

# Strive to be „Leading in Innovation“

Morgan Stanley ChemTech Day 2019  
May 22, 2019, London



# Leading in Innovation

## Ambitious targets, clear strategy and inspiring culture



### Innovation Targets

- Increase of innovation pipeline value
- **16%** contribution of innovation to sales/profit by **new products** and new/improved processes
- More than **€1 bn additional sales** through innovation by 2025



### Innovation Strategy

- Balanced innovation portfolio management
- **Fostering disruptive innovations:** Innovation Growth Fields
- **Open innovation approach** by partnering and **venture capital** investments
- Truly global



### Innovation Culture

- Guiding principles of innovation (trust, openness, speed, performance)
- Focus on **customer needs**
- **Fostering entrepreneurship** and deal with setbacks

## Leading in Innovation

# Innovation KPIs for 2018

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**~50%**  
patent-driven sales

**4.6**  
patent applications  
filed per week

**25**  
Investments Evonik venture capital  
has entered into<sup>1</sup>

**3.1%**  
R&D rate<sup>2</sup>

**€459 m**  
R&D expenditure

**12.4%**  
sales from new products and  
applications<sup>3</sup>

1. Since 2012, as of March 2019 | 2. Group R&D rate >3% since 2013 (of sales) | 3. Younger than 5 years

# FOCUS

## Innovation Growth Fields



### Growth Engines



Health & Care



Smart Materials



Animal Nutrition



Specialty Additives

Advanced Food Ingredients



Additive Manufacturing



Sustainable Nutrition



### Innovation Growth Fields

Cosmetic Solutions



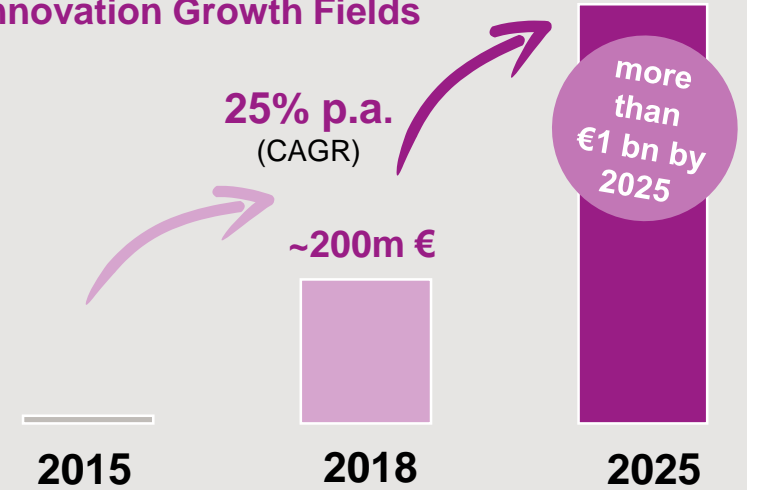
Membranes



Healthcare Solutions



### Additional contribution to sales from Innovation Growth Fields



# INNOVATION

# TRENDS

How we do it



**Sustainable Solutions**  
(resource efficient, renewables,  
biotech)

The graphic features a globe with green arrows forming a circular path around it, symbolizing sustainability and resource efficiency.



**Innovation  
Partnering**  
(collaboration,  
VC, M&A)

The graphic shows a stylized human head profile with a network of dots and lines inside, representing collaboration and innovation.



**Biotech  
Competence**

The graphic displays a blue and green DNA double helix structure against a background of hexagonal patterns, representing biotechnology.



**Speed**  
(shorter innovation cycles)

The graphic shows a speedometer with a needle pointing towards the right, overlaid with digital data and network lines, symbolizing speed and shorter innovation cycles.



**Value Added  
Services**  
(digital solutions,  
new business  
models)

The graphic features a globe with various digital icons and data points, representing value-added services and digital solutions.

