



# Green Chemistry & Commerce Council

Moving Business Toward Safer Alternatives

## *GC3 Webinar Series*



November 8, 2012

## Green Chemistry Innovation in the Chemical Industry: Venturing and Start-Ups



Cora Leibig, VP of R&D,  
Segetis



Erik Rutten, Senior Investment Manager,  
DSM Venturing

# Webinar Discussion Instructions



- Due to the number of participants on the Webinar, all lines will be muted.
- If you wish to ask a question, please type your question in the Q&A box located in the drop down control panel at the top of the screen.
- All questions will be answered at the end of the presentation.

# Venturing as Open Innovation Tool

Erik Rutten  
Sr Investment Manager USA  
DSM Venturing  
November 8<sup>th</sup>, 2012

# Safe harbor statement

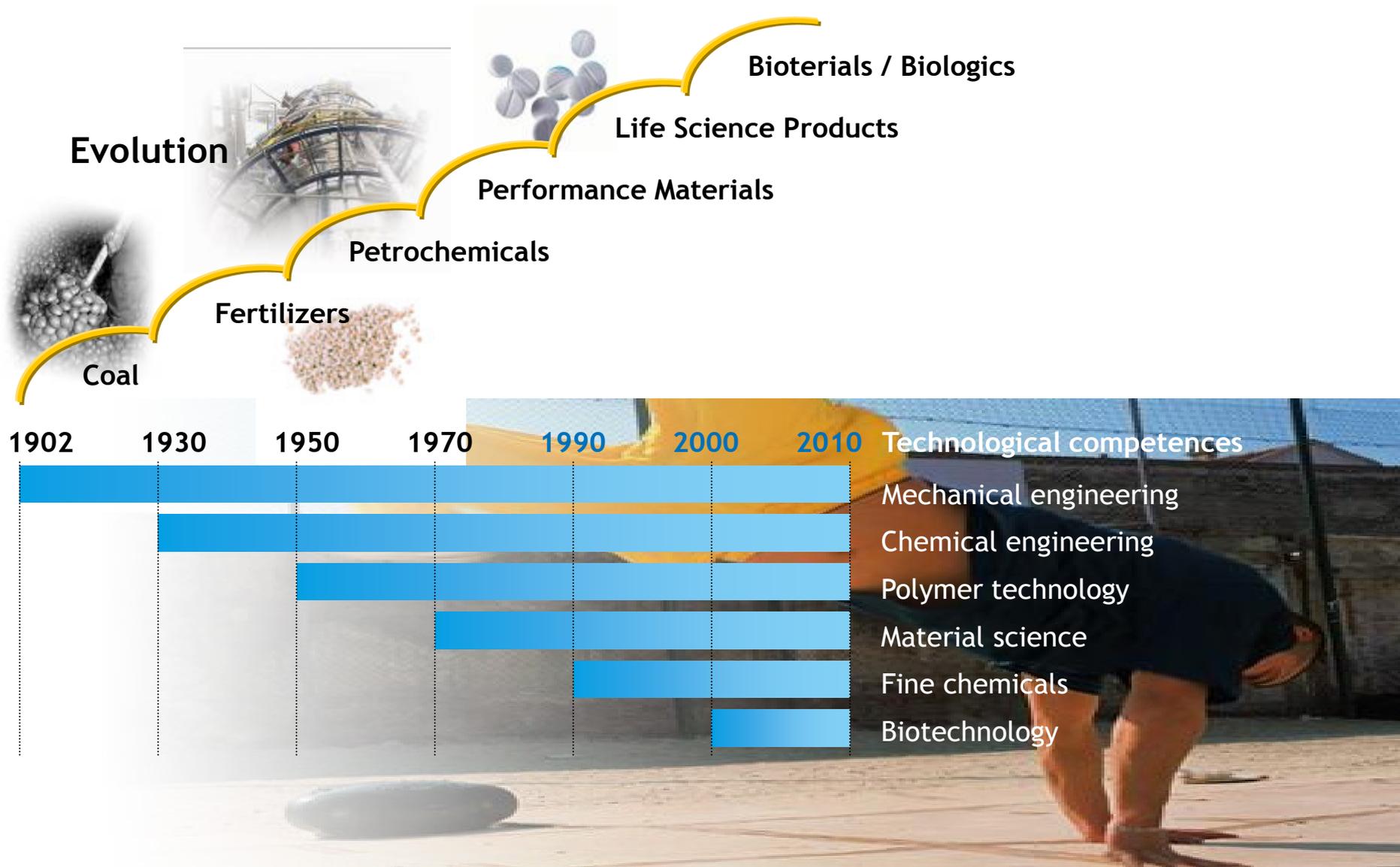
This presentation may contain forward-looking statements with respect to DSM's future (financial) performance and position. Such statements are based on current expectations, estimates and projections of DSM and information currently available to the company. DSM cautions readers that such statements involve certain risks and uncertainties that are difficult to predict and therefore it should be understood that many factors can cause actual performance and position to differ materially from these statements. DSM has no obligation to update the statements contained in this presentation, unless required by law.

The English language version of this document is leading.

