

# Overcoming the barriers in developing marine biotechnology enabled products

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# Content

## 1. Introduction:

- Motivation for building a MBT venture: personal view and experiences; mission

## 2. Barriers and challenges:

- **Venture's environment:** Understand the marine ecosystem, knowing the market, staying young and innovative, diversification vs. specialisation, upscaling, financing growth, gap to pharma, quality of raw material, .....

- **Overcoming barriers:** management of expectations, knowledge and innovation, qualifying and training of staff, active communication and networking, collaboration with academic institutions, .....

## 3. Examples

- Medical products, active ingredients, cosmetics, therapeutics

# Mission

*"Common Heritage of Mankind"*

**Sustainable  
Use of the Sea**

Development / Marketing  
of innovative products  
"Made from the sea"

Research on Marine  
Living Resources

**oceanBASIS**

sea.science.solutions.



Coastal Research & Management

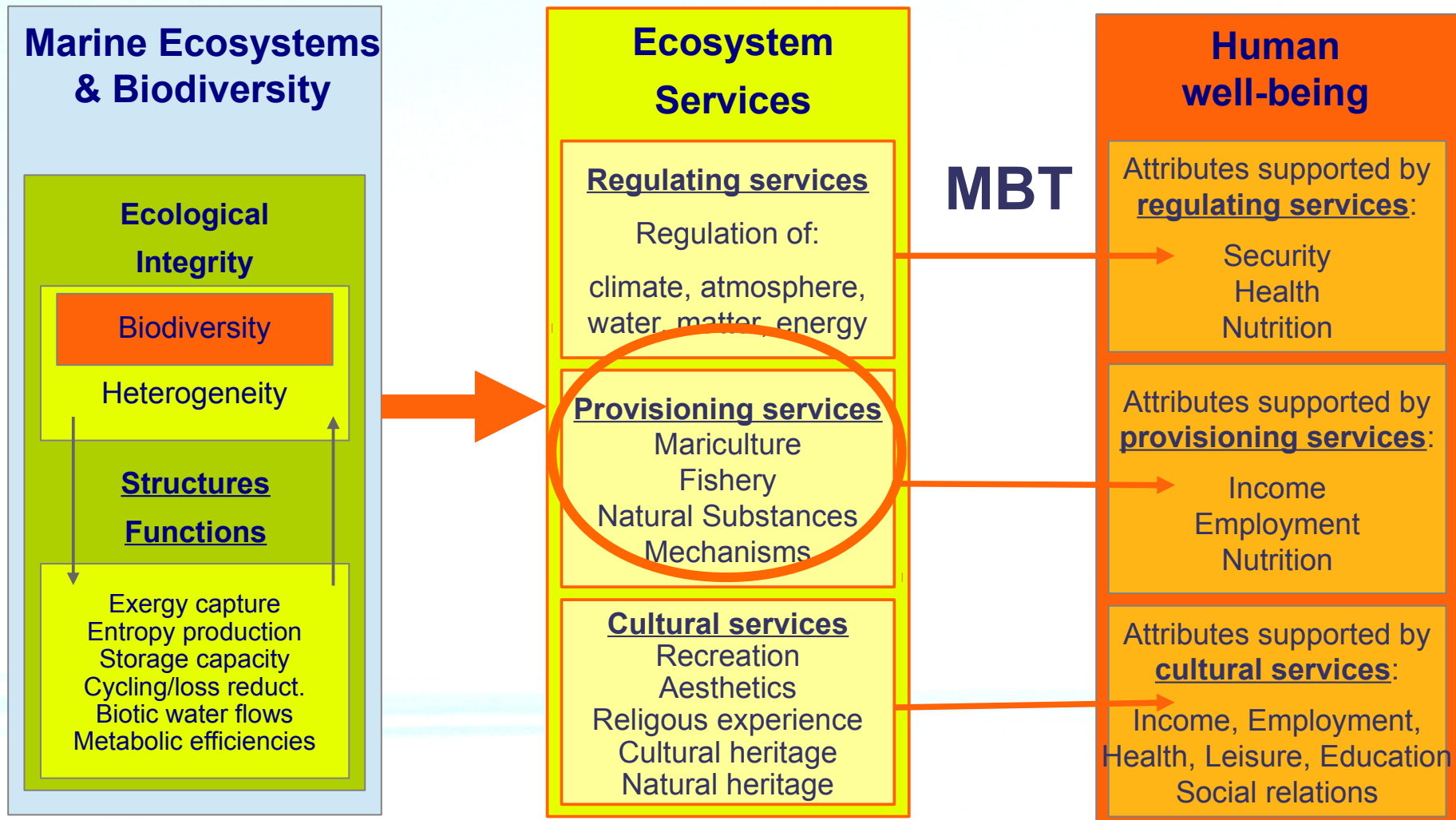
# Motivation

→ Making the sustainable use of the seas  
profitable

## State of the Art:

- Ocean Management is underdeveloped and exploitation techniques are still in their infancy
- Humans are still gatherers and hunters in the marine ecosystem, far away of being a “blue engineer”

