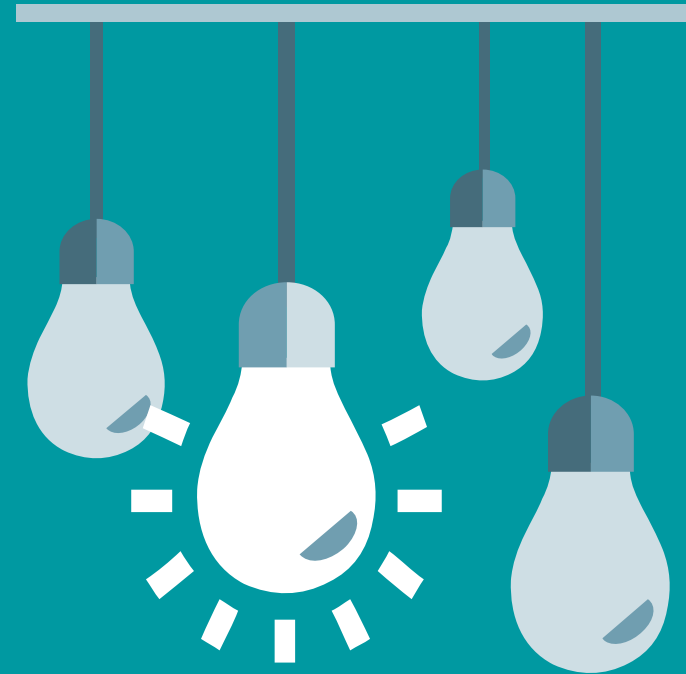


Innovation and Development Strategies

Business Case PHOENIX CONTACT
Part IV

Christian Helmig



Overview

Business Case PHOENIX CONTACT

Part IV

Innovation culture

Motivation

Leadership

Change Management

Strategic innovation management

Innovation
strategy

Technology
strategy

Knowledge
management

IP
management

Innovation
controlling

Resource
management

Innovation
organisation

Innovation process

Idea management

Scouting &
screening

Ideation /
idea
generation

Idea
evaluation &
selection

Realization

Planing

R&D

Commercialization

Market
launch

Optimization

Today's agenda

- Product lifecycle management / product portfolio management
- New business fields & innovation ventures
- Course wrap up (part I-III)

Business Case PHOENIX CONTACT Part IV

Innovation management

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management

Innovation
controlling

Resource
management

Innovation
organisation

Innovation process

Scouting
&
foresight

Ideation process

D1

D2

D3

PxC Development process

M1

...

M4

...

M7

M8

Market phase

M9

...

M12

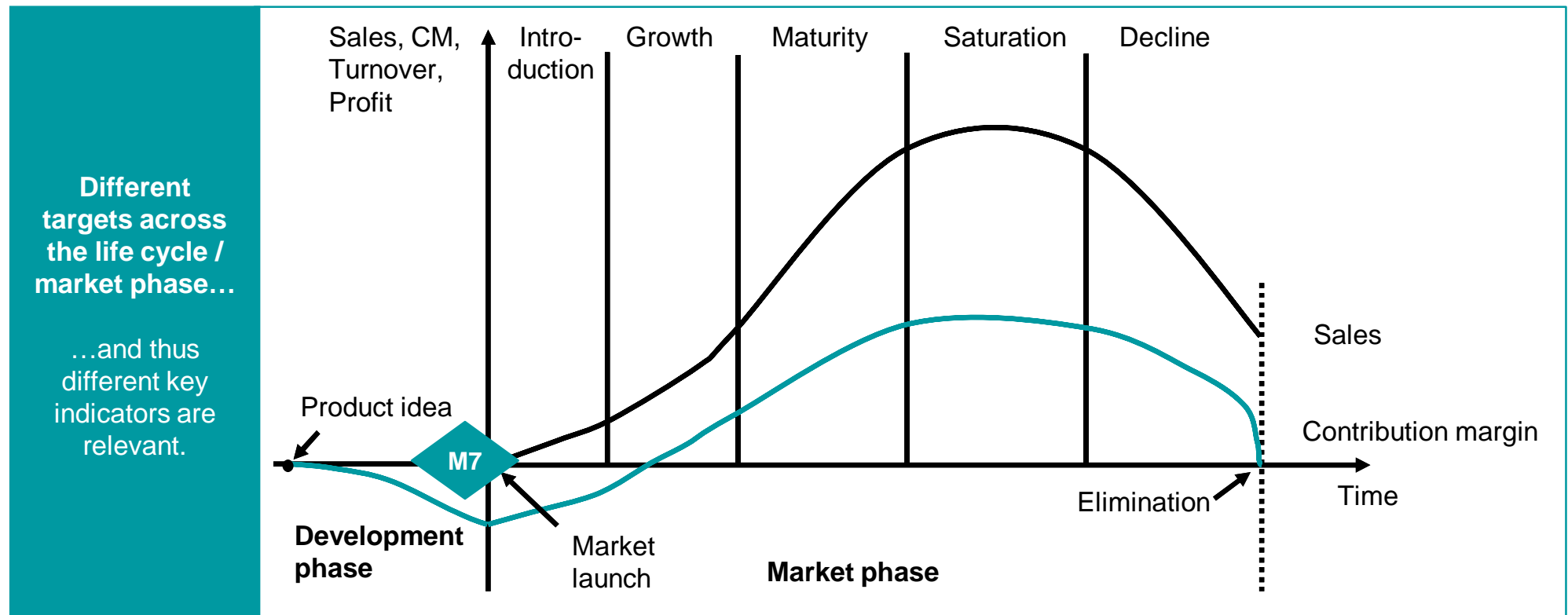
What are key indicators of product (portfolio) success / market performance during the market phase?

Key indicators of product market performance

Categories	Key figures
Contribution Margin	CM0, CM0-rate, Sales, Production cost
Market	Market share, Sales volume, Net sales price
Production Costs	Production costs of articles and components
Quality	Number of quality complaints, quality costs

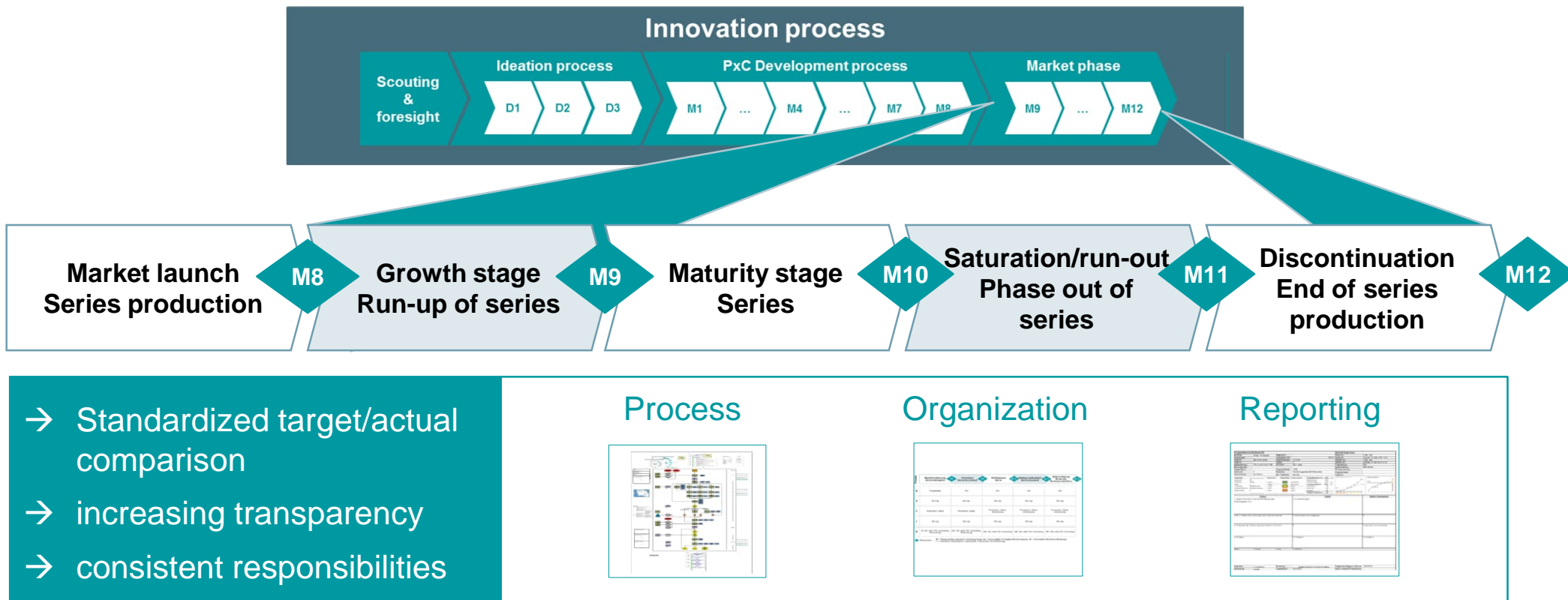
Business Case PHOENIX CONTACT Part IV

Key indicators during the market phase



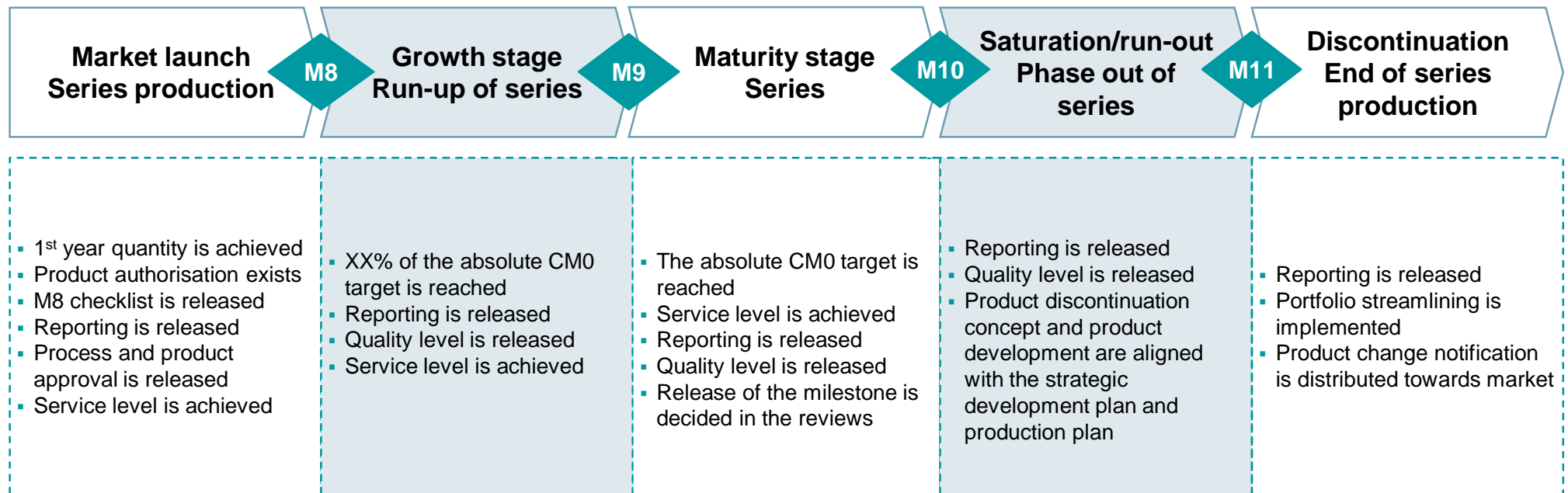
Business Case PHOENIX CONTACT Part IV

Extending the milestone process to cover the whole PLC



Business Case PHOENIX CONTACT Part IV

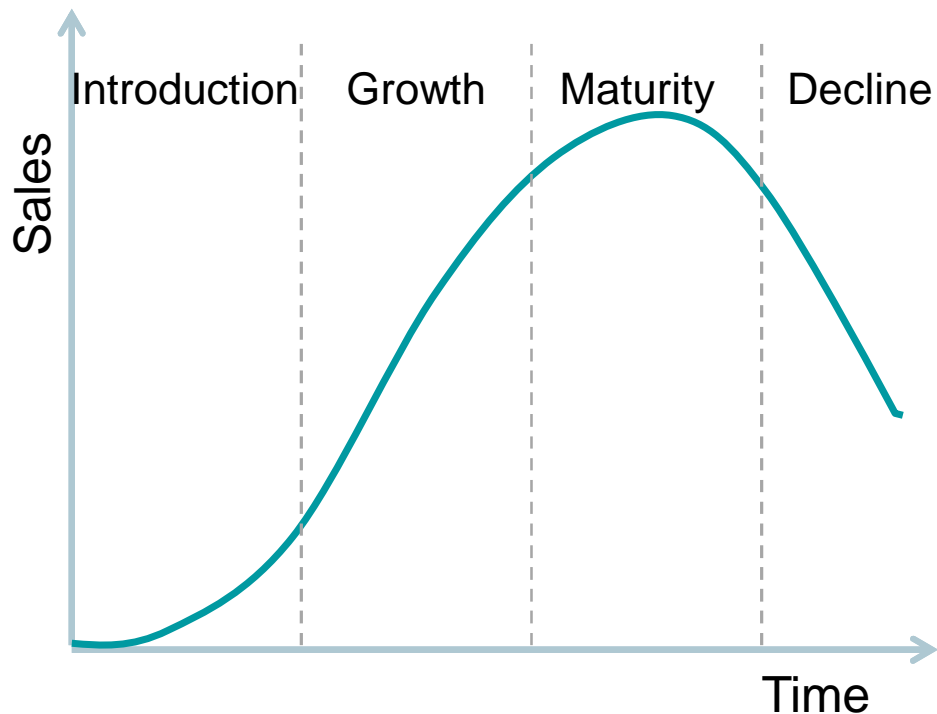
Extending the milestone process to cover the whole PLC