A more comprehensive discussion of the risk factors affecting DSM's business can be found in the company's latest Annual Report, which can be found on the company's corporate website, [www.dsm.com](http://www.dsm.com)

# DSM: Ability to change

## 100 years of successful transformations



# Unique business positions of DSM



Health



Nutrition



Materials

- Global leader in nutritional ingredients for feed, food and personal care
- Market leader in anti-infectives and key custom manufacturing player
- Market leader in sustainable high performance materials
- Merchant market leader in nylon precursor caprolactam
- Innovator active in advanced biofuels, biochemicals and biomedical materials

# DSMs global presence

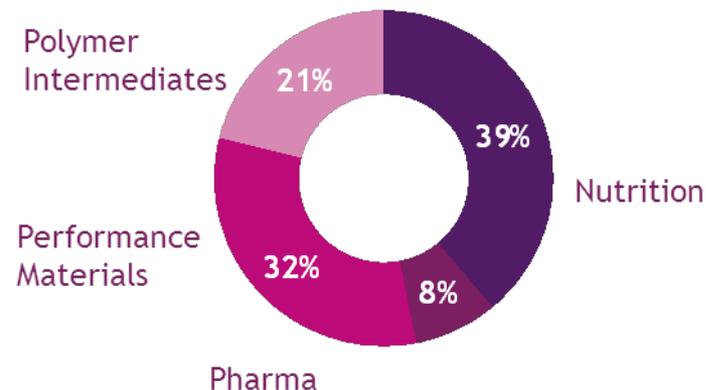
World total: 200+ locations, 22,000 employees



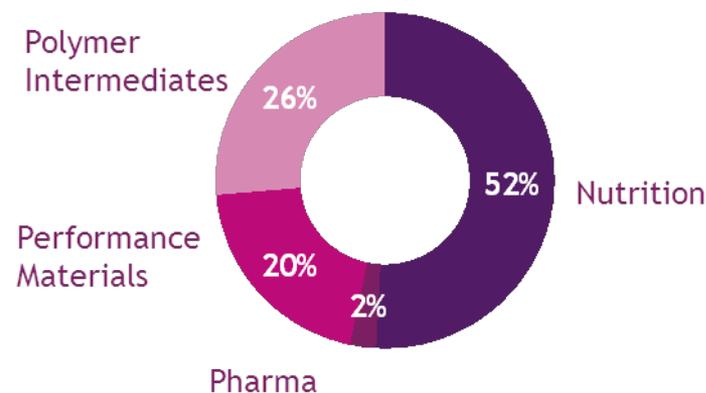
# DSM at a glance 2011, continuing operations

- Net sales € 9,048m
  - EBITDA € 1,296m
  - Net Profit € 594m
  - ROCE 14.0%
- 
- Capital Employed € 6,581m
  - Capex incl acquisitions € 1,508m
  - R&D € 476m
- 
- Workforce 22,224
  - Amongst leaders in sustainability  
No 1 in 6 out of 8 years DJSI

Sales<sup>(\*)</sup> per cluster

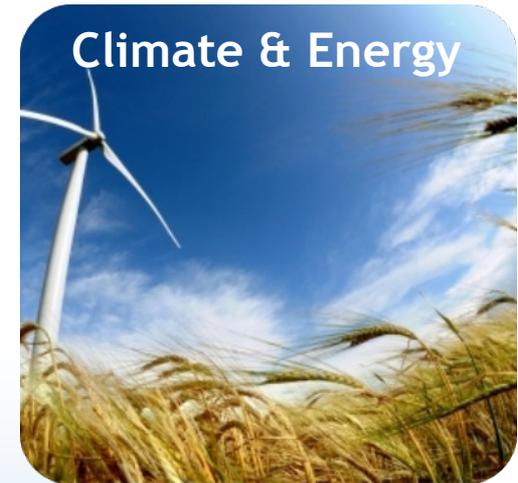


EBITDA<sup>(\*)</sup> per cluster



\* Innovation Center and Corporate Activities related Sales & EBITDA weighted distributed over clusters

# Global societal trends drive DSM's markets



Ageing population

Population growth

Resources constraints

Healthcare costs

Urbanization

Energy security

Food security

Wealth

Sustainability

Health

Nutrition

Materials

# Growth through four growth drivers

## High Growth Economies

From  
'reaching out'



to  
becoming  
truly global

## Innovation

From  
'building the  
machine'



