

# How we strengthen our innovative power

Ulrich Küsthardt,  
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# Innovation in flux

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## Incremental innovations

- Maintaining sales and market position:
  - Updating/adapting products
  - Improving production efficiency
- Strength of established organizations

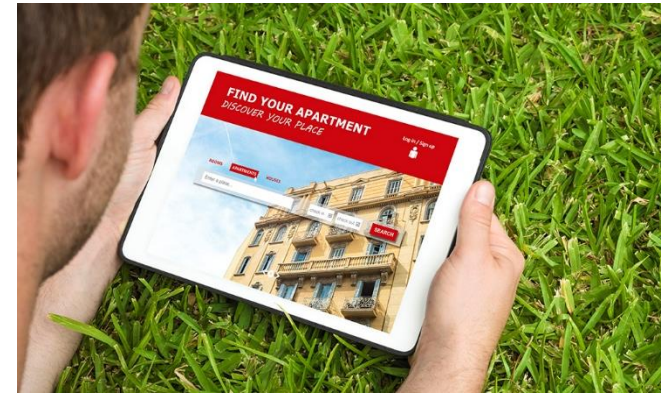


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## Disruptive innovations

- Displacing existing businesses
- Encroaching upon existing supply chain
- Strength of startups and open joint ventures
- Strength of **Creavis**

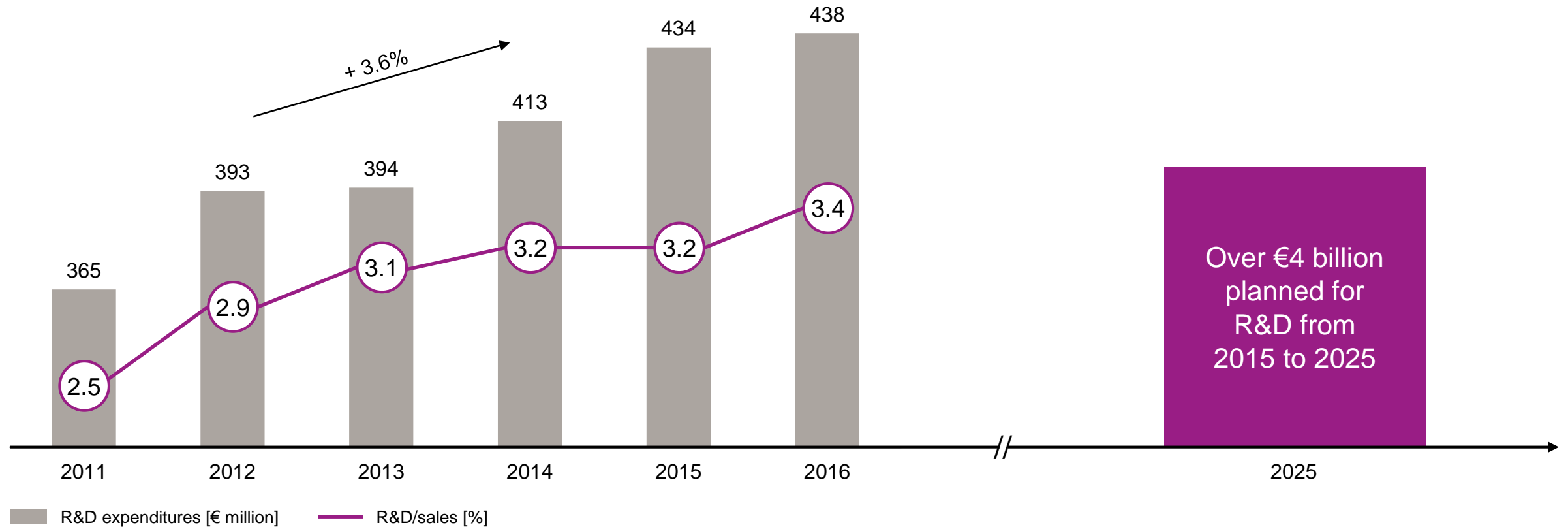


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# Innovation KPIs:

## What we invest

### R&D expenditures and R&D rates





# How we organize our innovation portfolio

€438 million

**Incremental:**  
Securing  
market position  
~70%

**Disruptive:**  
New business fields  
New business models  
New services  
~30%

**Venture capital**  
(€100 million over the  
medium term)

## Examples

- **POLYVEST® ST**  
For tires with low rolling resistance
- **TEGO® Phobe**  
For high-quality building protection
- **VESTAMID® LX9115**  
For improving fire safety in railway vehicles
- **ORTEGOL® P1**  
For manufacturing synthetic PU leather with aqueous systems
- **Algae oil**  
For aquaculture
- **Digitalization in the chicken coop**  
For improving the health of chickens
- **Direct investments**  
Vivasure Medical, Numaferm,  
Nanotech Industrial Solutions



# Innovation Growth Fields: What we concentrate on

## Growth Engines



Health & Care



Smart Materials



Animal Nutrition



Specialty Additives

## Innovation Growth Fields

Advanced Food Ingredients



Additive Manufacturing



Sustainable Nutrition



Cosmetic Solutions



Membranes



Healthcare Solutions



**More than €1 billion by 2025**

Additional contribution to sales from  
all six Innovation Growth Fields

# Example from the Sustainable Nutrition Innovation Growth Field

## The Animal Nutrition Growth Engine

**The challenge:** Raising healthy chickens without antibiotic growth promoters

**The solution:** Develop chicken probiotics in house, complemented by technology acquisitions



Illustration: C3 Visual Lab

- Leveraging our **biotechnology** competence in probiotics
- **Acquisition** of the probiotics business of Norel S. A. in 2016
  - Already approved and **established** brands
  - Access to the regulated and attractive **European** probiotics market
- **In-house product development:** GutCare®
  - In 2017 market launch in the **US, China, India, and Bangladesh**

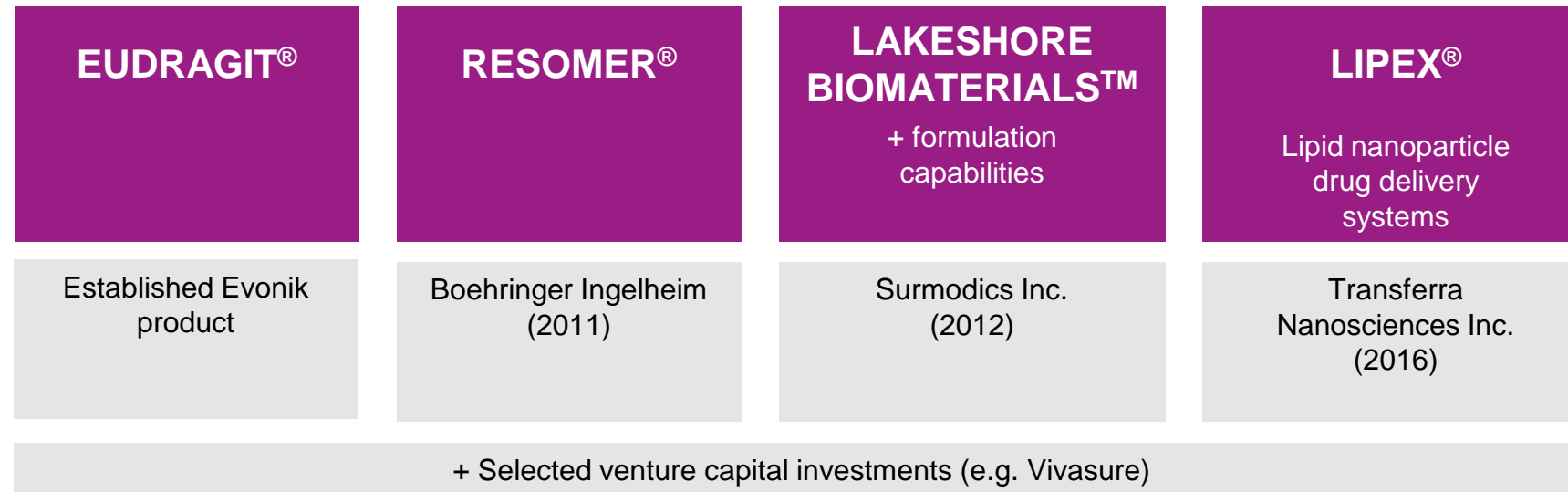
**Rollout of a global probiotics  
business within 12 months**

