Fisheries and Food
Caritasstraat 39
9090 Melle – Belgium
T + 32 (0)9 272 28 64
Hilde.Muyll@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

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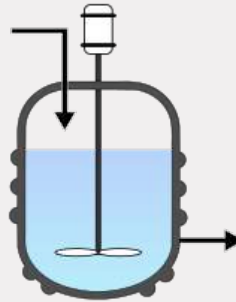
Process intensification for the future bio-refinery: Going beyond the stirred tank reactor

Dr. M.F. Neira D'Angelo

Chemical Reactor Engineering Group

Our Vision: Transition to biomass is **urgent & challenging...**

- Biorefinery: combination of novel biological, **catalytic** & **separation technologies**
- Product **degradation**: fouling, unstable operation & inefficient use of biomass



Stuck to the (not that efficient)
stirred tank reactor...

Difficult processing

- Shift to decentralized **highly efficient & compact** production

New feedstocks, new technologies

What do we do?

Design novel reactors for biorefinery

High- shear high-gravity equipment

- Extremely compact equipment (ca. 100 smaller)
- Extremely fast heating/cooling
- Minimal product degradation
- Safe operation at extreme conditions
- Excellent for modular production
- Supreme efficiency @ lowest costs



What do we do?

Design novel reactors for biorefinery

Catalytic (micro)structured reactor

- Couple reactor efficiency with optimal catalytic activity
- Extremely compact equipment
- Extremely fast heating/cooling
- Minimal product degradation
- Safe operation under extreme conditions

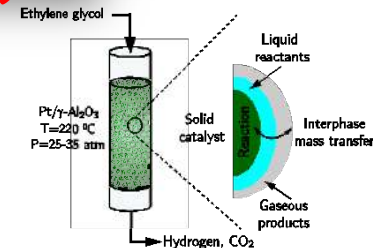
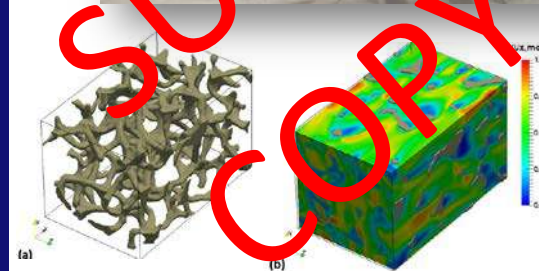


How exactly?

Multiscale approach

- Experiments & first-principle modeling
- Demonstration @ lab & pilot scale
- Process Engineering (PEng program)
- Results? Example:

Furfural production unit with nearly 100% yield in 3 min & no fouling! (reference: ca. 70%, 3-4 h, fouling)



Interested?

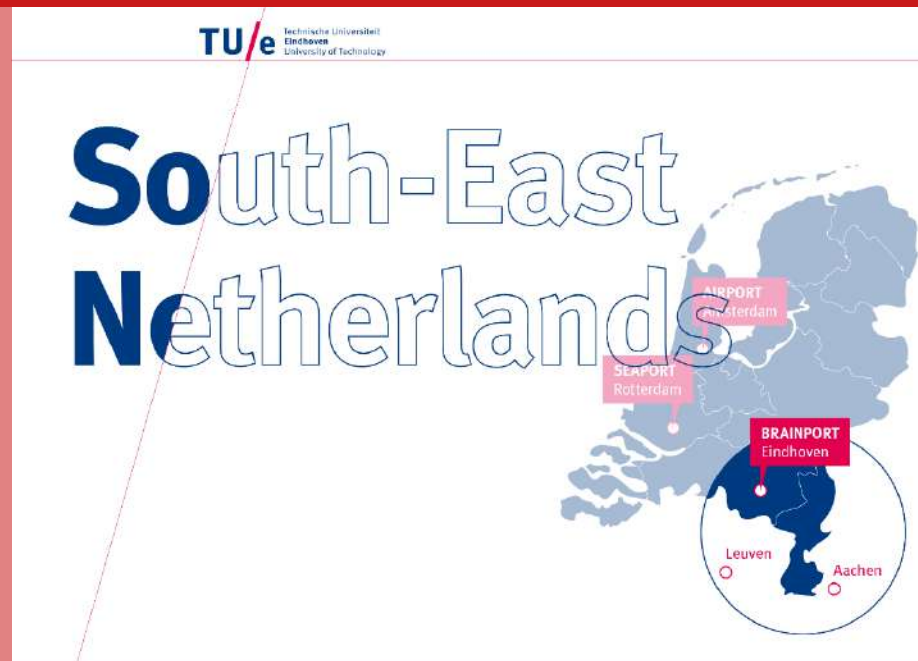
*Process Intensification for the
future biorefinery:*

*Going beyond the stirred tank
reactor*

Dr. M. Fernanda Neira D'Angelo

m.f.neira.dangelo@tue.nl

Chemical Reactor Engineering Group
Eindhoven University of Eindhoven



G.I. Dynamics

Making sustainable value chains happen

Established in 2010 part of VCM Holding BV

HQ Office in Wieringen, The Netherlands

between The Hague and Rotterdam. The GID team is experienced in developing chemical projects from concept to successful plant operation

This specialist team makes it possible to integrate all these project development processes.

Scope of services: Project development & execution

- ☐ Technology provider/process technology licenses
- ☐ Concept & feasibility study
- ☐ Managing product value chain: Feed stock & Offtake
- ☐ Business support: financial modelling, risk management, financing, contract & claim management
- ☐ Project Implementation BEDP, FEED and PMC incl. training and start up
- ☐ Operation improvements and integrity

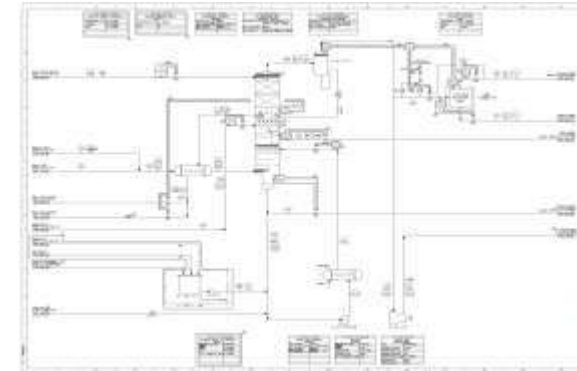


Disciplines:

- ☐ Strategic planning
- ☐ Project Finance
- ☐ Controls, Estimating & Planning
- ☐ Process and Process Controls
- ☐ Mechanical & Layout
- ☐ Electrical and Instrumentation
- ☐ Contracting and Sourcing
- ☐ QA & Document Management System
- ☐ Operational Management
- ☐ Project Management and Training & Start up.

Systems:

- ☐ Process Simulations
- ☐ Financial management and business modelling
- ☐ Planning like Primavera
- ☐ Doc management; Assai
- ☐ 2-D and 3-D design.



Chemical Division

Bio-Refineries

Ethanol-to-Ethylene
Bio-Ethanol & Bio-Diesel
EO & MEG



Caprolactam

U-Polish



Maleic Anhydride

MA Technology



Separation Process

Membrane Separation



Oil & Gas Division

Gas Processing

Nitrogen Rejection
CO2 Extraction
Catalytic Oxidation
Helium Recovery
Cryogenic Expander



Liquefaction

Small & Midscale Gas
Liquefaction



Waste Gas Handling

Enclosed Flare / Incineration



Water & Soil Treatment

Waste Water Treatment

Humid oxidation with Peroxide OHP[®]
Wet Air Oxidation
Membrane technology

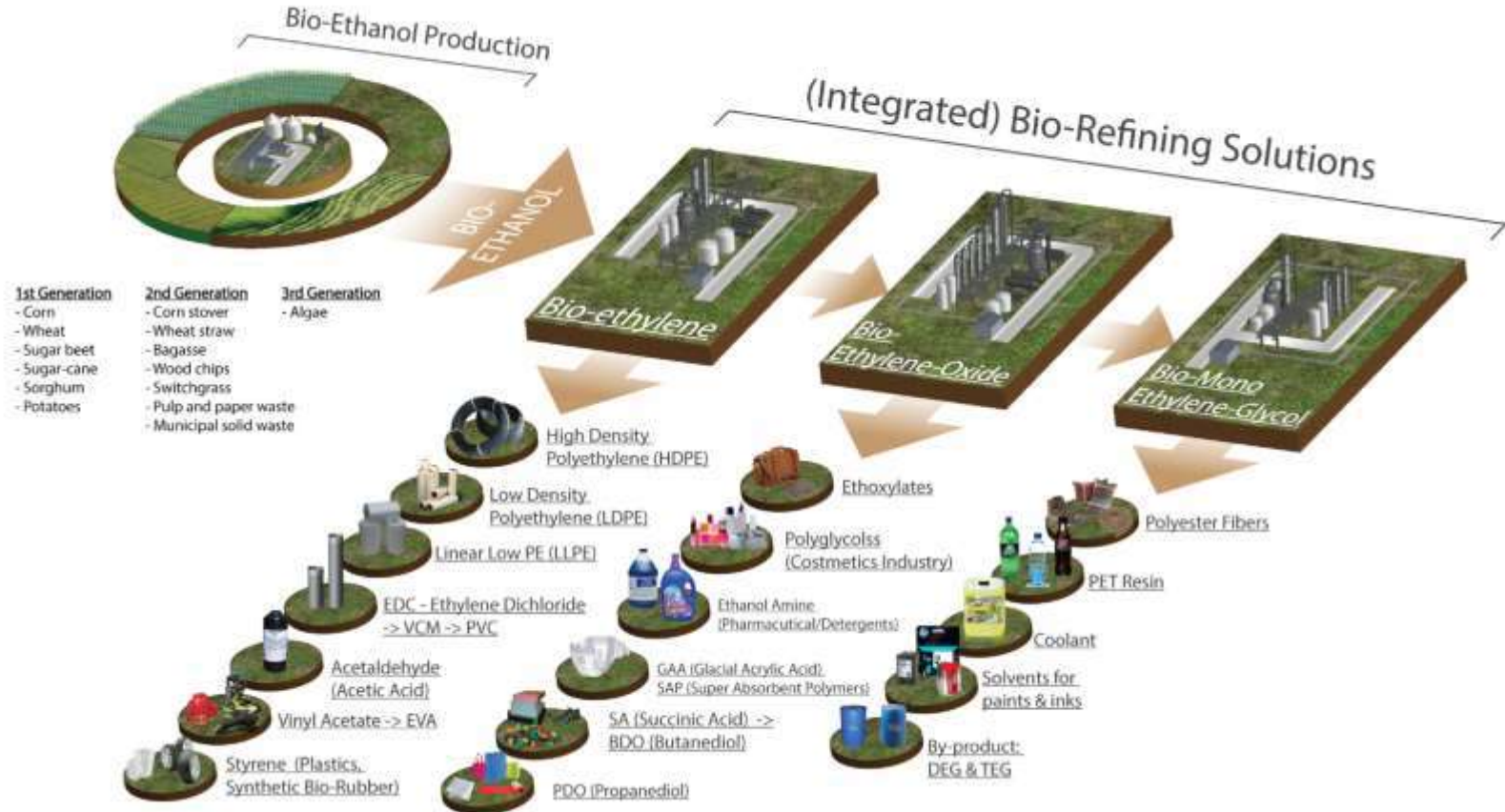


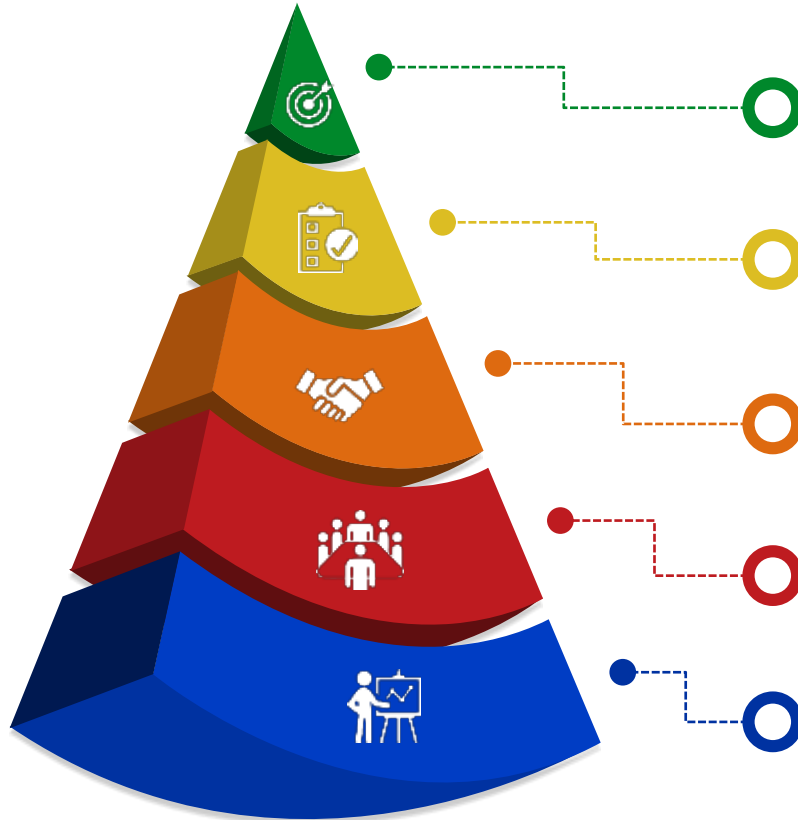
Contaminated Soil Remediation

PuriSoil[®]



