

Strive to be „Leading in Innovation“

Morgan Stanley Innovation Call
Dr. Ulrich Kuesthardt (CIO)
July 15, 2019



Innovation strategy: How we're thinking ahead

Our mission

Leading in innovation

Linking innovation with customer proximity

- Efficient, global
- Targeted and fast
- Close to the customer
- Working with the customer

Focusing on innovation growth fields

- Integrated within Evonik's growth engines
- Targets for issues and markets that are new to Evonik
- Nucleus for medium- and long-term sales growth

One step ahead of social developments

- Open, sustainable, digital
- Anticipating long-term customer expectations
- Venture capital
- Corporate Foresight

Innovation KPIs for FY 2018

~50%

patent-driven sales

4.6

patent applications
filed per week

25

Investments Evonik venture capital
has entered into¹

3.1%

R&D rate²

€459 m

R&D expenditure

1. Since 2012, as of March 2019 | 2. Group R&D rate >3% since 2013 (of sales)

FOCUS

Innovation Growth Fields



Growth Engines



Health & Care



Smart Materials



Animal Nutrition



Specialty Additives

Advanced Food Ingredients



Additive Manufacturing



Sustainable Nutrition



Cosmetic Solutions



Membranes

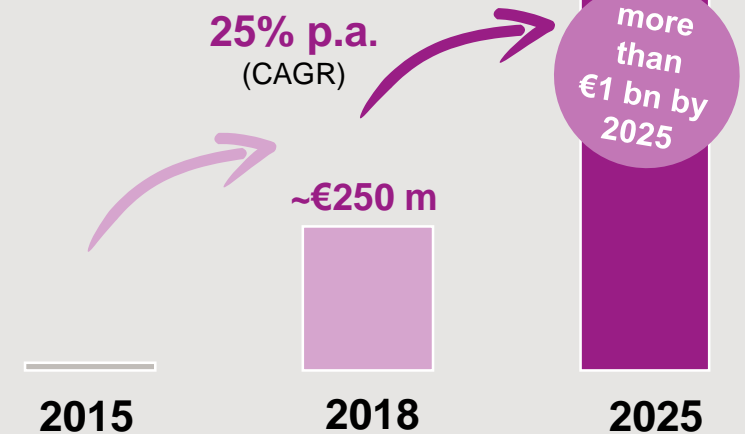


Healthcare Solutions



Innovation Growth Fields

Additional contribution to sales from Innovation Growth Fields



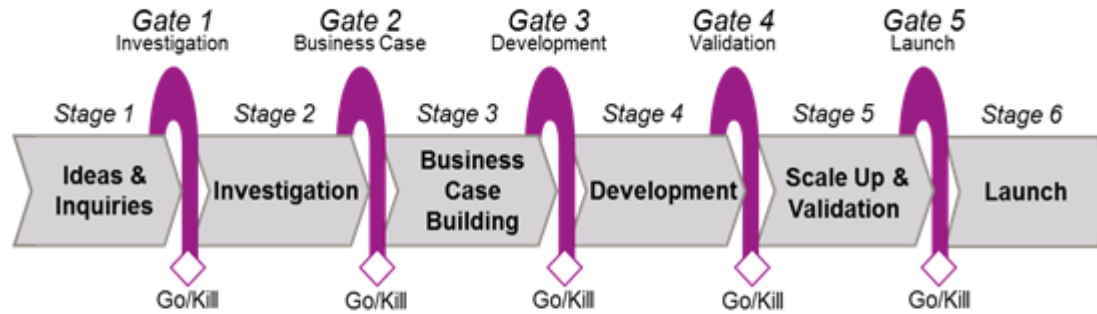
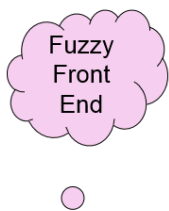
Managing Innovation

Best Practice: I2P³ Process



(Idea-to-Profit)³ Process (I2P³)