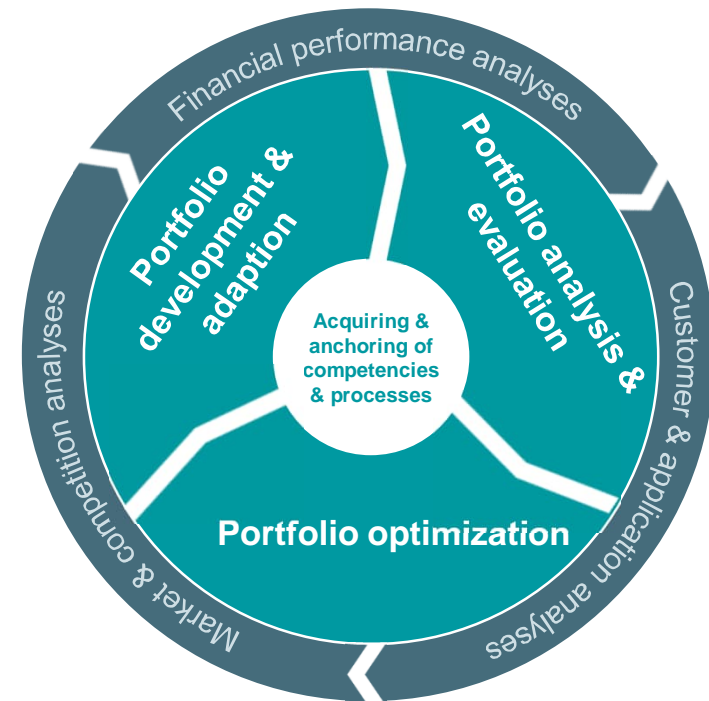
Business Case PHOENIX CONTACT Part IV

Remember: a comprehensive analysis has to integrate multiple views

Start to end of market phase



Portfolio management as a lifecycle

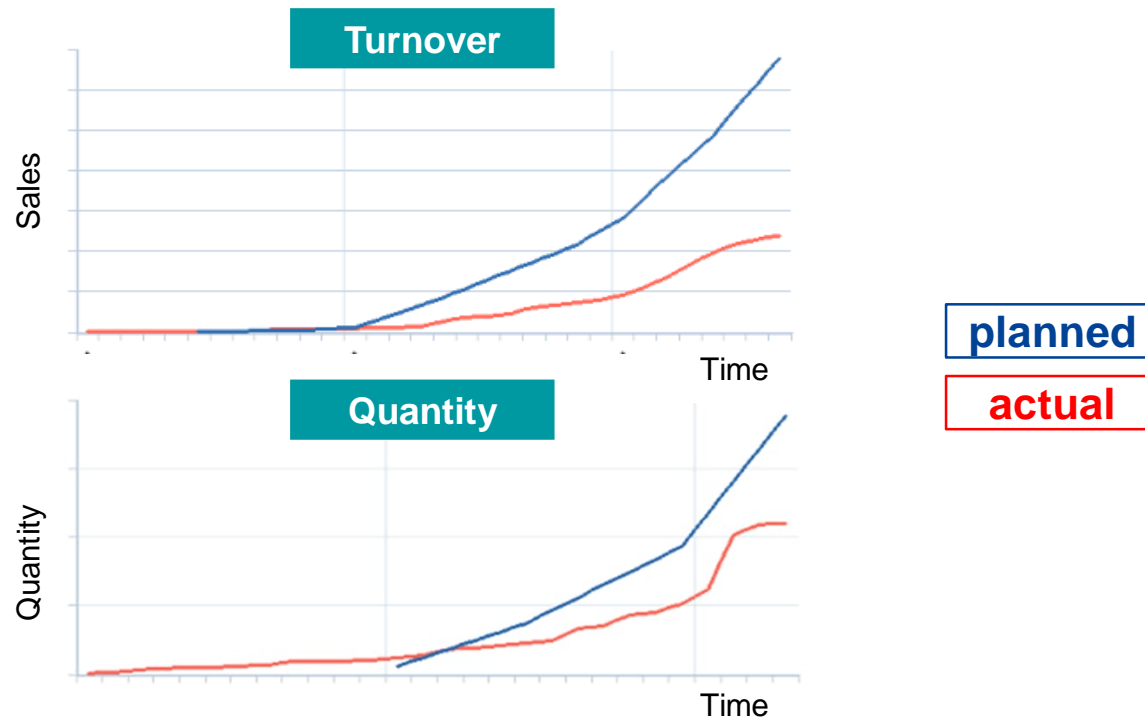


Business Case PHOENIX CONTACT Part IV

Portfolio management: tracking the market launch phase

Product launch cards

Tracking of product performance during the market launch phase

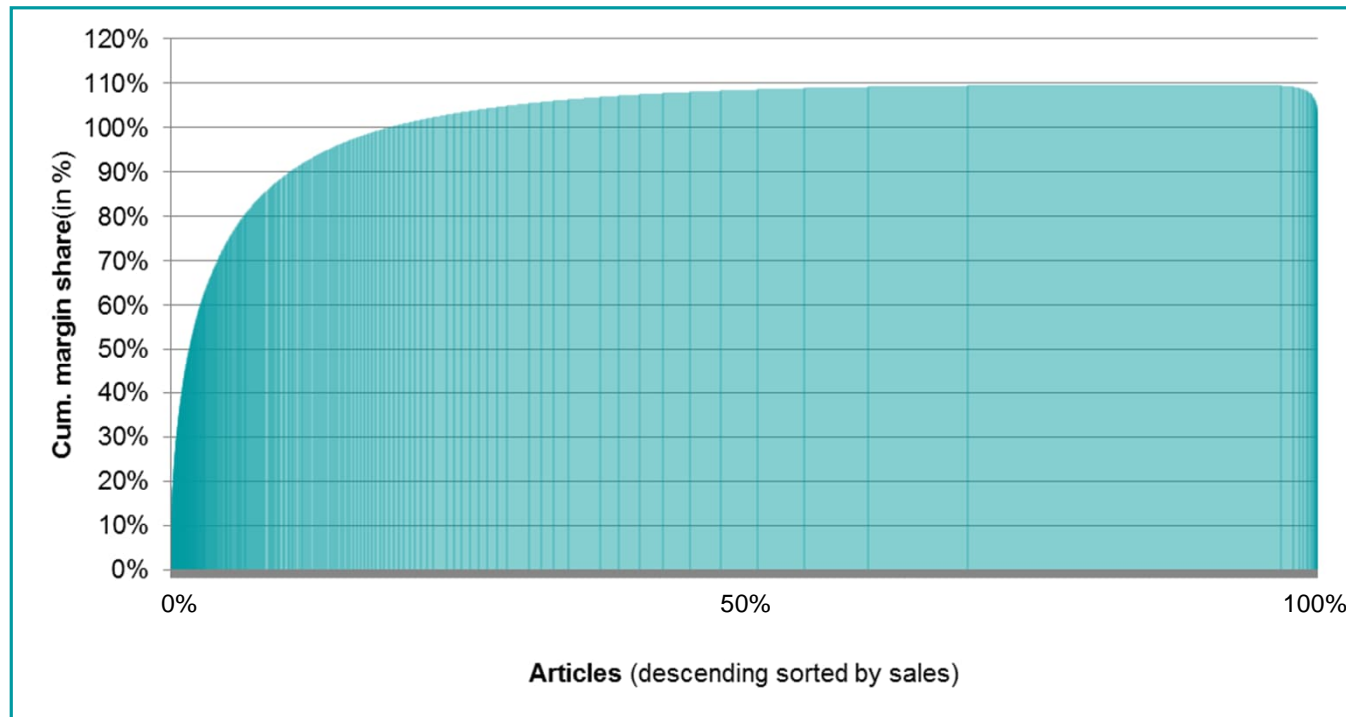


Emerging issues:

- Reasons for high deviation?
- Production & delivery capacity?
- Pricing?
- Bad forecasting!
- ...

Business Case PHOENIX CONTACT Part IV

Portfolio management: analysing active product families

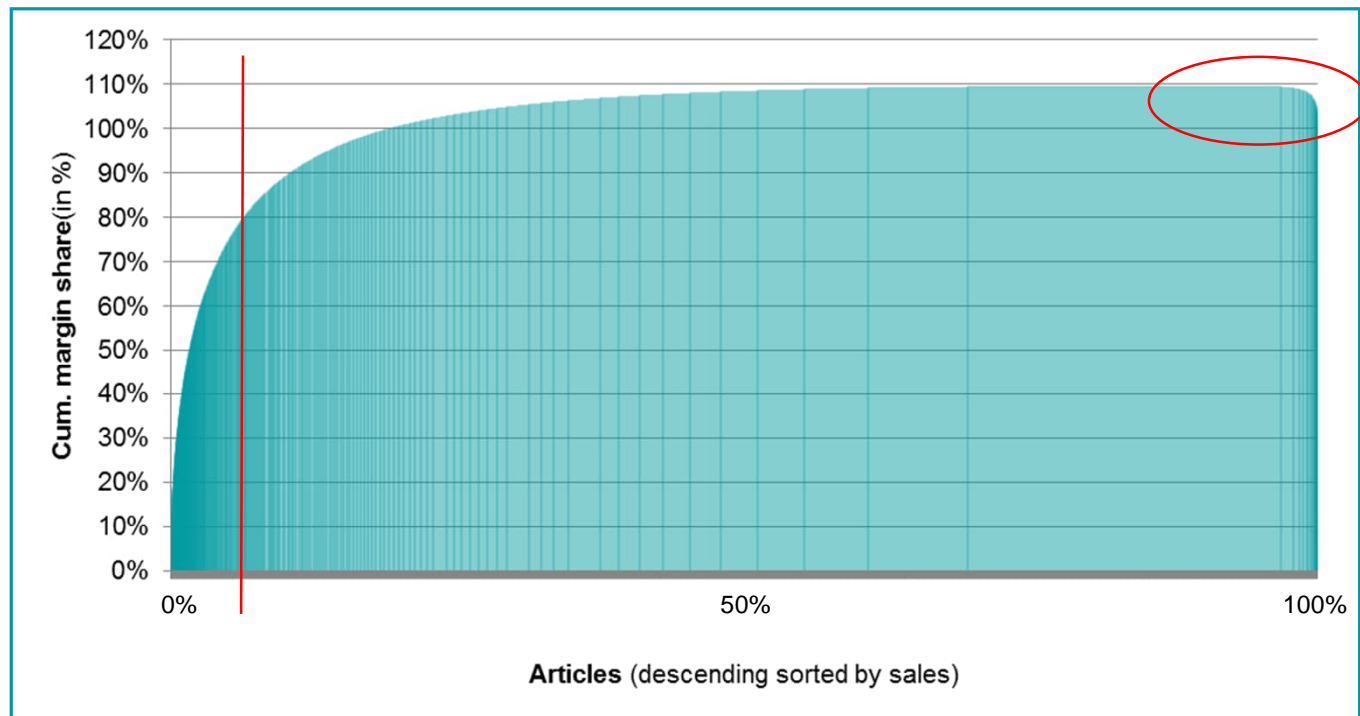


What is the issue with this fictional product family?

Any clue?

Business Case PHOENIX CONTACT Part IV

Portfolio management: analysing active product families



→ ~6% of the article → 80% of the contribution margin

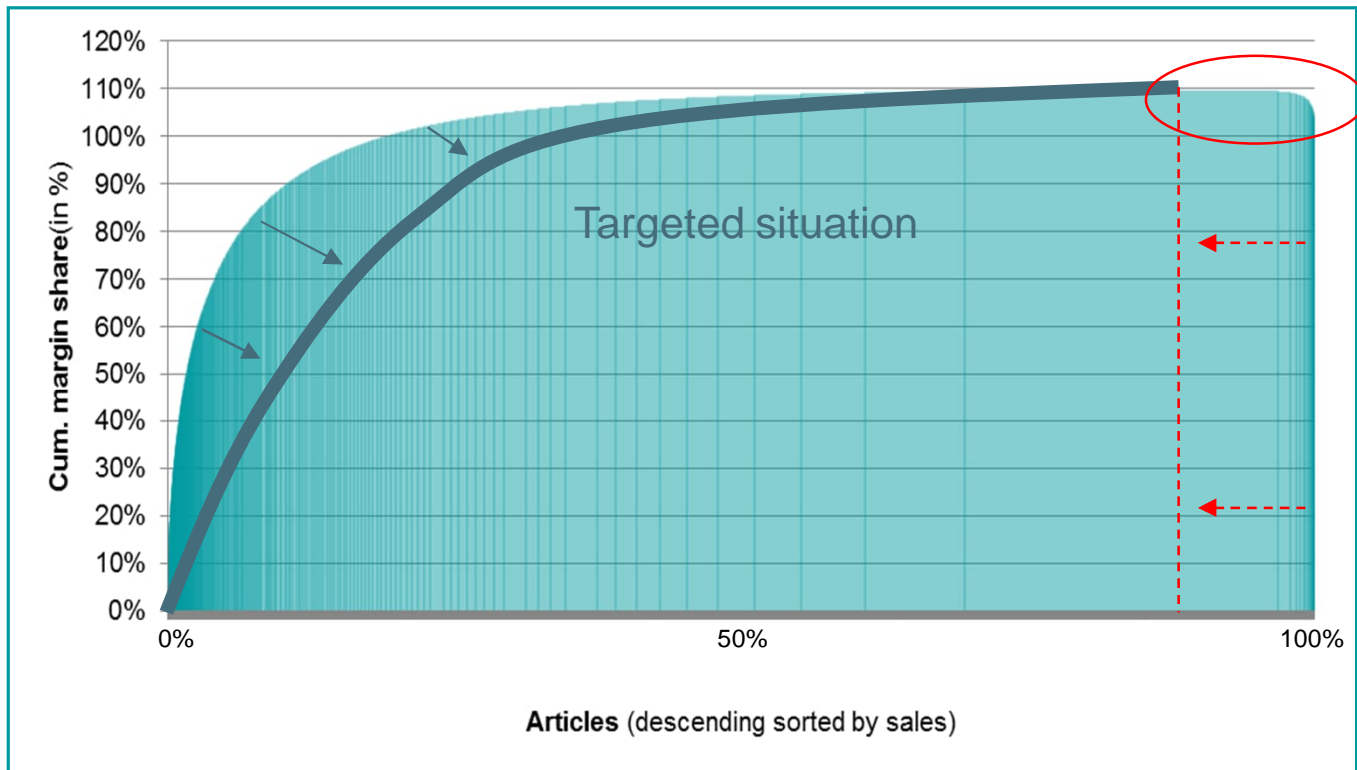
→ high dependency on few articles → risk!