BIO-Refinery CONCEPT





Upon confirmation of **firm project scope, schedule & costs**:

- **Finalize agreements** with offtakers, investors and financiers
 - **Start with EPC** (Engineering, Procurement and Construction) for the project
-
- Start with **Basic Engineering** of the Project
 - Align **overall utility and infrastructure**
 - Initiate **site preparation** works
 - Align **partners, investors and financial institutes**
-
- **Project strategy** optimizing the risks & opportunities
 - **Signing of agreements** and start of process design
 - Letter of Intent for **offtake guarantees**
-
- **Team available** to support such a program
 - Initiate discussion for **achieving guaranteed offtake**
 - **Feasible project** and facility
 - Align **technology** licensors
-
- **Favorable business environment**
 - Development of **Base Concept**
 - Apply **proven technologies** / processes

JILIN ZHONGXIN GROUP

- AWARDED IN 2010
- 90 kTA ETE integration with HPEO
- HPEO = 120 kTA, EG = byproduct
- Successful Start-up Q4 2014

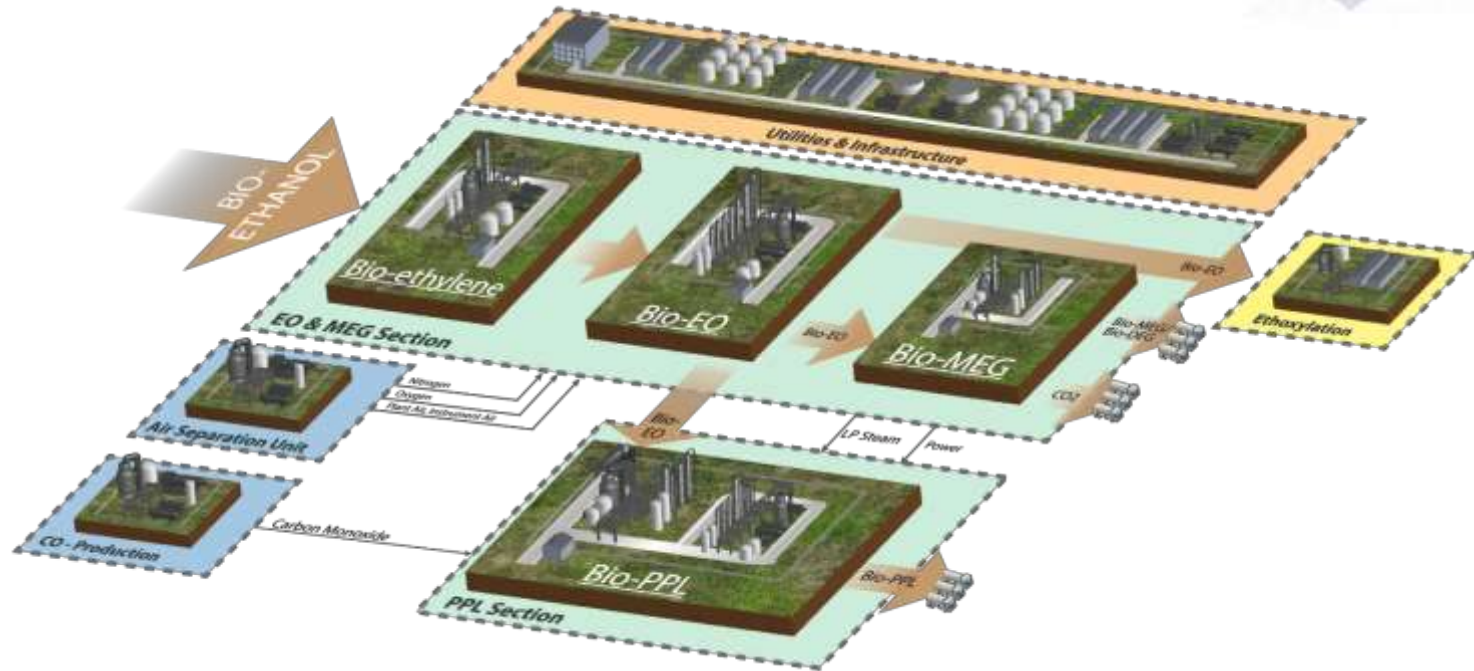


GREENCOL TAIWAN CORP.

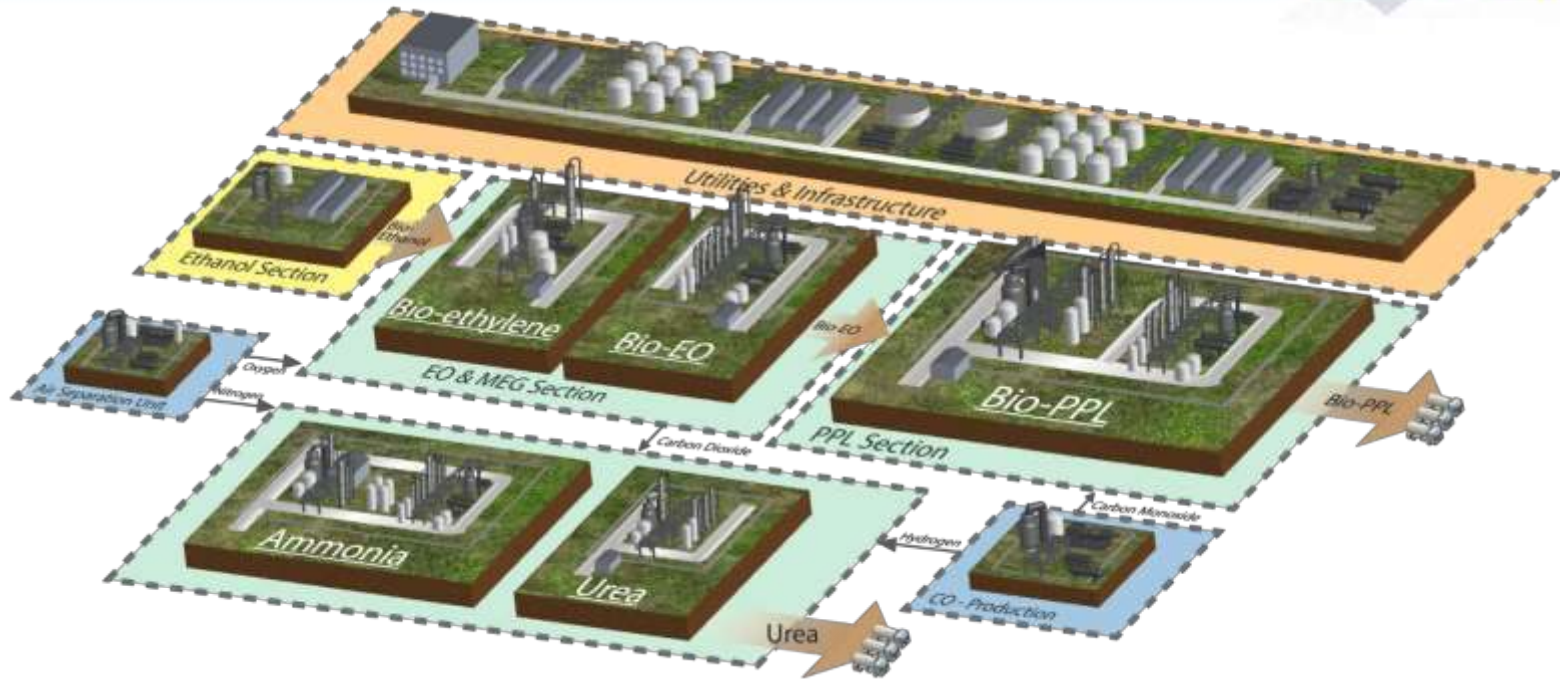
- **AWARDED IN 2010**
- Project executed by Chemtex
- JV of CMFC and Toyota Tshuho
- 100 kTA ETE for **MEG** and **BIO-PET**
- **IN OPERATION**



Biokim Project in Turkey



Bio-Ethanol Required	Bio-Ethylene (intermediate)	Bio-Ethylene Oxide Produced	Bio-Ethylene Oxide Produced for sales	Bio-MEG Produced for sales	Bio-PPL Produced for sales
240 - 250 KTA	~140 KTA	200 KTA	~23 KTA	25 KTA (50 KTA capacity)	240 KTA



Bio-Ethanol Production	Bio-Ethylene (intermediate)	Bio-Ethylene Oxide Produced	Urea Produced for sales	Bio-MEG Produced for sales	Bio-PPL Produced for sales
240 – 250 KTA	~140 KTA	200 KTA	Confidential	~13 KTA	310 KTA

Thank you



Contact Us

For more information about the technology and applications, don't hesitate to contact our business associates. We would be glad to help you in achieving sustainable business!

Dennis Chafiâ

Manager Business Development and Marketing

M: +31 (0)6 36 13 90 97

P: +31 (0)174 820 185

E: d.chafia@gidynamics.nl



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Bio Base Europe Pilot Plant

Turning Grams into Tonnes

Micro grants for innovation SMEs

Pitch Perfect and boost the European Bio-Economy

07/11/2018, Brussels



Tanja Meyer
Project coordinator
tanja.meyer@bbeu.org

KET4CleanProduction Ambition

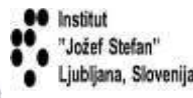


KET4CP's ambition is to establish a growing **open innovation ecosystem** by **interconnecting three main stakeholder groups**

to develop innovative solutions for cleaner production processes across Europe:

- KETs Technology Centres (KETs TCs)
- Enterprise Europe Network (EEN) partners
- Manuf. Small and Medium-sized Enterprises (SMEs)

After a pilot phase, starting in **07/2019**, the network is scaled up adding further KETs TCs and EEN partners



KET4CleanProduction Video



KET4Clean Production Approach

Manufacturing SMEs

- Stimulate manufacturing **SMEs** throughout Europe to increase their understanding and interest in clean production and the potential in adopting KETs

KET4CP Platform

- Build the **KET4CleanProduction platform** for Europe with specific awareness measures on regions where KET access is still not satisfactory

Multi-KET service

- Help SMEs benefit from **multi-KET service** know-how and infrastructure

- Micro- and Nanoelectronics
- Nanotechnology
- Industrial Biotechnology
- Advanced Materials
- Photonics
- Advanced Manufacturing Technologies

Cross-border potential

- Unlock the **cross-border service potential** of EU-certified KETs Technology Centres on clean production

Sustainable eco-system

- Create a **sustainable ecosystem** – one-stop-shop acting as single access point for EU manufacturing SMEs

Micro-grant schemes

- Implement a **micro-grant scheme** boosting clean production in SMEs through KET applications

Open Call for Micro Grants



Type of activities:

Cross-border cooperation projects with 1 SME + min. 2 KETs technology centres (KET TCs) to solve **clean production objectives**:

- the development of new production processes
- the improvement of the manufacturing of existing products by reducing
 - production costs; or
 - reliance on raw materials; or
 - consumption of energy; or
 - generation of waste and pollution

Technology services:

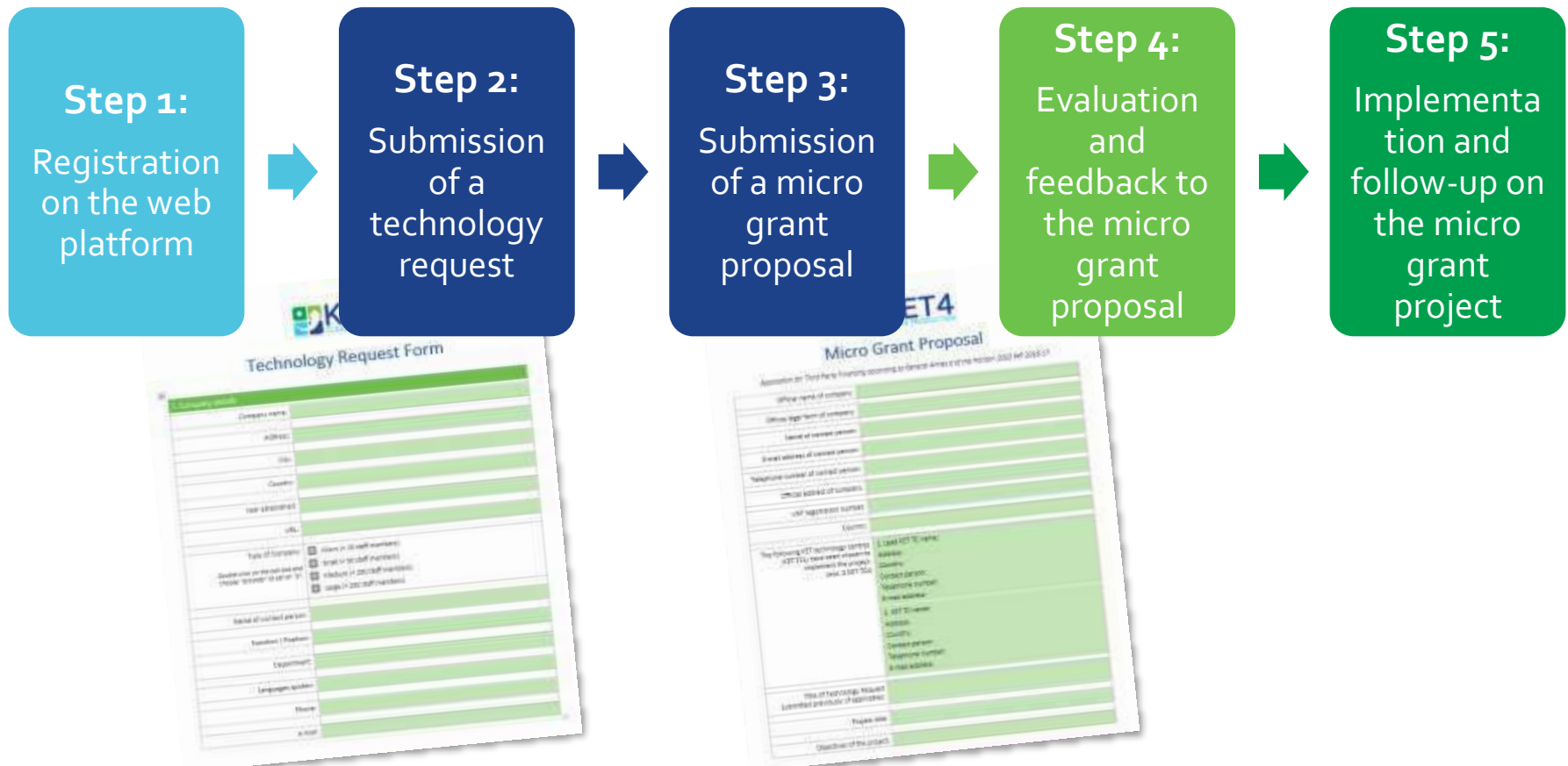
- research and innovation activities (TRL 4 to 8; focus on higher TRLs) including feasibility, demonstration, testing, pilot production and related engineering activities; complemented by feasibility studies

Financial support for each third party: EUR 50.000 (lump sum)

www.ket4sme.eu/micro-grants

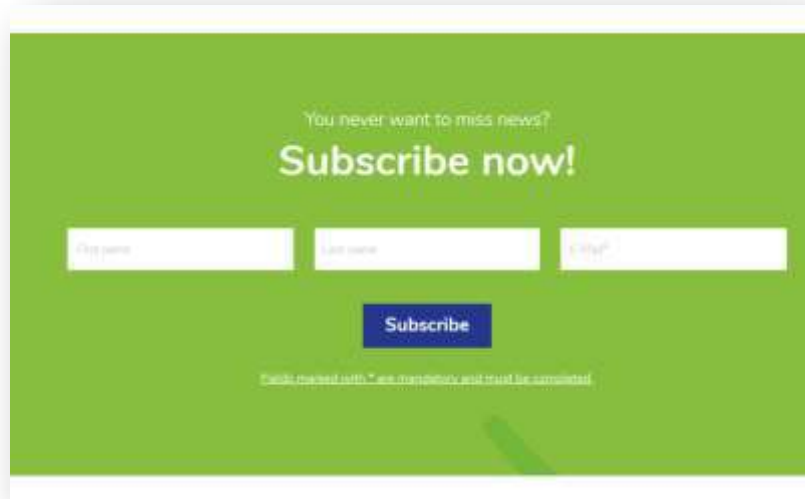
Procedure to apply for a Micro Grant

Check the steps in detail at <https://www.ket4sme.eu/micro-grants>



How to get in touch

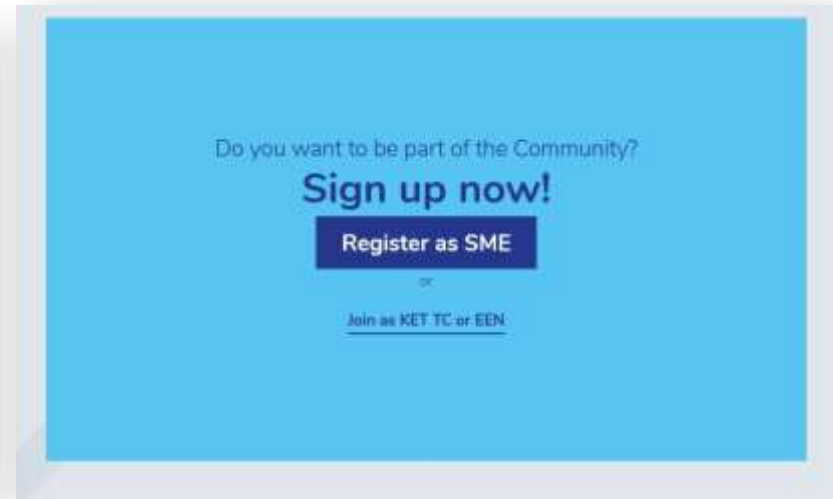
Sign up to stay informed
about news on micro grants



The screenshot shows a green background with the text "You never want to miss news?" followed by "Subscribe now!". Below this are three input fields labeled "First name", "Last name", and "E-Mail". A blue "Subscribe" button is positioned below the fields. At the bottom, there is a small note: "Fields marked with * are mandatory and must be completed."

<https://www.ket4sme.eu>

Become part of the community and/or
apply for a micro grant?



The screenshot shows a blue background with the text "Do you want to be part of the Community?" followed by "Sign up now!". Below this is a dark blue button labeled "Register as SME". Underneath the button is the word "or" and a link that says "Join as KET TC or EEN".

<https://www.ket4sme.eu/join-the-community/register>

Lance Leverette

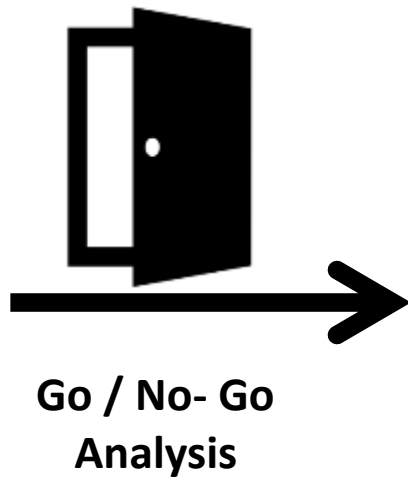
Innovation Management Consultant

*Applied Market Intelligence Solutions for
Industrial & Technical Applications*

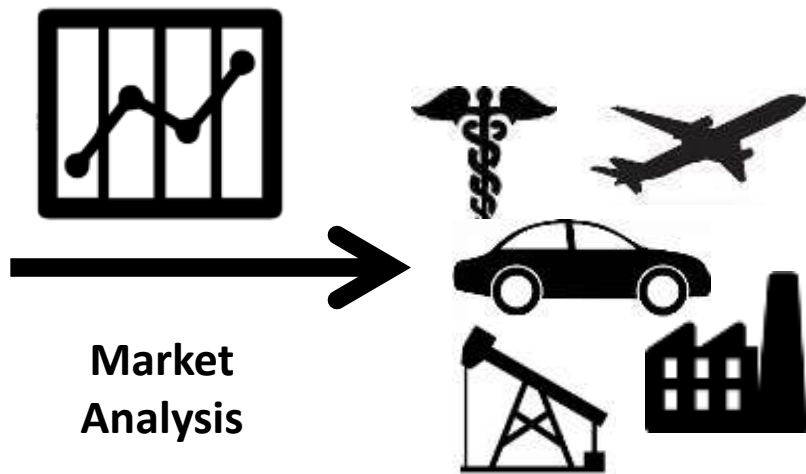


The Market Ready Methodology

Step 1 & 2: Ideation and Go/No Go



Step 3: Macro Market Analysis



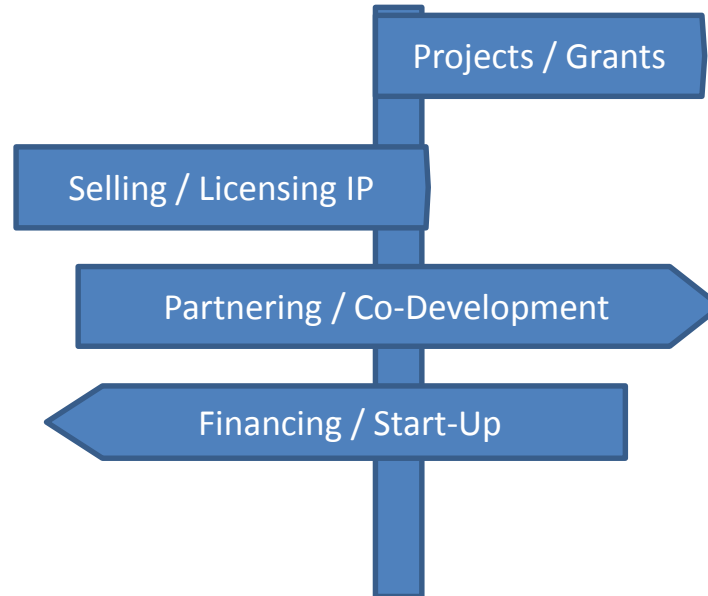
Step 4: Application Analysis



Step 5: Market Strategy



Market
Strategy



$$\left[\left[\text{Graph} \right] \left[\text{Target} \right] \right] - \left[\text{Factory} + \text{Truck} \right] = \text{€}$$

Step 6: Funding / Go - To Market





Bio-based Process Development with Artificial Intelligence

Hans Keuken, CEO
keuken@process-design-center.com

November 7, 2018

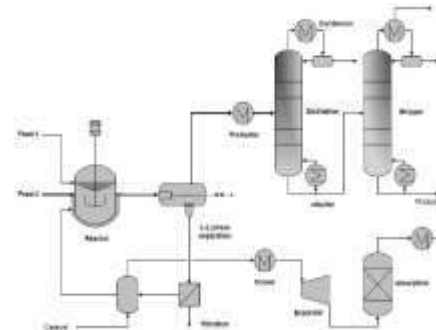
FROM

- Known chemistry
- Physical properties (often incomplete)



