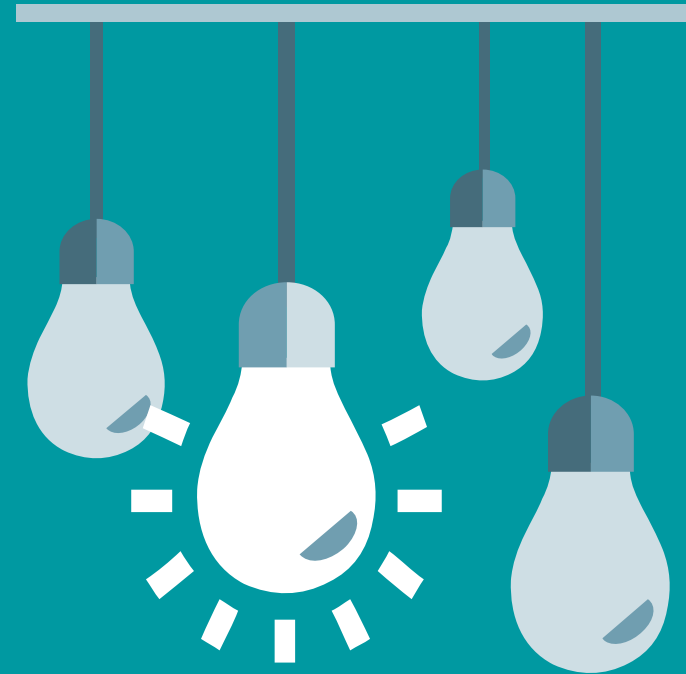


Innovation and Development Strategies

Business Case PHOENIX CONTACT
Part II

Christian Helmig



Overview

Business Case PHOENIX CONTACT

Part II

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

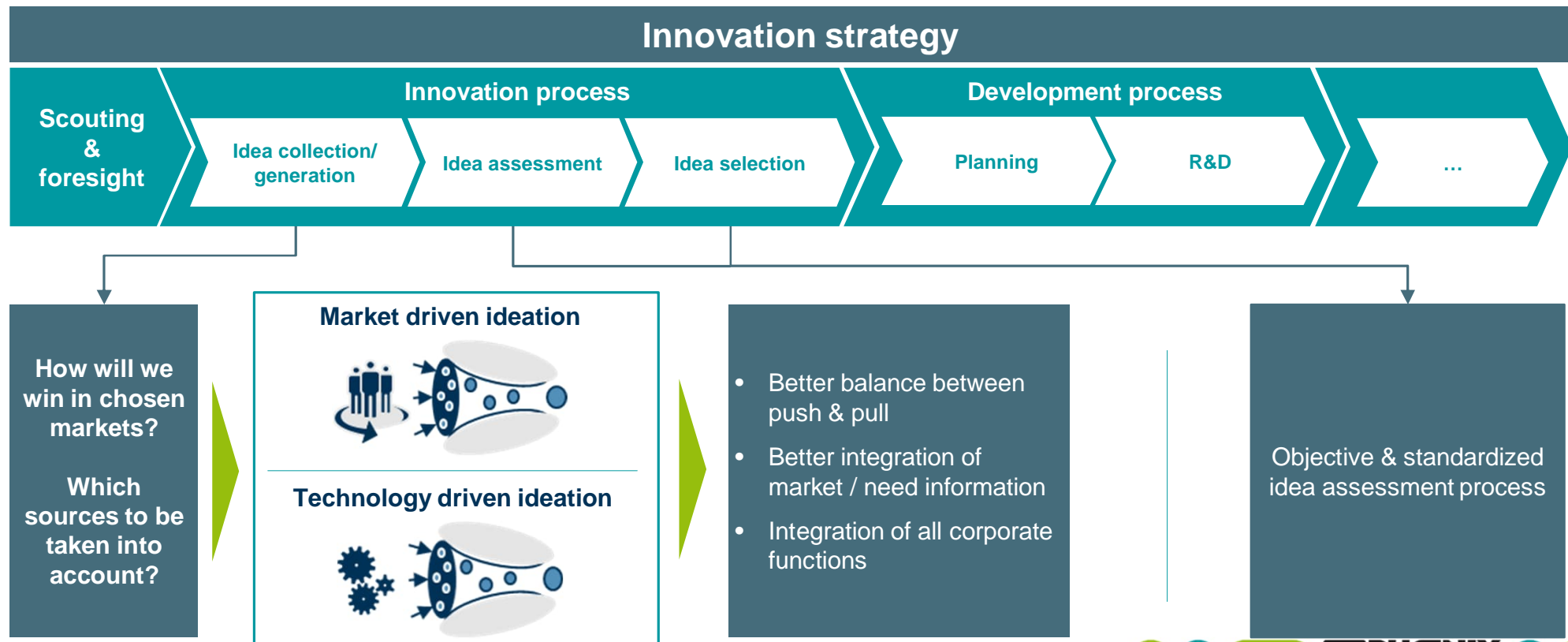
Business Case PHOENIX CONTACT Part II

Today's agenda

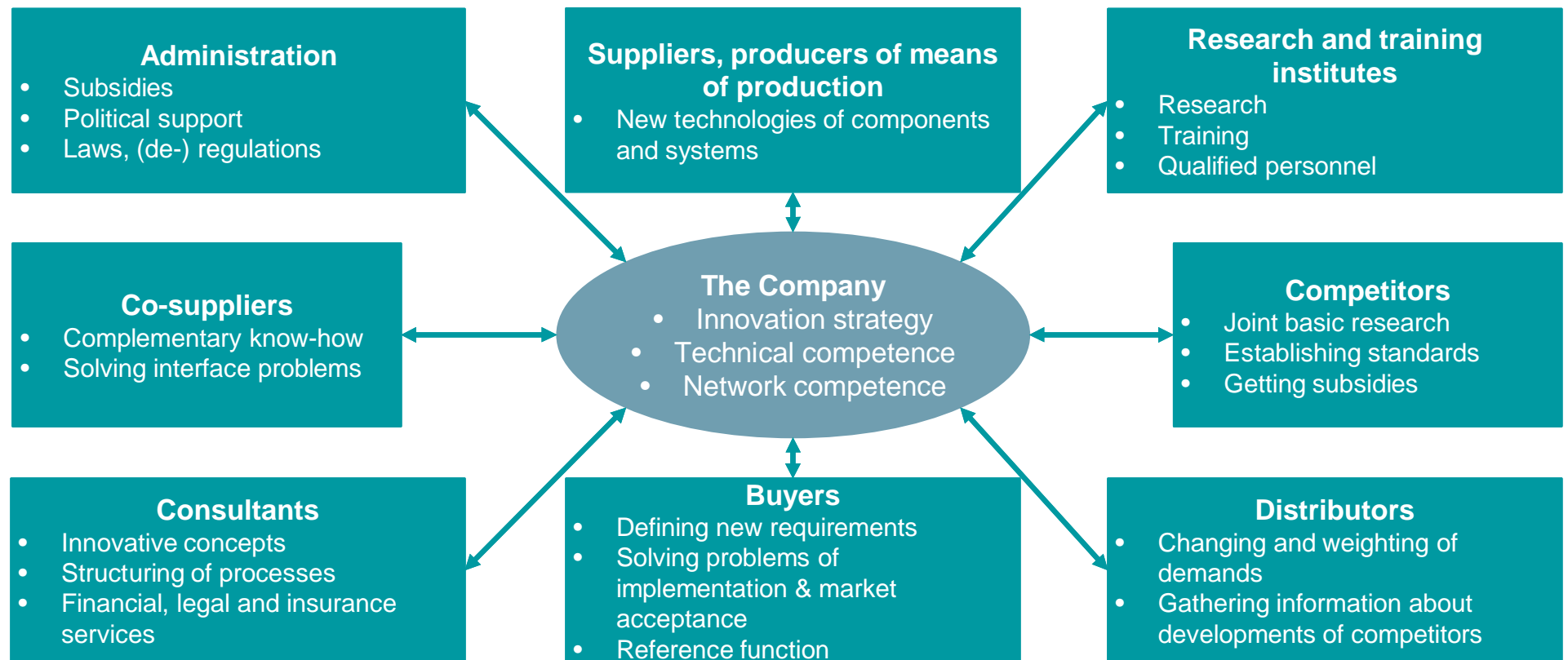
- Sources of ideas
 - Lifecycle management
 - Innovation portfolio
 - Idea assessment
 - Culture & innovation organization
 - Mass customization
 - Technology development