Market Needs



- Freedom of time
- Fail fast
- Virtual Collaboration Platform

Idea Portfolio

Inno Project Portfolio



Buckets	Profit		Planet		People	
Categories	ECV	CF	GHG	Water	Waste	SVA

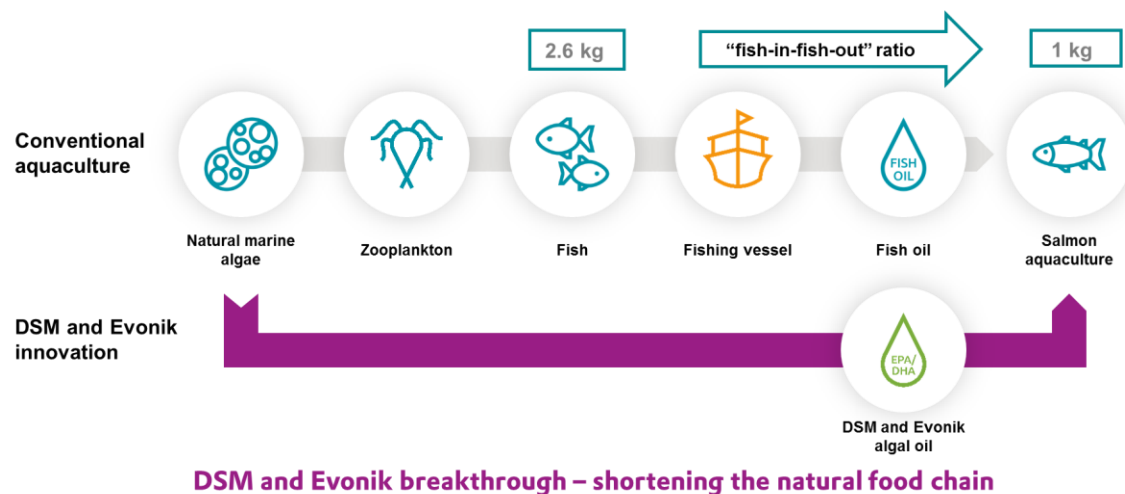
Example

from Innovation Growth Field
Sustainable Nutrition

The Animal Nutrition Growth Engine

The challenge: Sustainable nutrition in aquaculture

The solution: Combining omega-3-fatty acids DHA and EPA from natural marine algal oil produced by fermentation to replace fish oil with vegetable based diet concepts and supplemental amino acids to replace fishmeal



1 kg of our EPA and DHA algal oil
can replace **60 kg** wild catch fish

Meeting roughly **15%** of the EPA and DHA
demand of the **global salmon industry**

Example

from Coating Additives business

Coating Additives

The challenge: More complexity, increasing legislation, shorter product lifecycles, demand for innovation

The solution: COATINO™ - first digital lab assistant for the coatings industry

Formulating a coating is complex...
...and time consuming

- **Sample calculation:**

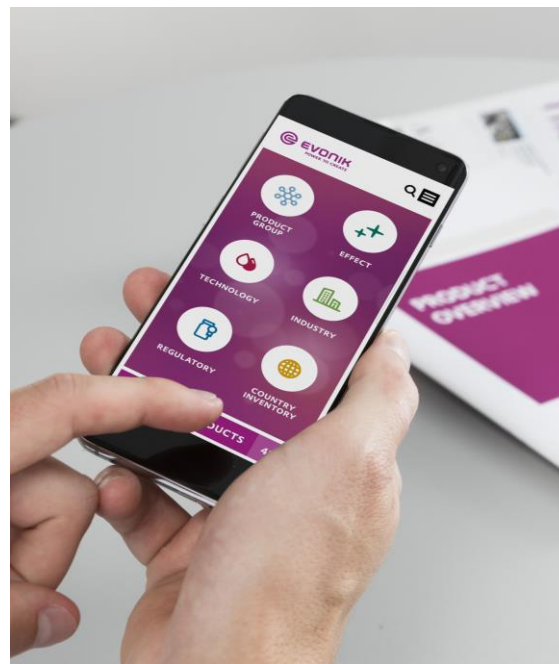
10 solvents x 10 binders x 10 pigments x 10 additives
= **10,000** possible combinations*

- **Manually:**

> **10 years**

- **High Throughput Equipment (HTE):**

< **6 months****



The next steps...

- **“Early access”** program
- **Joint development** and pre-testing with customers
- Official **launch** in **2020**
- **Continuous development** in 2021 and beyond

* Changes in mixing ratios are not taken into account. Therefore many more combinations would be tested under real conditions.

** Standard samples

Example

from Innovation Growth Field
Healthcare Solutions

The Health & Care Growth Engine

The challenge: Increased need for medical devices due to longer lives

The solution: Biodegradable polymer composites for medical devices

- Specialty polymers such as Evonik's RESOMER® and VESTAKEEP® already play an important role as **implant materials**
- **Project house „Medical devices“** has built up extensive competencies in the area of orthopedic surgery. It was transferred to the operative business in 2018 and first sales have been already achieved
- Evonik well positioned to become a leading material supplier and development partner when it comes to **patient-friendly medical device solutions**



Innovation in videos...

Just follow the links to get further insights into...