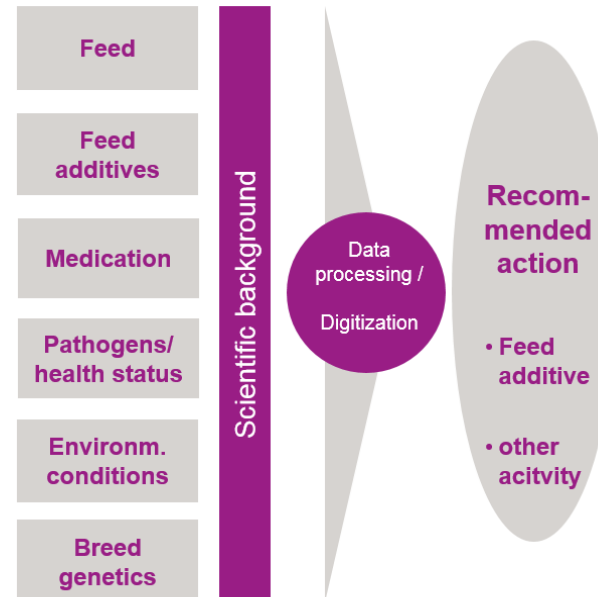
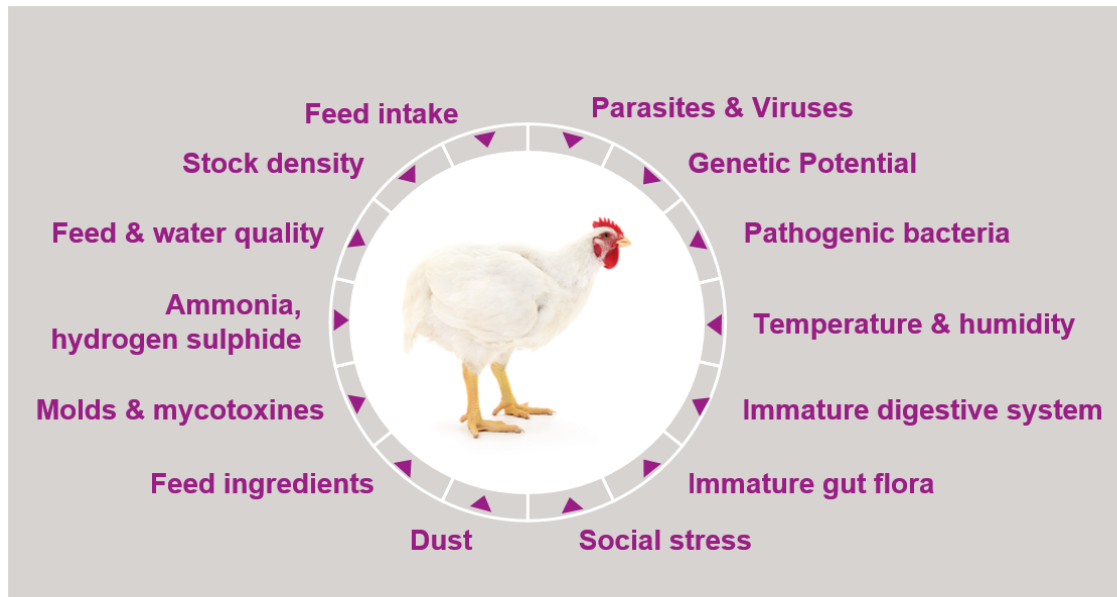
# Example

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



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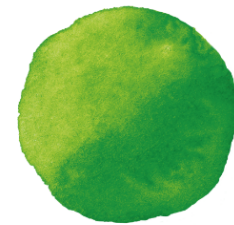
# Example

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



# veramaris

A JOINT VENTURE OF DSM AND EVONIK

Start-up of commercial production planned for mid 2019

# 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

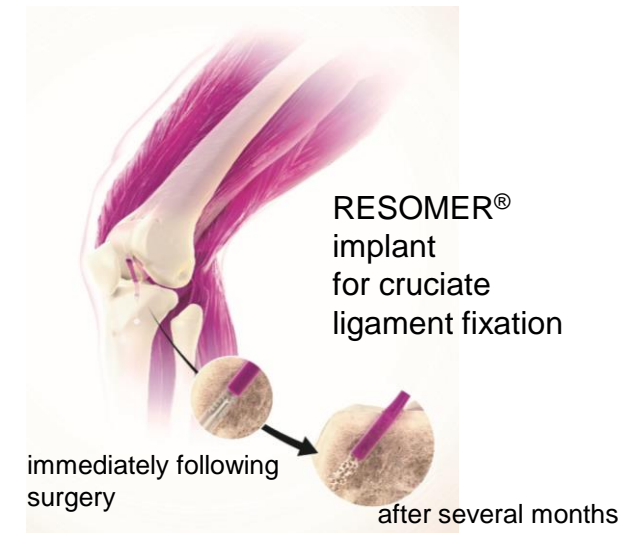
Surmodics Inc. (2012)