Business Case PHOENIX CONTACT Part II

Getting the right product ideas: push vs. pull

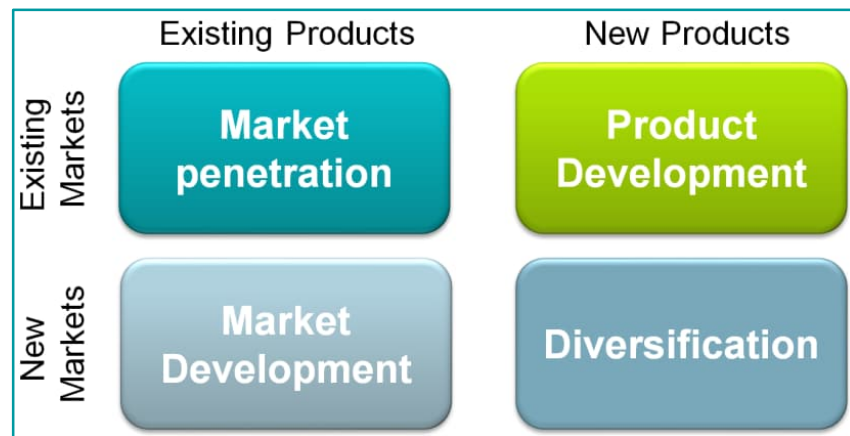


Combining internal & external sources



Business Case PHOENIX CONTACT Part II

Sources of ideas

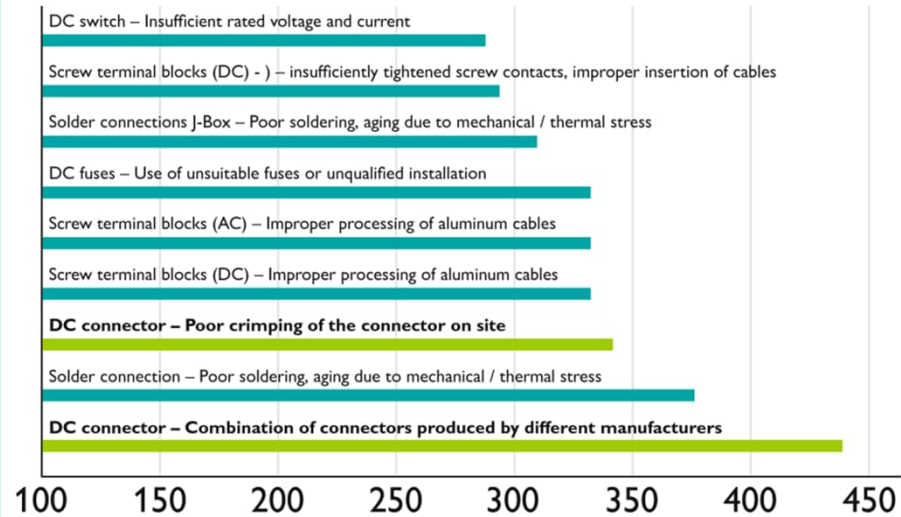


- Customer requirements
- Market observation
- Competition observation (benchmarking)
- Technology observation
- Market/portfolio analysis
- Improvement processes / complaints
- Understanding of the application
- Laws/regulations

Business Case PHOENIX CONTACT Part II

Sources of ideas: market pull

Identification of unmet market needs or weaknesses of existing products



... after few months of operation.



Business Case PHOENIX CONTACT Part II

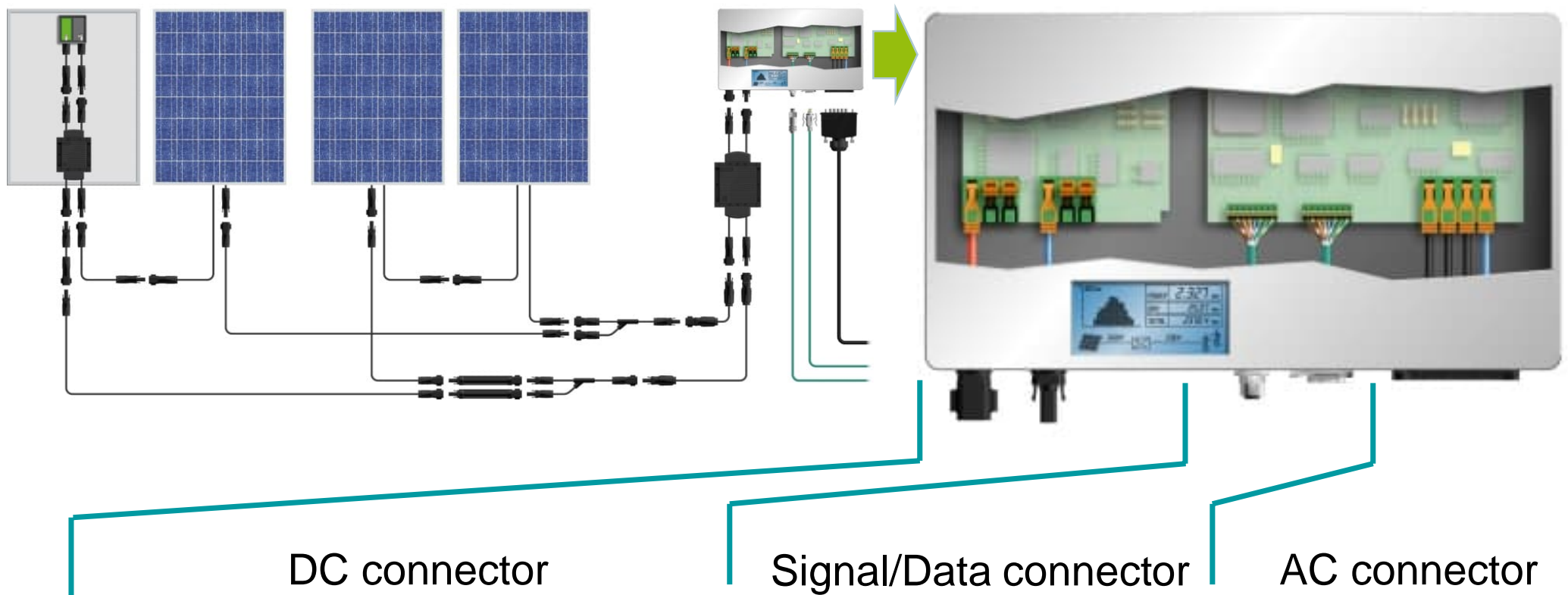
Understanding the application in the customer sphere: example Solar

What is the job that customers needs to get done?