Veramaris

▶ [French retailer Supermarché Match launches sales of salmon fed with Veramaris' algal oil](#)

Coatino

▶ [COATINO™ - The first digital lab assistant of the coatings industry | Evonik](#)

Membranes

▶ [SEPURAN® Green – Evonik's hollow fiber membranes for efficient biogas upgrading | Evonik](#)

Rheticus

▶ [How to turn carbon dioxide into green chemicals | Evonik](#)

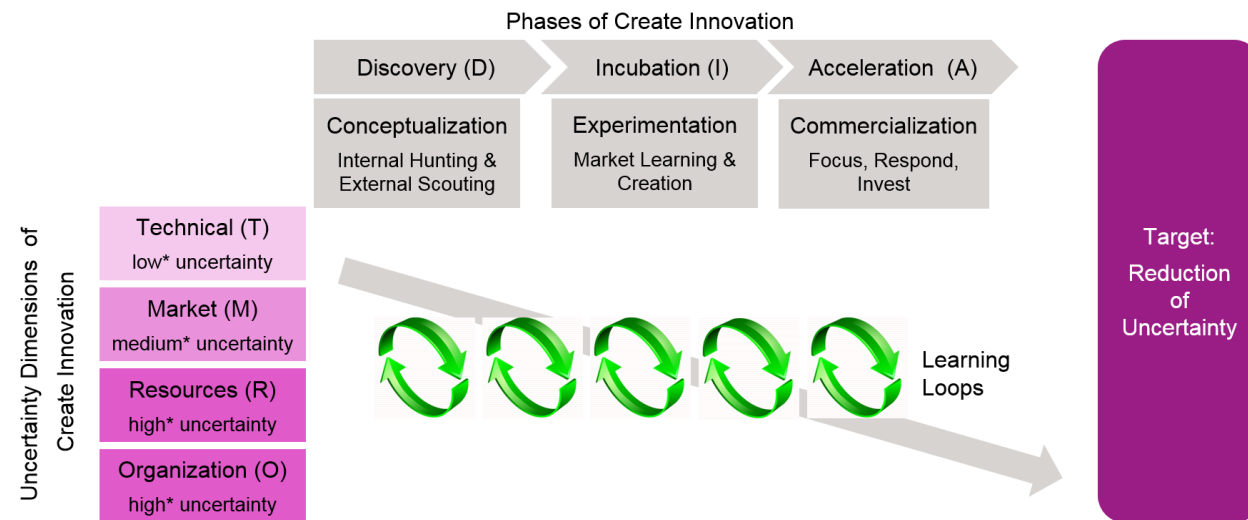


EVONIK

POWER TO CREATE

Managing Innovation

Best Practice: Disruptive Innovation Process (via DIA and TMRO)



- **Speed**
Fast direction changes, instead of pure milestones follow-up
- **Mindset**
requires different mindset: asking for the unknown
- **Learning**
Continuous market/customer feedback

*based on internal qualitative assessment facilitated by Gina O'connor (rInnovation)

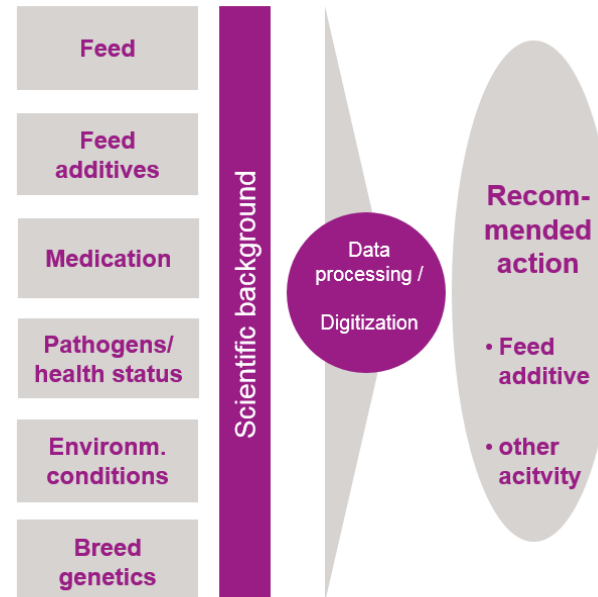
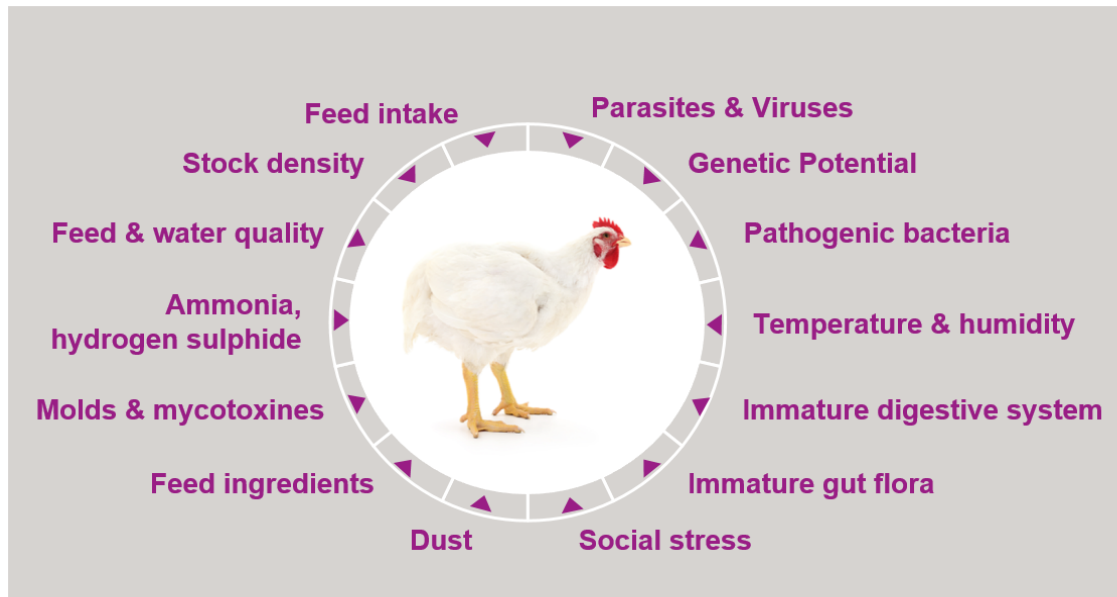
Example