**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  
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**



# 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

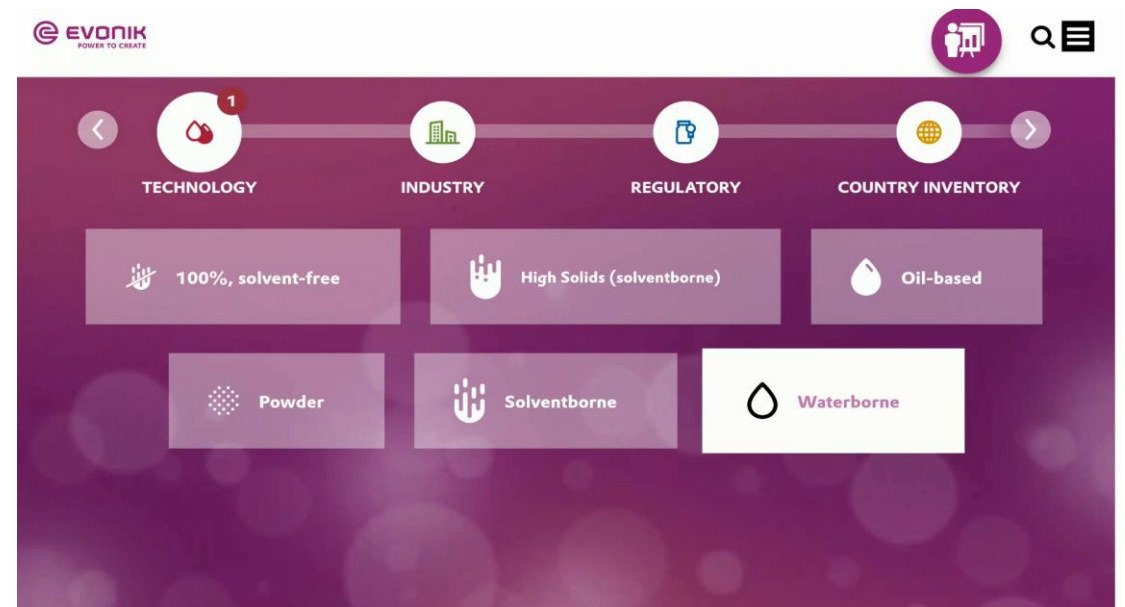
from Coating Additives business

## Coating Additives

**The challenge:** Increasing legislation and regulation, more and more complexity, shorter lifecycles

**The solution:** First digital lab assistant for the coatings industry

- Voice-controlled, digital lab assistant
- One, cloud-based **multi-channel** platform
- Available **everywhere** and **any time** – access via smartphones, tablets, laptops
- Access to **database from HTE plant** (Evonik's fully automated testing plant for coating formulations)
- To be **launched** early **2020**