to  
doubling the  
output

## Sustainability

From  
responsibility



to  
business driver

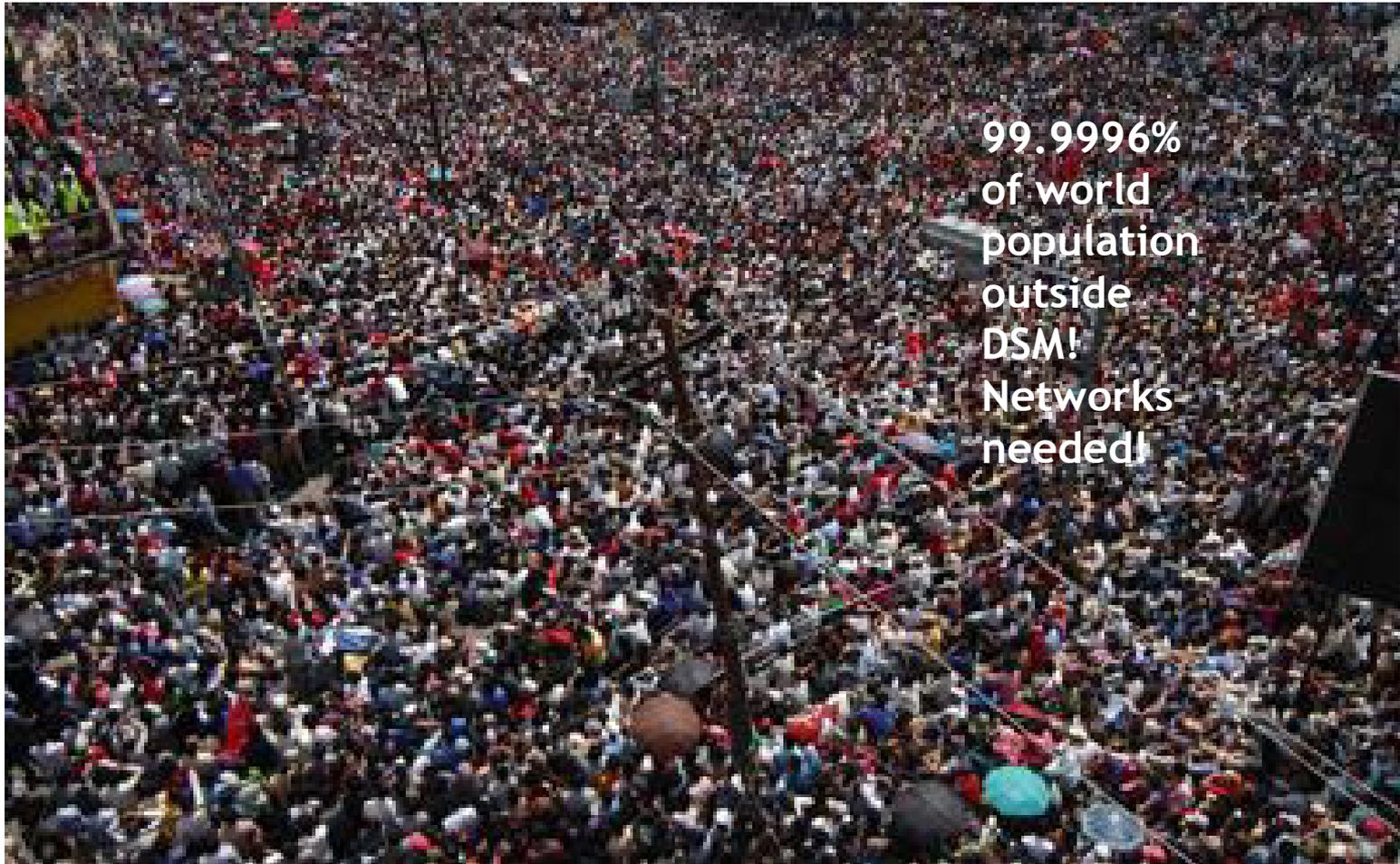
## Acquisitions & Partnerships

From  
portfolio  
transformation

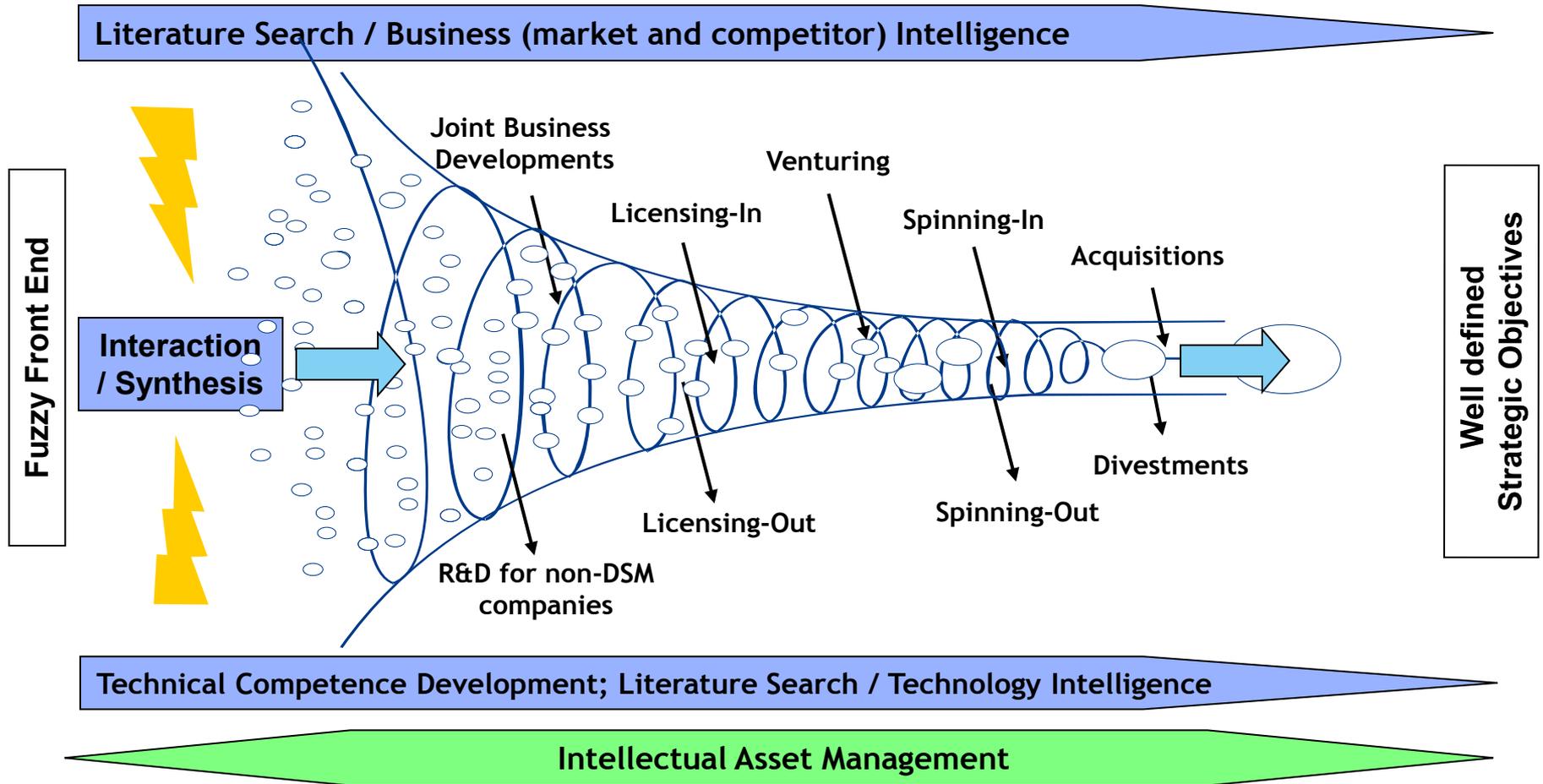


to  
growth

# Why do we need **Open** Innovation?



# Value Creation by Open Innovation



# Choose the right hunting areas!



# Accelerating and supporting innovation

## DSM Innovation Center

### New Business Development



EBA Biomedical



EBA Bio-based  
Products & Services



EBA Advanced Surfaces

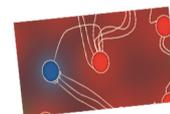


Business Incubator

### Enablers



Excellence in Innovation



CTO Office



Licensing



Venturing

# Accelerating and supporting innovation

## DSM Innovation Center

### New Business Development



EBA Biomedical



EBA Bio-based Products & Services