# Lack of understanding and implementing the concept of ecosystem services



Modified after Kandziora *et al.*, 2013

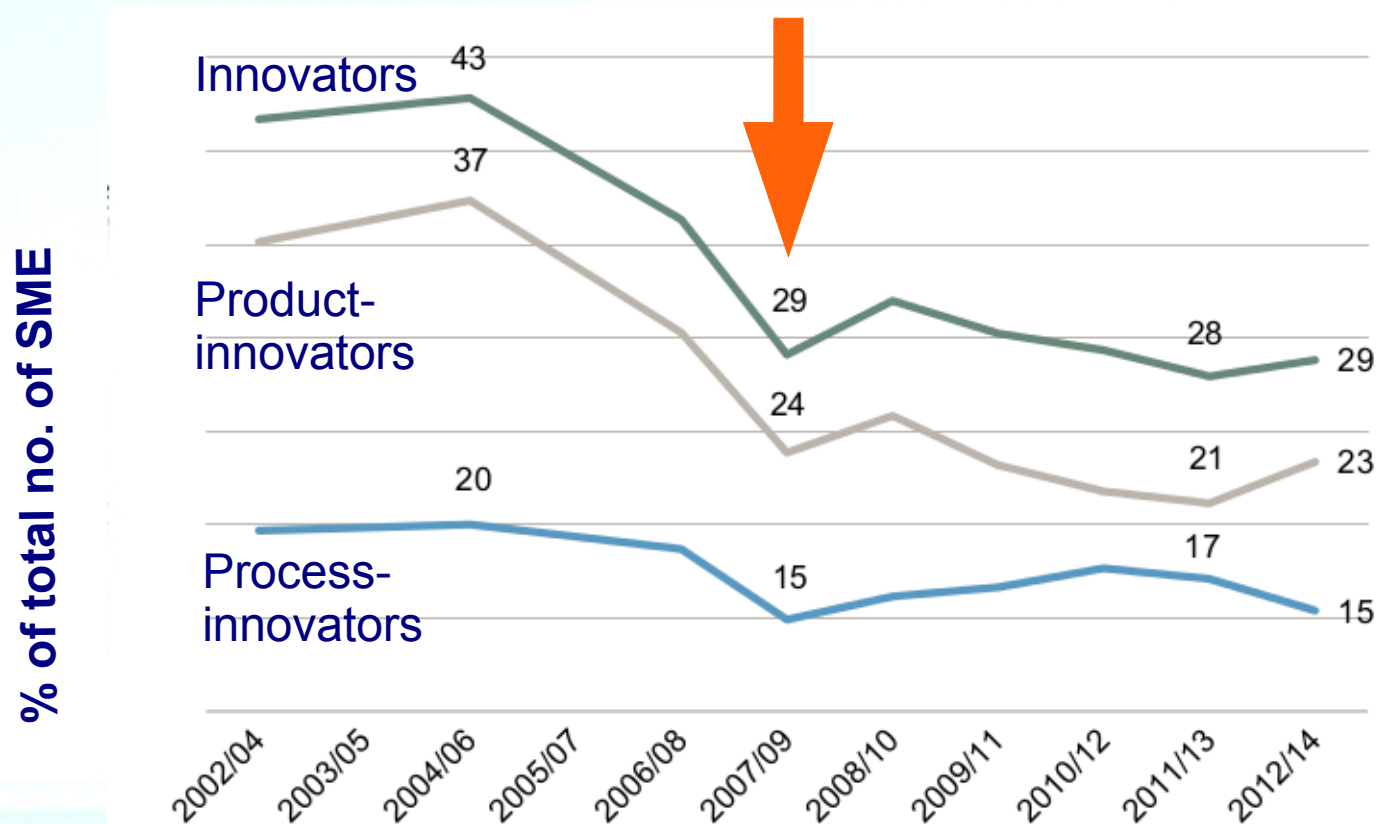
*Innovation Report of KfW bank:*

# **„Innovation among SMEs continues to fade“**

- Share of innovative companies is comparingly low today
- Weak economic activity in the eurozone and intense price competition hamper progress
- Sales and employment opportunities remain unexploited
- Lack of financing constitute a further obstacle for innovation.