USING

- Human + Artificial Intelligence (PROSYN®)
- Process Intensification
- Process Integration
- Process Simulation/Optimization



TO

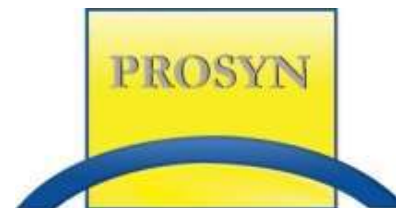
- Alternative process designs
- Mass and energy balances
- Production cost (Capex + Opex)
- Sensitivities





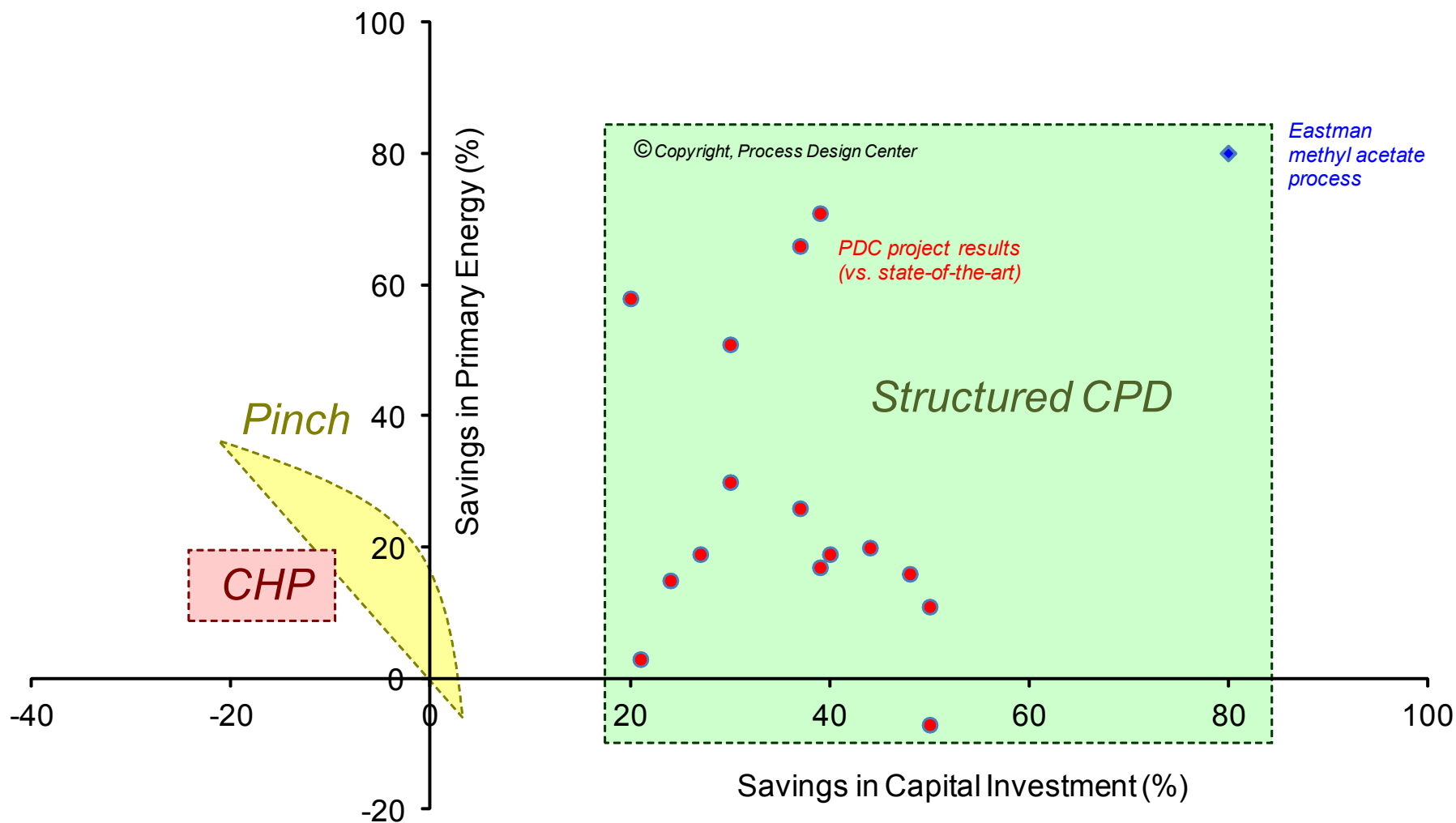
PROSYN[®] expert system: History

- **Started in 1980s**
 - Prof. Simmrock (TU Dortmund) consortium BASF, Bayer, Degussa, Hoechst, Hüls
 - Academic software
- **PDC/Keuken & de Koning (> 1996)**
 - Successfully applied PROSYN[®] in industrial projects
- **Major investments in IT (> 2010)**
 - Further professionalization
 - Transfer to new platforms (web-based in the cloud)
 - Currently more than 300 man years invested
 - New and extended modules
 - PROSYN[®] workshops
 - PROSYN[®] services & licensing

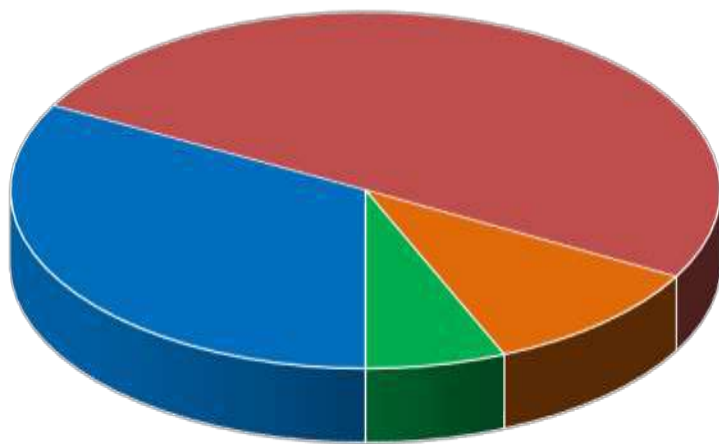




PDC's re-design track record

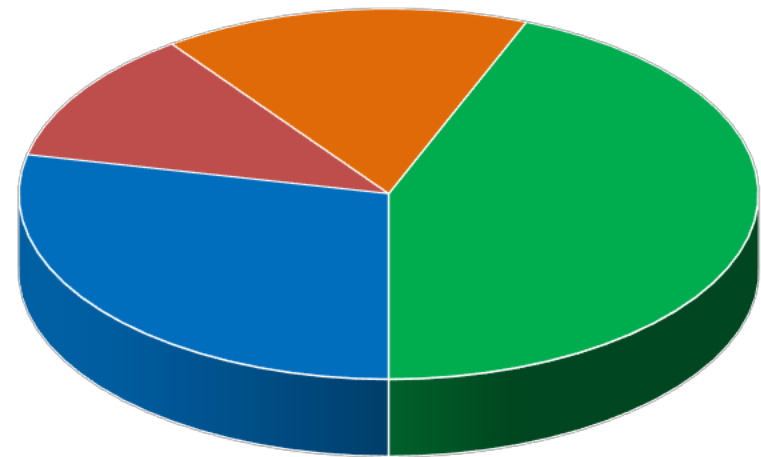


Increase in Bio-based turnover



■ (Petro)chemical ■ Energy ■ CCS/CCU ■ Biobased

< 2010



■ (Petro)chemical ■ Energy ■ CCS/CCU ■ Biobased

> 2010



PDC B.V.

Catharinastraat 21-F
4811 XD Breda
Netherlands

PDC N.V.

Kalmthoutsesteenweg 168
2990 Wuustwezel
Belgium

PDC Inc.

602 N Camino Miramonte
Tucson, AZ 85716
U.S.A.

Process Design Center B.V.

Catharinastraat 21F, NL-4811 XD Breda, The Netherlands

☎: +31 (0)76 5301 900

🌐: www.process-design-center.com

Contact: Ir. Hans Keuken, managing director
keuken@process-design-center.com

Dr. Hank Vleeming, CTO
vleeming@process-design-center.com

NETHERLANDS - BELGIUM - USA

EU funding – is it worth the hassle!

Donald Mc Donagh



1. % Success rates

Reported / True

Call for proposals: H2020 EIC SME INSTRUMENT- (Deadline: 23.05.2018)

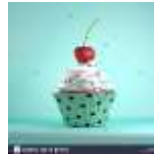
- * Number of proposals submitted: **1658**
- * Number of above-threshold proposals: **696**
- * Number of projects proposed for funding: **63** **3.8% / 9%**

For all H202 programmes (2015):

- * 42,535 / 20, 024 / 4,565 **10.7% / 22.8%**

2. The Process

- * Innovation and efforts to access funding (grants, other) should be embedded as a key activity within the business
- * Embrace the process of project/proposal development
- * Grant award is the:



Partnering versus Coordination

- * Correct approach?
- * Partnering strategy – identifying and courting a “winning” Coordinator

Proposal development - key points

- * Close alignment to funder criteria
- * Treat grant proposal as a sales document
- * Pitch to audience (evaluator) – key front end pages
- * The WHAT, the WHY, the HOW
- * Concise, coherent, succinct – less is often more!

Contact details

THANK YOU!

Donald Mc Donagh

donald@cillnua.eu





STRENGTH IN NUMBERS: STRATEGIES FOR SUCCESSFUL PROJECTS

Dr Ritchie M Head

Ceratum Limited

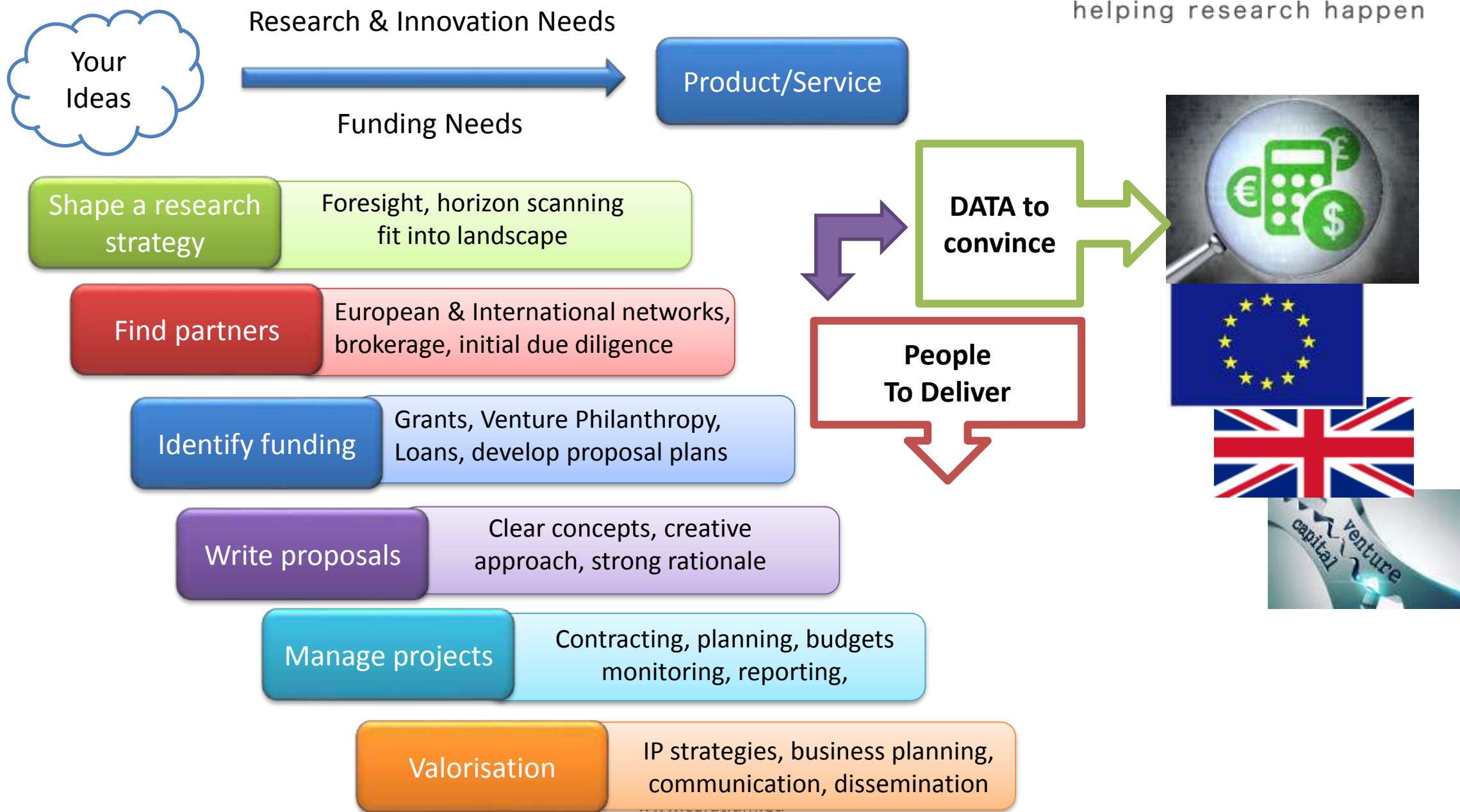
ritchie.head@ceratum.eu



PROJECTS: PUTTING THE NUMBERS TOGETHER



WE WORK FROM INCEPTION TO COMPLETION



Workshops and webinars – hands-on practical examples

Training



LOCATION – SUCCESS - BENEFIT



CLIENTS

Universities

Businesses

Hospitals

Research
Organisations

NGOs

- ✓ Refine knowledge needs
- ✓ Improve R&I strategies
- ✓ Better business planning
- ✓ Address investment needs
- ✓ Successfully build and manage collaborative projects