EBA Advanced Surfaces



Business Incubator

### Enablers



Excellence in Innovation



CTO Office



Licensing



Venturing

# DSM Venturing supports DSM's innovation and growth ambitions by providing venture capital to “start-up”-companies and partnering with them.

## Window to the world

Explore new emerging markets, technologies and products in order to enhance DSM's product portfolio, technology toolbox and business model's

## Strategic value

Add value internally and externally through facilitating strategic co-operations with start-ups

## Financial return

Create value by investing in and divesting start-up companies

# Investment criteria

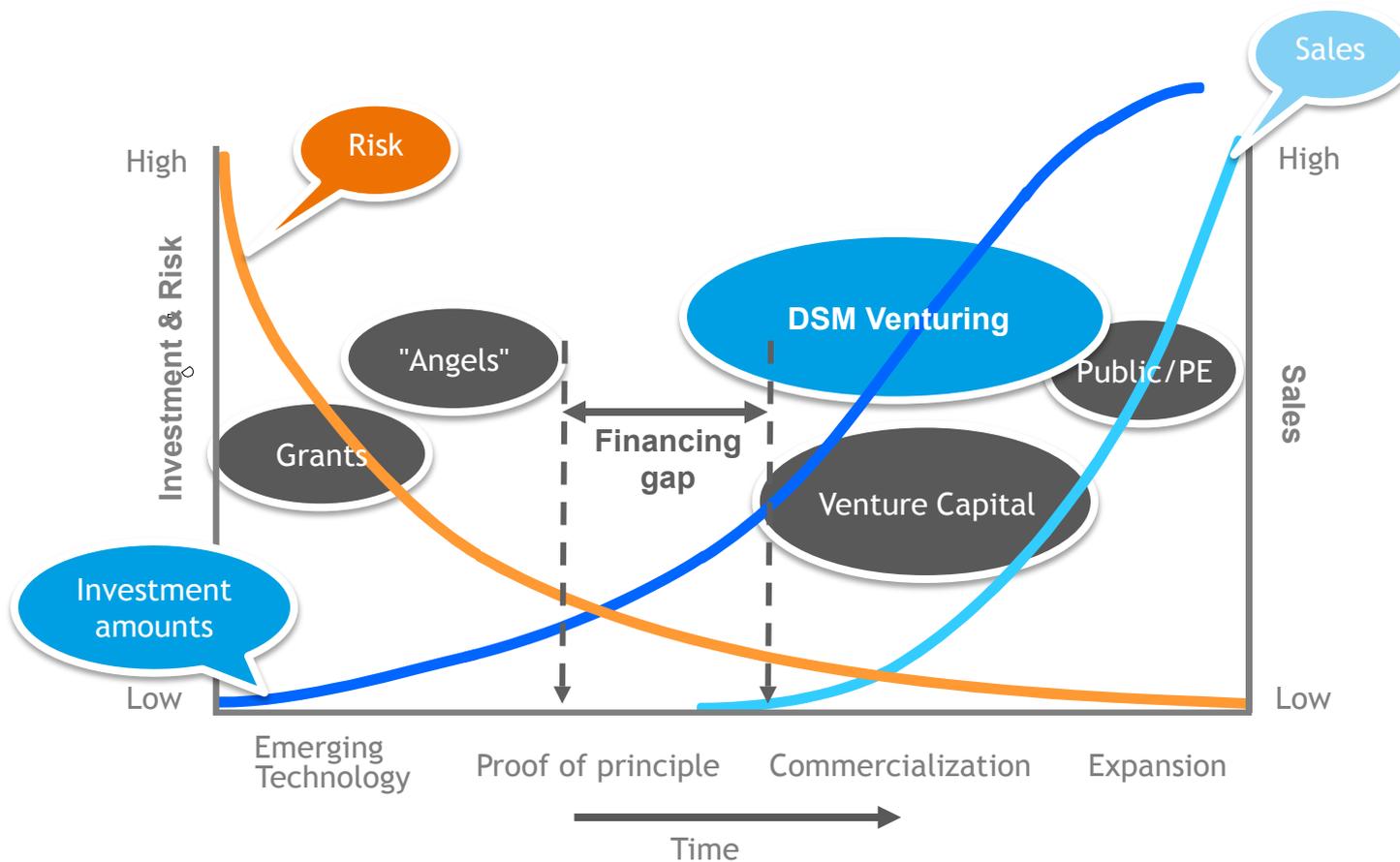
## 1st filter: Strategic relevance

- Fit with DSM's competence base?
- Strategic benefits for the business (and collaboration potential)?