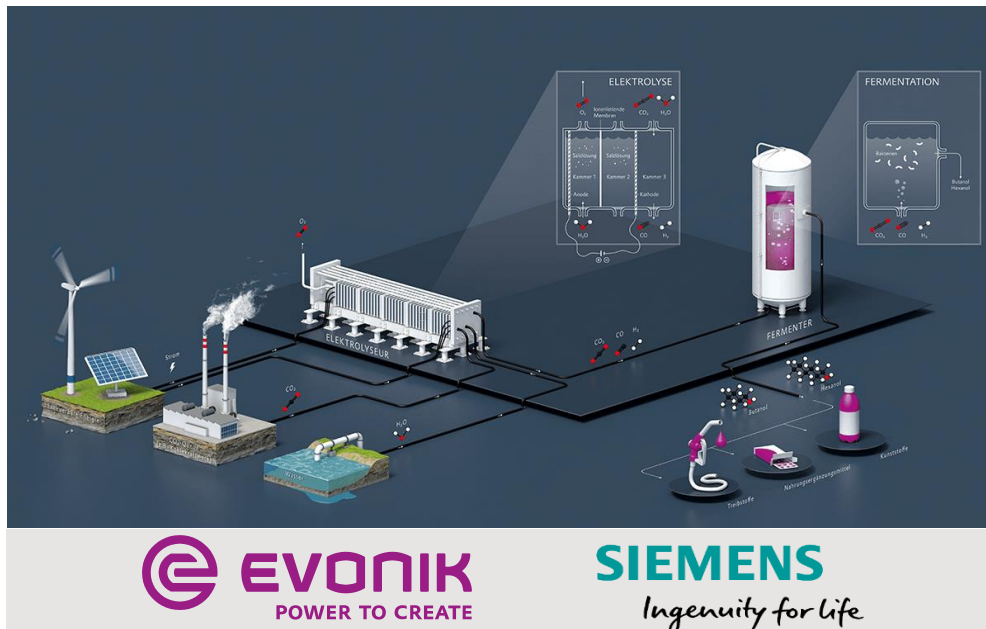
# Example

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

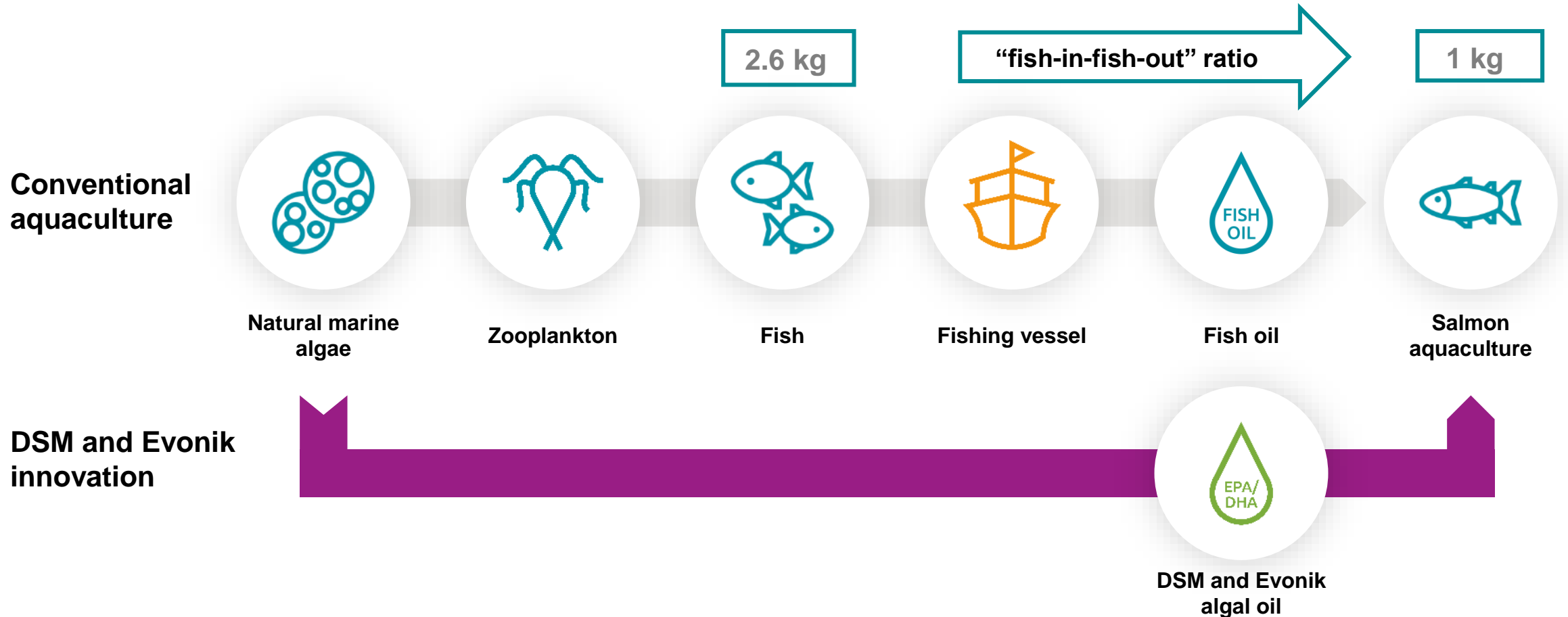


**EVONIK**

**POWER TO CREATE**

## Back-up – Veramaris (1/3)

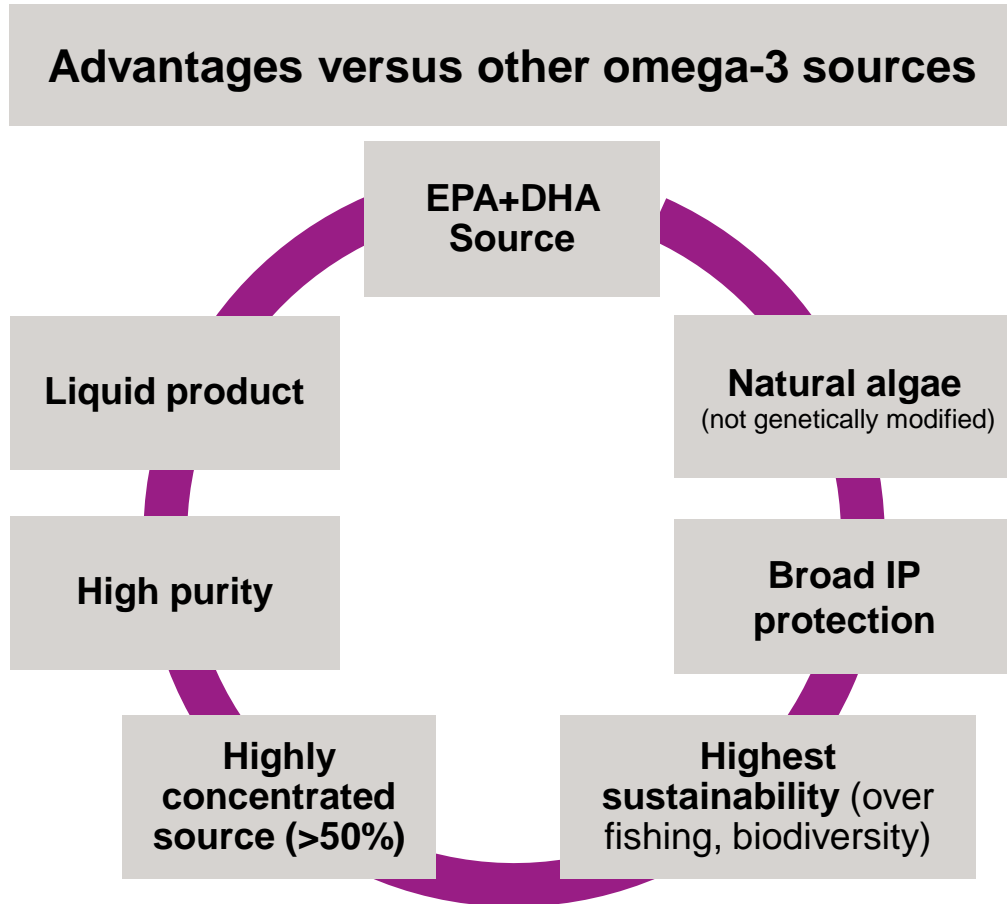
Natural marine algal oil is a sustainable alternative solution for EPA and DHA