→ Low performer destroy profits

→ **Measures required!**

Business Case PHOENIX CONTACT Part IV

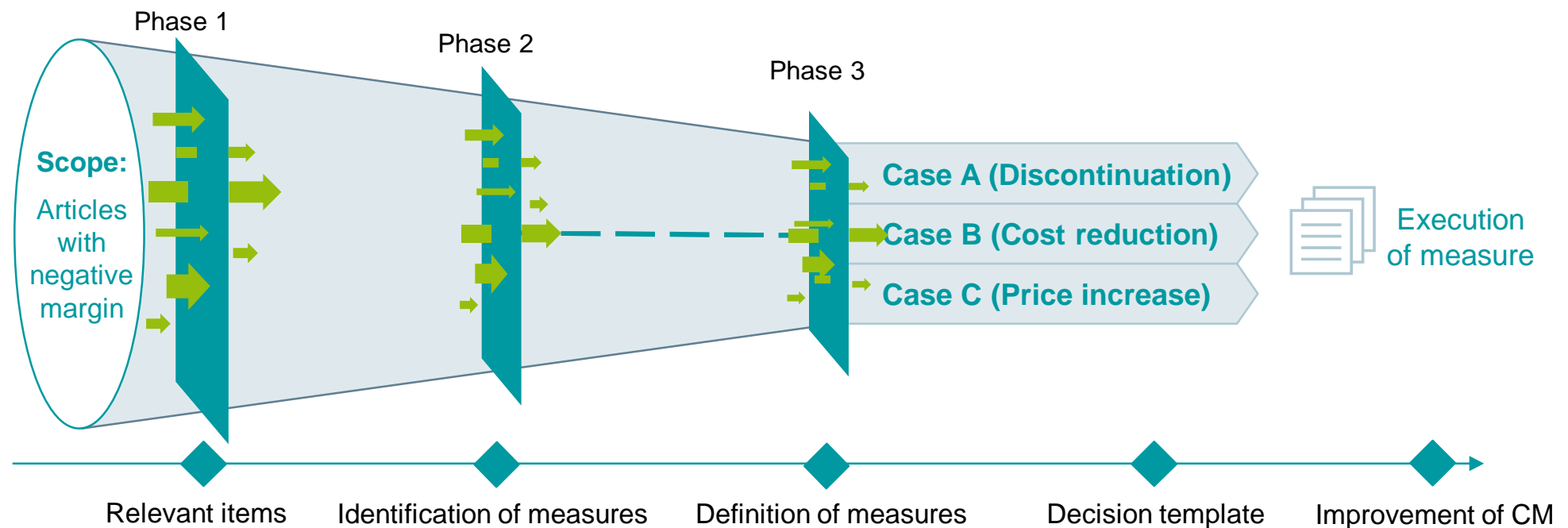
Portfolio management: analysing active product families



- Improving portfolio exploitation
- Reducing dependency from single high performer articles
- Improving contribution margin of low performer articles within the portfolio (e.g. cost cutting / discontinuing / ...)

Business Case PHOENIX CONTACT Part IV

Low-performer: assessments & measures



Business Case PHOENIX CONTACT Part IV

Portfolio management: example of a circular connector family

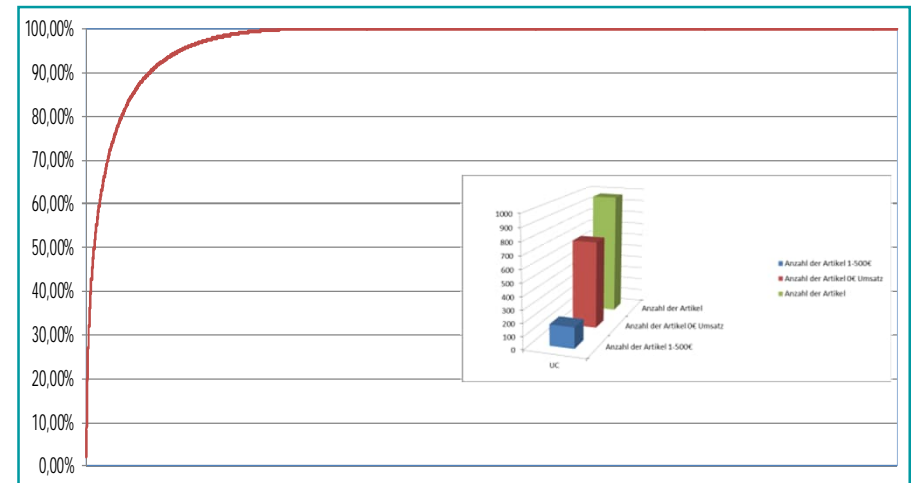
Example:
a circular
connector
family



Portfolio optimization / portfolio adaption

Portfolio clearing

- Identification of low performer (3y w/o sales / low sales vol.)
- Pareto/ ABC-sales analysis across all articles
- Identification of articles for potential discontinuation
- In-depth product family analyses
- Assessment of discontinuation scenarios
- **150+ articles discontinued**
- **Savings +100k€**



Business Case PHOENIX CONTACT Part IV

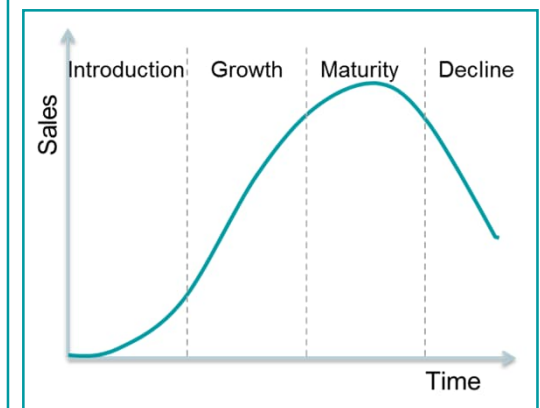
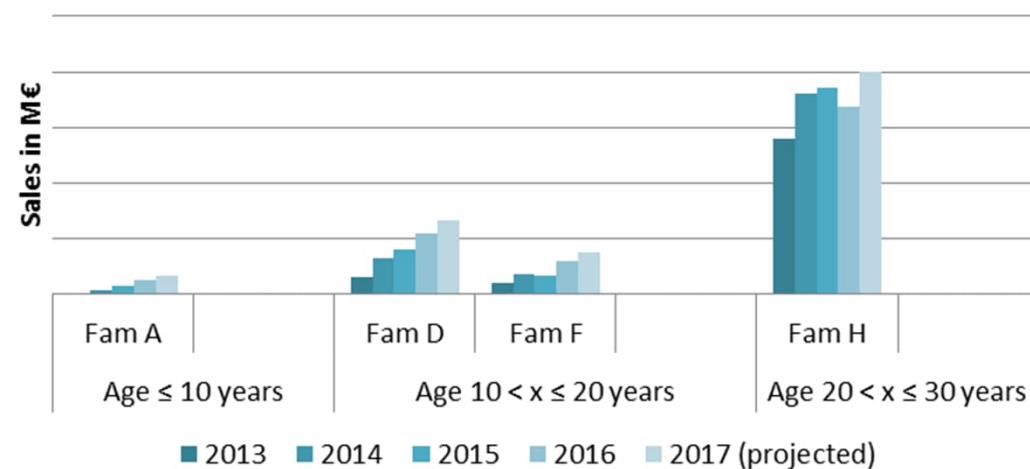
Portfolio management: example of a circular connector family

Example:
a circular
connector
family



Financial performance analyses

- Significant sales growth 2013 – 2017
- Oldest family with highest sales share & lowest sales growth
- Declining margins (oldest product family)



Business Case PHOENIX CONTACT Part IV

Portfolio management: example of a circular connector family

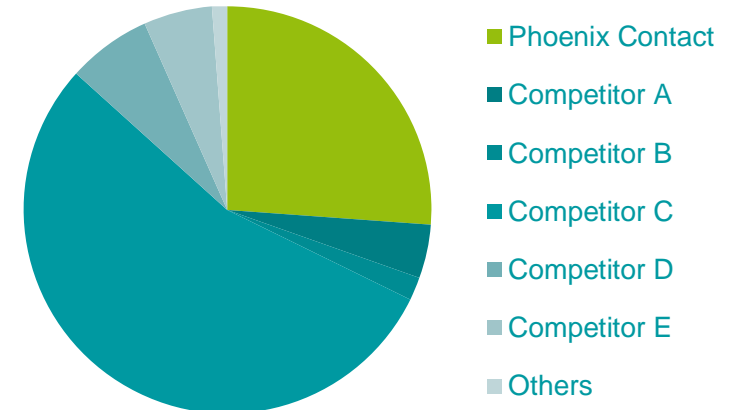
Example:
a circular
connector
family



Market & competitor analyses

Portfolio competitiveness & customer needs

- Existing portfolio needs to become updated
- Customer needs: easy commissioning; cross compatibility; reduced connector size
- Market: ~100 M€ / 5-10% growth p.a.



→ Portfolio clearing required

→ Portfolio renewal required

Today's agenda

- Product lifecycle management / product portfolio management
- New business fields & innovation ventures
- Course wrap up (part I-III)

Business Case PHOENIX CONTACT Part IV

Corporate structure

Group Functions

Core Business Areas



New Business Fields



Business Case PHOENIX CONTACT Part IV

New business fields

- ...creates space and focus for new business areas that secure the future of business
- ...proactively tackles the challenges of digitization
- ...promotes the innovation and start-up culture
- ...provides impulses for innovations within the core business fields of the Business Areas without burden the running business
- ...as a corporate unit is reporting directly to the management board



New business fields

Identifying new business models



Tapping into business areas which are emerging due to digitalization or other disruptive topics.

Phoenix Contact Innovation Ventures GmbH is in charge of developing significant innovation impulses. First investments include holdings in

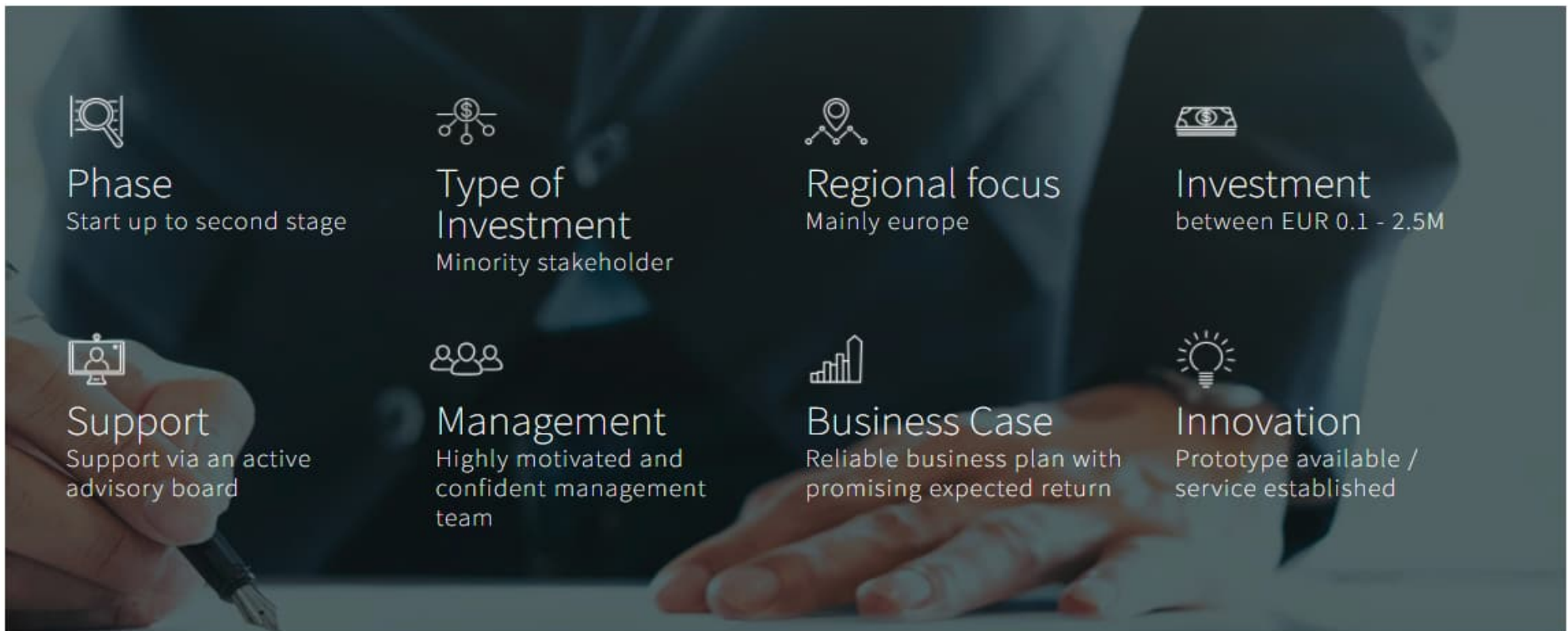
- Eologix Sensor Technology
- Security Matters