## 2nd filter: Venture capital criteria

- Viable business proposition?
- Attractive return potential?
- Exit opportunities other than spinning-in?

# When does DSM Venturing invest?



# Summary Investment scope

- Companies in early stage to expansion stage, active in DSM strategic scope
- Typical initial investment: € 0.5 - 5 mln
- Minority participations typically a 10 - 25% stake
- Recognized potential for strategic cooperation with DSM Businesses
- Representation in board of start-up
- Global (focus on USA, EU, China and India)

# Strategic Cooperation

- Our investments in start-ups are meant to create mutual benefits:
  - We help the start-ups navigate successfully through DSM's global structures and will facilitate their linking in to our technology and business networks
  - We support start-ups with hands-on advise and share our experiences, e.g. in IP strategy; market intelligence; commercial contracting terms; technology assessments; second opinions; etc.
  - The start-ups 'partner' with one or more of our DSM businesses and thereby provide us with insights in and access to new technologies, new markets, new products, new business models, etc.
- DSM Venturing will be actively involved in the start-up's activities but always at 'arm's length' to make sure that they keep their identity, entrepreneurship, key people, agility, enthusiasm and business responsibility

# Track Record

- 40 direct investments since 2001; 23 still active in our current portfolio
- 17 divested:
  - 2 acquired by DSM businesses (LTP and TCG)
  - 2 sold to third party acquirers (Morphotek and OPM)
  - 2 sold back to the founders (Creagri and Terreco)
  - 1 successful IPO (Speedel)
  - 10 failed and were dissolved, liquidated, wound down
- Net financial result is positive - i.e. 'free' option generation!
- Partnerships realized with 30 portfolio companies in various forms and degrees (feasibility studies, joint development, licensing, distribution/marketing relations, supply relations)
- In addition, DSM Venturing facilitated similar partnerships with > 50 other start-ups which it scouted but did not invest in
- We scouted and screened more than 3000 companies which provided useful insights and complementary window-on-the-world for our businesses