from Innovation Growth Field
Sustainable Nutrition

The Animal Nutrition Growth Engine

The challenge: Healthier and more efficient livestock farming to reach genetical potential of animals

The solution: Holistic approach by using big data, diagnostic tools, sustainable nutrition and knowledge for precision livestock farming



© shutterstock / Tsekhmister

Example

from Innovation Growth Field
Healthcare Solutions

The Health & Care Growth Engine

The challenge: Selective release of modern active ingredients (biopharmaceuticals, etc.)

The solution: Expand portfolio by acquiring technologies and combining competences

EUDRAGIT®

Established Evonik product

RESOMER®

Boehringer Ingelheim (2011)

LAKESHORE BIOMATERIALS™

+ formulation capabilities

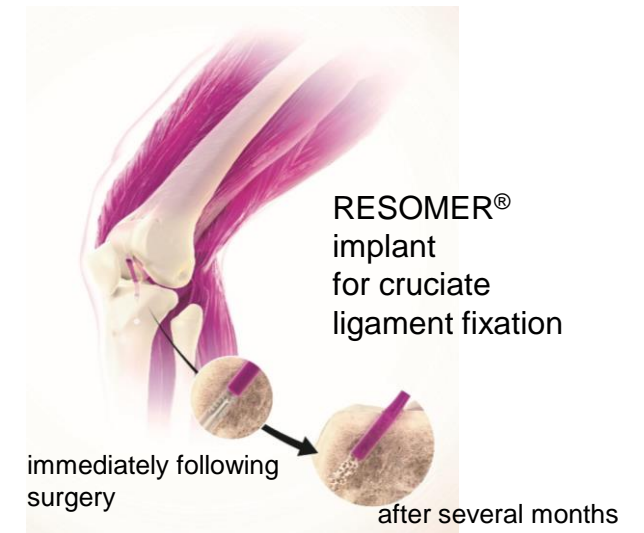
Surmodics Inc. (2012)

Evonik Vancouver laboratories

Lipid nanoparticle drug delivery systems

Transferra Nanosciences Inc. (2016)

+ Selected venture capital investments (e.g. Vivasure)



Evonik as an enabler and strategic partner for the pharma industry

Example

from Innovation Growth Field
Cosmetic Solutions

The Health & Care Growth Engine

The challenge: Drive for sustainable and versatile bio-based surfactants

The solution: Biotechnological production of unique and sustainable glycolipids

- RHEANCE® Glycolipids: **100% nature-identical biomolecules**, produced by **fermentation** from low-cost renewable feedstocks
- **Set new standards** by combining high performance in cleansing and solubilizing with excellent skin compatibility and eco-profile
- Recognized as **innovative step change** in cosmetic ingredient technology: Winner of multiple awards at leading industry events
- **Large scale production** on track



Example

from Innovation Growth Field
Membranes

The Smart Materials Growth Engine

The challenge: Reduce high energy cost for gas separation

The solution: A membrane system that uses resources efficiently; all key aspects adaptable