Other new business models are those represented by

- Protiq GmbH
- Phoenix Contact E-Mobility GmbH

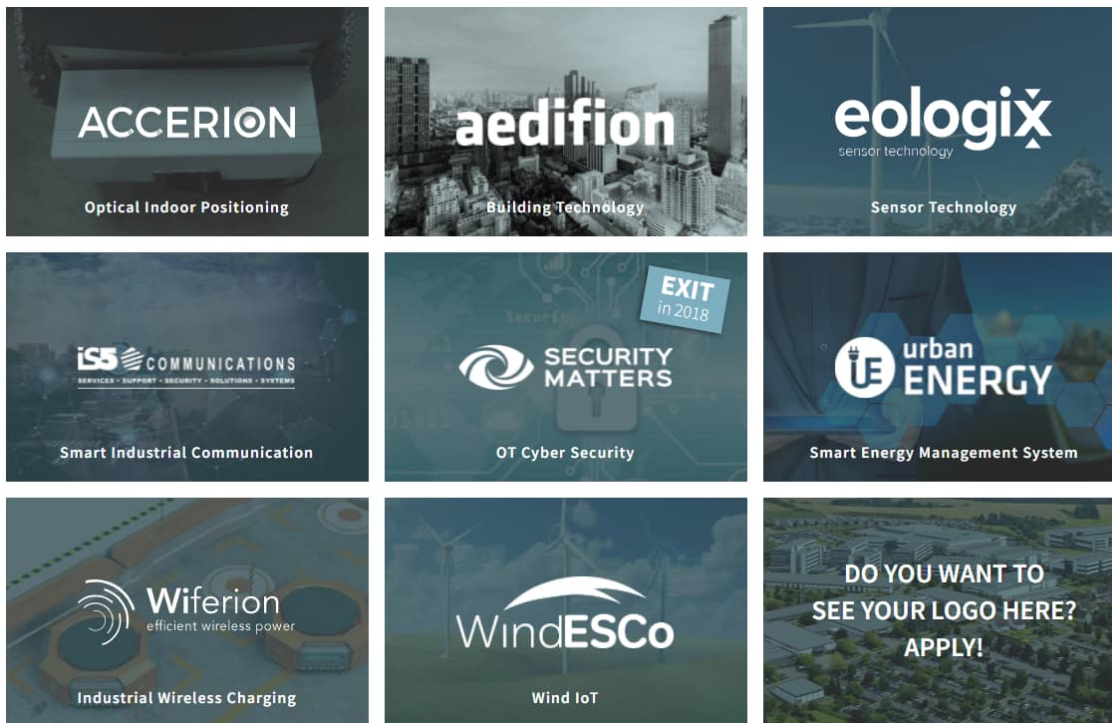
Business Case PHOENIX CONTACT Part IV

Phoenix Contact Innovation Ventures GmbH | Criteria



Business Case PHOENIX CONTACT Part IV

Phoenix Contact Innovation Ventures GmbH: investments





WELCOME TO PROTIQ

3D-printing by PROTIQ

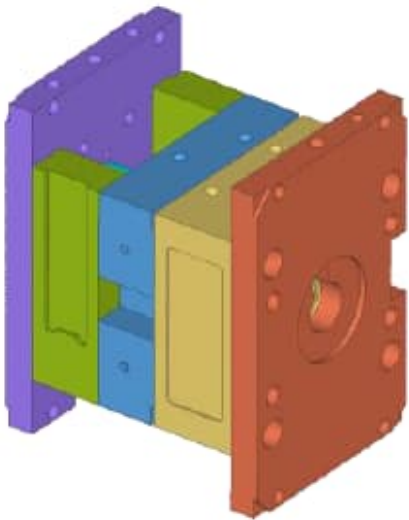
- ▶ PROTIQ was founded in 2016
- ▶ PROTIQ provides a web portal that allows users to upload and configure 3D models. We manufacture the desired objects with high precision and ship them worldwide - fast.
- ▶ Since 2010, PROTIQ has been offering the expertise in additive manufacturing for the Phoenix Contact Group as an internal unit under the name "Rapid Solutions"
- ▶ Marketplace since 2017



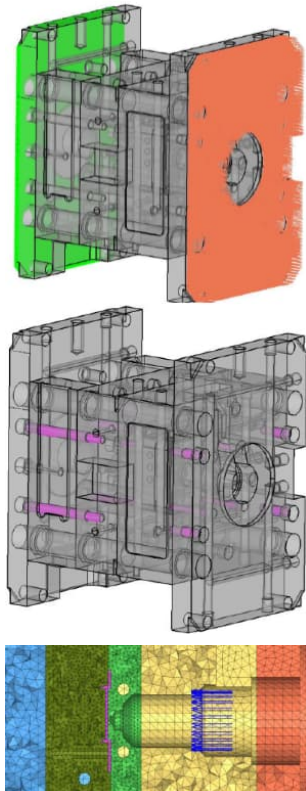
TOPOLOGY OPTIMIZATION

Tool generation 4.0

Conventional tool

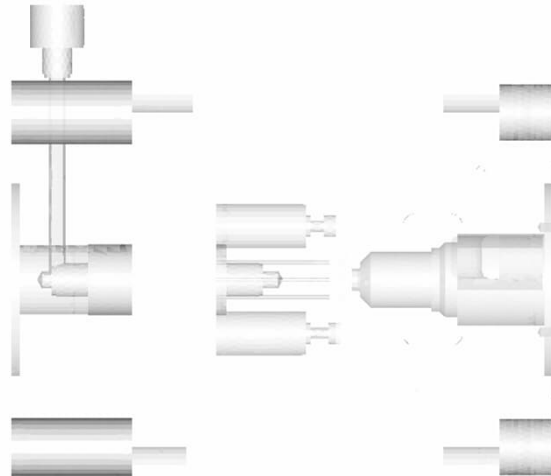


Load cases

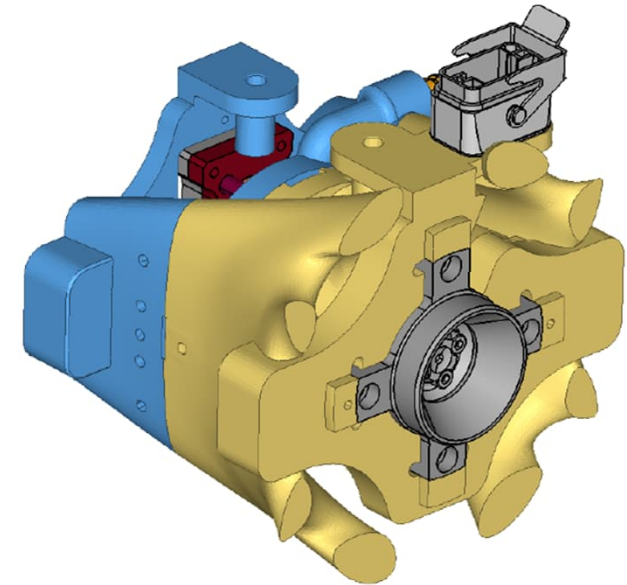


■ ■ ■

Simulation



Realization & assembly



Individualized Gears

- Configurator based on six standardized geometries
- More than 20 parameters provides total flexibility
- Individual customizing to specific customer needs
- Ensured functionality of the configured inductors

Hello Stefan de Groot. May we help you?

Search Language Currency My account Cart

PROTIQ
MARKETPLACE

3D-Printing Configurators News Marketplace Contact **FILE UPLOAD**

Gear Configuration

Select the desired basic form and configure it according to your requirements

Geometries

☒ Spur gear Straight
☐ Spur gear Slanted
☐ Ring gear Straight
☐ Ring gear Slanted
☐ Rack Straight
☐ Rack Slanted

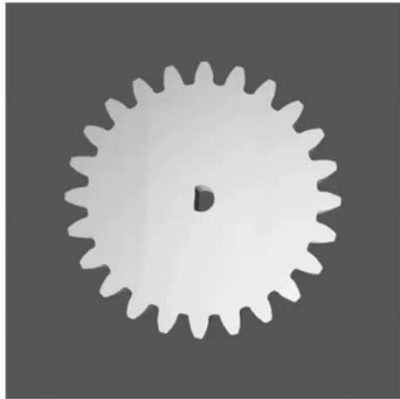
Material:

☐ Polyamide 6x (PA6x)
☒ Tool steel (MS1 - 1.2709)

Configuration:

☒ Single
☐ Pair

Spur gear configuration	Selection	min.	max.
teeth module m:	1.6	0.5	25
number of teeth z:	24	6	123
pitch diameter D:	38.4	9.6	196.8
Extended input (expert mode) <input type="checkbox"/>			
Pitch P:	5.02655	1.5708	78.5398
tip diameter d_a :	41.6	12.8	200
Root diameter d_f :	34.6688	5.8688	193.069
Addendum h_a :	1.6	0.5	25
Dedendum h_f :	1.6656	0.583	29.15
tooth height h:	3.4656	1.083	54.15
base diameter d_b :	36.0842	9.02105	184.932
Face width b:	10	1	30
Ledge:	Front & Back		
Ledge diameter a:	16.8344	1	33.6688
Ledge height a _h :	1	0	10
Axle connection	Selection	min.	max.
	Flattened eye plate		



Business Case PHOENIX CONTACT Part IV

Today's agenda

- Product lifecycle management / product portfolio management
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Overview