**DSM and Evonik breakthrough – shortening the natural food chain**

## Back-up – Veramaris (2/3)

Algal oil as a high-quality source of omega-3 with many advantages



**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**





## Back-up – Veramaris (3/3)

New standard in aquaculture thanks to superior product properties

	Fish oil standard	DSM and Evonik breakthrough
EPA	✓	✓
DHA	✓	✓
EPA + DHA (%)	20% – 28%	≥ 50%
Product form	Oil: Typically derived from anchovies, sardines, herring, sprat, capelin, menhaden	Oil: Derived from <i>Schizochytrium</i> sp. algae
Handling properties	+	+
Concentration of EPA and DHA	+/-	+++
Oxidation stability	+/-	++
Absence of dioxins and PCBs	-	+++
GMO status	None	None
Supply security	+/-	+++
No price volatility	-	+++
High flexibility in feed formulation	+/-	+++

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

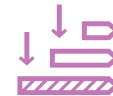
## Focus on Growth Engines, Innovation Growth Fields and Digital Transformation

### 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

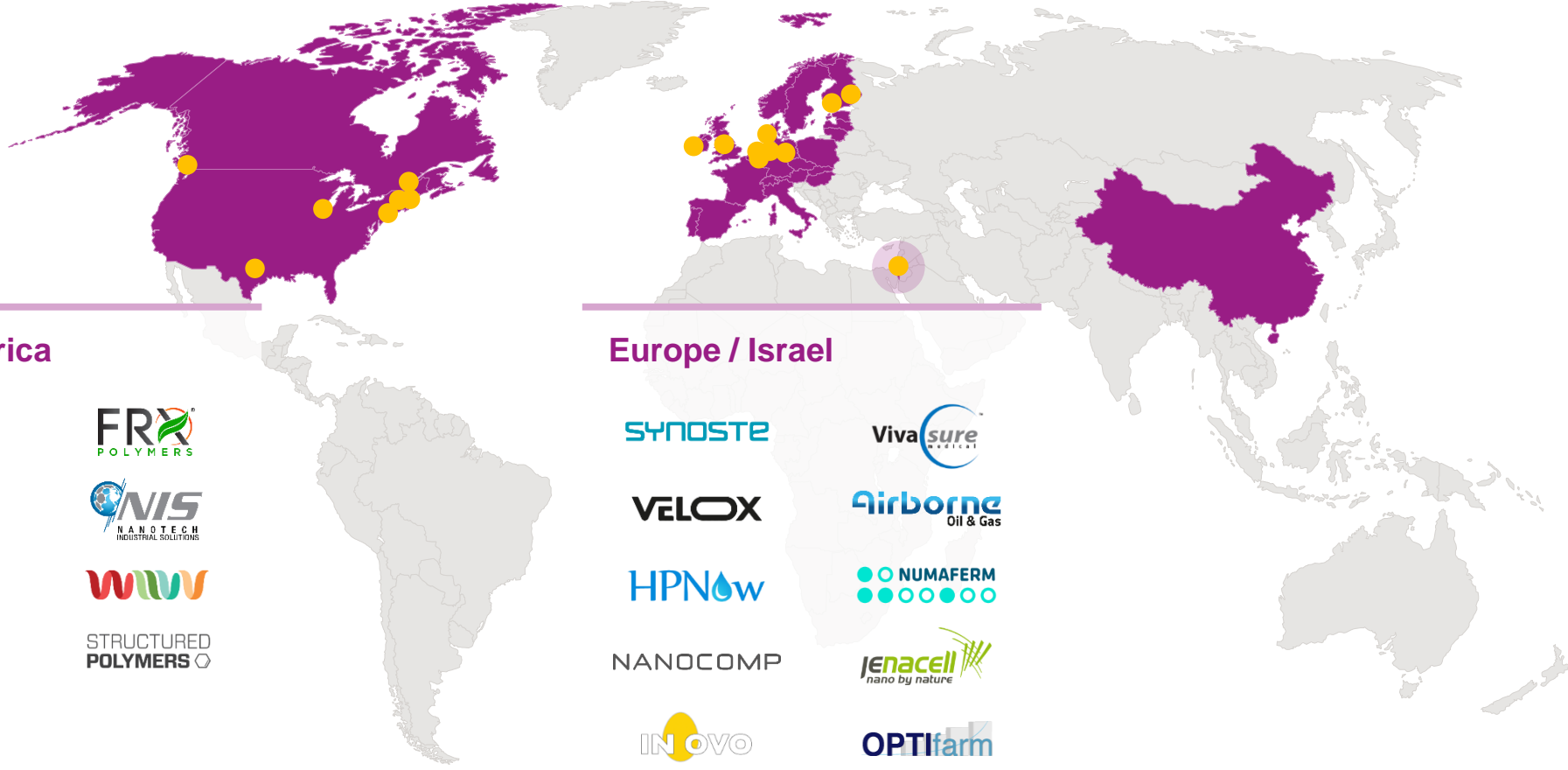


#### Investment Geography

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



## North America

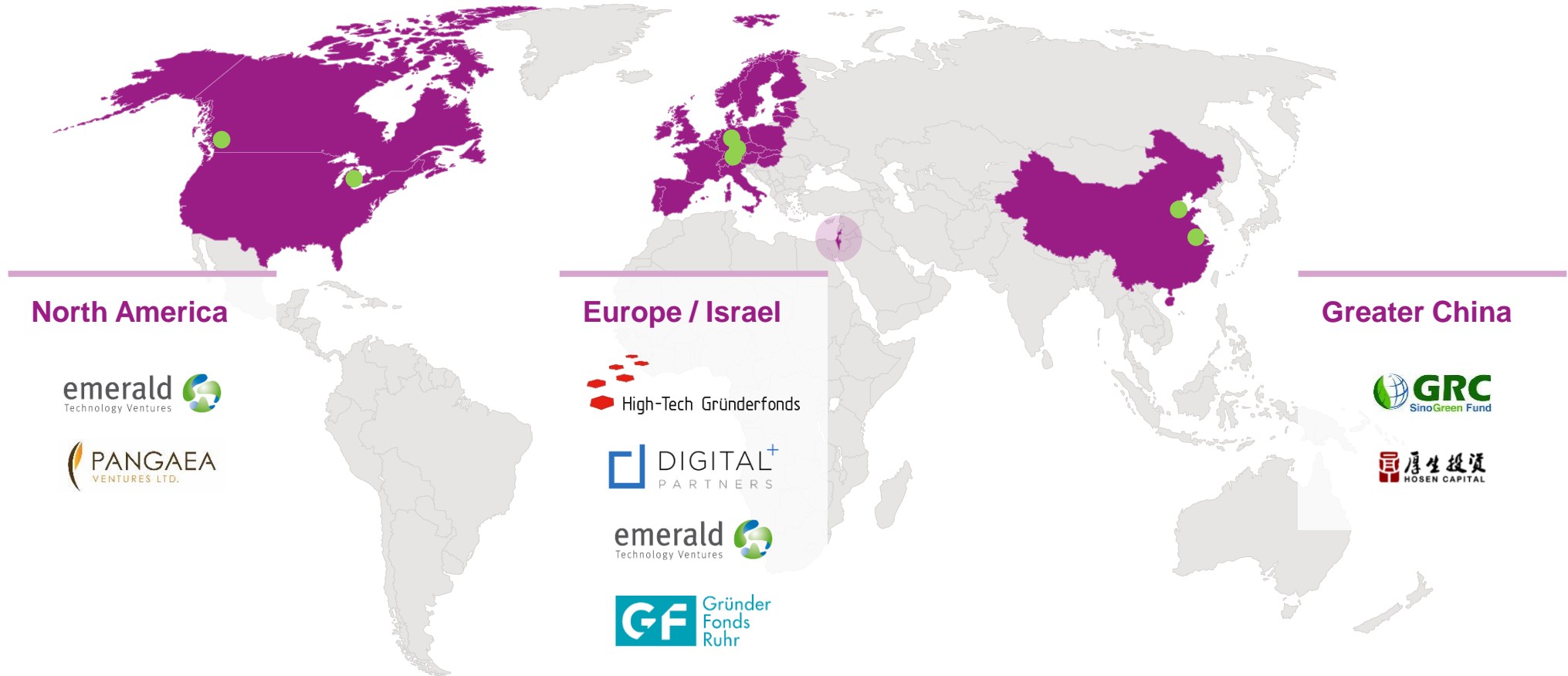
- ALGAL SCIENTIFIC
- FRX POLYMERS
- Biosynthetic TECHNOLOGIES
- NIS NANOTECH INDUSTRIAL SOLUTIONS
- mySkin unbiased advice
- STRUCTURED POLYMERS