- **Superior gas separation:** biogas, helium, nitrogen, hydrogen, and natural gas
- **Separation solution:** consisting of the polymer, membrane, module, and application or process; entire supply chain covered
- **Open innovation:** basic system developed in house and adapted to a given application in collaboration with customers (example: Linde/helium extraction)

**SEPURAN®
Green (biogas)**

Established business



**SEPURAN® Noble
SEPURAN® N2**

Market penetration:
helium and nitrogen



**Hydrogen,
natural gas**

Technology
development
and
market entry



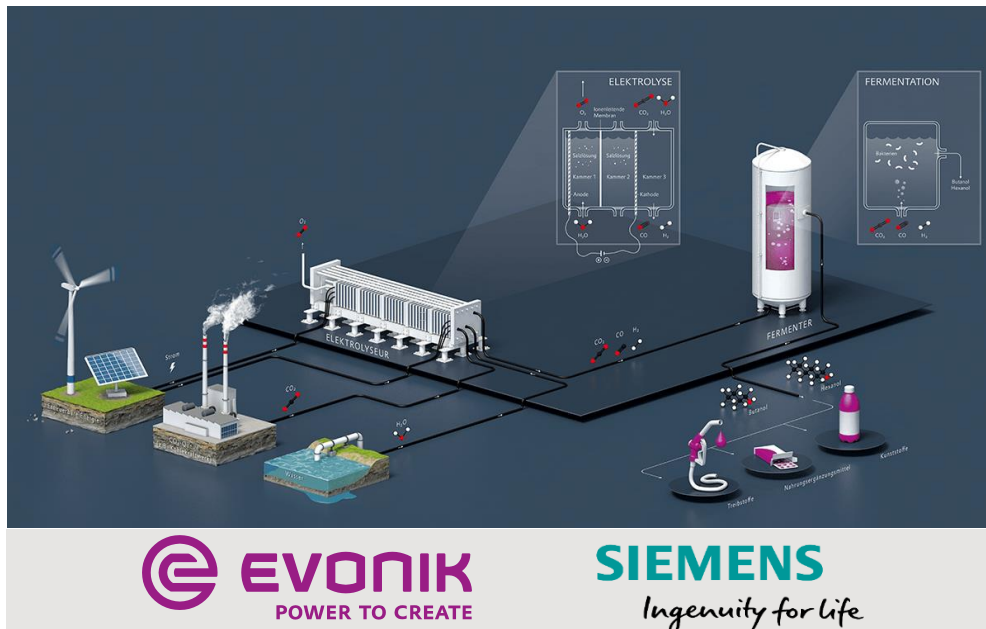
Example

New Technology Platform:
Artificial Photosynthesis

Combining competences: electro chemistry & biotechnology

The challenge: Sustainable process using carbon dioxide and electrical energy

The solution: Rheticus (Artificial Photosyntheses)



From idea to
pilot plant
in less than
5 years:

start-up
end of 2019

Back-up – Evonik Venture Capital (1/3)

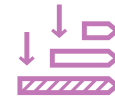
Focus on Growth Engines, Innovation Growth Fields and Digital Transformation

Investments driven by strategic goals and financial returns



Investment Strategy

- Focus on **Growth Engines** and **Innovation Growth Fields**
- Opportunities that support and enable Evonik's **digital transformation**
- Enable early access to **Tech M&A** candidates



Investment Stages

- Early stage investments (initial investment of €0.5 - 3m)
- Later stage investments (initial investment of €3 - 7m)

Fund Size: €150 million



Investment Size

Maintains a **minority share** and typically **invests up to € 15 million** per company