Business Case PHOENIX CONTACT Part II

Application: inverter in the field of Solar



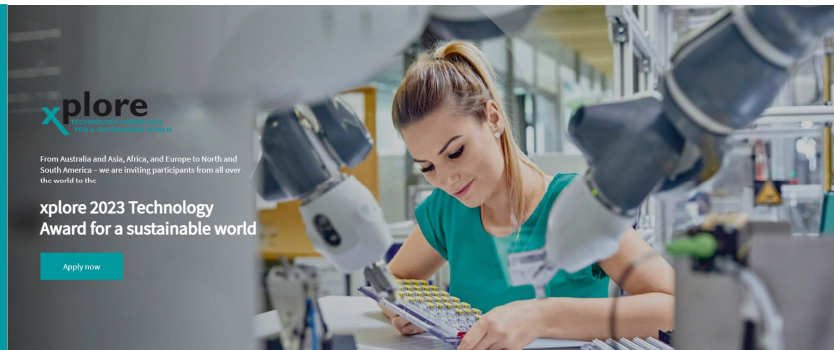
Business Case PHOENIX CONTACT Part II

Idea competitions: Xplore – Technology Award



Open call
for
innovative
ideas

(open
innovation)



The tasks

At xplore 2023, those interested in the following fields of activity can apply with their ideas:



Technical solutions for daily life in a sustainable world

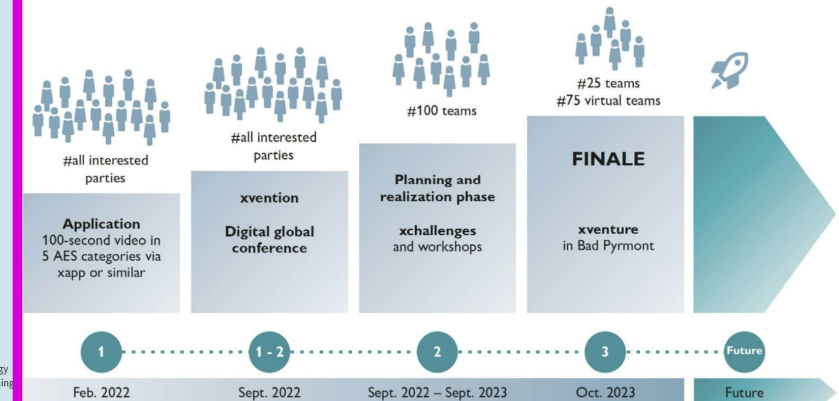
Here, we are seeking ideas that innovatively combine technology and sustainable supply, for example in the energy or the production sector. Or answers to the question of how we live and work in buildings that are developed and operated economically and ecologically sustainably on the basis of data.



Educational solutions for technology and qualification for a sustainable world

We would like to find and support ideas that involve the question of how to use technology to build the awareness, mindset, and expertise through which redesigning and transforming a sustainable world is even possible.

The entire competition schedule



Business Case PHOENIX CONTACT Part II

Open Innovation: Expedition Future @ PxC



The poster features a close-up of a person's face with digital overlays. Text on the face includes 'Inspiring innovations', 'Mensch', 'Digitalization', 'Industrie 4.0', and 'Solutions for the future'. A QR code is visible on the right side of the face.

**Creativity /
idea
workshop

(open
innovation)**

**Expedition Zukunft – der Workshop
für kreative Köpfe mit frischen Ideen**

Sie gehen zur Schule, Sie studieren oder gründen gerade ein Unternehmen? Sie haben den Kopf voller Ideen? Sie möchten die Zukunft aktiv gestalten? Sie suchen Impulse für Ihren Berufsweg?

Brechen Sie mit uns gemeinsam auf zur Expedition Zukunft:
In einer Gruppe von 80 Personen werden wir zusammen mit Ihnen in einem Kreativworkshop nach frischen Ideen für die digitale Welt von morgen suchen. Die Agentur BrainSore unterstützt uns dabei.

**Treffen Sie Start-ups, Experten und Ideengeber von Phoenix Contact:
Bewerben Sie sich jetzt!**

Phoenix Contact ist weltweit Marktführer und Innovationsträger in der Elektrotechnik und Automatisierung. Und ein Familienunternehmen, das verantwortungsvoll Zukunft gestaltet.

Informationen
Ort:
PHOENIX CONTACT
Training Center,
Schieder-Schwalenberg (NRW)
Zeit:
27. Oktober 2016, 9:30 bis 17:00 Uhr,
anschließend Get-together
Ansprechpartner:
Tanja Claas, Tel. 032 35 / 3-424 31,
tclaas@phoenixcontact.com
Bewerbungsschluss:
30.09.2016
Ihre Reisekosten werden erstattet
Bewerbung unter:
phoenixcontact.de/expedition-zukunft

**PHOENIX
CONTACT**
INSPIRING INNOVATIONS

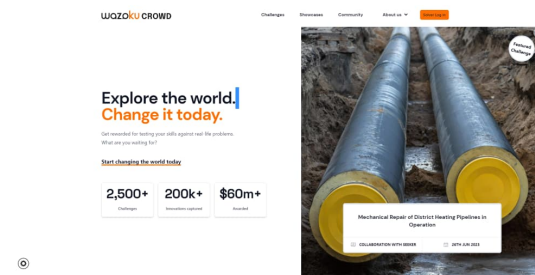
COPRIS 16.09.16
© Phoenix Contact 2016

- Identify digital market drivers of the future
- Internal and external participants:
 - Selection process to identify 90 participants with different background/views
 - Open call at universities, schools, partner companies
- Defining a future roadmap for digitalization potential

Business Case PHOENIX CONTACT Part II

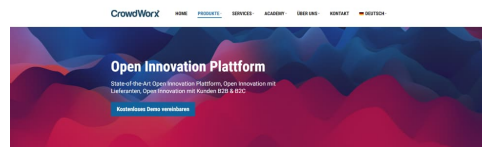
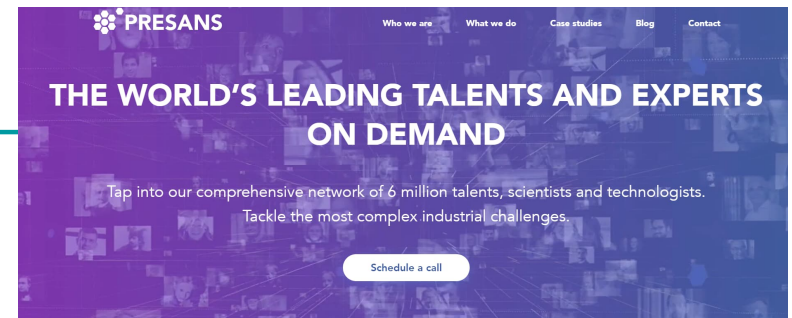
Open Innovation: crowd sourcing