## Europe / Israel

- SYNOSTE
- Viva sure
- VELOX
- Airborne Oil & Gas
- HPNow
- NUMAFERM
- NANOCOMP
- JENACell nano by nature
- INOVO
- OPTIfarm

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

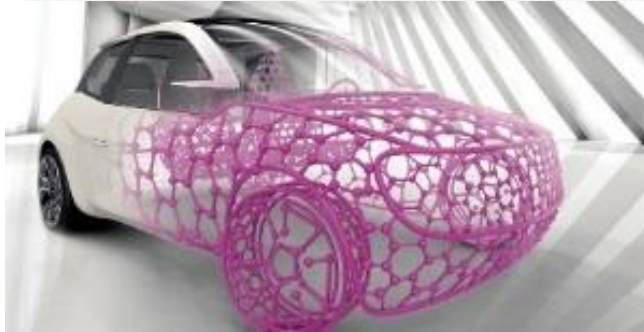
## Eight fund investments provide access to emerging technologies



# 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 ...

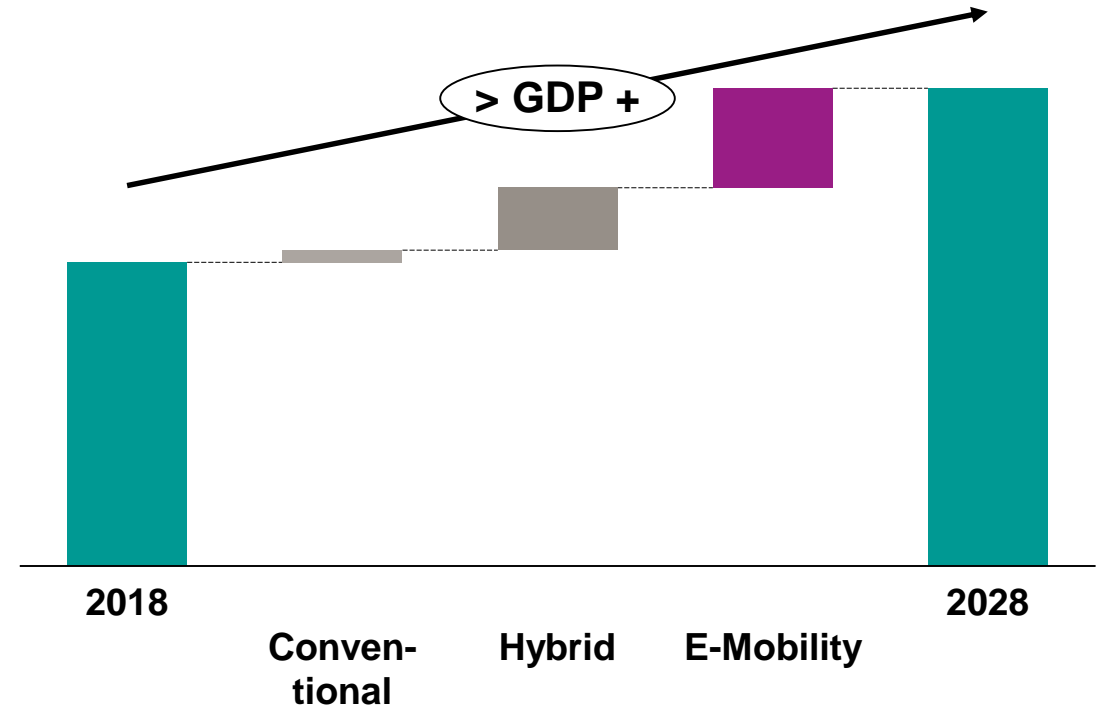
**Plastics and composites** (e.g. PA 12 or ROHACELL®)  
Cooling lines, charging and high voltage cables