# Innovation slump (Germany)

Development of Innovation Index over the last 10 Years



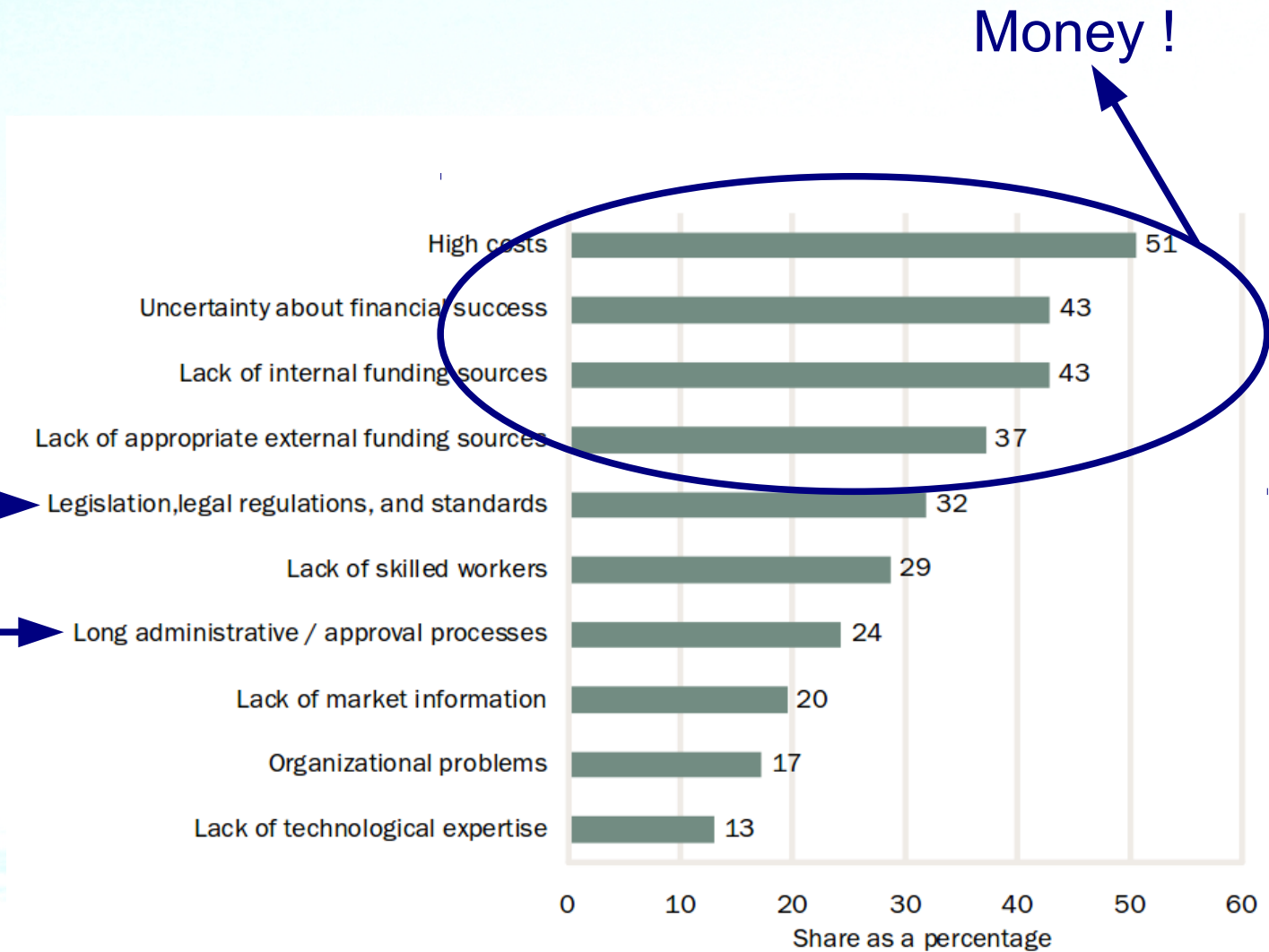
Quelle: KfW-Innovationsbericht 2015

# Factors hampering innovation in the SME sector

Regulation



Approvals



Note: only companies with innovation activities

## Internal barriers

- Lack of knowledge on the target market
- Specific work flow and infrastructure (R&D, marketing/sales) need to be established
- Science and industry – partly incompatible, e.g. in communication, perception of time, goals.
- With staff aging innovation fades