OI
platforms
in the www



www.wazokucrowd.com

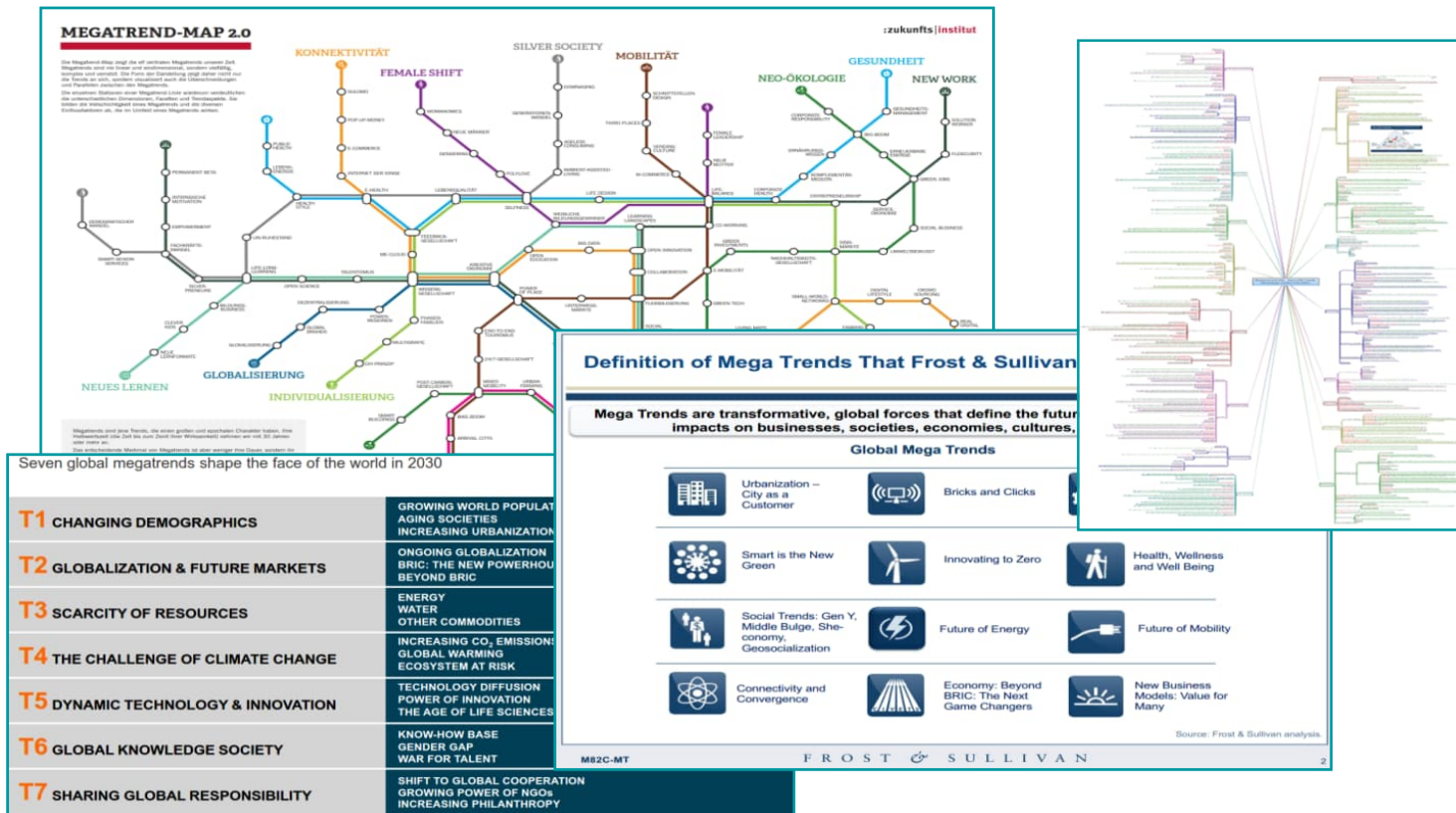
www.presans.com



www.crowdworkx.com

Business Case PHOENIX CONTACT Part II

Megatrend analysis: future potentials!



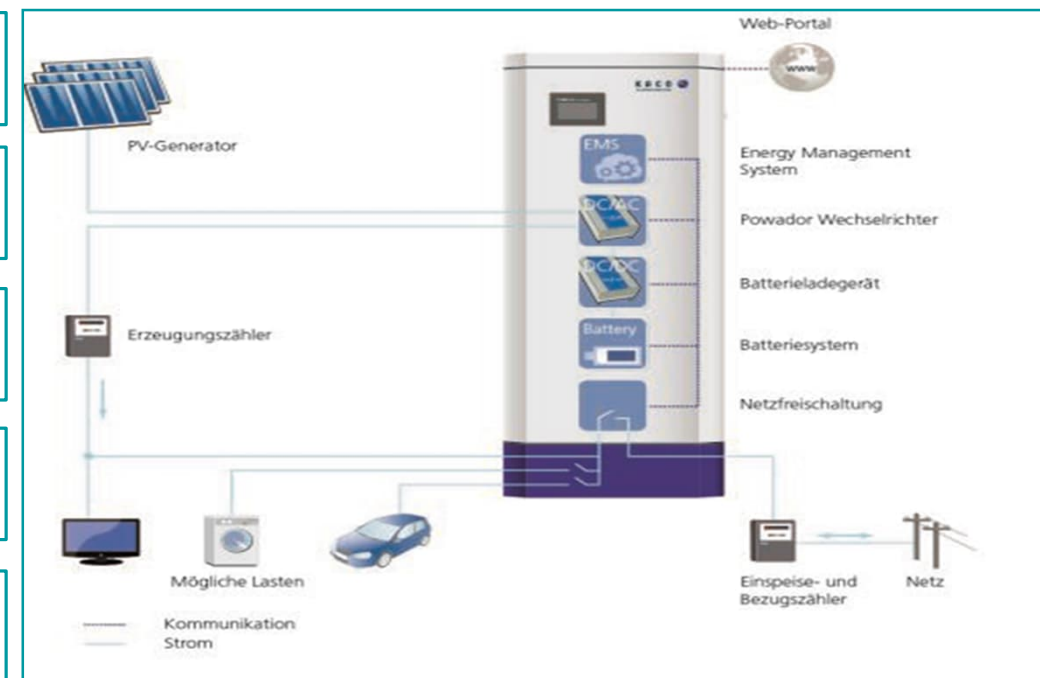
Challenges:

- Identifying the effects on our business
- Getting further reliable data allowing to define a valid action plan/roadmap
- Breaking trends down to product level