# Renewables, enabling the bio-based economy

## LIFE SCIENCES & MATERIALS SCIENCES

Energy and resources security requires renewable energy

Renewable energy from residues & waste (biofuel, biogas), sun and wind

Demand for 'greener' products

Bio-based alternatives to oil-based products

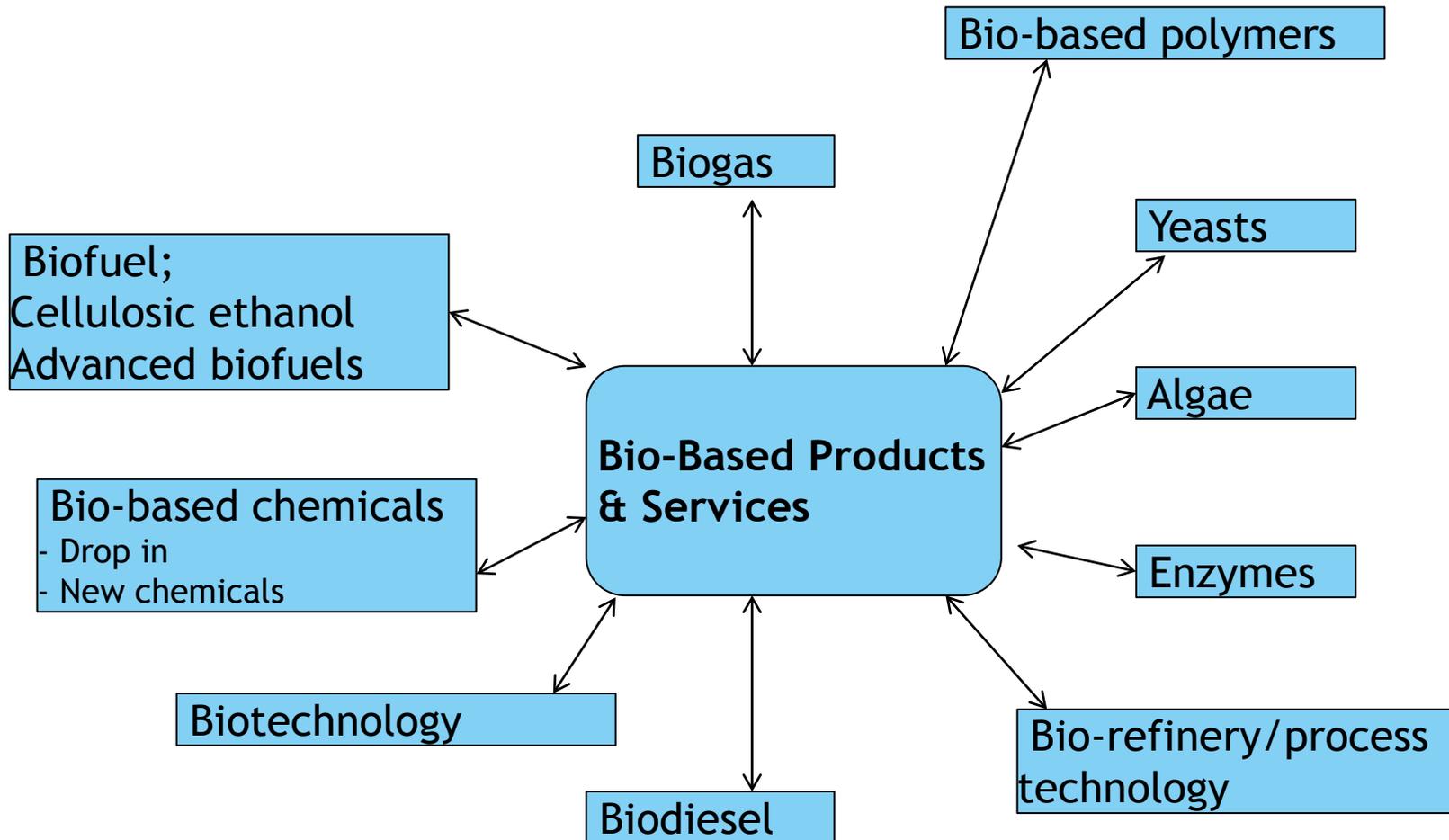


*"It can be calculated that by 2022 ~ 150-200 plants to produce cellulosic bio-ethanol from corn crop residue could be required in the US."*

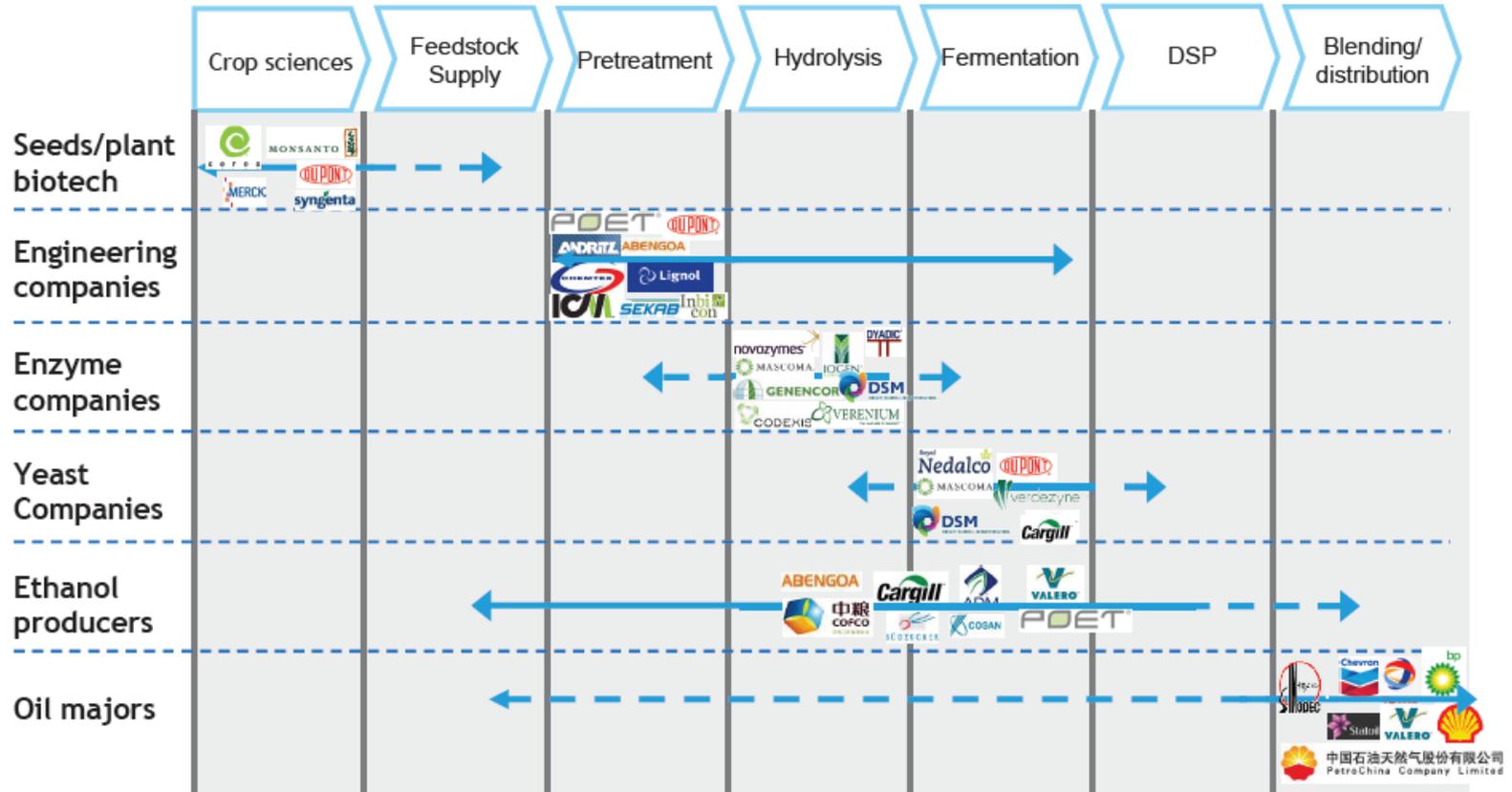


*"Nature takes 10,000 years to turn plant material into fuels. DSM can do that in a week."*