Business Case PHOENIX CONTACT

Part I

Innovation culture

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strategy

Technology
strategy

Knowledge
management

IP
management

Innovation
controlling

Resource
management

Innovation
organisation

Innovation process

Idea management

Scouting &
screening

Ideation /
idea
generation

Idea
evaluation &
selection

Realization

Planing

R&D

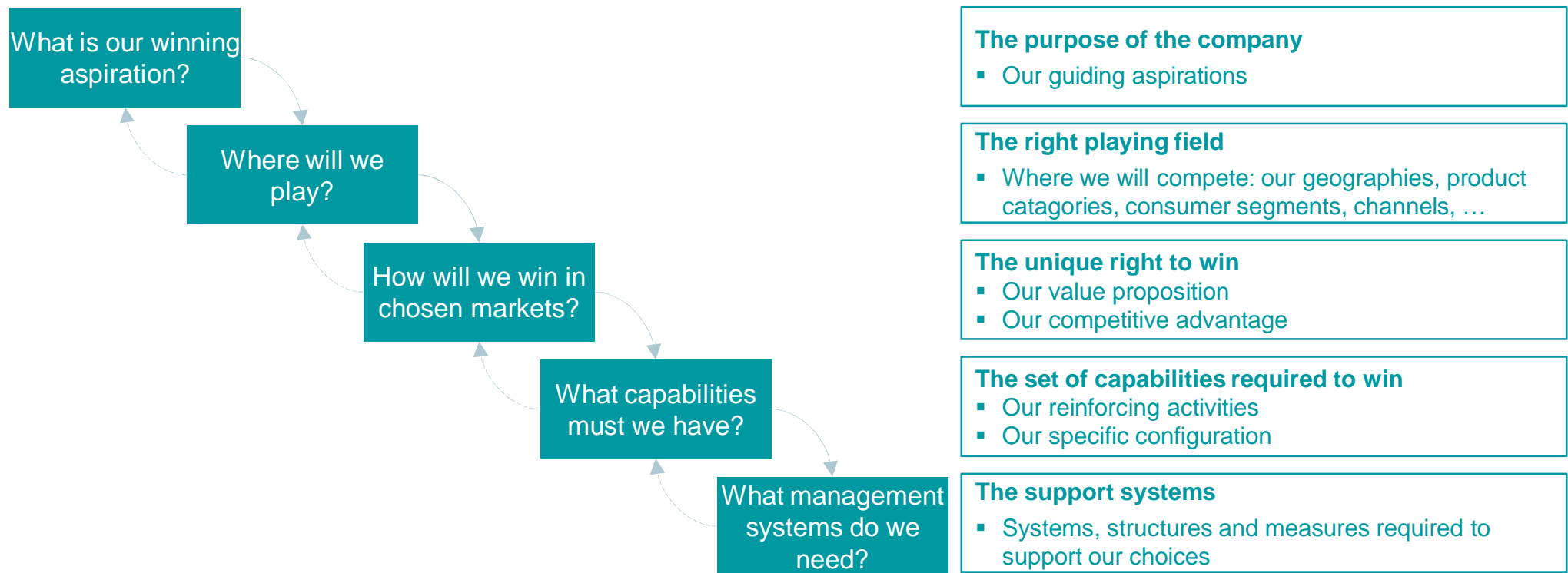
Commercialization

Market
launch

Optimization

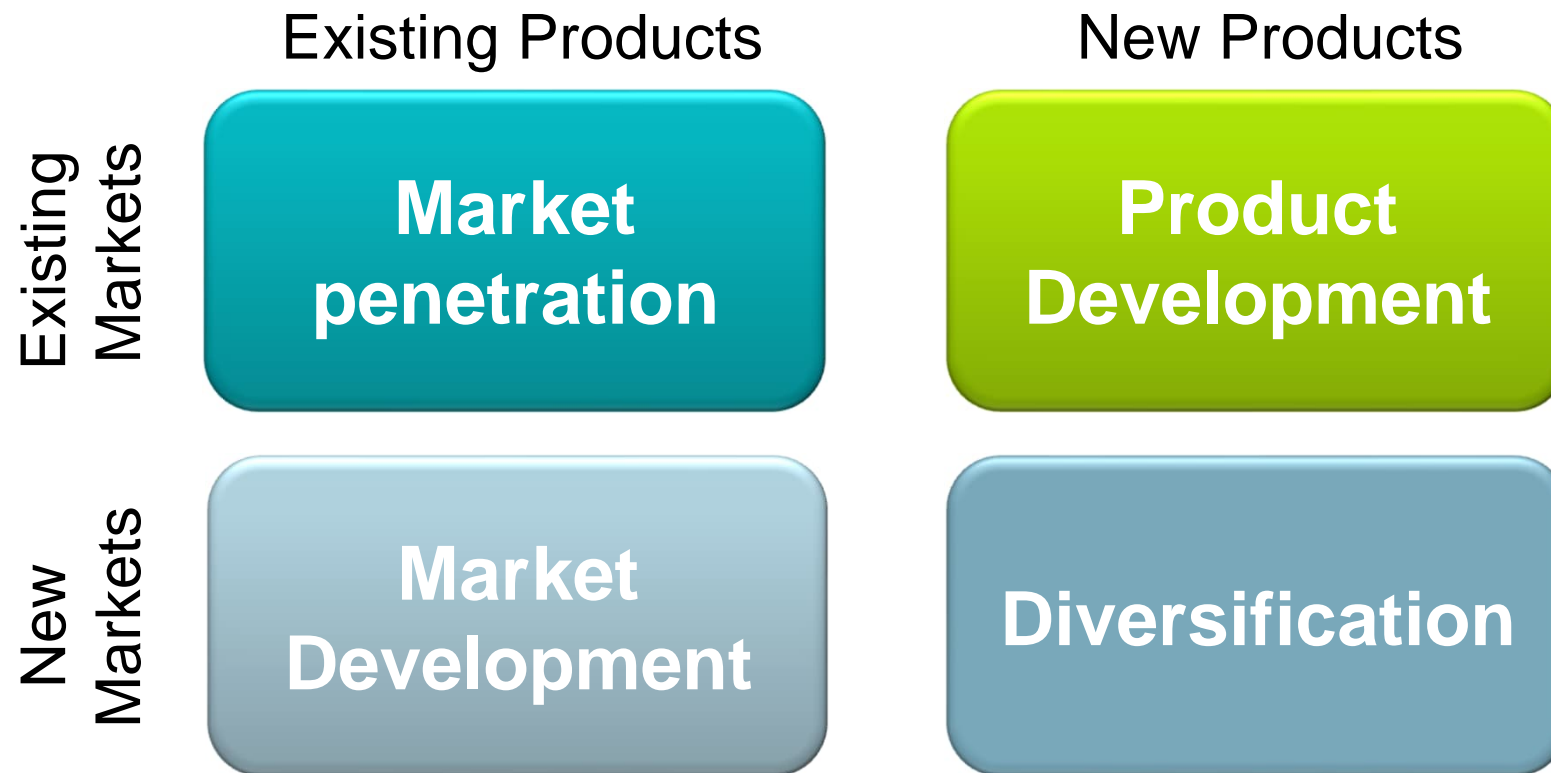
Business Case PHOENIX CONTACT Part I

Breaking down strategy



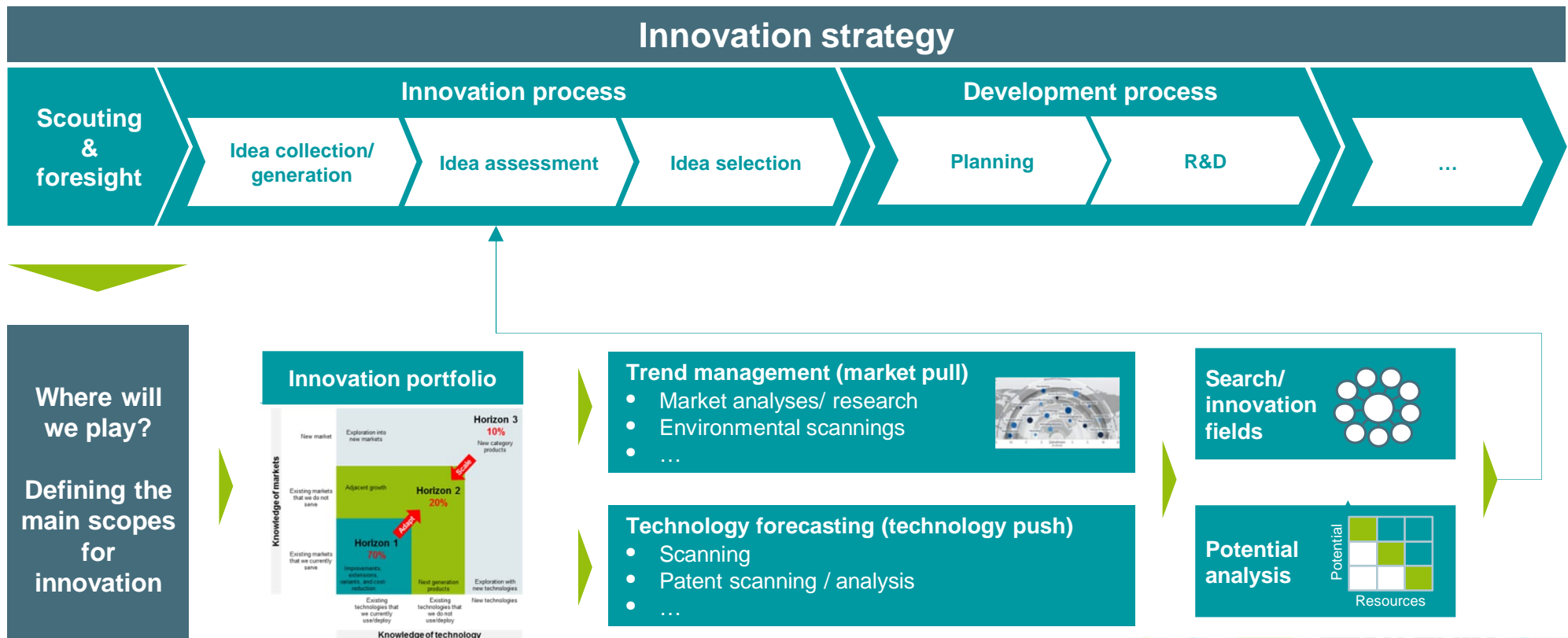
Distribution of resources according to your strategy

Ansoff matrix: matching markets and products



Innovation strategy

Product portfolio development for chosen markets

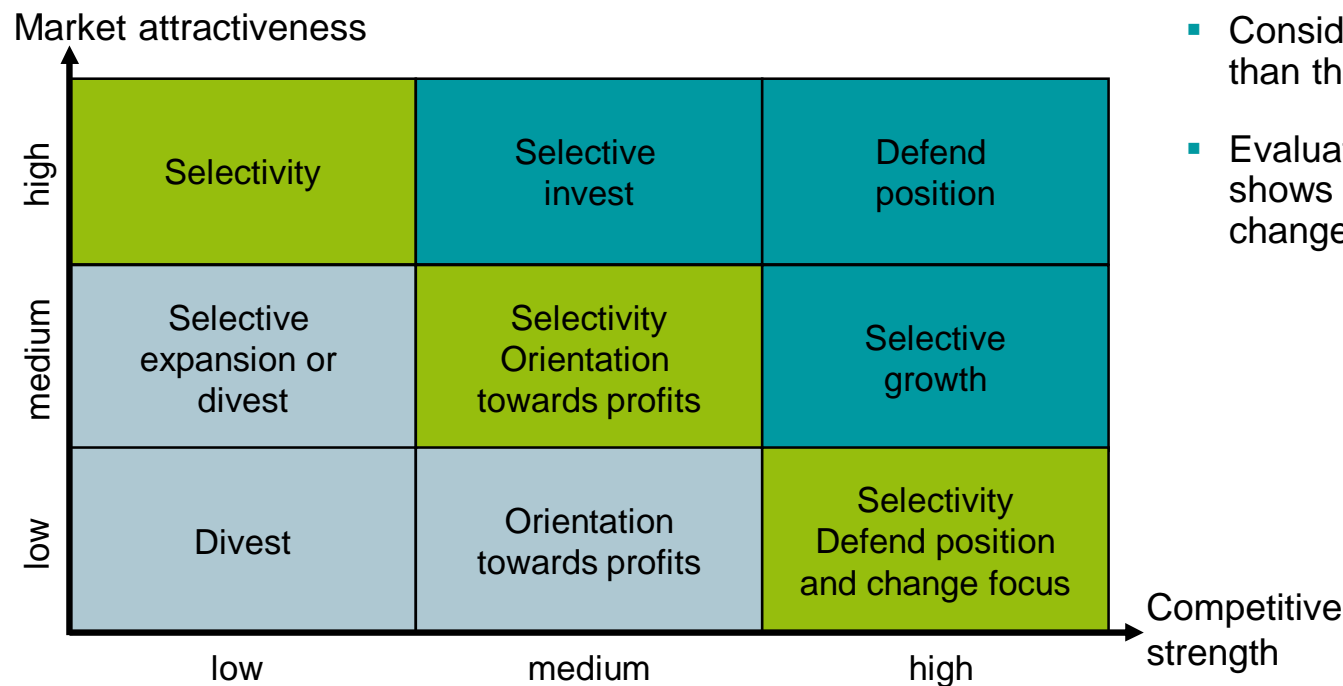


Managing & developing the product portfolio

Strategies for products & business fields



McKinsey portfolio

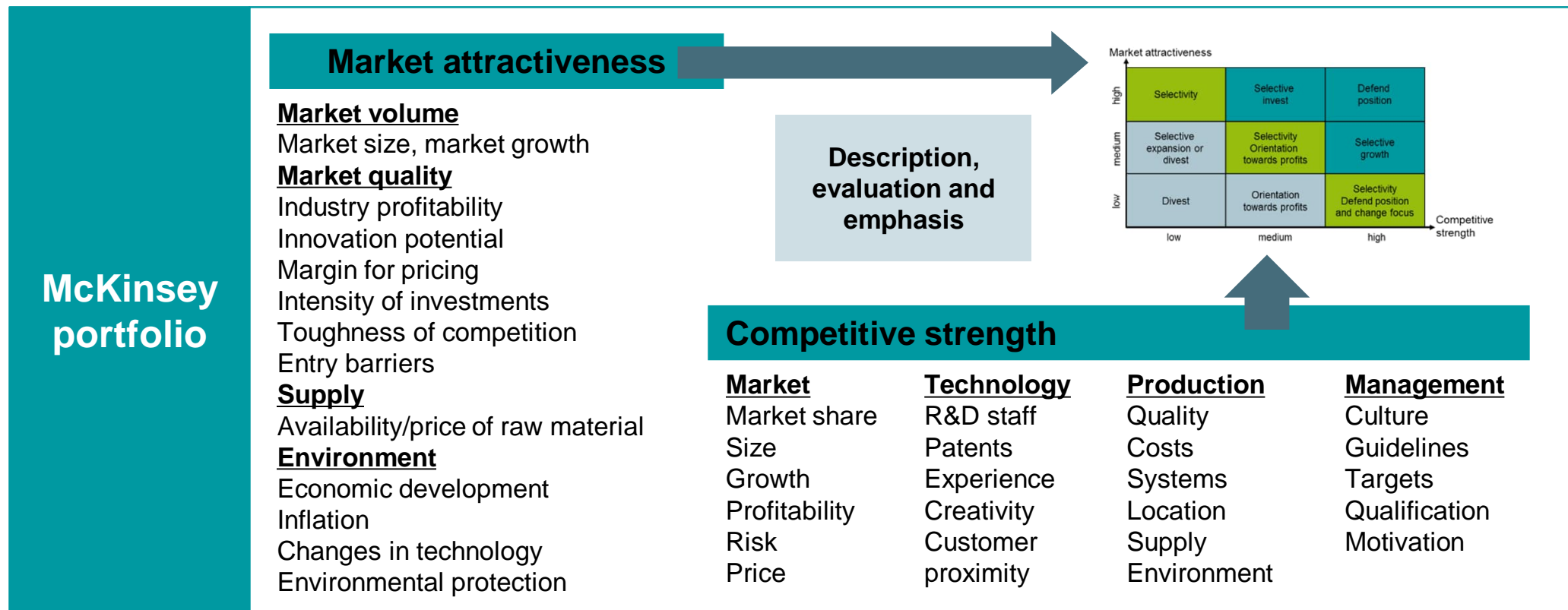


- Considerably more detailed than the BCG portfolio
- Evaluates the capability and shows fields of activity to change the situation



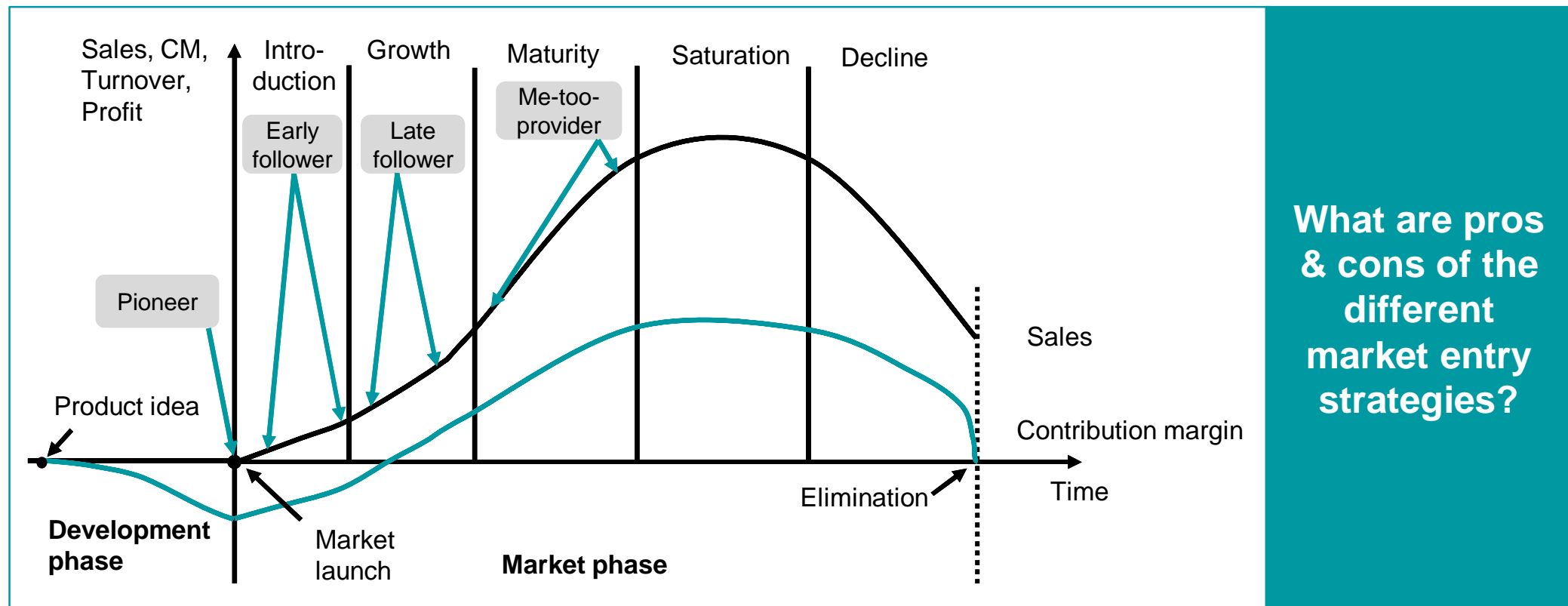
Managing & developing the product portfolio