Business Case PHOENIX CONTACT Part II

Transfer megatrends into business

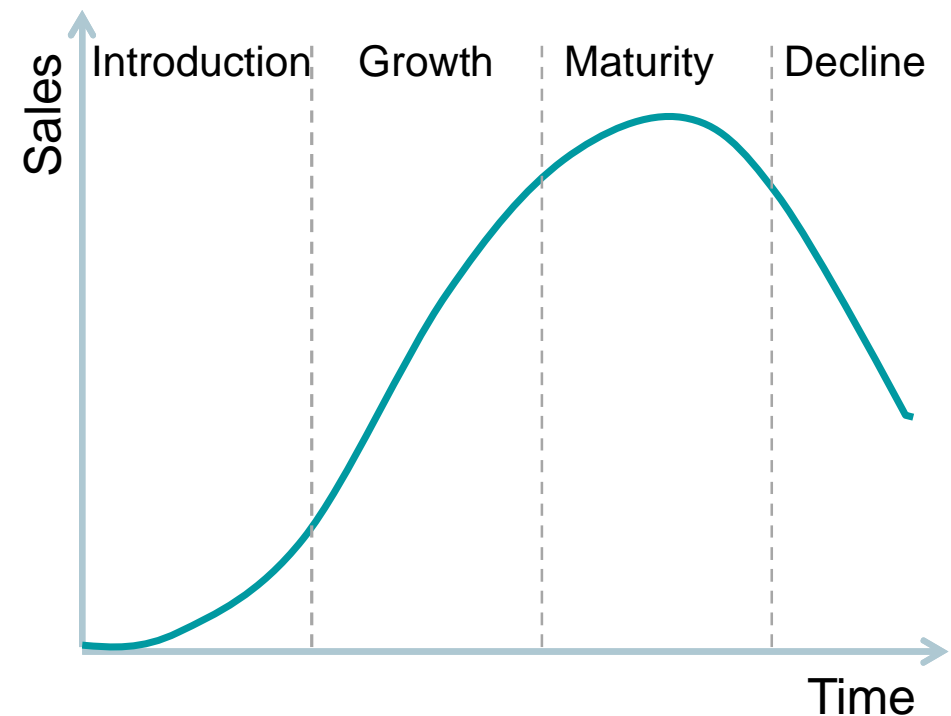
Megatrend	Renewable energy
Subtrend	PV with energy storage for internal consumption
Application	Intelligent energy management system
Device	Inverter
Product	Hybrid connectors for power and data



Business Case PHOENIX CONTACT Part II

Megatrend analysis: early bird or fast follower?

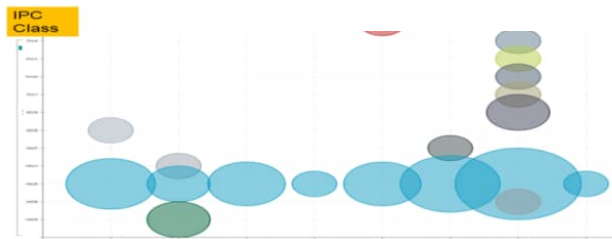
Trend	Energy	Urbanization	Digitalization	Mobility/Transportation	Economy
5 years	Batteries Smart Power generation Use of waste Energy grids Increasing CO2 emissions Renewable Energy Smart Energy Smart lighting Home Energy Home Automation Sustainable Society Recycling by material groups	Car-Sharing Mega Regions&Cities Mixed Mobility Smart Buildings Smart City Planning Smart Energy Smart Grid Smart Home Smart Information Technology	Big Data CRM's Cyber Criminals ERP's Home Automation Virtual commerce/stores Digital Marketing 3D Manufacturing/printing Cloud Computing E-Health Smart Factories&CPS Internet of Things	High Speed Rail in the USA E-Mobility Automotive Smart Mobility Automobile Navigation & Intelligent traffic control	Creative Economics Emerging markets Global Brands Global Cooperation Global Player China Growth-Cluster Beyond BRIC Change of global economic Focus 24/7-Co-working Silverpreneur
10 years	Batteries Smart Power generation Use of waste Energy grids Increasing CO2 emissions Renewable Energy Smart Energy Smart lighting Home Energy Home Automation Sustainable Society Recycling by material groups	Car-Sharing Mega Regions&Cities Mixed Mobility Smart Buildings Smart City Planning Smart Energy Smart Grid Smart Home Smart Information Technology	Big Data CRM's Cyber Criminals ERP's Home Automation Virtual commerce/stores Digital Marketing 3D Manufacturing/printing Cloud Computing E-Health Smart Factories&CPS Internet of Things	High Speed Rail in the USA E-Mobility Automotive Smart Mobility Automobile Navigation & Intelligent traffic control	Creative Economics Emerging markets Global Brands Global Cooperation Global Player China Growth-Cluster Beyond BRIC Change of global economic Focus 24/7-Co-working Silverpreneur
15 years	Batteries Smart Power generation Use of waste Energy grids Increasing CO2 emissions Renewable Energy Smart Energy Smart lighting Home Energy Home Automation Sustainable Society Recycling by material groups	Car-Sharing Mega Regions&Cities Mixed Mobility Smart Buildings Smart City Planning Smart Energy Smart Grid Smart Home Smart Information Technology	Big Data CRM's Cyber Criminals ERP's Home Automation Virtual commerce/stores Digital Marketing 3D Manufacturing/printing Cloud Computing E-Health Smart Factories&CPS Internet of Things	High Speed Rail in the USA E-Mobility Automotive Smart Mobility Automobile Navigation & Intelligent traffic control	Creative Economics Emerging markets Global Brands Global Cooperation Global Player China Growth-Cluster Beyond BRIC Change of global economic Focus 24/7-Co-working Silverpreneur
20 years	Batteries Smart Power generation Use of waste Energy grids Increasing CO2 emissions Renewable Energy Smart Energy Smart lighting Home Energy	Car-Sharing Mega Regions&Cities Mixed Mobility Smart Buildings Smart City Planning Smart Energy Smart Grid	Big Data CRM's Cyber Criminals ERP's Home Automation Virtual commerce/stores Digital Marketing 3D Manufacturing/printing Cloud Computing E-Health Smart Factories&CPS Internet of Things	High Speed Rail in the USA E-Mobility Automotive Smart Mobility Automobile Navigation & Intelligent traffic control	Creative Economics Emerging markets Global Brands Global Cooperation Global Player China Growth-Cluster Beyond BRIC Change of global economic Focus