**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)



# Back-up – Sustainability (1/3)

## Sustainability as core pillar of Evonik's operating businesses

### Value chain and products



- **94%** of sales covered by **sustainability analysis**<sup>1</sup>
- **70%** of sales covered by **Life Cycle Management** analysis
- Founding member of “Together for Sustainability” initiative:  
**>75%** of purchasing volume covered by **TfS** assessments
- **50%** of sales from **resource efficiency** products<sup>2</sup>
- **>80%** of Group 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 **GHG by 50%** until 2025 (base year: 2008)
  - Internal **CO<sub>2</sub> 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 applications<sup>1</sup>

### 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

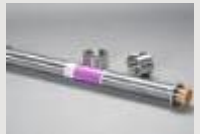


**Crosslinkers, silica, oil additives, silicone epoxy resins** for wind power



#### **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

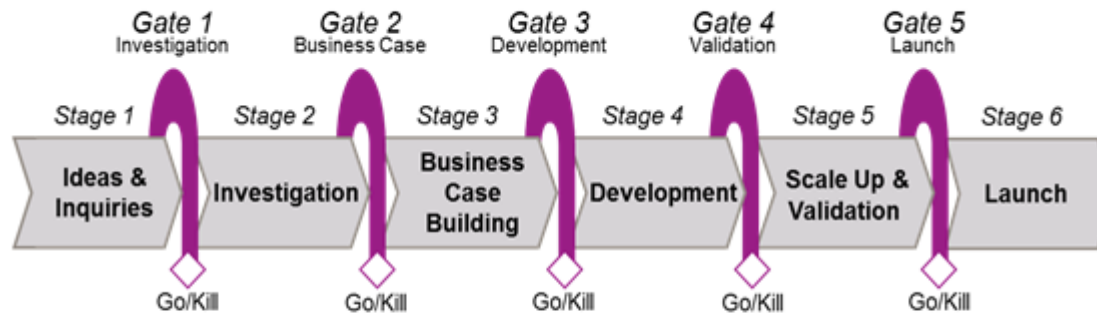
# Managing Innovation

## Best Practice: I2P<sup>3</sup> Process



### (Idea-to-Profit)<sup>3</sup> Process (I2P<sup>3</sup>)

Market Needs



- Freedom of time
- Fail fast
- Virtual Collaboration Platform

**Idea Portfolio**

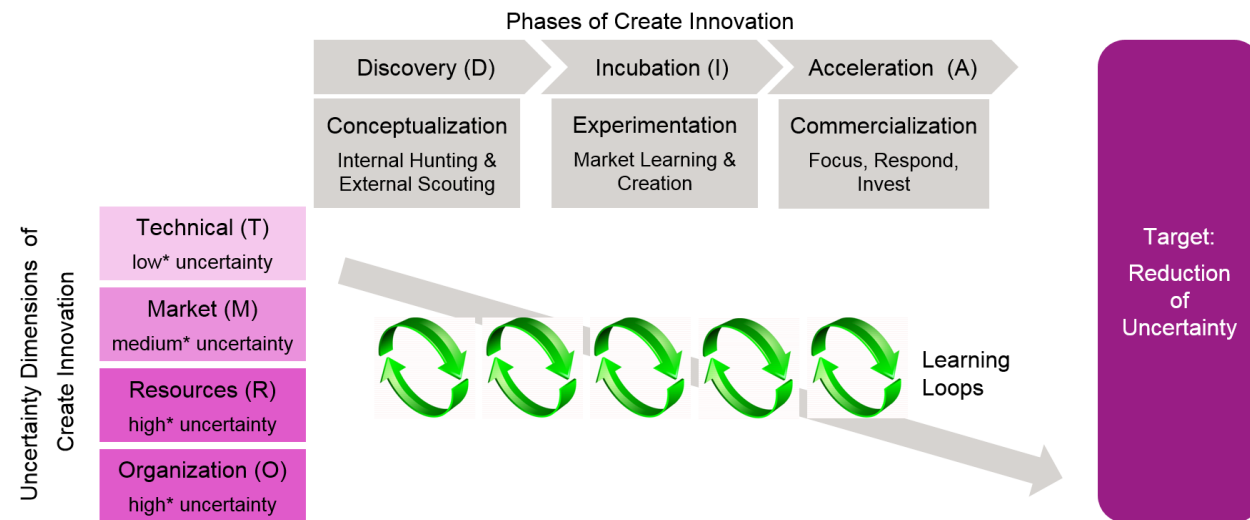
**Inno Project Portfolio**



Buckets	Profit		Planet			People
Categories	ECV	CF	GHG	Water	Waste	SVA

# 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)