McKinsey portfolio



Managing & developing the product portfolio

Different market entry strategies across the PLC



Managing & developing the product portfolio

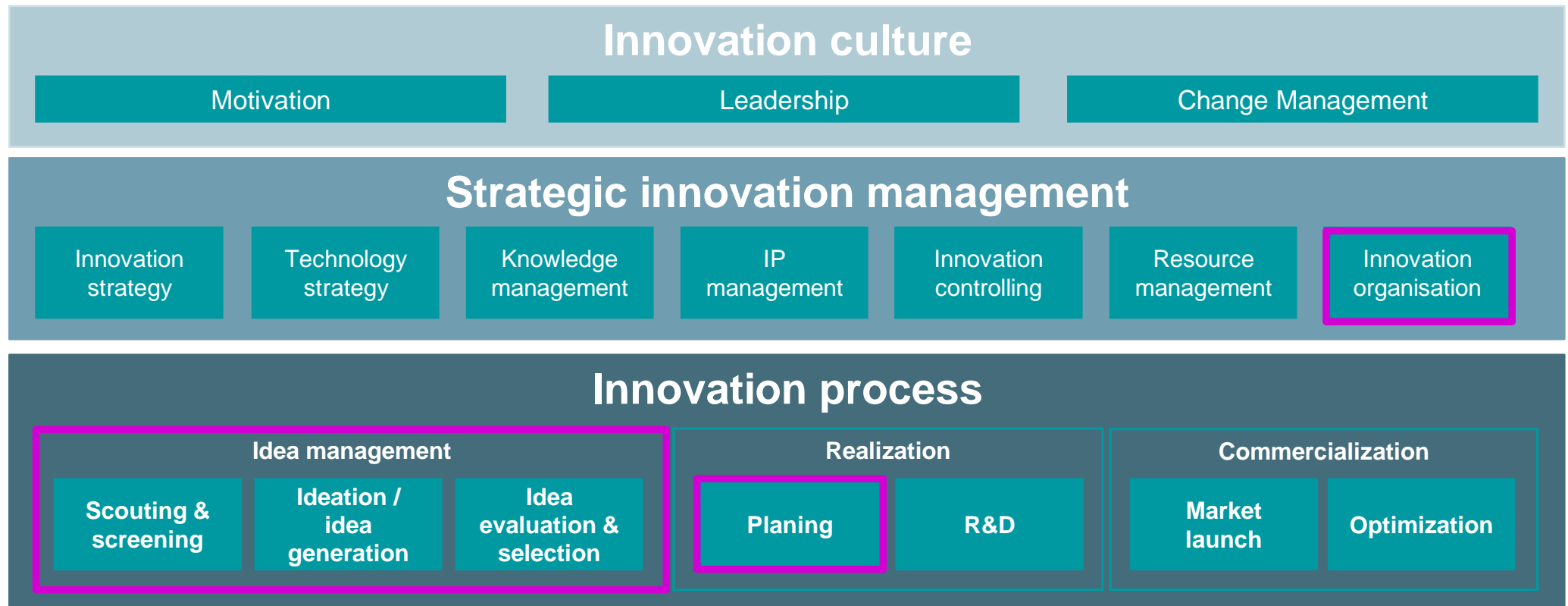
Pros & cons of different market entry strategies

	Amount of RnD	Required investments	Technology/ market orientation	Main duties	Strategic target
Pioneer strategy (First-to-Market)	Very high research efforts	Very high	Rather technology- oriented (Technology-Push)	RnD	Technology leader
Early Follower	Intense development work	Low to medium	Rather market- oriented (Market- Pull)	Development/ sales	Customer orientation
Late follower	Strong customer- oriented development	Low	Rather market- oriented (Market- Pull)	Sales/ development	Customer orientation
Imitation strategy (Me-too)	No RnD effort	Very low	No technological competence	Production/ sales	Cost leader

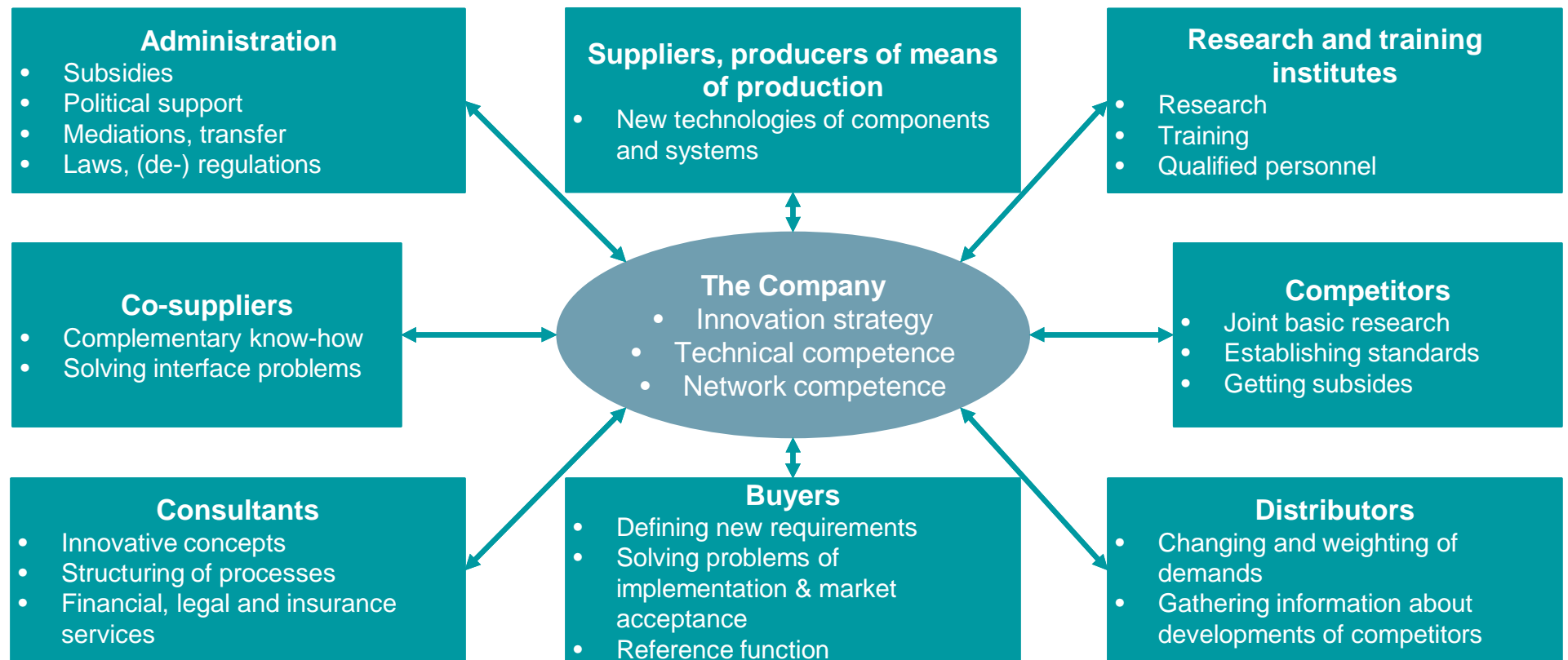
Overview

Business Case PHOENIX CONTACT

Part II

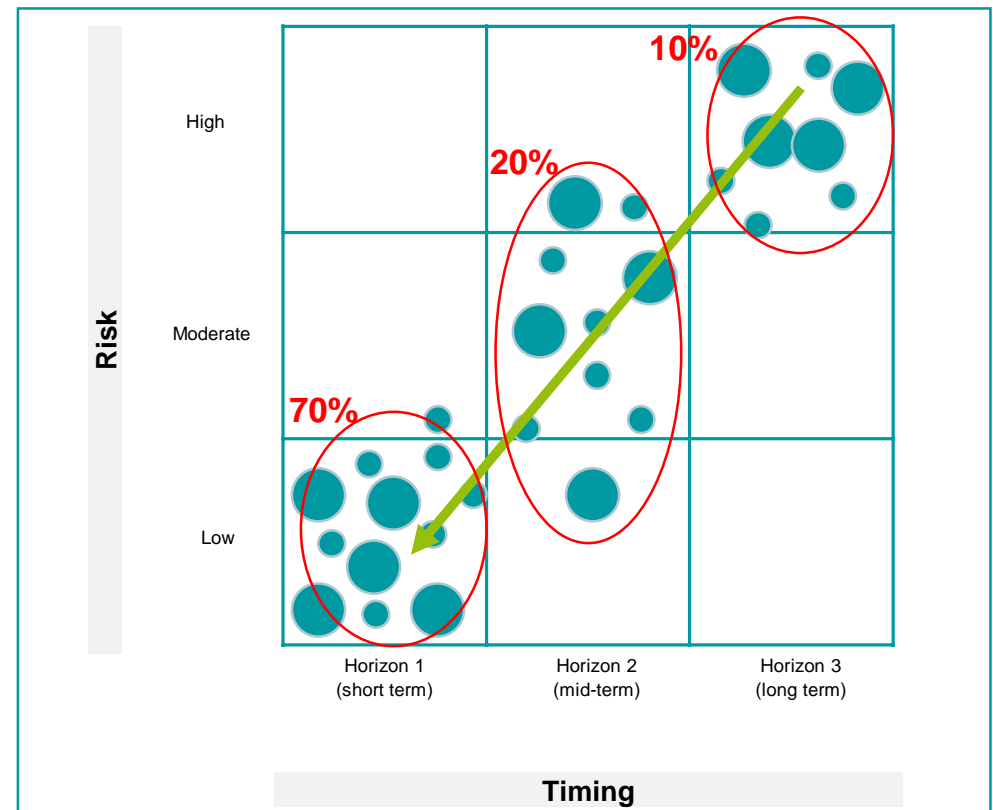
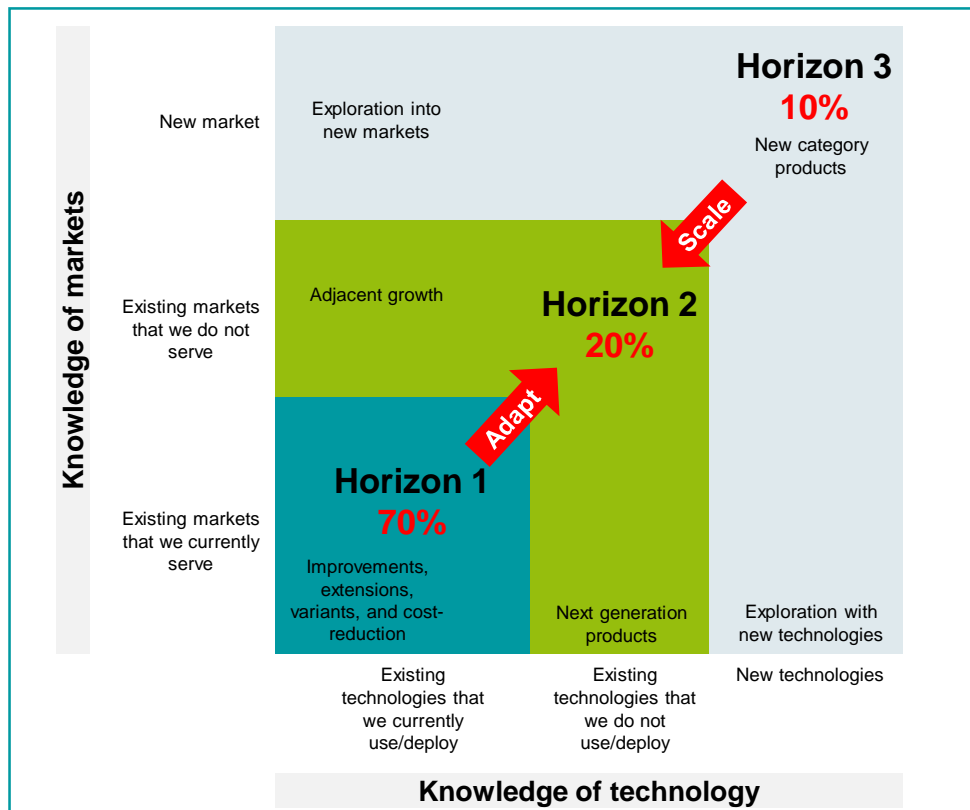


Combining internal & external sources



Business Case PHOENIX CONTACT Part II

Composition of the innovation portfolio



Business Case PHOENIX CONTACT Part II

Managing the tension: exploration vs. exploitation

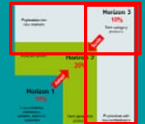
Exploitation

- instils efficiency
- involves refinement, incremental learning, implementation and selection
- thrives in stable and controlled environments
- might entail strategic inertia and limit creativity