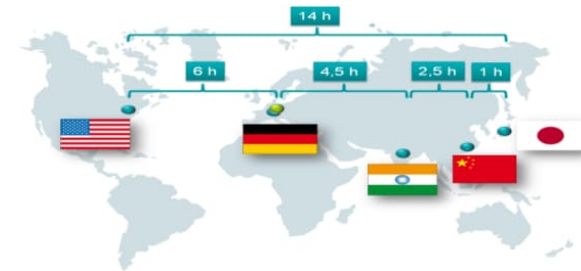
Business Case PHOENIX CONTACT Part II

Other sources of ideas

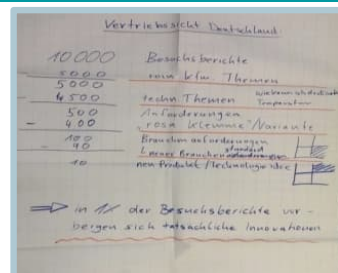
Patent mapping of competitors



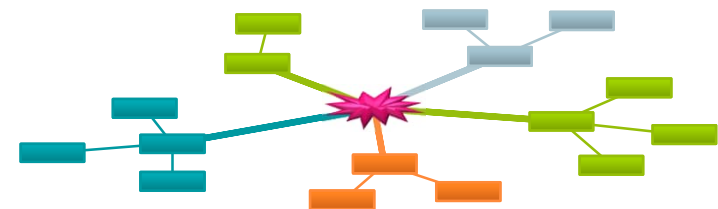
Virtual technology hubs



Customer visit reports



Innovation workshops



Business Case PHOENIX CONTACT Part II

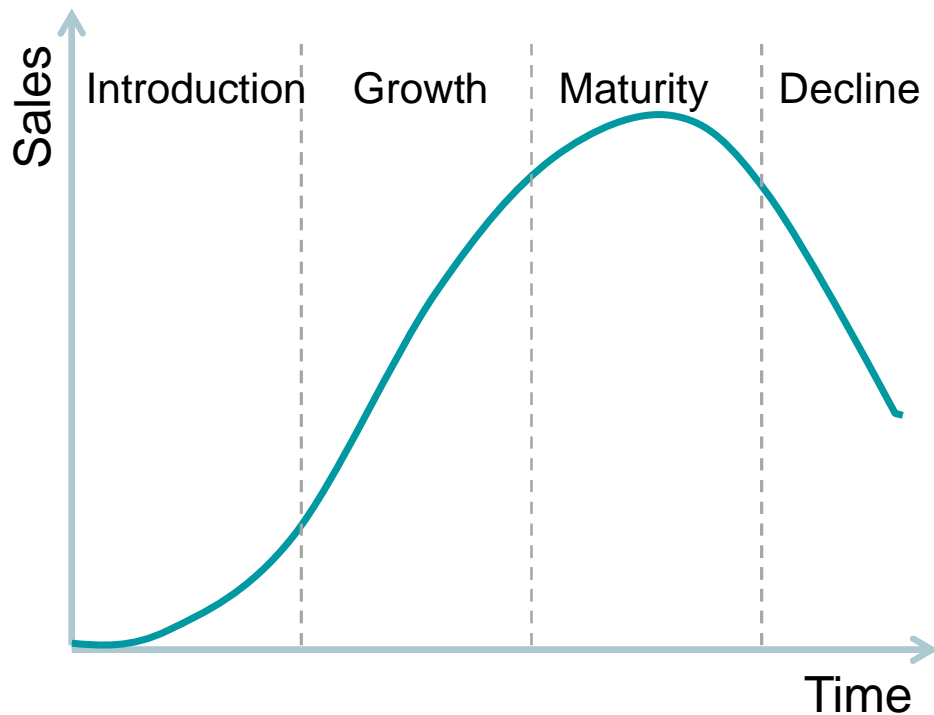
Today's agenda

- Sources of ideas
- Lifecycle management
- Innovation portfolio
- Idea assessment
- Culture & innovation organization
- Mass customization
- Technology development

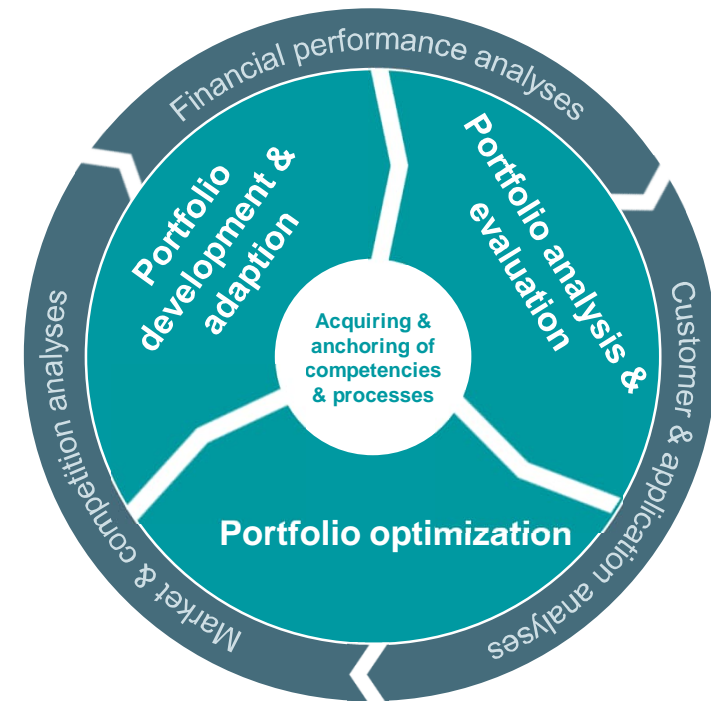
Business Case PHOENIX CONTACT Part II

Different perspectives

Start to end of life



Portfolio management as a lifecycle



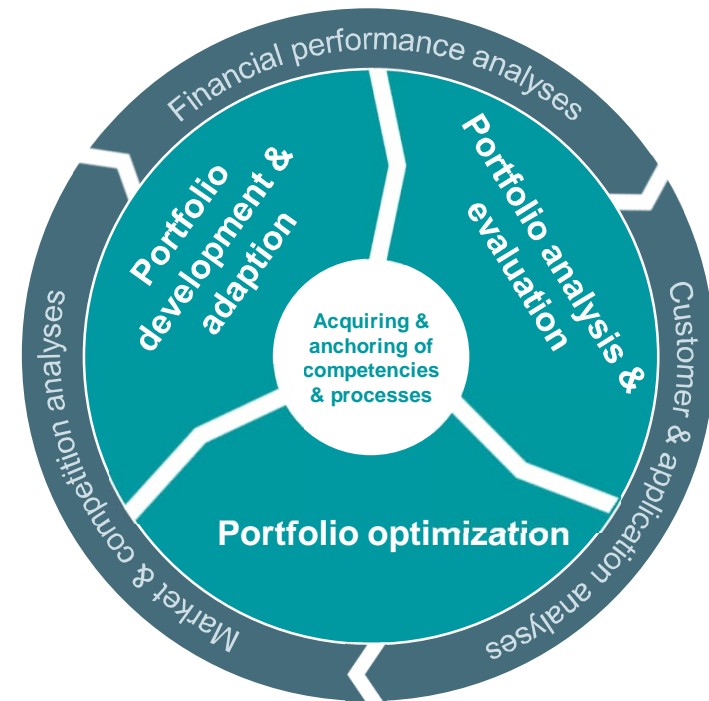
Business Case PHOENIX CONTACT Part II

Needs for actions & portfolio management approach

Existing needs for action

- Further improving tracking & assessment of the portfolio quality in terms of
 - high/low performer
 - portfolio profitability assessment
 - effectiveness of price management
- Stronger integration of the market, application & customer perspective into the portfolio assessment process
- Improving performance of product market launches
- Strengthening portfolio innovativeness & attractiveness to gain additional market share
- Identification & realization of saving potentials