# Example from the Healthcare Solutions Innovation Growth Field

## The Health & Care Growth Engine

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

**The solution:** Expand portfolio by acquiring technologies



Evonik as an enabler and strategic partner for the pharmaceuticals industry



# Example from the Membranes Innovation Growth Field

## The Smart Materials Growth Engine

**The challenge:** Gas extraction is energy intensive

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

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

**SEPURAN®  
Green (biogas)**

Established business



**SEPURAN® Noble  
SEPURAN® N2**

Step-by-step market entry now underway: helium and nitrogen



**Hydrogen,  
natural gas**

Under development





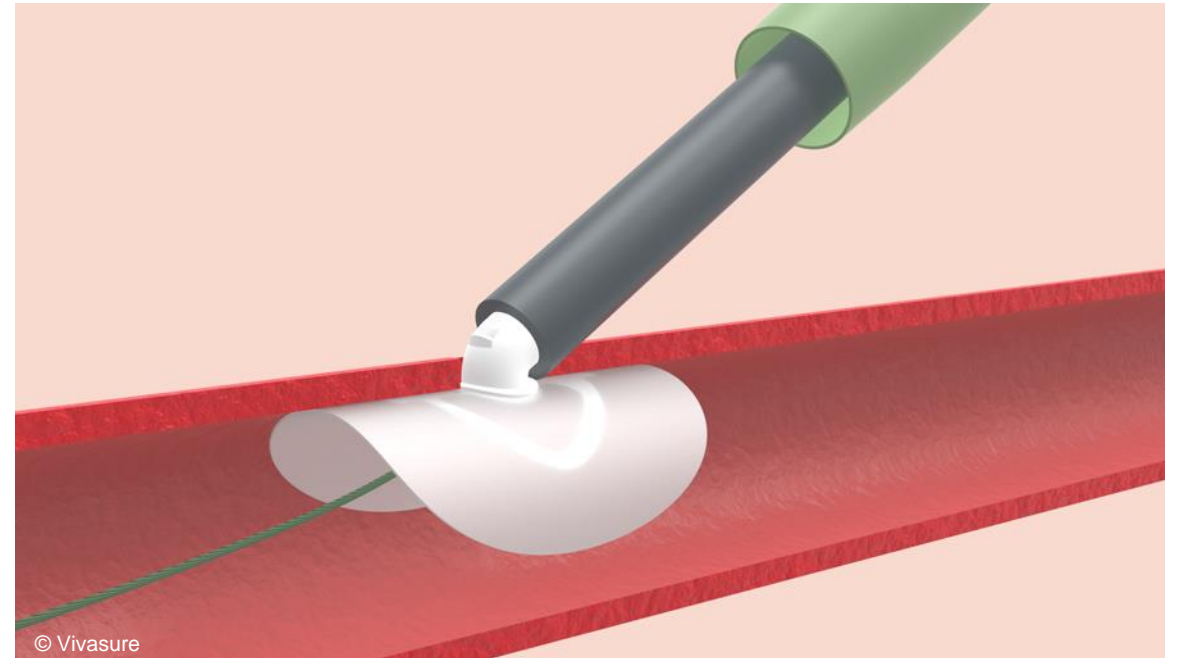
# How we continue developing our culture of innovation

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**The challenge:** Continue developing our technology portfolio and tapping into new business opportunities  
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**The solution:** Venture capital—learning from startups  
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- Early insights into technology trends, disruptive innovations, and new business models
- Review over 500 startups per year
- Acquire a direct share in 11 startup and technology companies as a strategic investor
- Radar for technologies of the future: investments in 7 funds
- Total volume: €100 million
- Examples:  
Vivasure, High-Tech Gründerfonds, Hosen Capital



# How we foster staff development

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**The challenge:** The market is becoming more dynamic  
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**The solution:** Encourage a startup mentality  
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- The Evonik Entrepreneurship competition
- Teach agile methods:
  - Reduce development cycles
  - Introduce products onto the market more quickly
  - Fail faster
  - Learn from mistakes