- ✓ Helped clients to win >€60M in grant funding in 5 years (EC/UK/US)
- ✓ Led to additional funding >€15M euro (Venture Funding, Grants)
- ✓ Create multiple new collaborations
- ✓ Most recent success 15/15 for €6M Grants [global rare disease project]

Our success

THANK YOU



CERATIUM
helping research happen

Horizon 2020 specialists in

- Biotech
- Health
- Environment
- Maritime
- Energy

Phone: +44 (0)7584 636566
E-mail: admin@ceratium.eu
Website: www.ceratium.eu

Helping you accelerate research and innovation.

- **Innovation and Research Strategy:** Business intelligence, market research, structuring ideas, strategic positioning, partnership building and technology transfer.
- **Funding:** Identifying finance, investor relations, proposal development and reviewing, budget planning, subsidies and Horizon 2020 specialists.
- **Project management:** contracting, work planning, communications, IP management and valorisation to deliver impact.
- **Training:** proposal writing, managing projects, and tailored courses for industry and academia.

CERATIUM
helping research happen





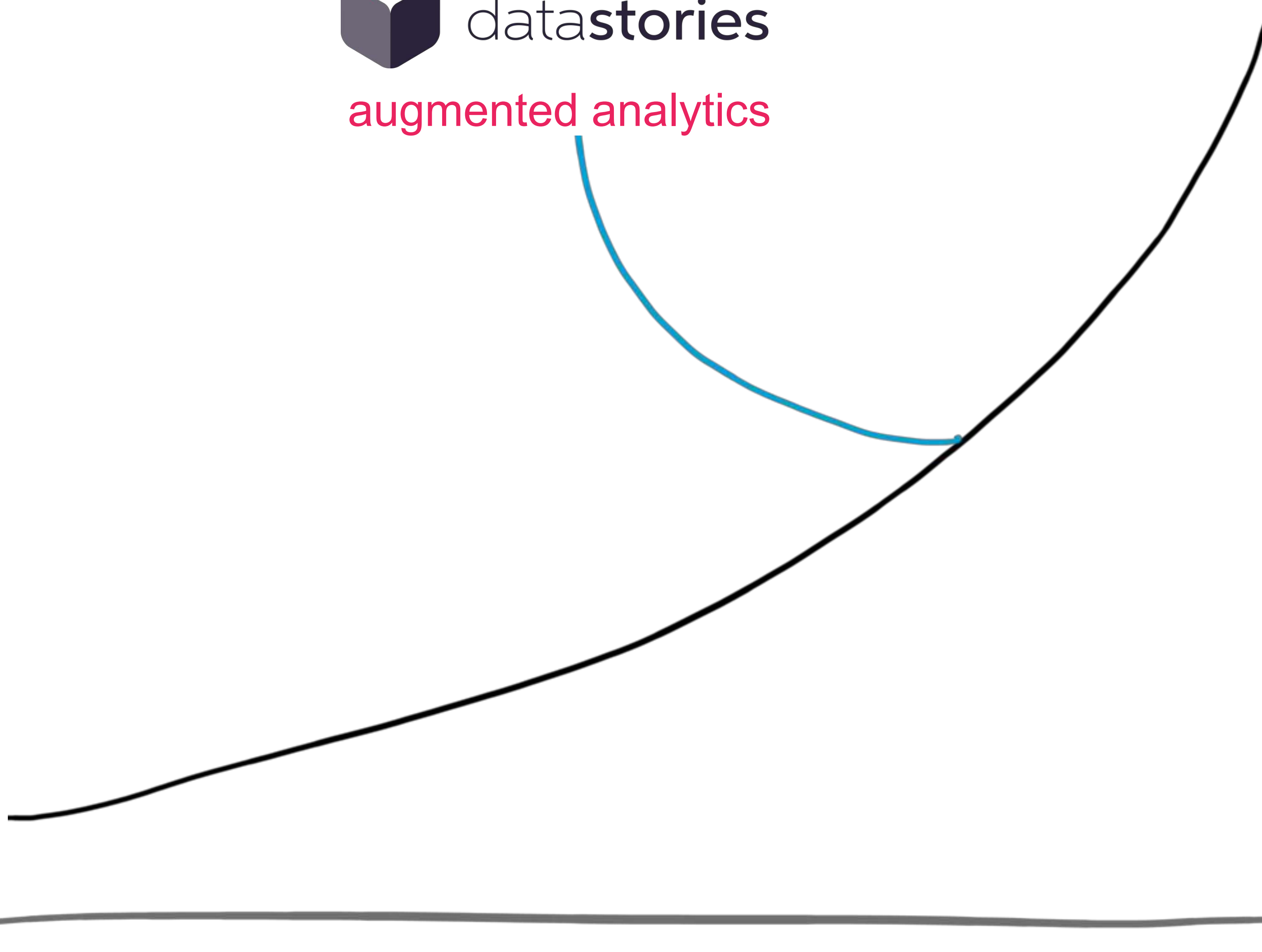
data**stories**

AUGMENTED ANALYTICS

First simple-to-use AI innovating compounds, mixtures and processes

analytical maturity

 data**stories**
augmented analytics



needed analytical expertise

SHAPED BY LEADERS

		#1 in semiconductor machinery	
			
			
			

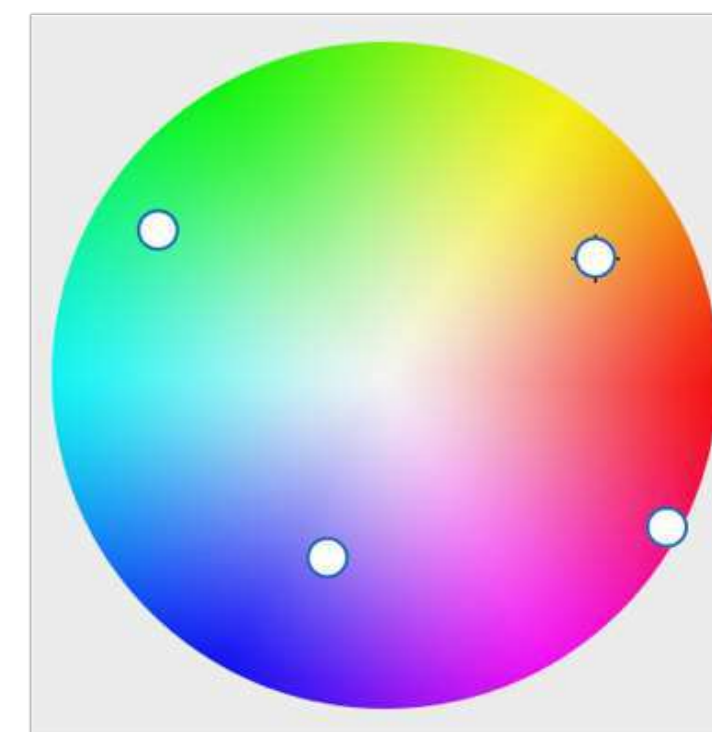
now available for anyone





COMPOUND DESIGN

HOW TO FIGHT THE COMBINATORIAL EXPLOSION?

MAKE PREDICTIONS
FOR UNKNOWN
COMPOUNDS,
PRODUCTS,
SERVICES, ...