Portfolio management approach

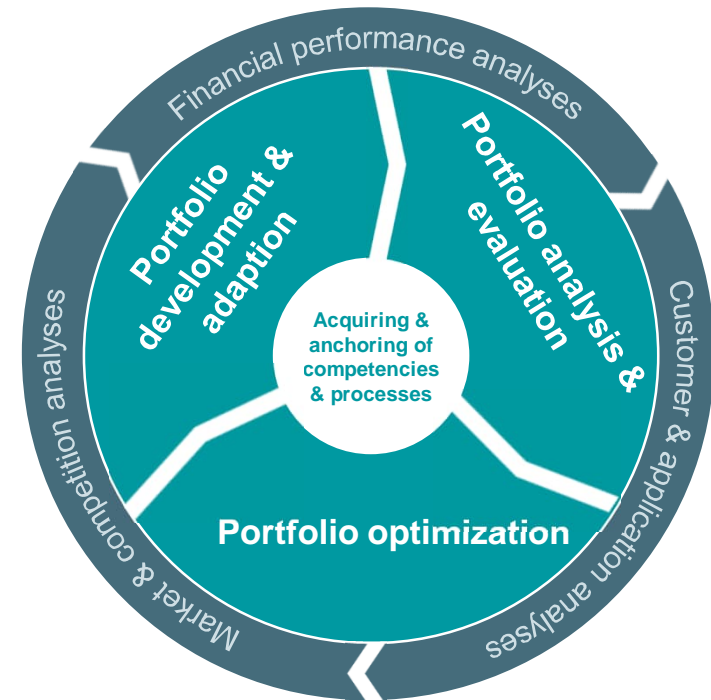
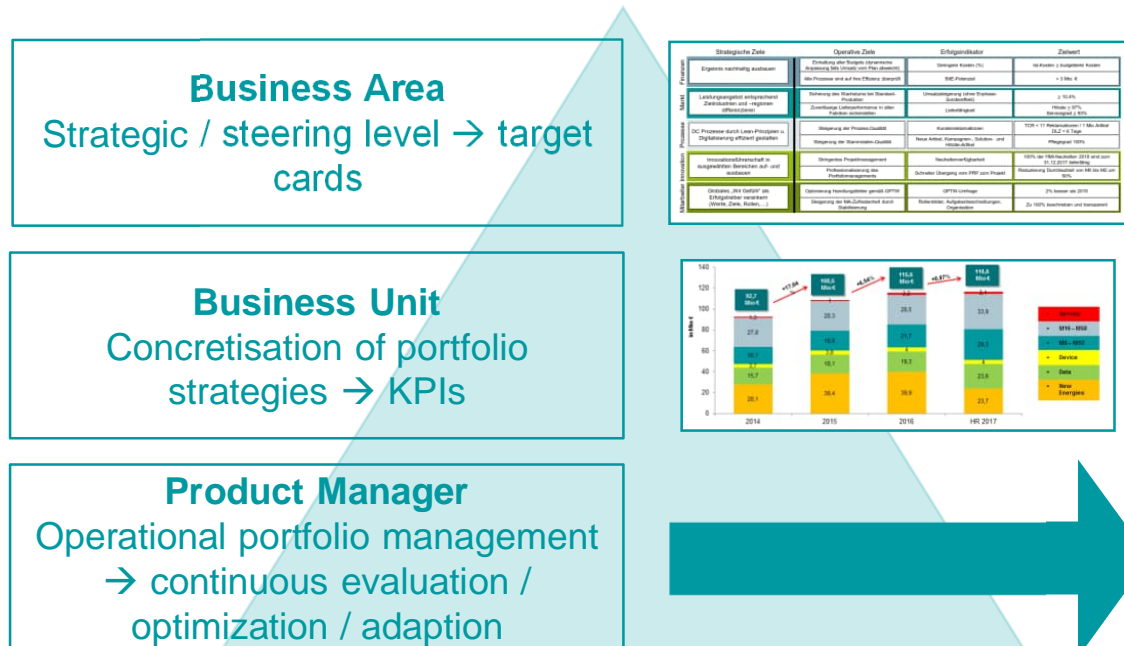