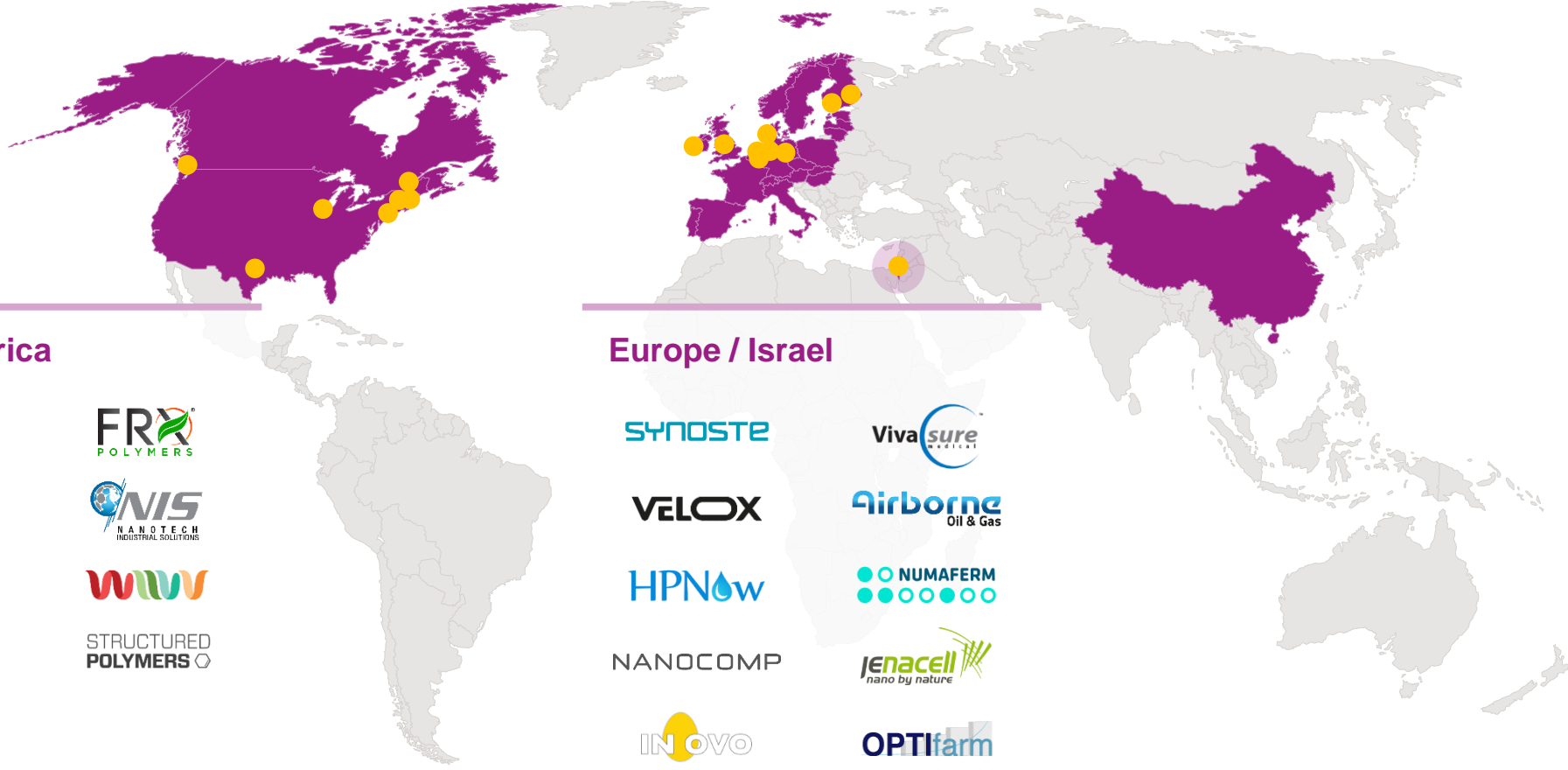


Investment Geography

Global investment strategy with focus on **Europe, North America and Asia**

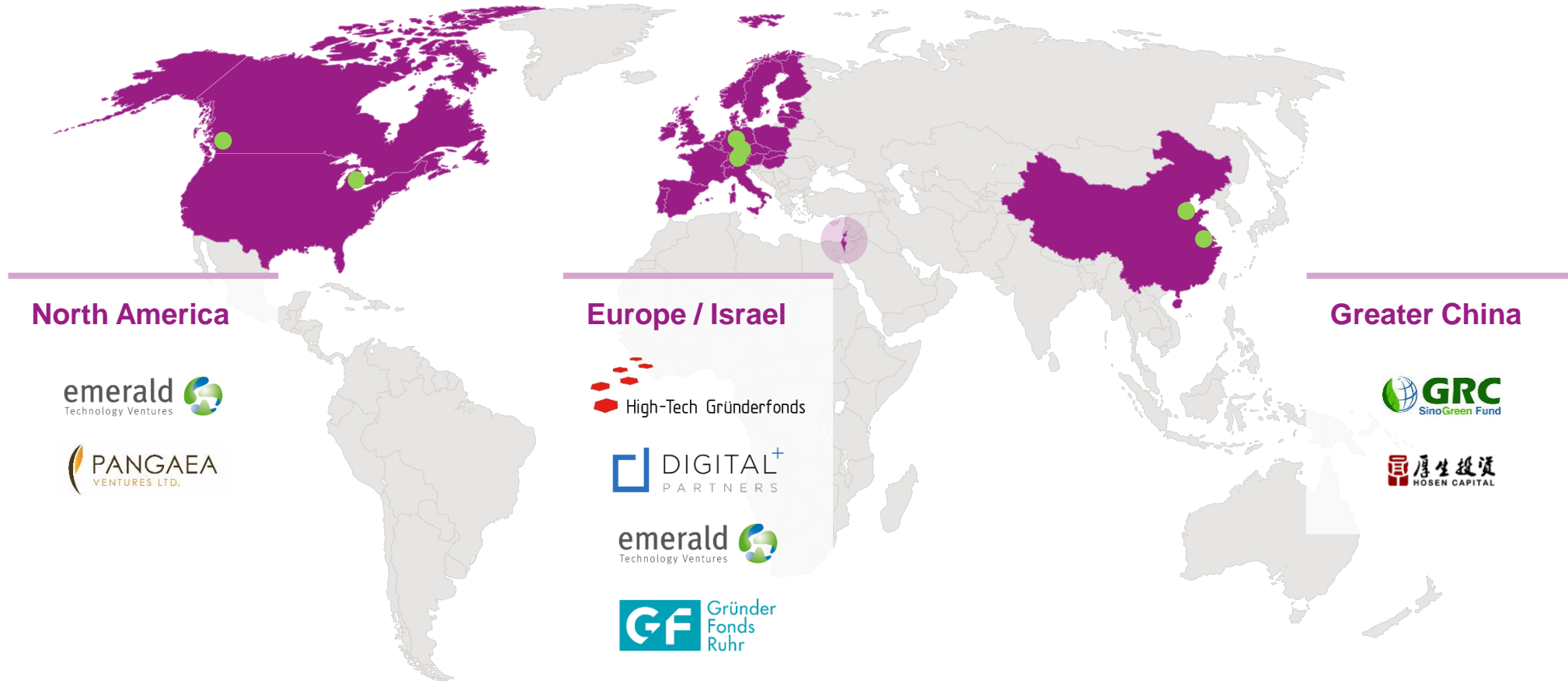
Back-up – Evonik Venture Capital (2/3)