## Innovation KPIs for 2016: Where we stand

**56%**

patent-driven sales

**33%**

increase in the value of innovation pipeline<sup>1</sup>

**10%**

sales from new products and applications<sup>3</sup>

**3.4%**

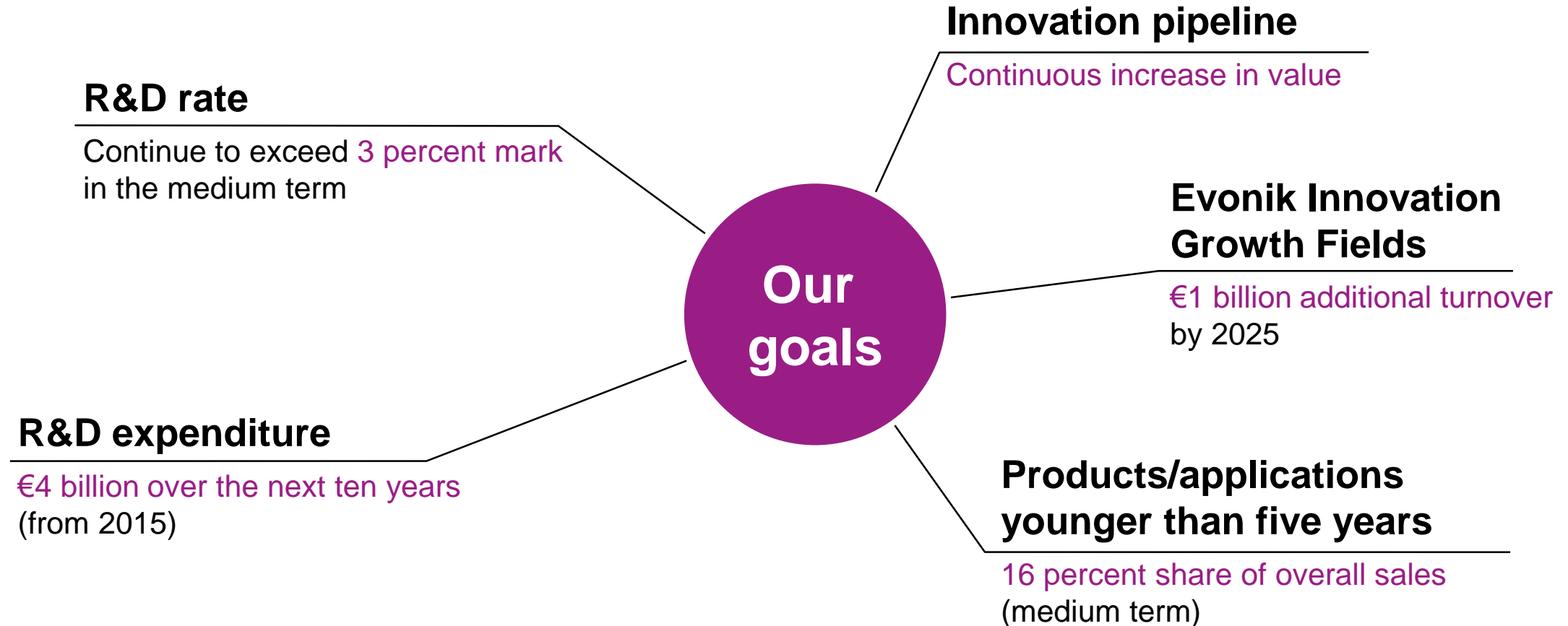
R&D rate

**€438 m**

R&D expenditure<sup>2</sup>

<sup>1</sup> since 2012    <sup>2</sup> since 2011: increase by 3.6% p.a.    <sup>3</sup> younger than 5 years

# Innovation KPIs: What we want to achieve





# Key strategic objectives

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Focus on the innovation portfolio

Strengthen the innovation culture

Grow through innovation



- Innovation Growth Fields
- Collaborations along the value chain
- Technology acquisitions



- Learn from startups
- Entrepreneurship competition
- Teach agile methods
- Open Innovation



- Increase the value of the innovation pipeline
- Increase sales of products developed within the past 5 years
- Generate additional sales through Innovation Growth Fields



**EVONIK**

**POWER TO CREATE**