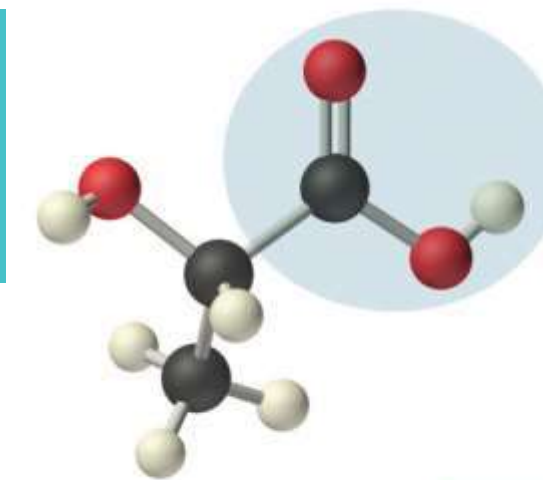
ENRICH WITH 10 TO 1000S OF DESCRIPTORS



	Red	Green	Blue
	229	0	78
	244	152	65
	0	179	118
	133	82	248

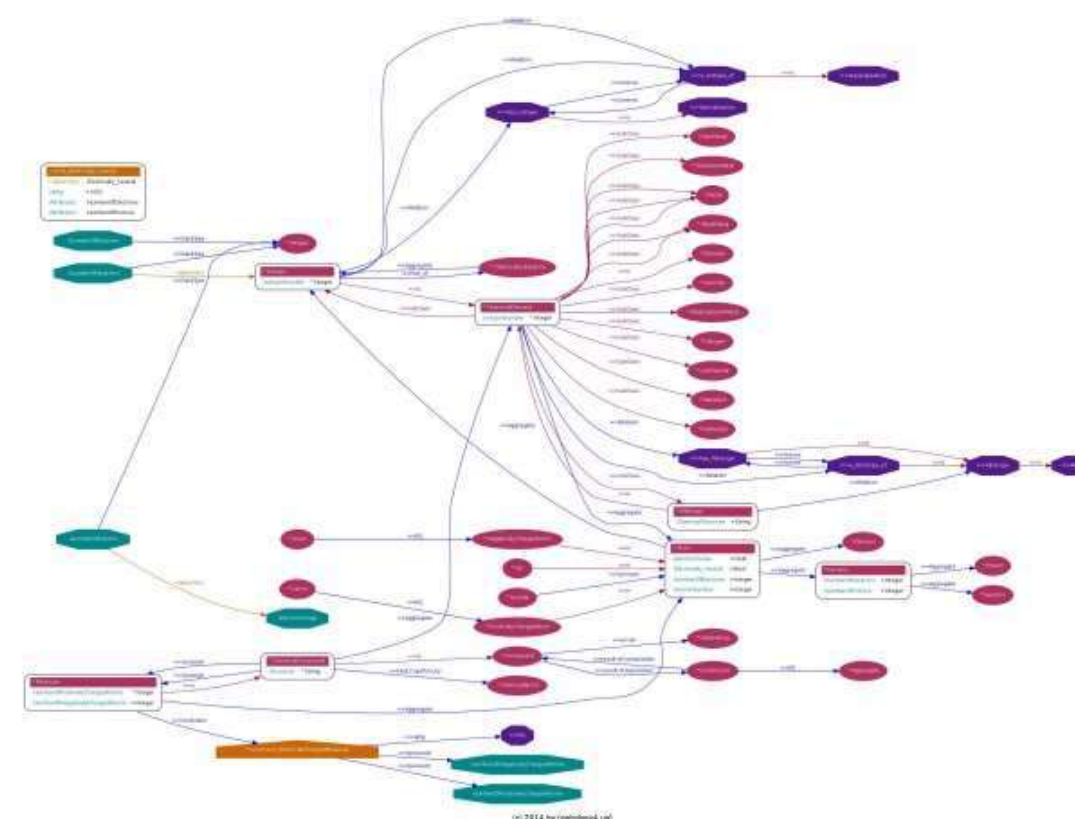
FROM CATEGORICAL TO CONTINUOUS SPACE

DATASTORIES loves thousands of variables

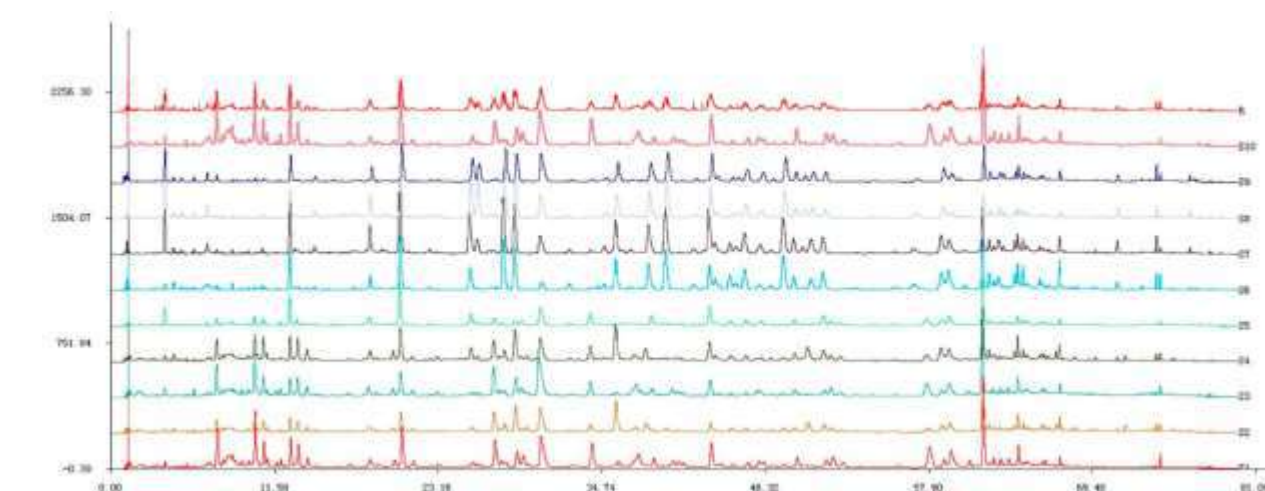
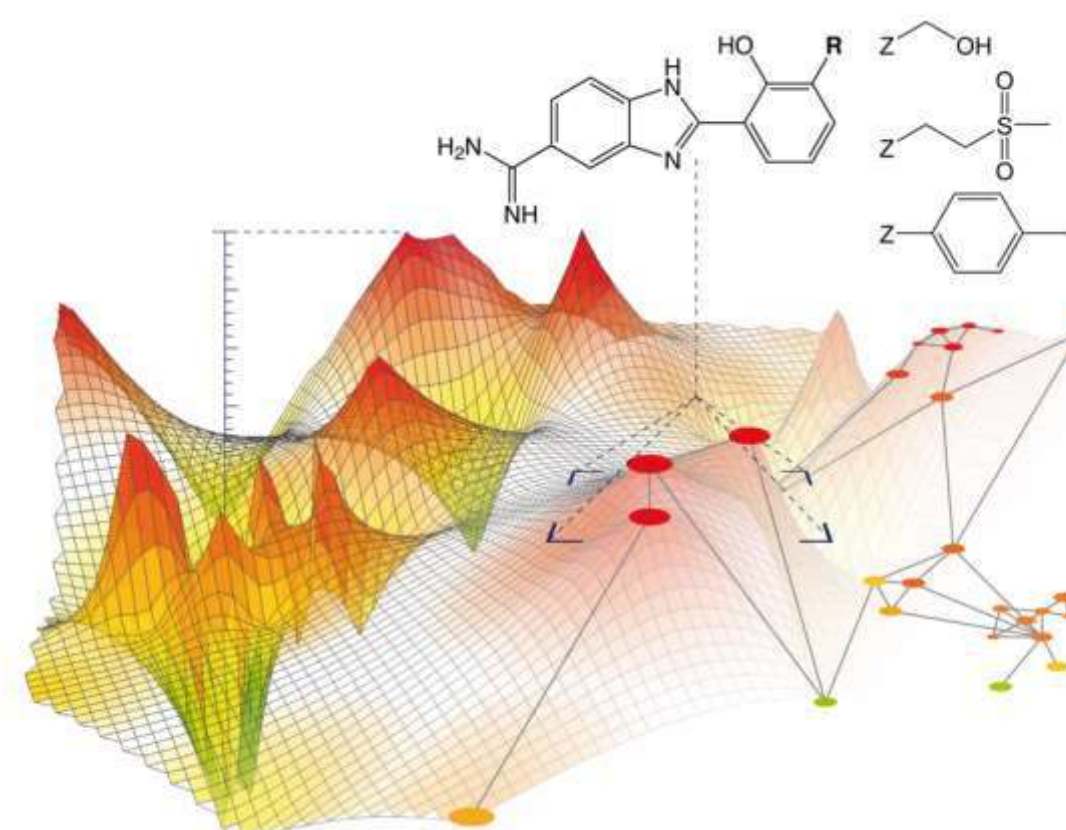
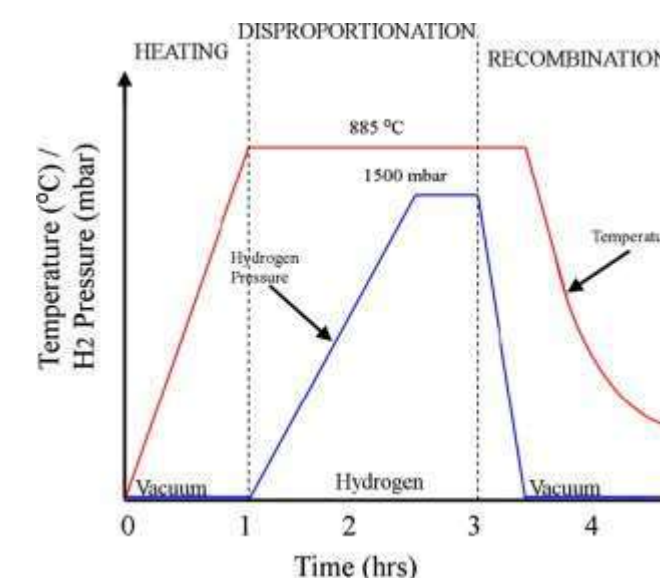


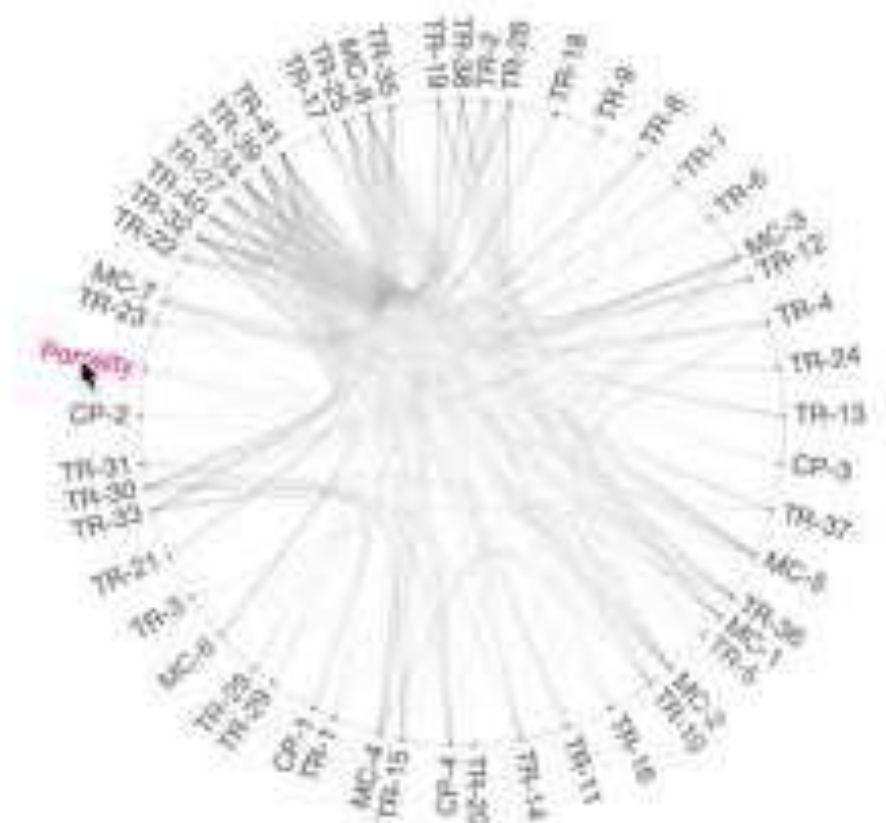
Lactic acid, $\text{CH}_3\text{CH}(\text{OH})\text{CO}_2\text{H}$

- PROCESSING CONDITIONS
- COMPOUND INFORMATION
- Calculated properties
- Ontologies
- Formulations
- Spectra
- Chemical Spaces
- WEATHER CONDITIONS



System	9	Calculated geometries ^{b,c,d}	AIM Critical point properties ^e	ELF Basins	Digital Repository ^f
X-H, R-H charge=0, n=2	Be-H: 1.491Å, \angle 1.474Å, \angle 1.505Å, \angle	Select coords 2	AIM p(V _{BC}) = 0.035; V _{BC} = -0.376	ELF	10042to-2494 10042to-2492 10042to-2524 10042to-2498
X-H, R-CN charge=0, n=2	Be-H: 1.4815Å, \angle 1.4663Å, \angle	Select coords 2			10042to-2499 10042to-2497
X-H, R-DIP charge=0, n=2	Be-H: 1.5471Å, \angle 2.2299Å, \angle 1.101 cm ⁻¹	Select coords/Vib 2			10042to-2893 10042to-2899
X-H, R-H charge=1, n=2	B-H: 1.2914Å, \angle 1.2783Å, \angle 1.688Å, \angle 1.2873Å, \angle	Select coords 2	AIM p(V _{BC}) = 0.082; V _{BC} = -0.787	ELF	10042to-2472 10042to-2478 10042to-2525 10042to-2563 10042to-2487
X-H, R-CN charge=1, n=2	B-H: 1.2858Å, \angle 1.2794Å, \angle	Select coords 2	AIM p(V _{BC}) = 0.082; V _{BC} = -0.745	ELF	10042to-2493 10042to-2470 10042to-2454
X-H, R-DIP charge=1, n=2	B-H: 1.3096Å, \angle 1.688Å, \angle 1.2 x 268 cm ⁻¹ v 258 cm ⁻¹ , 75 (g, g)	Select coords 2			10042to-2584 10042to-2638
X-C, R-H charge=2, n=2	C-H: 1.2984Å, \angle 1.888Å, \angle 1.1965Å, \angle	Select coords 2	AIM p(V _{BC}) = 0.181; V _{BC} = -0.831	ELF	10042to-2472 10042to-2474 10042to-2526 10042to-2486
X-H, R-H charge=0, n=1	B-H: 1.3468Å, \angle 1.3552Å, \angle	Select coords/Vib 2	AIM p(V _{BC}) = 0.061; V _{BC} = -0.555	ELF	10042to-2499 10042to-2588 10042to-2499
X-H, R-H charge=2, n=3	B-H: 1.3157Å, \angle 1.2956Å, \angle	Select coords/Vib 2	AIM p(V _{BC}) = 0.079; V _{BC} = -0.620	ELF	10042to-2594 10042to-2512 10042to-2504

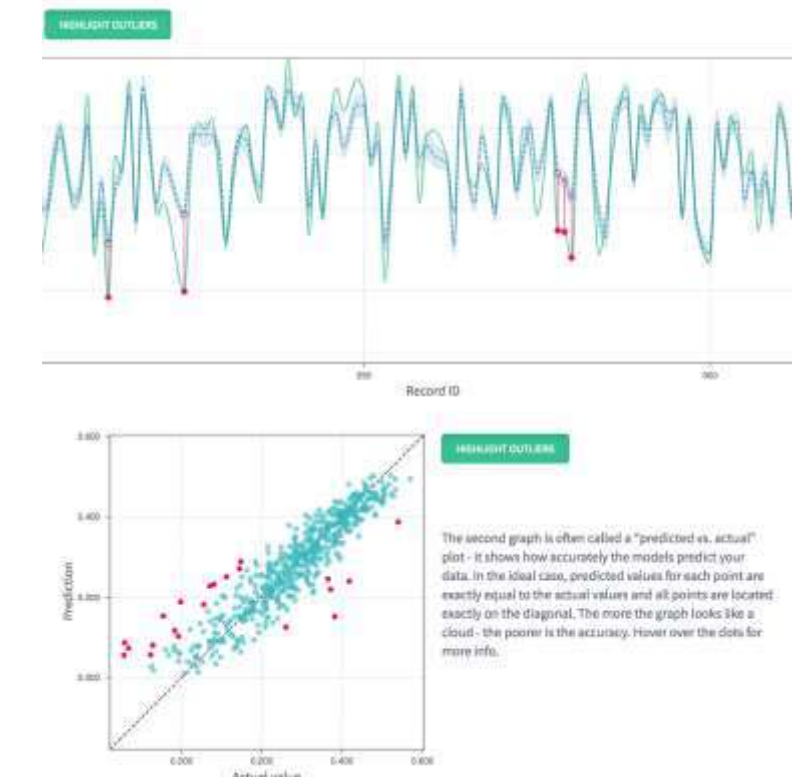




How is everything inter-connected?