## Political and internal barriers

- As-Is-Analysis too fluffy
- Goals scheduled too short-termed
- Expectations too unrealistic

# How to overcome these barriers ?

# Expectation management

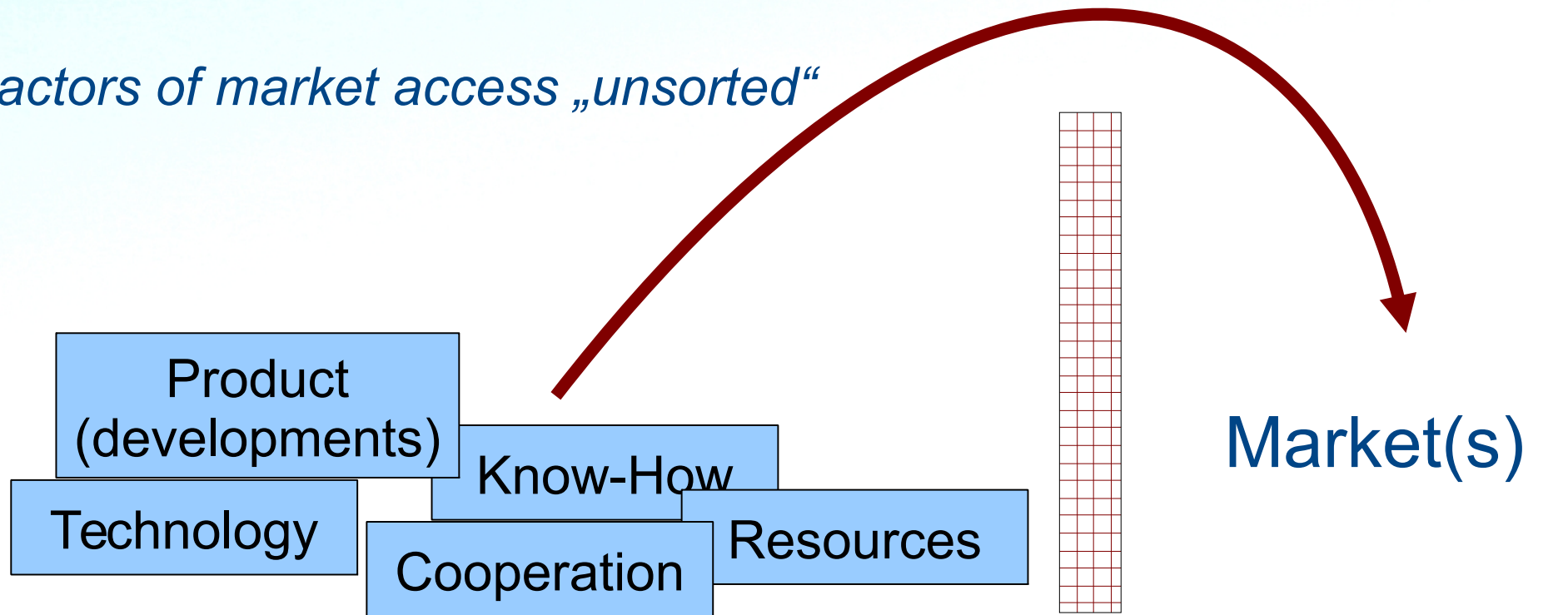
- Realistic As-Is-Analysis and objectives
- Active and careful communication, documentation and reporting
- Set expectations realistically