Direct investments provide preferential access to start-up's and technology



Back-up – Evonik Venture Capital (3/3)

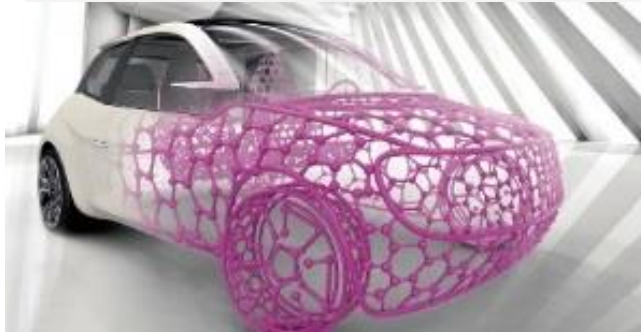
Eight fund investments provide access to emerging technologies



Back-up – E-Mobility (1/2)

Resource Efficiency's approach towards e-mobility

From...



- **Automotive as Resource Efficiency's largest end market** (~20% of sales), with strong exposure to tires, lubricants and plastics and composites

Resource Efficiency catching significant opportunities of e-mobility trend, while balancing downside potential

- **~20%** of revenue in 2018 into automotive industry



To...

- **Automotive will stay the largest end market** and is growing with Resource Efficiency average growth rate
- **Key material supplier to enable e-mobility trend**
- **Focus higher amount of resources** in R&D, AT and M&S towards new upcoming opportunities and risks
- A consistent and Resource Efficiency wide aligned perspective and market communication towards e-mobility

- **~20%** of revenue in 2027, incl. additional e-mobility opportunities

Back-up – E-Mobility (2/2)

Significant additional sales opportunities



Opportunities arising from e-mobility ...