From all inputs, which are the dominant ones?

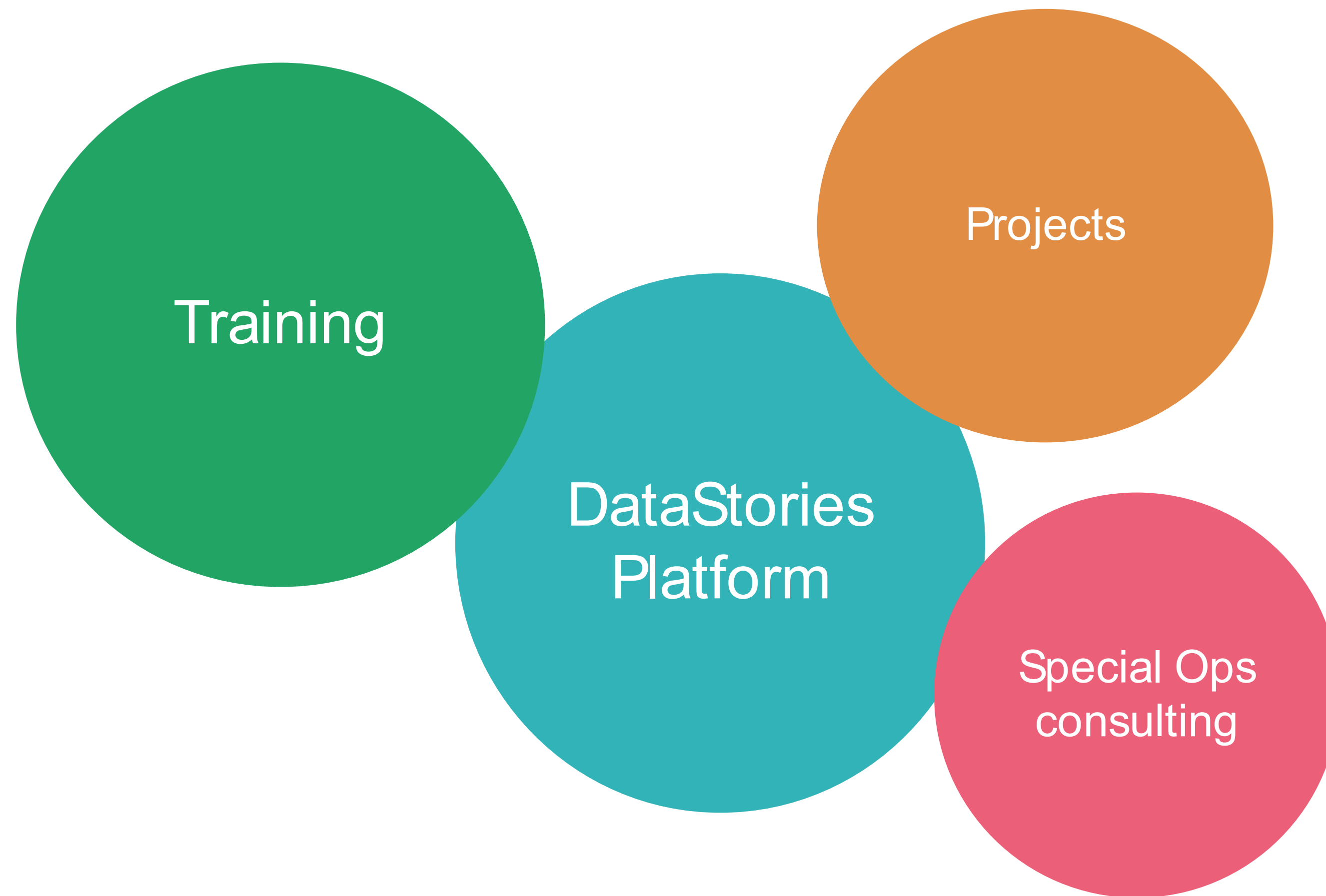


What are the exceptions to the rule?



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-7	TR-8	TR-9	TR-10	TR-11	TR-12	TR-13	TR-14	TR-15	TR-16	TR-17	TR-18	TR-19	TR-20	TR-21	TR-22	TR-23	TR-24
2	37,76826	0	10,72934	0	0	0	0	0	0	10,25688	0	0	0	4,102712	10,25428	0	15,76425	0	0	0	0	0	0	0
3	34,95269	0	0	14,4846	0	0	0	0	0	13,76054	0	0	0	0	15,82367	0	7,150036	0	0	0	7,738014	0	0	0
4	34,55571	0	0	0	8,750768	0	0	0	0	16,11571	0	0	0	0	13,09145	0	15,70946	0	0	4,029879	0	0	0	0
5	28,82497	0	0	7,635113	0	0	0	0	0	7,703272	0	0	0	35,38289	0	0	9,053304	0	0	3,706599	0	0	0	0
6	45,48735	0	0	0	5,725948	0	0	0	0	0	0	0	0	10,38714	5,767717	0	25,38208	0	0	0	0	0	0	0
7	20,3436	0	7,000182	0	0	0	0	0	0	27,55418	0	0	0	24,85957	11,73996	0	0	0	0	0	0	0	0	0
8	31,11202	0	5,220457	0	0	0	0	0	0	34,54729	0	0	0	0	14,63688	0	4,95252	0	0	0	0	0	0	0
9	32,37367	0	0	0	12,12199	0	0	0	0	11,27032	0	0	0	0	17,04875	0	0	0	5,883745	0	0	8,36291	0	0
10	21,08679	0	0	12,0013	0	0	0	0	0	39,11747	0	0	0	2,547448	16,09833	0	0	0	0	0	0	0	0	0
11	34,04005	0	0	9,913737	0	0	0	0	0	10,49266	0	0	0	0	12,77843	0	9,564582	0	0	1,822931	0	0	6,844697	0
12	36,87246	0	0	0	9,72228	0	0	0	0	0	0	0	0	0	11,65103	0	11,62069	0	0	0	11,75469	0	0	0
13	25,65631	0	13,09147	0	0	0	0	0	0	22,20215	0	0	0	4,224551	10,02183	0	0	0	0	0	11,2843	0	0	0
14	22,40442	0	8,783758	0	0	0	0	0	0	18,69243	0	0	0	33,04642	0	0	0	0	0	0	1,065661	0	0	0
15	34,90682	0	0	12,90205	0	0	0	0	0	7,474624	0	0	0	7,646666	0	0	4,598522	0	0	4,478193	8,636207	0	0	0
16	46,17838	0	0	8,227612	0	0	0	0	0	8,160793	0	0	0	0	4,116057	0	28,16221	0	0	0	0	0	0	0
17	43,4119	0	0	3,1644	0	0	0	0	0	0	0	0	0	0	0	0	29,1443	0	0	0	0	0	0	0
18	25,68776	0	0	0	13,32756	0	0	0	0	1,712921	0	0	0	40,98206	0	0	8,509068	0	0	2,264378	0	0	0	0
19	22,17325	0	0	0	15,51469	0	0	0	0	0	0	0	0	0	0	0	11,47414	0	0	36,63111	0	0	4,991637	0
20	44,54397	0	0	2,907071	0	0	0	0	0	3,53224	0	0	0	0,920674	29,78012	0	0	0	0	1,827625	1,919983	0	1,549249	0
21	47,52828	0	0	0	3,514452	0	0	0	0	0	0	0	0	0	0	0	10,74762	0	0	0	32,61489	0	0	0
22	32,83928	0	0	4,120787	0	0	0	0	0	0	0	0	0	8,571727	43,62387	0	2,653173	0	0	0	0	0	2,836825	0
23	43,98922	0	0	8,906335	0	0	0	0	0	1,80919	0	0	0	2,28944	0	0	3,211237	0	0	0	0	0	21,12522	0
24	44,62924	0	0	12,16238	0	0	0	0	0	0	0	0	0	0	1,366464	0	3,985396	0	0	15,2404	0	0	1,404263	0
25	35,54513	0	11,37611	0	0	0	0	0	0	0	0	0	0	4,709295	35,95016	0	0	0	0	1,819234	2,2117	0	2,104025	0
26	43,85994	0	7,674158	0	0	0	0	0	0	3,437808	0	0	0	2,73932	0	0	3,013572	0	0	0	0	0	26,35392	0
27	47,91409	0	3,122331	0	0	0	0	0	0	5,497414	0	0	0	2,203527	0	0	4,032631	0	0	0	0	0	31,92434	0
28	45,80616	0	0	6,82948	0	0	0	0	0	0	0	0	0	0	0	0	9,056673	0	0	25,54012	0	0	2,247993	0
29	43,13861	0	0	0	9,647631	0	0	0	0	0	0	0	0	0	2,058998	0	5,899411	0	0	0	0	0	24,93531	0
30	43,88031	0	4,496614	0	0	0	0	0	0	0	0	0	0	1,154935	0	0	6,648952	0	0	24,33565	0	0	3,210653	0
31	38,72733	0	13,00038	0	0	0	0	0	0	2,672408	0	0	0	1,83461	0	0	2,974023	0	0	0	0	0	20,92064	0
32	45,6319	0	3,118648	0	0	0	0	0	0	1,63725	0	0	0	1,885133	0	0	4,721086	0	0	0	0,988732	0	27,88977	0
33	42,9275	0	0	7,7325	0	0	0	0	0	0	0	0	0	0	0	0	27,5641	0	0	0	0	0	0	0
34	42,61154	0	0	0	10,5919	0	0	0	0	0	0	0	0	0	0	0	29,56291	0	0	0	0	0	0	0
35	47,1598	0	0	5,4685	0	0	0	0	0	0	0	0	0	0	0	0	21,0023	0	0	0	0	0	0	0
36	41,74313	0	0	9,770785	0	0	0	0	0	0	0	0	0	1,758895	0	0	5,565318	0	0	2,603289	33,21929	0	0	0
37	25,52258	0	15,04078	0	0	0	0	0	0	3,423076	0	0	0	38,16451	0	0	9,450287	0	0	0	0	0	0	0

Next Steps



LET'S DO A



Towards Innovative Sustainable Production Processes

Technology, Systems, Resources, Environment and Economics

Prof. Dr.-Ing. Axel Gottschalk

SUPREN GmbH, Dortmund, DE

Pitch perfect and boost the European Bio-Economy

Cross-border matchmaking and networking event

7 November 2018, 10am-6pm

Sheraton Brussels Airport Hotel (Belgium)

Matchmaking and networking event enabled by:

Interreg 
North-West Europe
BioBase4SME
European Regional Development Fund



Independant SME

- **Process industries, RTOs, Universities**
- **Technical consultants**
- **Open innovation partner**
- **Process development**
 - 1st of it's kind
 - Debottlenecking
 - Revamp
- **Computer Aided Process Engineering (CAPE)**



Technical Competence

- **Whole industrial production processes**

- Modeling
- Simulation
- Integration
- Intensification
- Optimization
- Scale-Up

- **Techno-economic evaluation**

- CAPEX, OPEX, production costs
- Net Present Value (NVP), Return on Investment (ROI)

- **Enironmental impact assessment (LCA)**

- **Holistic approach towards innovative sustainable processes**



Experience in EU Projects



- ongoing:



see www.nanomemc2.eu



see www.falcon-biorefinery.eu

- proposals under evaluation (e.g. SFS-16-2018, BBI.2018.SO2.R2)

European Networks



see www.suschem.org



see www.spire2030.eu



BUSINESS LINE FINANCE ET INNOVATION PERFORMANCE

Taking Great Ideas from Lab to
Market – How we do it

Pitch perfect and boost the European Bio-Economy

Cross-border pitching, matchmaking and networking event

Date: Wednesday 7th November 2018

Location: Sheraton Brussels Airport Hotel, Brussels Airport, Belgium

Matchmaking & networking event
enabled by:

Interreg 
North-West Europe
BioBase&SME

 Superbio

01

AYMING



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Finance & Innovation
performance



Élu meilleur
cabinet de Conseil
par le Magazine
Capital en 2017



32 ans
d'expérience



1 500
employés



> 20 000
clients



167 M€
CA en 2016

Assets and Strengths

Our DNA - We are Project builders

EXPERIENCE

20+ Years in collaborative projects
10 years average @AYMING
PMP certified, ISO 9001 certified

EVALUATORS & CULTURE

3 H2020 Evaluators among our 6 expert Team Leader (ERC, FTI, ...)
Culture of innovation – putting in perspective with Story telling, graphic design

WORK FORCE

50 consultants(PhD, engineers)
Broad spectrum of scientific excellence/Topics

RECOGNIZED METHODOLOGIES IN PROJECT ENGINEERING - TOOLS

Projects followed up by the whole Team (pitch)
Long time Tested methodologies adapted towards call for proposal own specificity

MANAGEMENT OF INNOVATION

Beyond Grants, capability to assist Innovation management
Scouting, watch, IP, Business model & Business Plans

NETWORK

4000+ partners since 2004 involved in Projects we brought support



OUR AREAS OF EXPERTISE

Five approaches to supporting your innovation

Training

- Training in **preparing R&D projects**
- Training in **coordinating R&D projects**

Innovation management

- **Improving innovation processes**
- Collaborating more effectively
- **Positioning you** within collaborative networks and projects

Upstream and strategic support

- **Support with decision-making**
- **Monitoring of calls for proposals**
- **Technology scouting** (scientific, technology and market ecosystems)
- **Business plans**

R&D project engineering

- **Ideation** and emergence of new concepts
- **Maturation** to lay the foundations of a collaborative R&D project
- **Project engineering** and preparation of funding applications

R&D project coordination

- Supporting and **managing R&D projects**
- Exploiting and **communicating your results**



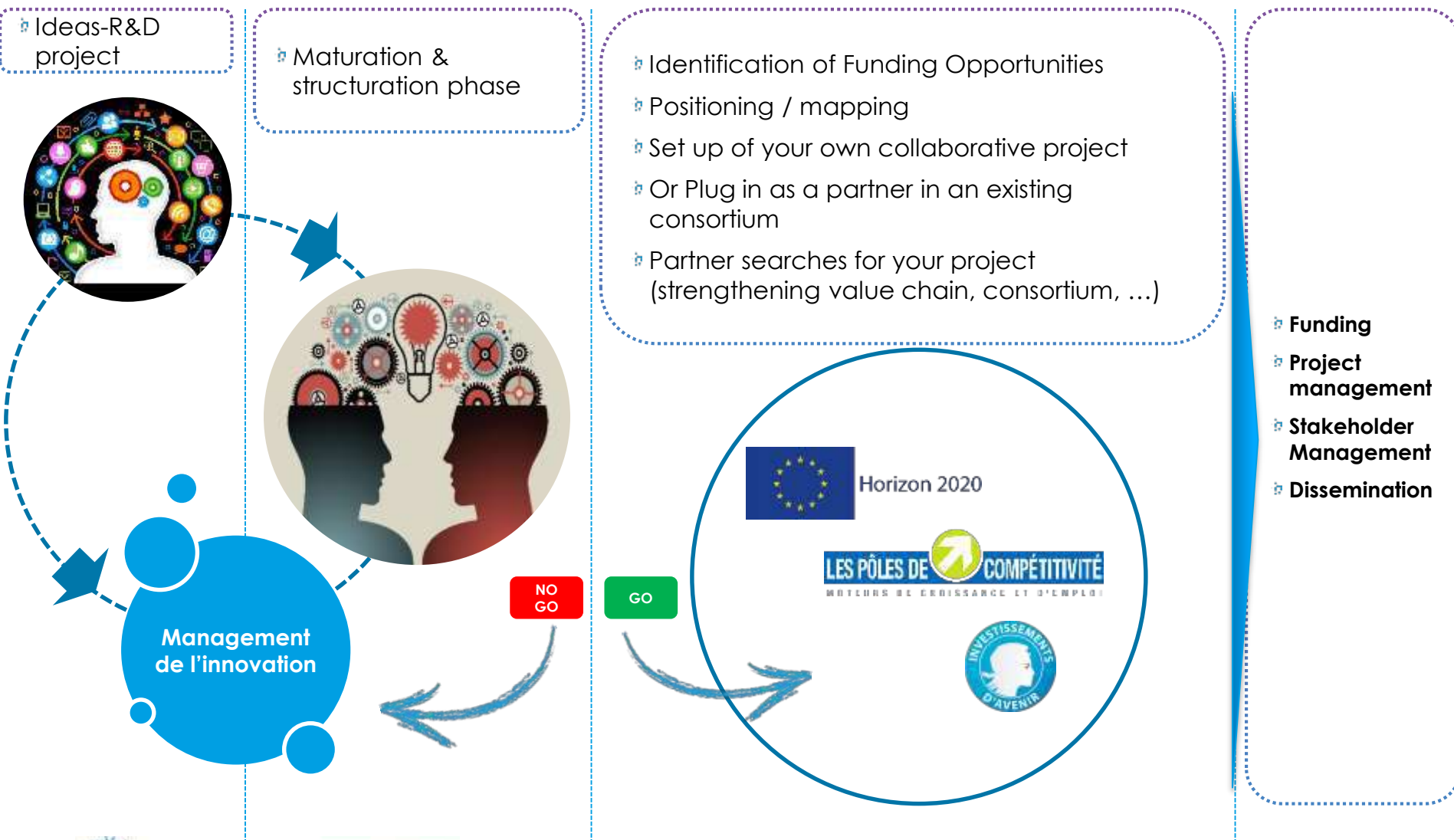
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Understanding– Identifying– a prerequisite

Your ideas R&D projects: base of our missions



KNOWLEDGE OF THE DIFFERENT FUNDING AVAILABLE

Our Playground



TRL

Projects to increase the participation of industry, industrialise and commercialise the results

H2020

**Fast Track to Innovation
SME Instrument**

Market-oriented
TRL 7-8

Subjects based on the Industrial Roadmaps

Innovative solutions to societal challenges



**Eurostars 2
& ERA-NET**

KIC
Knowledge
Innovation
Communities



LIFE+
Climate
&
Environment
2014-2020

H2020 Pillar 2

Industrial
Leadership

H2020 Pillar 3
Societal
Challenges

**H2020
Public-Private
Partnerships**
Joint
Technology
Initiatives

Applied
research
TRL 4-6

*Market-oriented R&D
projects,
transnational
framework*

*Promoting
innovation and
entrepreneurial
spirit*

*Applied
research,
generic key
technologies*

*Encouraging scientific
excellence*

H2020 Pillar 1
Excellent Science

Grants

Upstream
research
TRL 1-3



paying

financial
performance

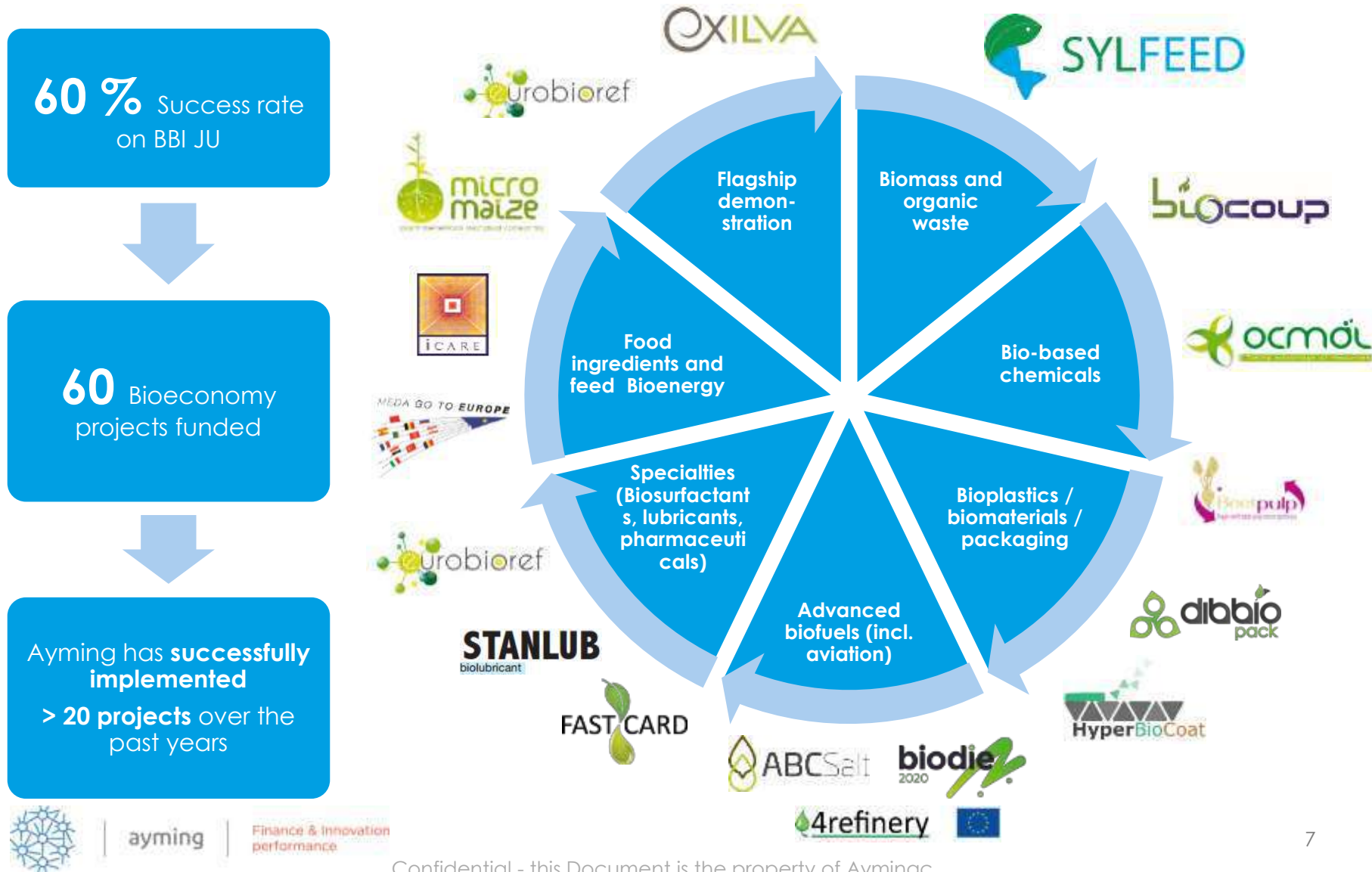
< €3m

> €5m

Scale of project (funding)

Success stories

Bio-economy related projects



YOUR CONTACT



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performance
consulting

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