*Puneet Kuthiala, justpmblog.com*

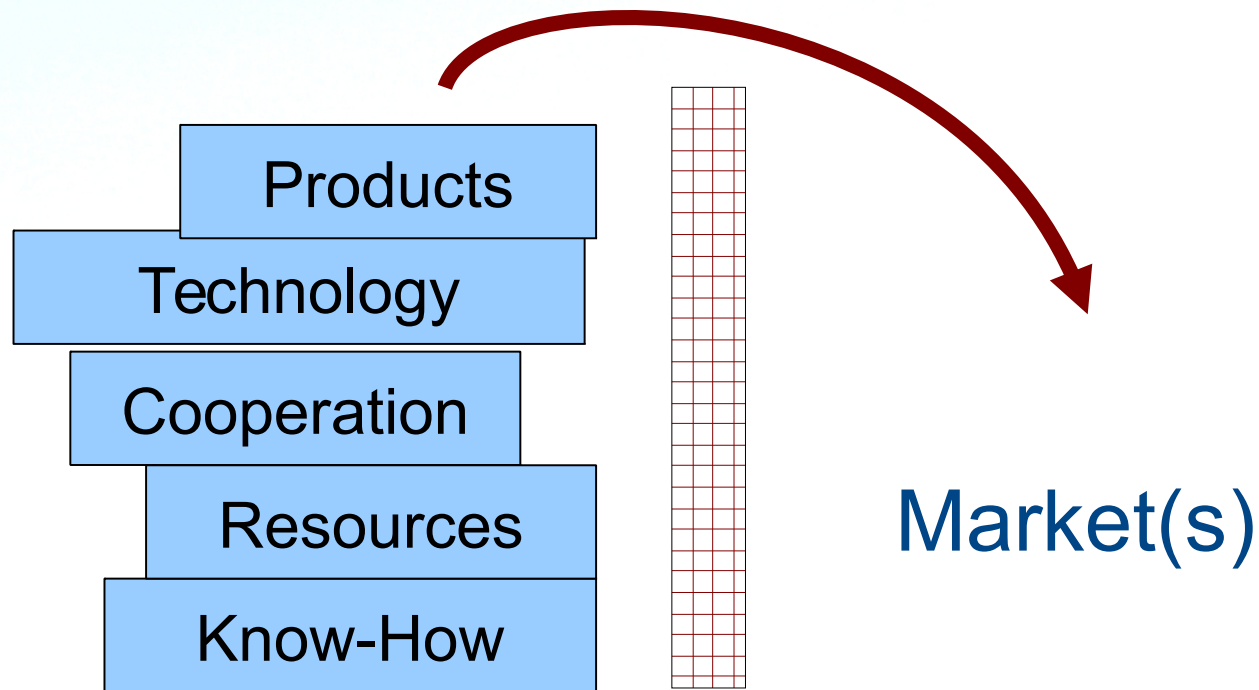
# Collaboration, networking, communication