Exploration

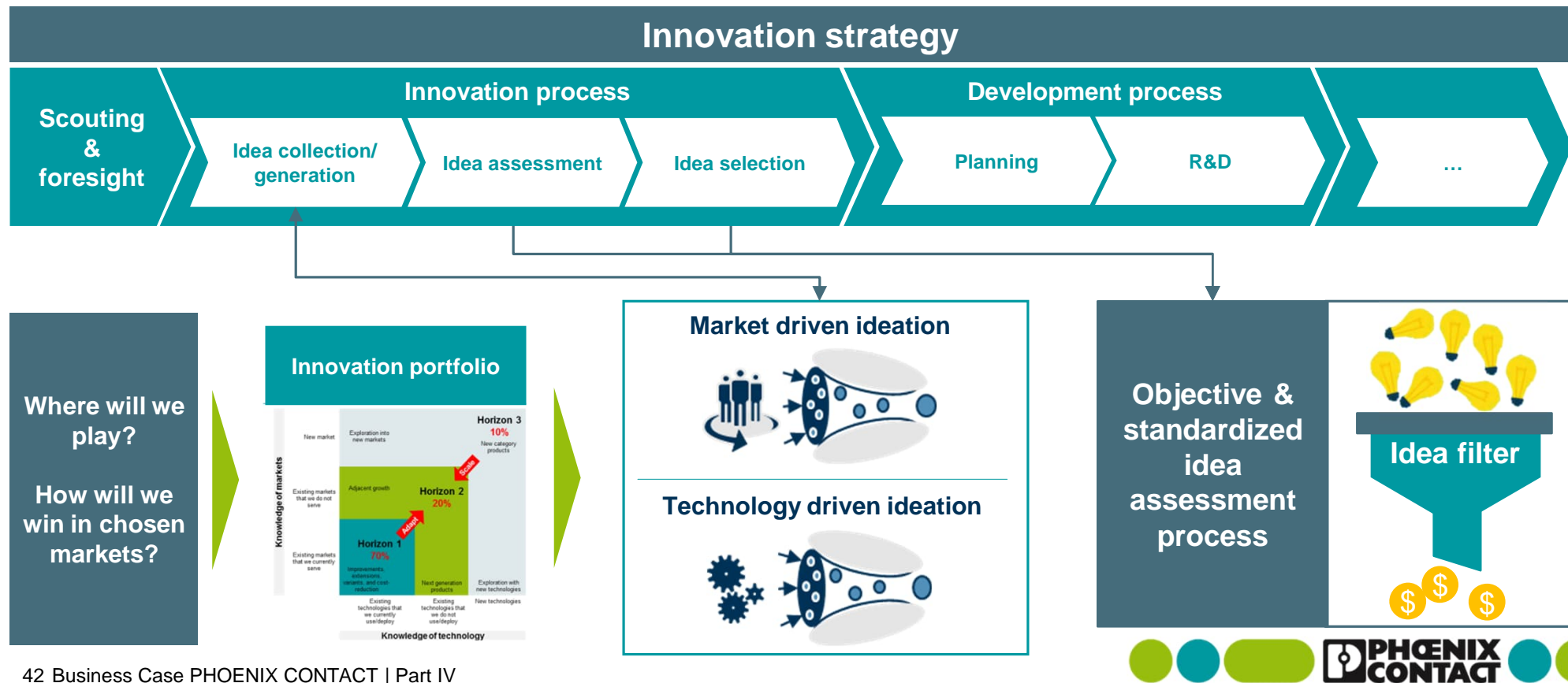
- instils novelty
- involves search, experimentation, discovery and risk taking
- thrives in loose and flexible environments
- might entail disruption and efficiency losses



“The basic problem confronting an organization is to engage in sufficient exploitation to ensure its current viability and, at the same time, to devote enough energy to exploration to ensure its future viability.” (Levinthal and March 1993, p.105)

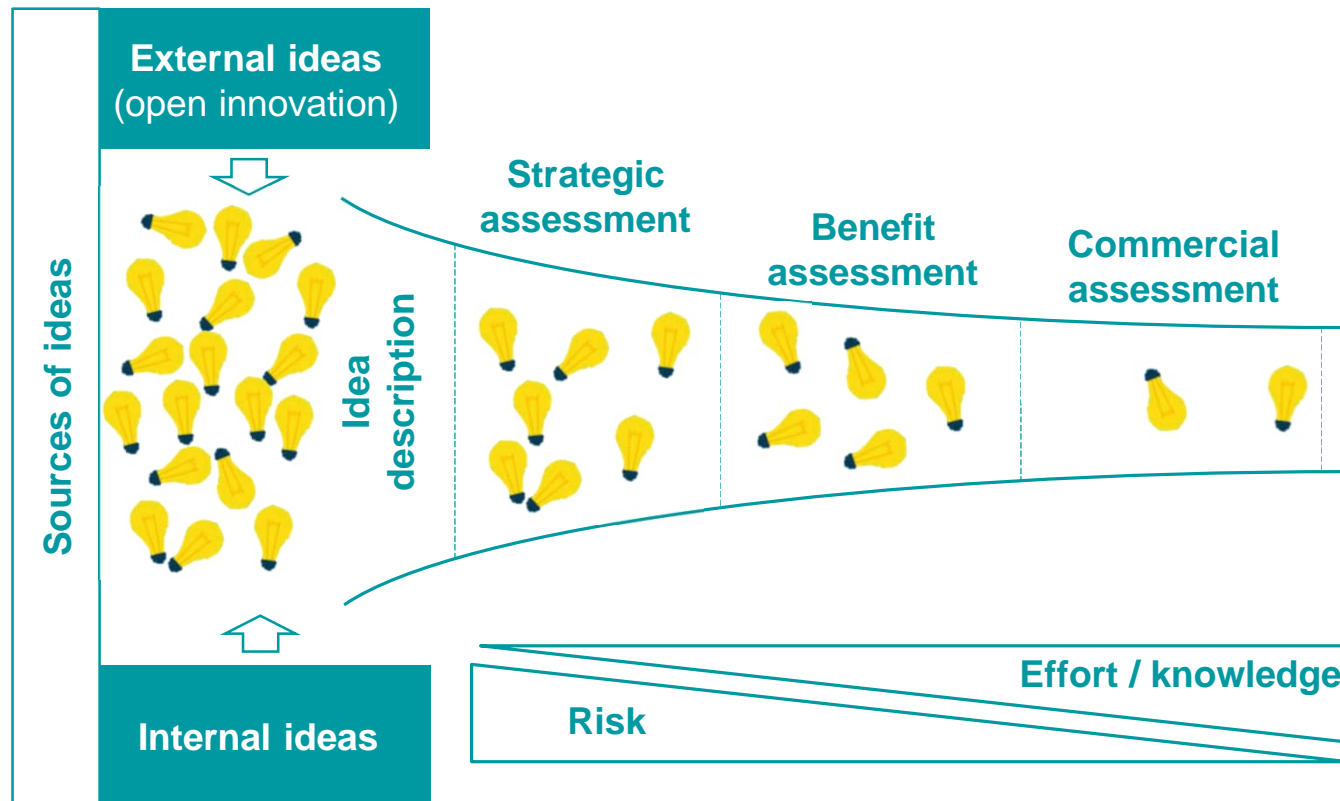
Business Case PHOENIX CONTACT Part II

Idea assessment & selection process



Business Case PHOENIX CONTACT Part II

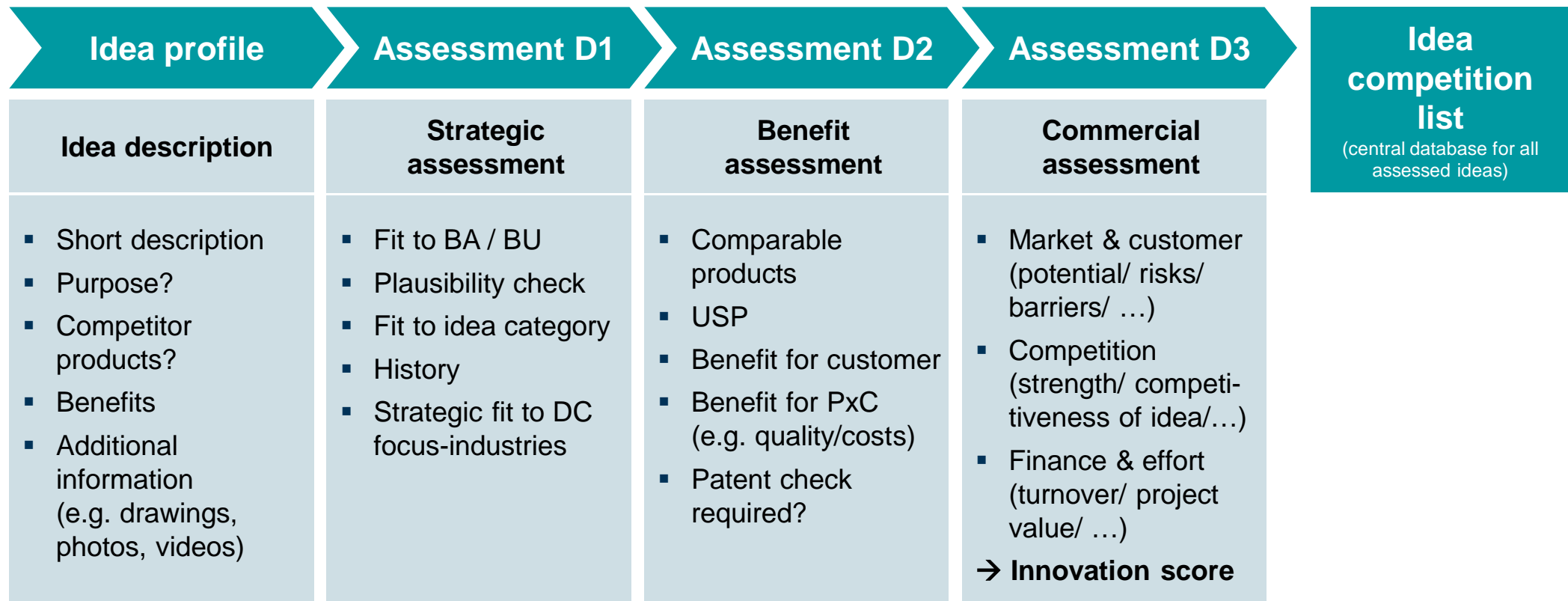
Idea funnel



Idea competition list
(central database for all assessed ideas)

Business Case PHOENIX CONTACT Part II

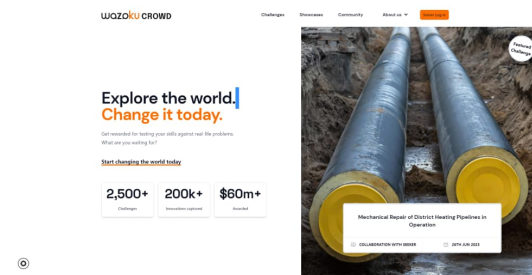
Idea assessment process



Business Case PHOENIX CONTACT Part II

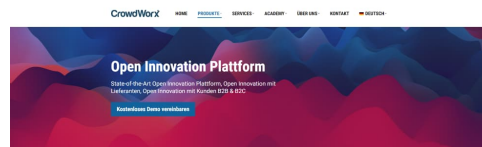
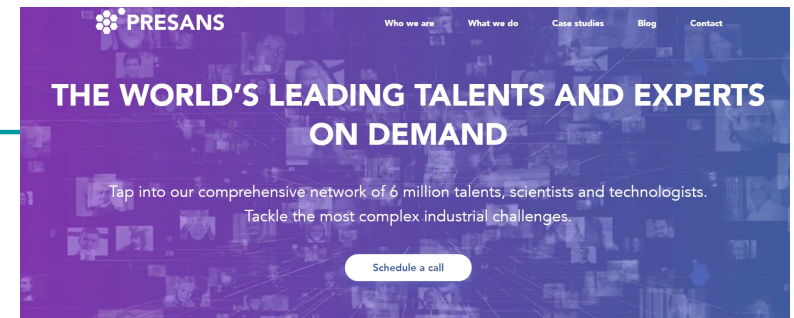
Open Innovation: crowd sourcing