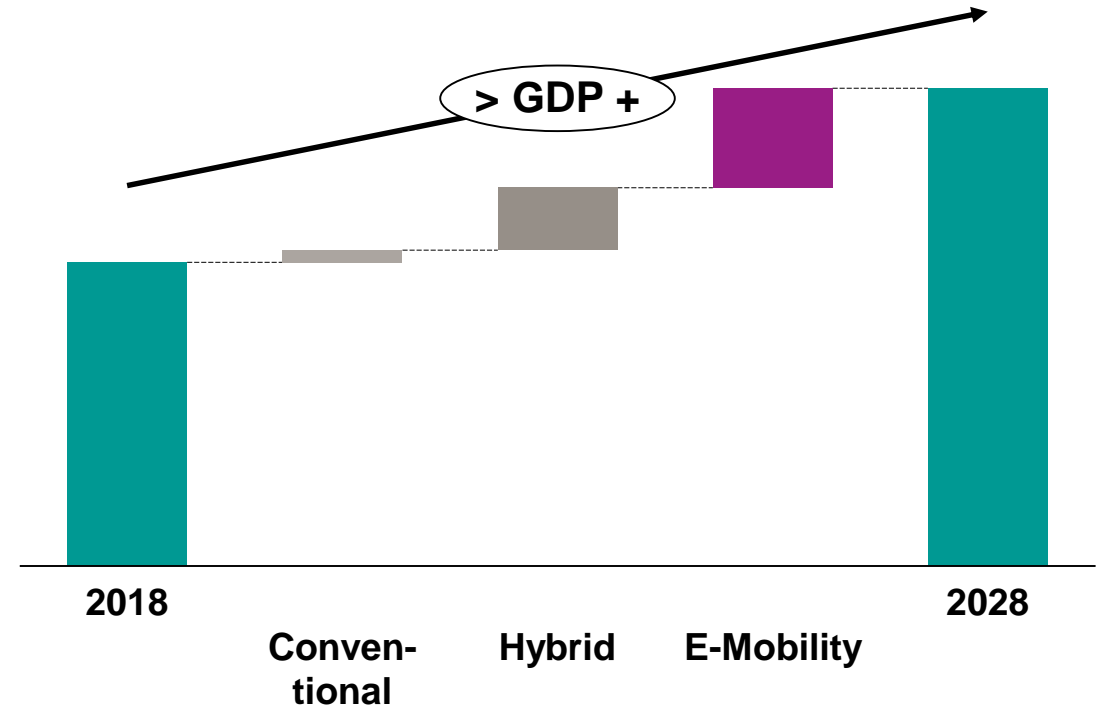
Plastics and composites (e.g. PA 12 or ROHACELL®)
Cooling lines, charging and high voltage cables

Lubricants (e.g. Additives like DYNAVIS® or DRIVON™)
Cooling fluids and e-motor greases, hybrid transmission

Tires (e.g. Silica like ULTRASIL®)
Reduced rolling and higher abrasion resistance

Adhesives & Sealants (e.g. Polyesters like DYNACOLL®)
Gap fillers for batteries, noise reduction, vibration/harshness

Additional sales potential in auto end market 2018-2028 (in €m)



Evonik Sustainability Strategy and Targets

Sustainability as core pillar of Evonik's operating businesses

Value chain and products



- **94%** of sales covered by **sustainability analysis**¹
- **~70%** of sales covered by **Life Cycle Management** analyse
- Founding member of “Together for Sustainability” initiative:
~80% of purchasing volume covered by **TfS** assessments
- **50%** of sales from **resource-efficient** products²
- **>80%** of sales contribute to **UN Sustainable Development Goals (SDGs)**

Environment



Targets 2004 – 2014 ✓

- Reduction of
 - specific greenhouse gas emissions (**GHG**) emissions by **20%** ✓
 - specific **water intake** by **20%** ✓

Targets 2013 – 2020

- Reduction of
 - specific **GHG** emissions by **12%**
 - specific water intake by **10%**
- **Evonik SUSTAINABILITY STRATEGY 2020+**
 - Reduction of absolute **GHG emissions by 50%** until 2025 (base year: 2008)
 - Internal **CO₂ pricing** taken into account for investment decisions
 - Introducing worldwide **water management system**

1. Methodology available at Evonik website; 2. Products that make a measurable contribution to improving resource efficiency in the use phase

Back-up – Sustainability (2/3)

More than 80% of sales contribute to UN Sustainable Development Goals SDGs

2017: Our contributions to the SDGs

<https://corporate.evonik.com/en/responsibility/unsustainabledevelopmentgoals>



2018: Most relevant SDGs for the Evonik Group



Back-up – Sustainability (3/3)

Broad-based resource-efficient applications portfolio

50% of sales generated with products for resource-efficient applications¹

Product examples for **Insulation & Circular Economy**

POLYVEST® HT

Sealing compounds for insulating glass windows (triple glazing)



VESTENAMER®

Process additive that allows rubber waste to be processed to low-noise asphalt



PU-Additives

Additives for furniture applications and the automotive industry (low VOC)



CALOSTAT®

Purely mineral high-performance insulation material, fully recyclable and incombustible



Product examples for **Mobility**

Silica-organosilane

Reinforcing system for „green tire“ technology



DYNAVIS®

Oil additives for energy-efficient hydraulic fluids



ROHACELL®

Light-weight technology for automotive and aircraft industry



DRIVON™

Technology for cost-efficient engine oils and transmission fluids



Product examples for **Renewable Energies**

Catalyst NM 30

Catalyst enables cost-efficient biodiesel production



Crosslinkers, silica, oil additives, silicone epoxy resins for wind power



SEPURAN®

Customized hollow-fibre membranes for efficient biogas purification



TAICROS® Crosslinkers

Used for photovoltaic cell encapsulation



1. Products that make a measurable contribution to improving resource efficiency in the use phase