*Factors of market access „unsorted“*

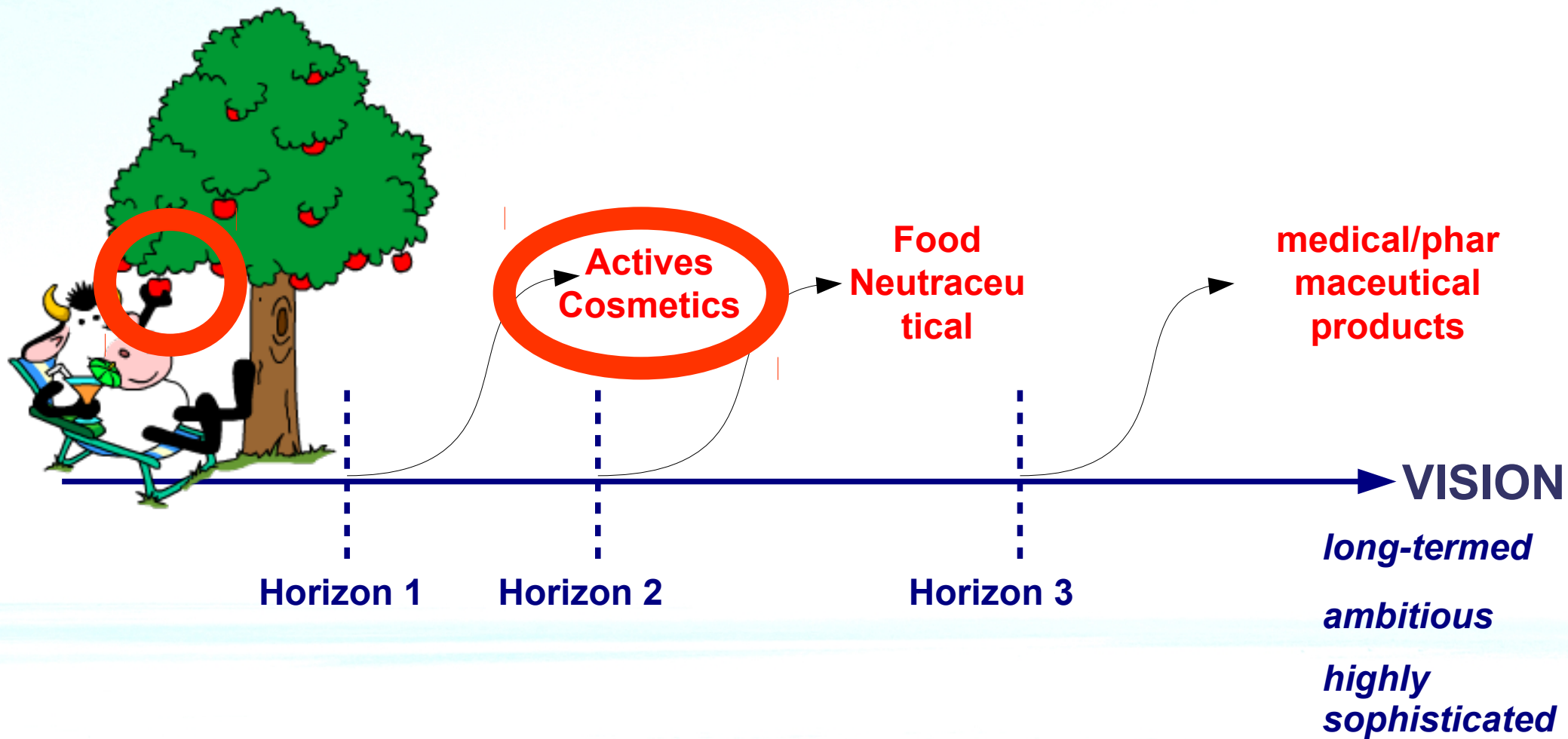


# Collaboration, networking, communication

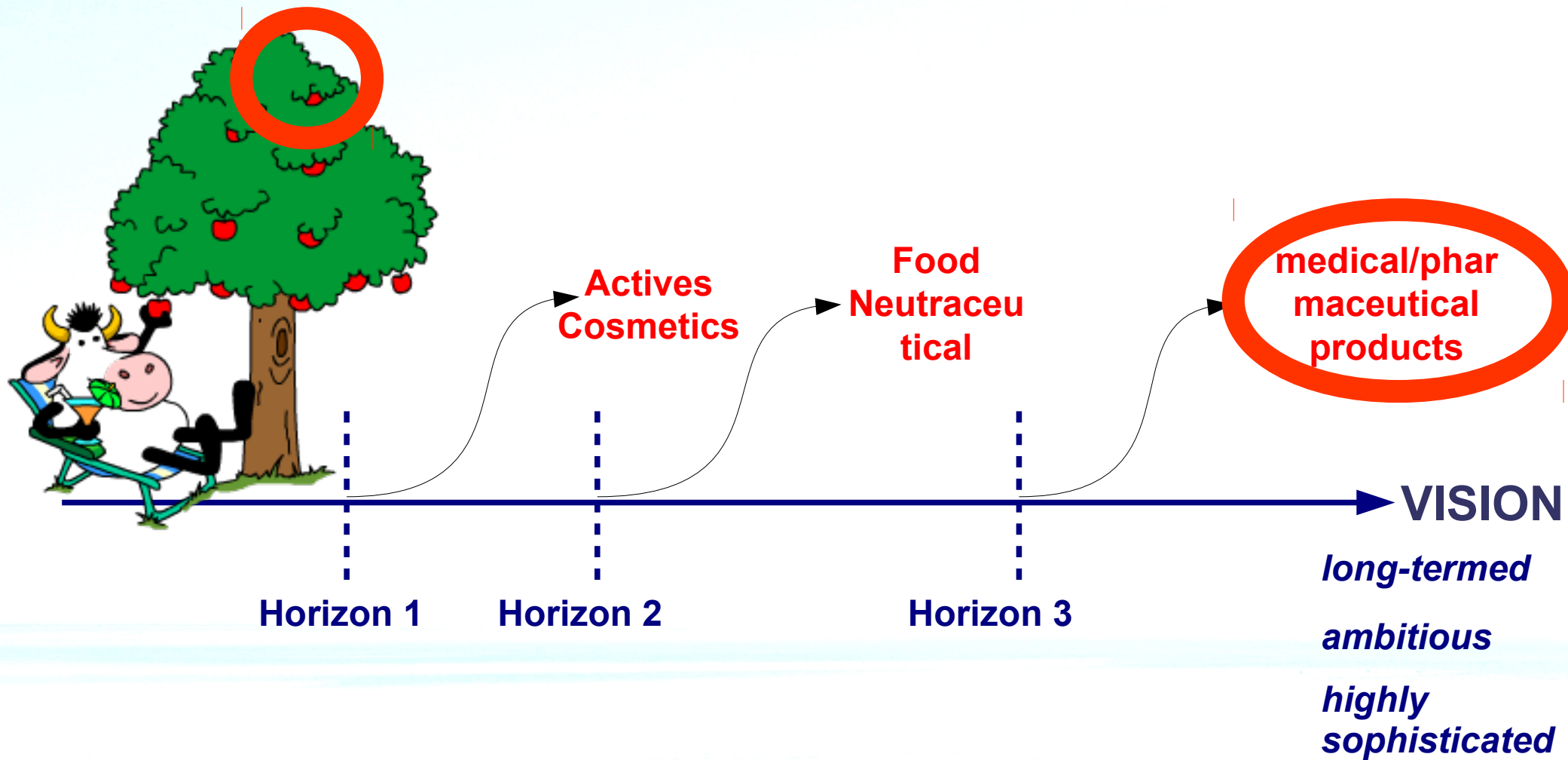
→ *Facilitating access to the market*



# Innovation management: Finding a balanced portfolio of innovation horizons, markets and products



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## Starting points of overcoming the barriers

<b>Keep eyes open!</b>	Company environment - networking, collaboration, customers – is an important source of ideas and innovations.
<b>Qualified (and younger) staff</b>	Lack of experts is already today innovation barrier no. 2; Develop active recruiting and training
<b>Improving innovation and knowledge management</b>	Implementation of appropriate processes, management of expectations, knowledge and innovation
<b>The right strategy for the venture</b>	Diverse or specialised? A good mix of short-termed and long-termed goals
<b>Reduce financing barriers!</b>	Innovation financing is a continuous task, especially, small enterprises are affected.

*Modified after Zeuner, KfW, 2016*

# Active ingredients



ocean actives

## Lamocrude 'S

The Natural Brown Algae Extract

Protecting aqueous extract from *S. latissima*, contains unique anti-oxidative algae sugars and polyphenol

## Lamowell 'S

The Enhanced Brown Algae Extract

Soothing and nourishing properties. Enhanced bioavailability by long cold fermentation of *S. latissima*.

## Qollagen 1%

Collagen from the Deep Ocean

Superior moisturizing properties. Sustainable resource of pure, native collagen.

## Palmocrude 'P

The Natural Red Algae Extract

Aqueous extract of *P. palmata*. Improving skin elasticity by promoting cell matrix proteins. Cytoprotective through amino acids and polyphenols.

## **Specific barriers and challenges for the development and marketing of active ingredients**

- technical upscaling (grinding algae, filtration, preservation, quality etc.)
- access to the market
- staying innovative



# Marine Natural Cosmetics

*- effectively moisturizing,  
protecting, regenerating,  
revitalizing*



# Specific barriers and challenges for the development and marketing of cosmetics

- tedious brand building, marketing/PR
- identification of appropriate distribution channels
- financing growth

# Wound gel - medical products



**ISO 10993: Standards for evaluating the biocompatibility of medical devices, e.g.**

- ✓ ISO 10993-3:2014:  
Tests for genotoxicity, carcinogenicity and reproductive toxicity
- ✓ ISO 10993-5:2009:  
Tests for *in vitro* cytotoxicity