OI
platforms
in the www



www.wazokucrowd.com

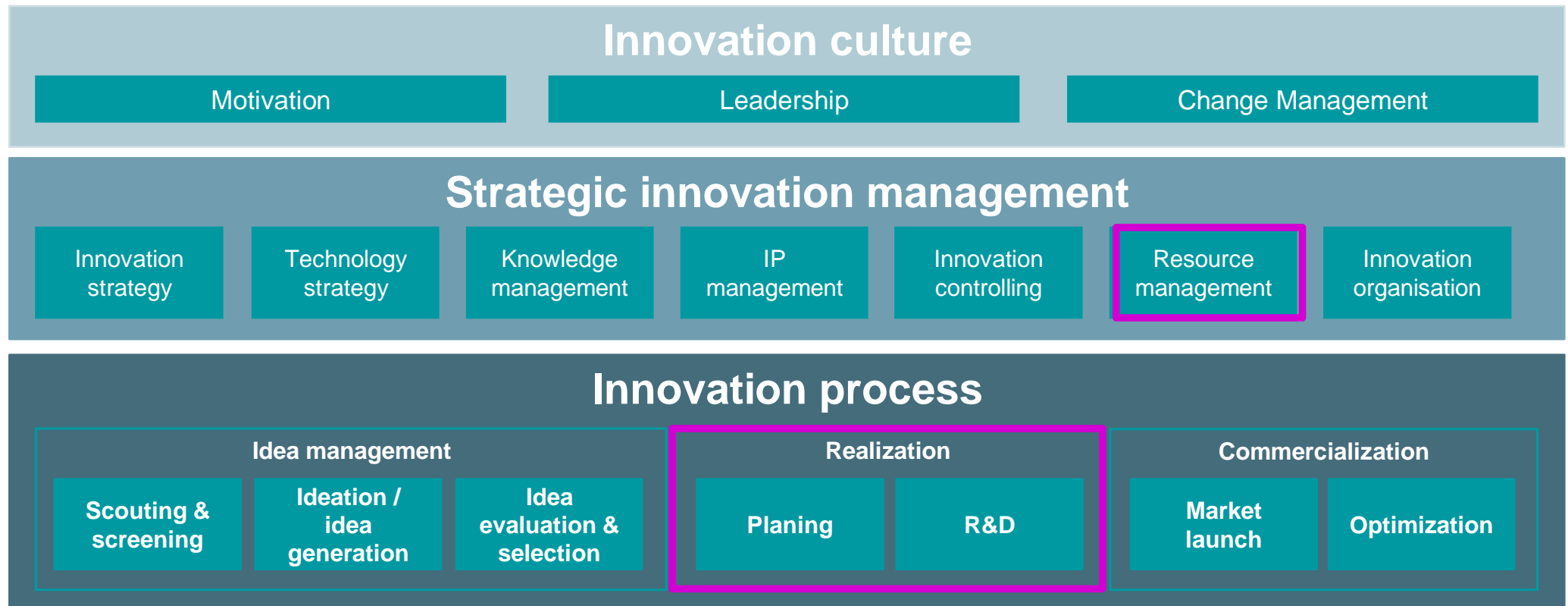
www.presans.com



www.crowdworkx.com

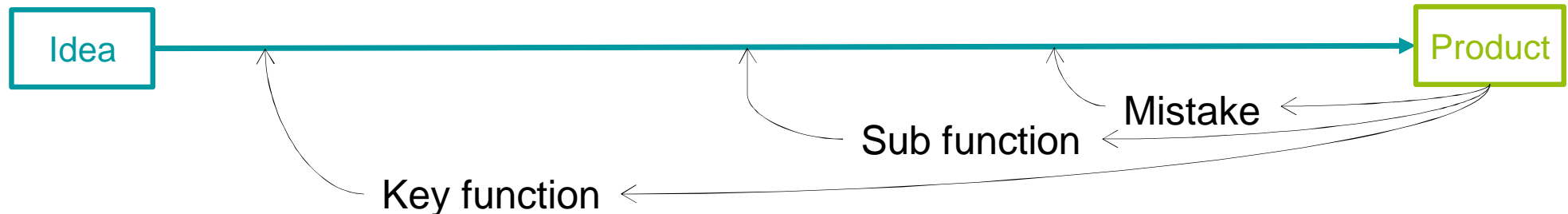
Business Case PHOENIX CONTACT

Part III



Why project management? - path from idea to product

→ The „fast way“

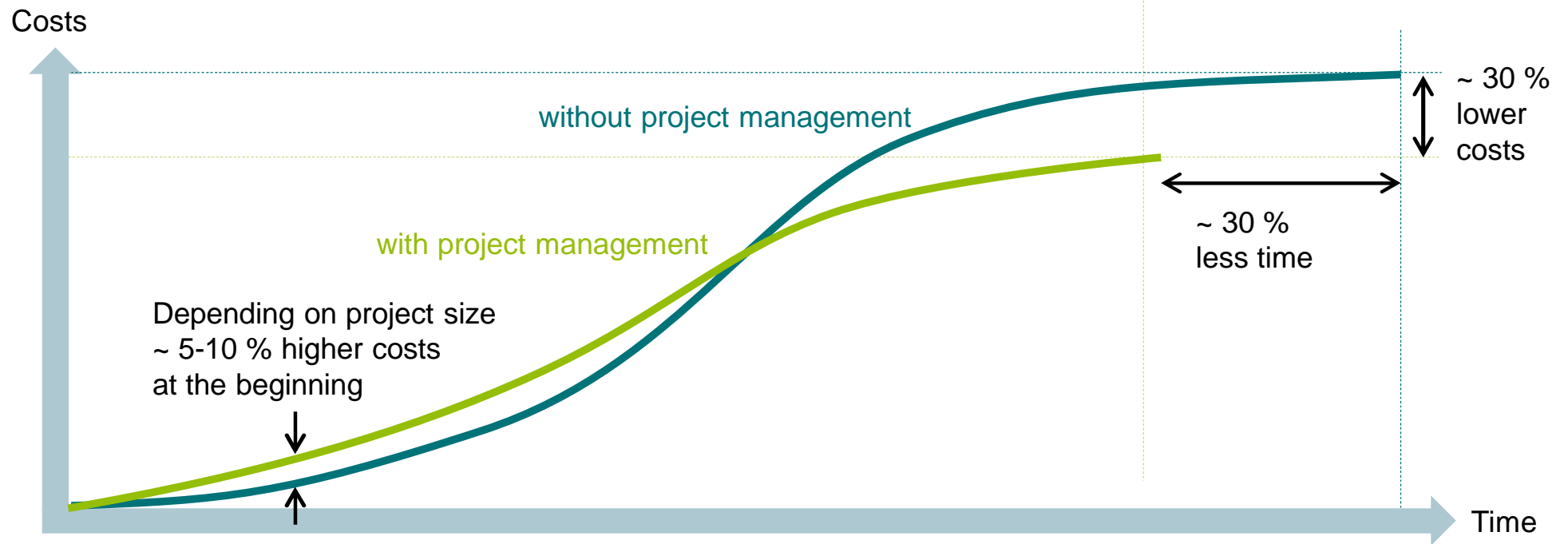


High level of **risks**:

- Problems are detected at the end of the development with all the bad consequences (time, money, ...)
- There is no defined “setback”

→ not calculable

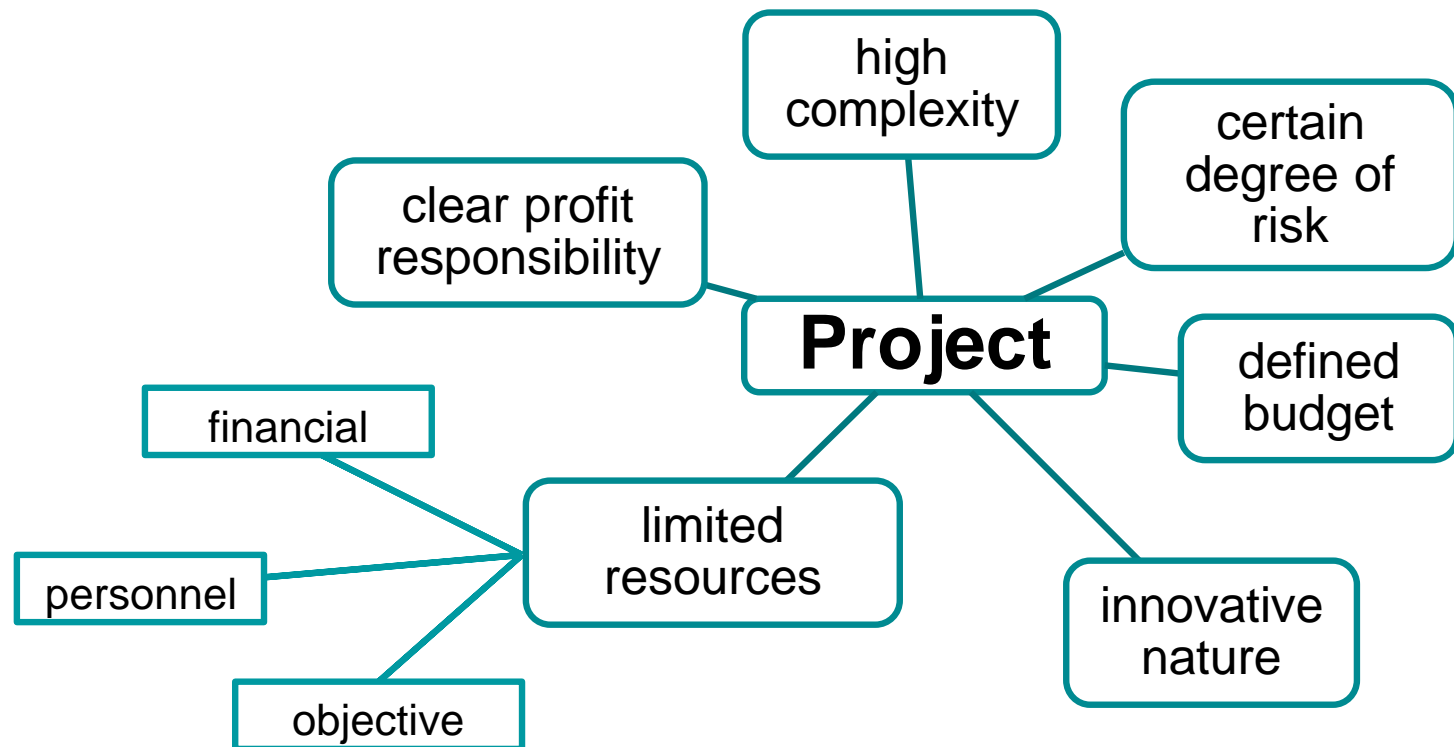
Why is project management required?



→ Project management helps to reduce time and costs

Characteristics of a projects

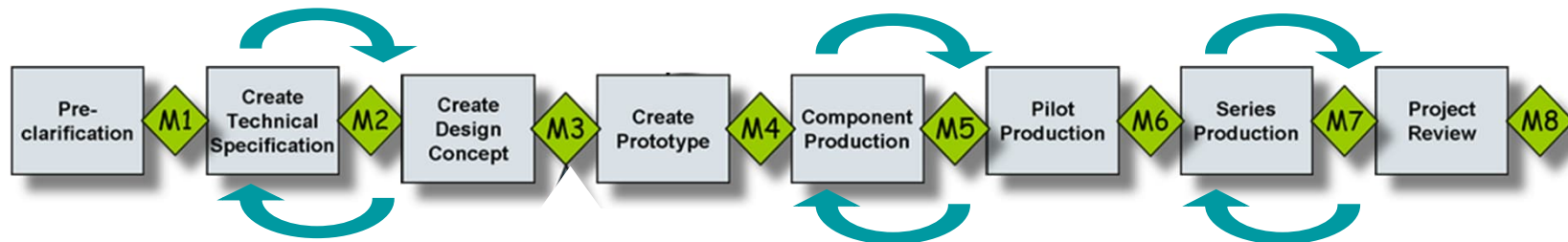
What
characterizes
a project?



Project organization: matrix team



Waterfall: Stage-Gate[®] Milestone Process

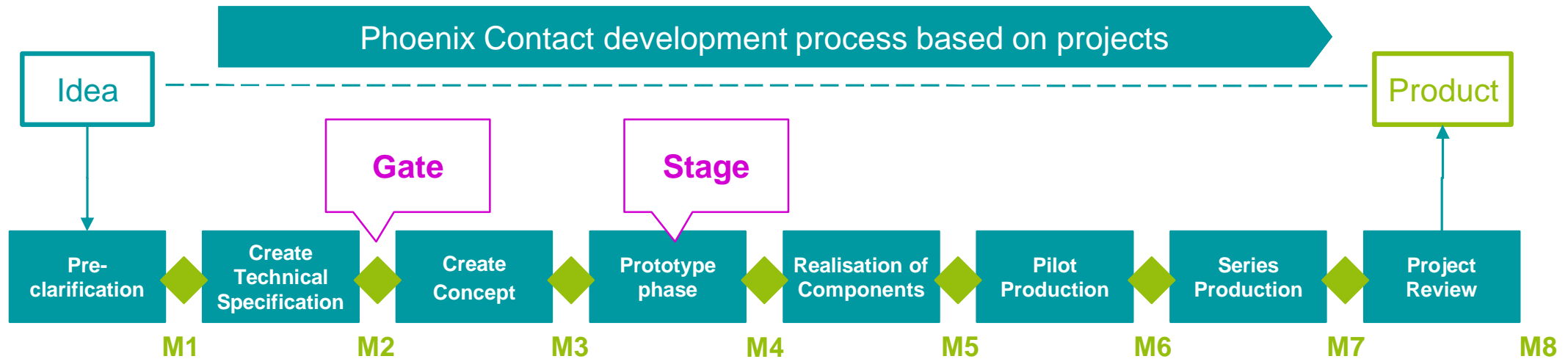


...allows to shorten the “time to market” thanks to the early detection of problems and the avoidance of setbacks in the development process and...

... makes the project more calculable & safe

Business Case PHOENIX CONTACT Part III

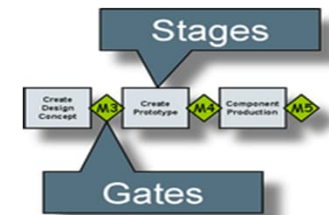
Product development @ PxC: Milestone Process



Product development @ PxC: Milestone Process

The stages

- In each stage, the team deals with a set of specified activities that are based on the “Best Practices” of Product Development.
- Each stage has to be completed successfully before approval (from management) is granted and the next stage of the product development can be tackled.
- All stages are interdisciplinary – several departments of a company are involved.
- Prior to each stage, there is a decision or “gate”.



Product development @ PxC: Milestone Process

Design concept phase

Definition of product concepts/ M3



→ **M3 gate meeting:** The concept and the steps to realization of the product are known to all involved in the project. They serve as basis for further ascertainment of the product.

Criteria:

- If mechanical components are created during the project, a CAD 3-D model must exist. If necessary, the order for production of a rapid prototype is issued or procurement of samples (components, standard parts etc.) is initiated.
- Development has reach a level of maturity that supplies meaningful results during tests on 3D models/ rapid prototypes The project manager is appointed and has taken over the project order.
- In the case of electronics: the function blocks for realization of the product are determined and the division between hardware, firmware and software took place.
- Depending on the risk assessment, a product FMEA must be available.

Business Case PHOENIX CONTACT Part III

EXAMPLE: developing product concepts with customers

Innovation
workshops
with a large
inverter
supplier

(here:
morphological
box)

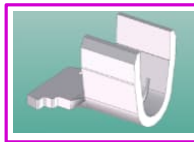
Contact system



Field connection



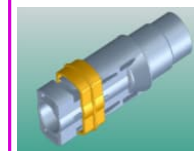
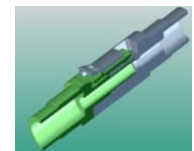
Device connection



Wall feed through



Locking



Time for your questions.

Many thanks for your attention.