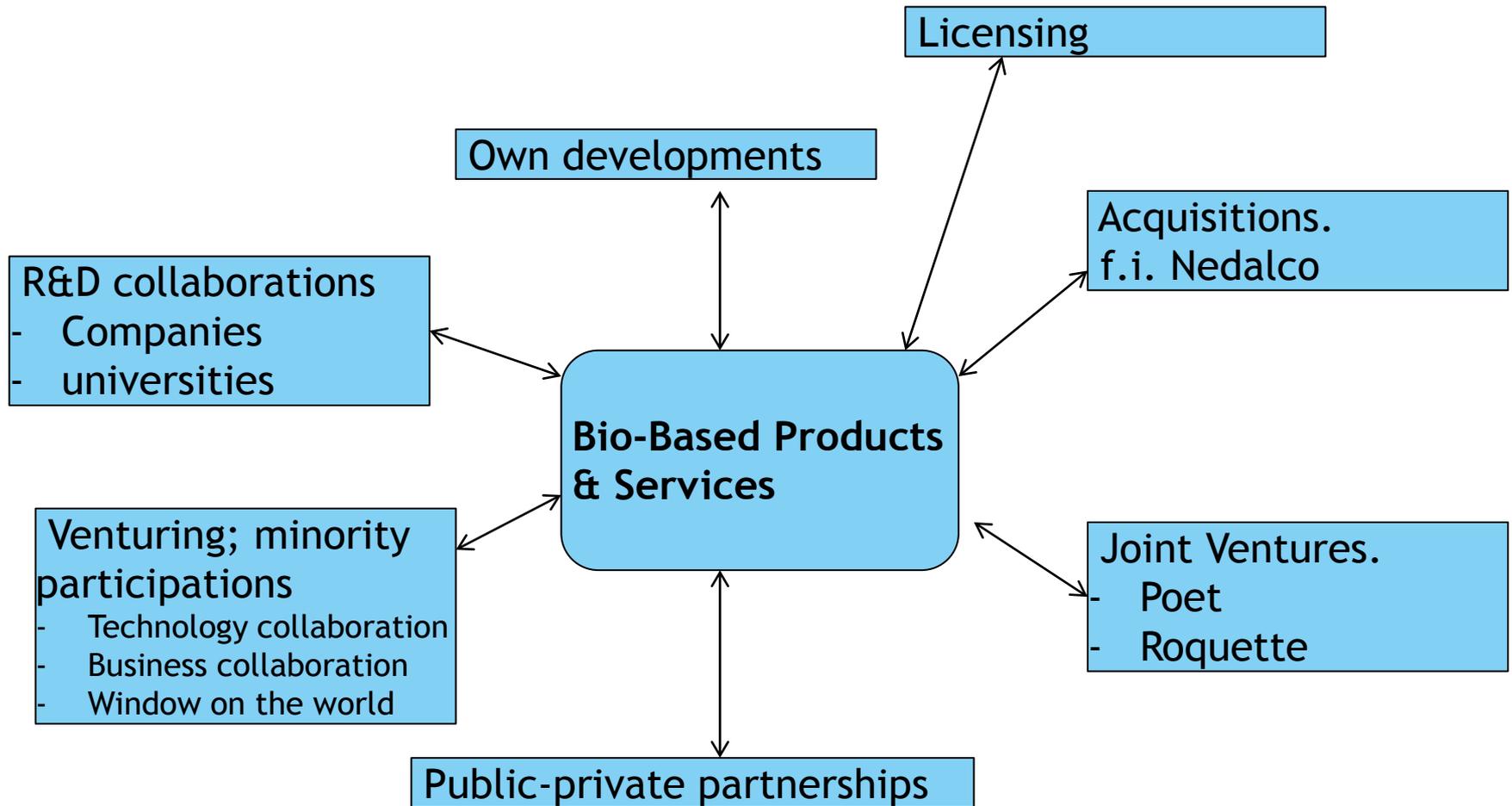
# The challenge



# In the value chain of bioethanol back- and forward integration is ongoing



# Open Innovation in action



# Venturing Portfolio Direct Investments

## Life Sciences



## Material Sciences



Red investments are related to BP&S



**BRIGHT SCIENCE. BRIGHTER LIVING.™**

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# Segetis™

*Better Products...  
Sustainably...From Renewable Feedstocks*

*Cora Leibig, PhD  
VP R&D*



**RENEW. REINVENT. SUSTAIN. CHANGE THE WORLD.™**

# Segetis Highlights

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**Renewable Source of Chemicals Addressing Large Market Opportunity**

**Platform of Tailored Products from Common Technology Base**

**Chemical-based Manufacturing Process Easily Scalable**

**First Validation Products In Market Today**

# Renewable Feedstock to Specialty Chemicals

## Step 1: Convert Renewable Biomass Feedstock Into Levulinic Acid (LA)

Cellulosic Biomass

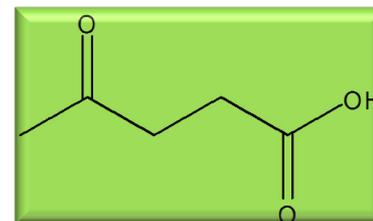


Sugar



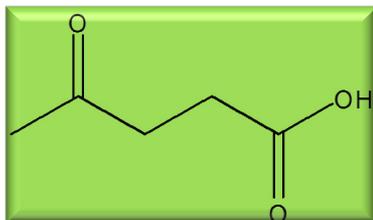
Multiple Process Technologies

Levulinic Acid (LA)