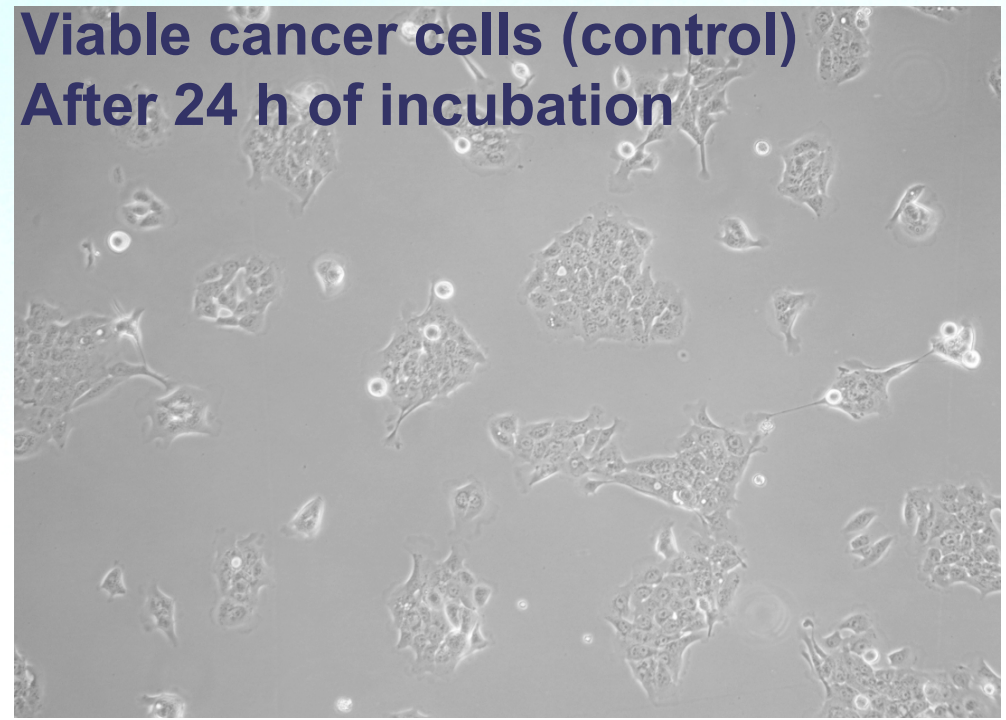
# Specific barriers and challenges for the development of medical products

- regulations, quality management (ISO 13485)
- access to special and fragmented markets

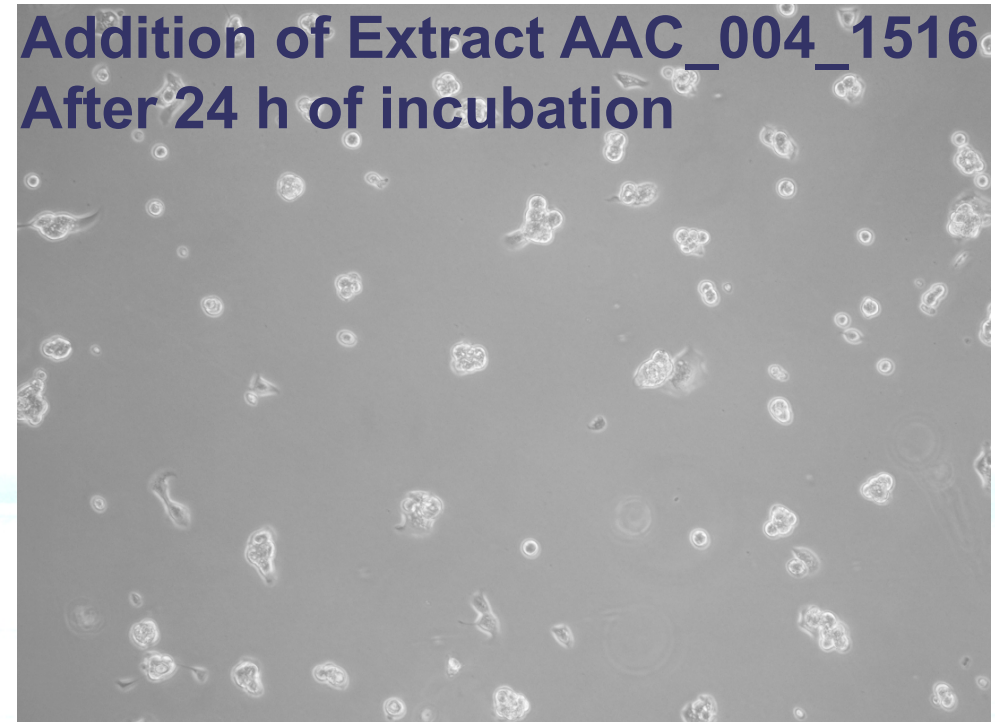
## Anti-cancer activities

### „AAC-Algae Against Cancer“

**Viable cancer cells (control)  
After 24 h of incubation**



**Addition of Extract AAC\_004\_1516  
After 24 h of incubation**



## Specific barriers and challenges for the development of therapeutics

- huge, particularly financial, gap between preclinical stage and clinical phase I/II
- high risk
- very long-termed undertaking

# Partners to overcome barriers

Excellent R&D cooperation with e.g.:

- University Kiel (molecular biology, microalgae)
- GEOMAR (marine compound research, algae)
- Technical University Dresden (material science)
- University Lübeck (collagen)
- ttz Bremerhaven (food product development)
- CRI – Collagen Research Institute
- Du Pont (Nutrition, former Danisco)

# Thank you for your attention!