## Step 2: Convert LA to LA Ketals to Serve Various End Markets

Levulinic Acid (LA)



Segetis Patented Process / Products



# Commercial Products in Stores Today...

## Segetis Specialty Solvents

- Strong Solvency & Coupling Power
- Low to No Odor
- VOC Compliance in Cleaners, Coatings & Personal Care
- Non-Toxic
- Life-cycle advantages

**Method**  
Launched Products in 2010



**In Target stores today**



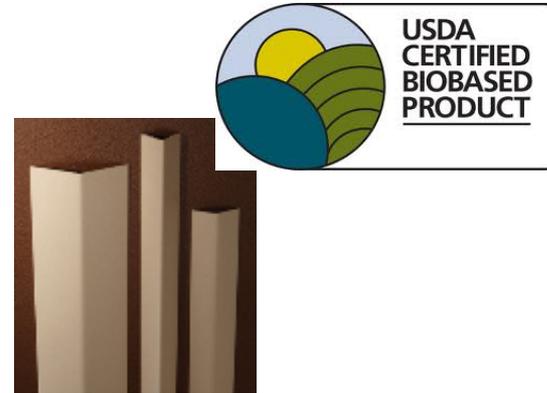
**Seventh Generation**  
Launched Products in 2012



# Commercial Products in Stores Today...

## Segetis Plasticizers

### In Inpro's Wall and Door Protection Products



**Global Adhesive Manufacturer -  
Trialing Segetis products for  
packaging applications**



# Building Production Experience & Capacity

## Segetis (Pilot Scale) - 2009



***0.25 Million lbs/yr***

**Objectives:**

- 1. Process development**
- 2. Support market validation**

## Demonstration Plant - 2012



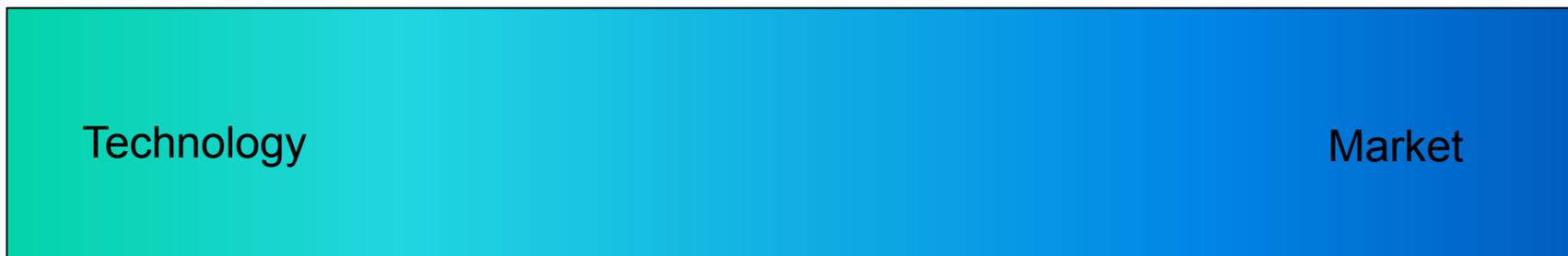
***3+ Million lbs/yr***

**Objectives:**

- 1. Demonstrate scale-up  
utilizing existing assets**
- 2. Supply Strategic Customers**

# Innovation for New Materials

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## **Inside-out**

New technology fuels  
market development

Challenge: select applications  
from a broad market space, then  
prove and develop product  
performance

## **Outside-in**

Market need fuels  
technology development

Challenge: select technologies  
from a broad chemistry space,  
then prove and develop product  
performance

Iterations are always necessary!  
Market demand is essential to  
justify capital and R&D investment

# Segetis Development Path

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- 2005-6

Driven by world need for sustainable, safer chemistry, Sergey Selifonov invents broad platform of compounds based on Levulinic acid, a feedstock projected by DOE to be broad and plentiful in the bio-based economy

- 2006

Segetis is founded with initial funds from Khosla Ventures, used to identify potential of the technology

- 2008

Several proof-of-concept products are developed for a range of applications; market focus areas determined by technical feasibility, market need, and market attractiveness

- 2009 +

Process development to scale production and lower costs

- 2009 +

Customer trials and introductions to refine product composition and performance requirements

- 2011 +

Development of toxicology dossiers on products with largest market potential

- 2011 +

Development of supply chain



# Motivating Safer Chemicals

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Development of new materials is costly and multi-faceted.

How GC3 members can help:

- Consolidate demand – where do your market needs overlap with others?
- Provide feedback on early-stage prototypes – may require confidentiality, poor quality, and incomplete cost and toxicology information
- Know your ingredients – what are the cost/performance trade-offs your formulation chemists make every day?
- Make sure your dreams really can come true – are you asking for a non-VOC that evaporates quickly at a low temperature?
- Motivate upstream – do your suppliers know you are looking for safer ingredients? Do you motivate them to look for alternatives?

The audio recording and slides shown during this presentation will be available to GC3 Members on the GC3 Website:

<http://www.greenchemistryandcommerce.org>

*Non- GC3 Member Attendees who would like to view these slides please contact Sarah Shields at [sarah\\_shields@uml.edu](mailto:sarah_shields@uml.edu)*



***SAVE THE DATE!***

**GC<sup>3</sup>** | **Green Chemistry & Commerce Council**

8th Annual **MAY 8-10•2013**  
**Innovators Roundtable**

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