Business Case PHOENIX CONTACT Part II

Organizational structure for portfolio management

Organizational structure for portfolio management

Portfolio management approach



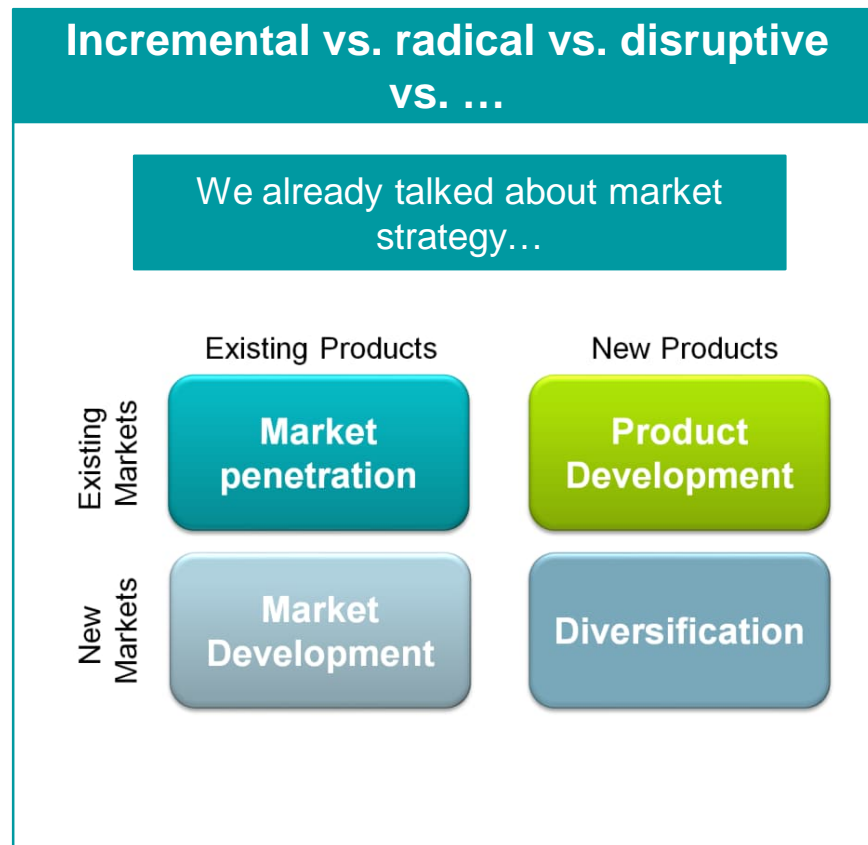
Business Case PHOENIX CONTACT Part II

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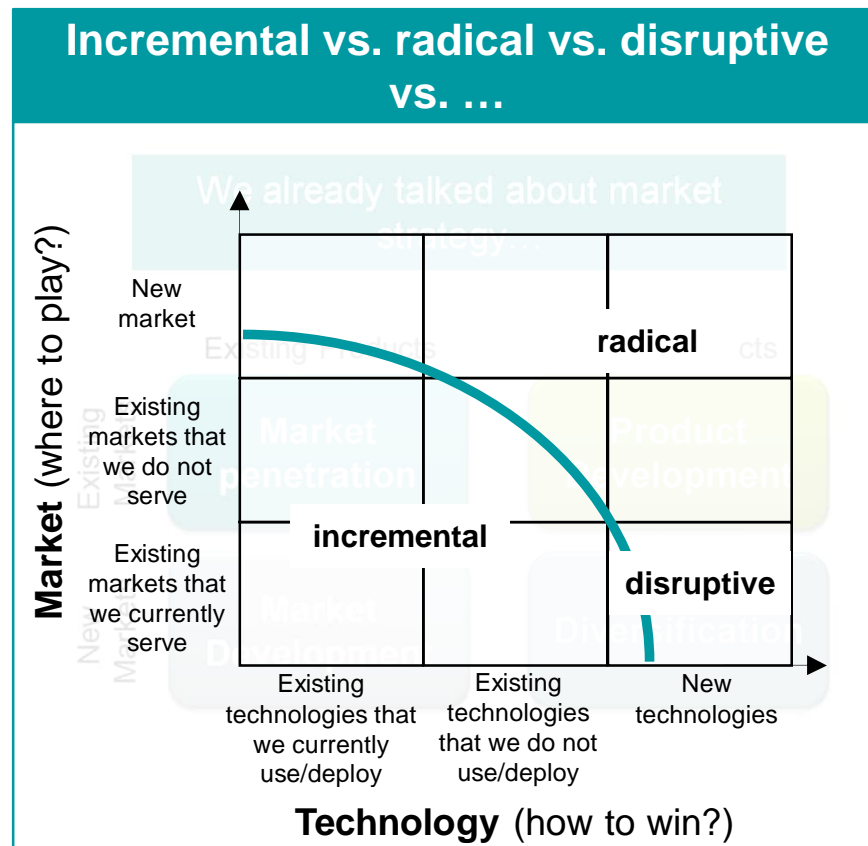
Business Case PHOENIX CONTACT Part II

Innovation level: radical vs. incremental



Business Case PHOENIX CONTACT Part II

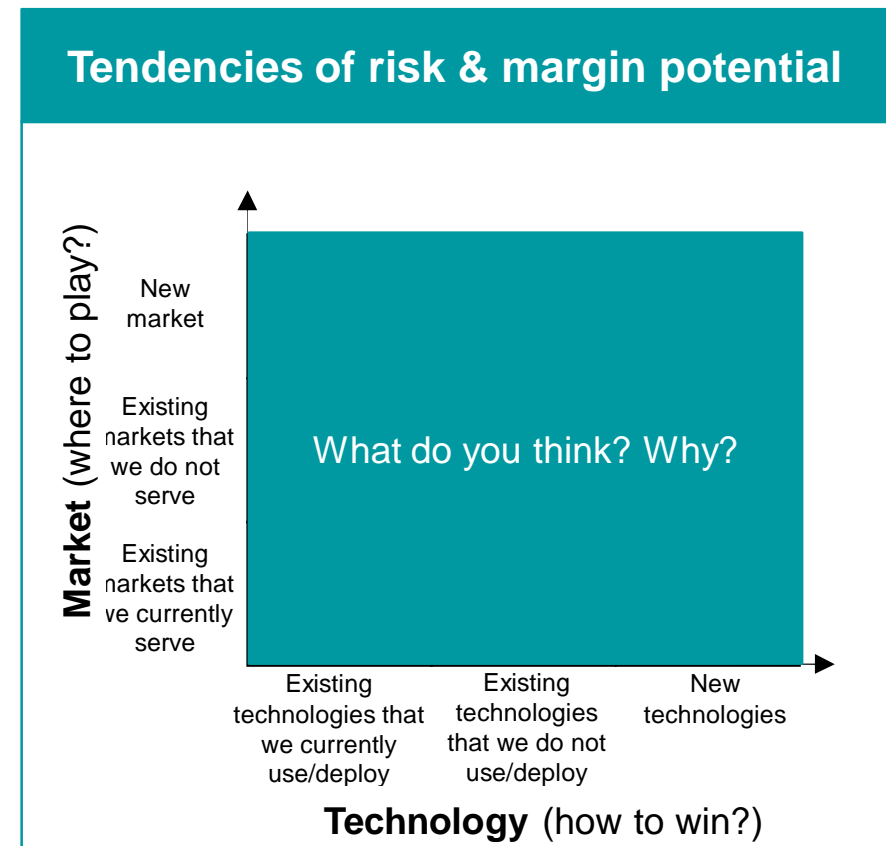
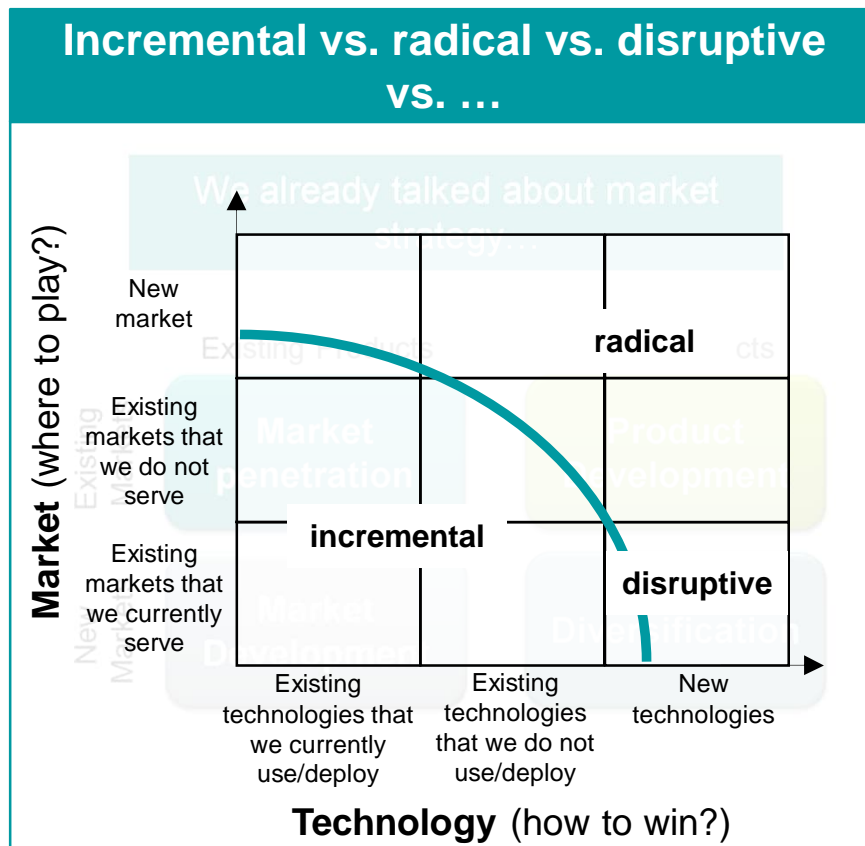
Innovation level: radical vs. incremental



Tendencies of risk & margin potential

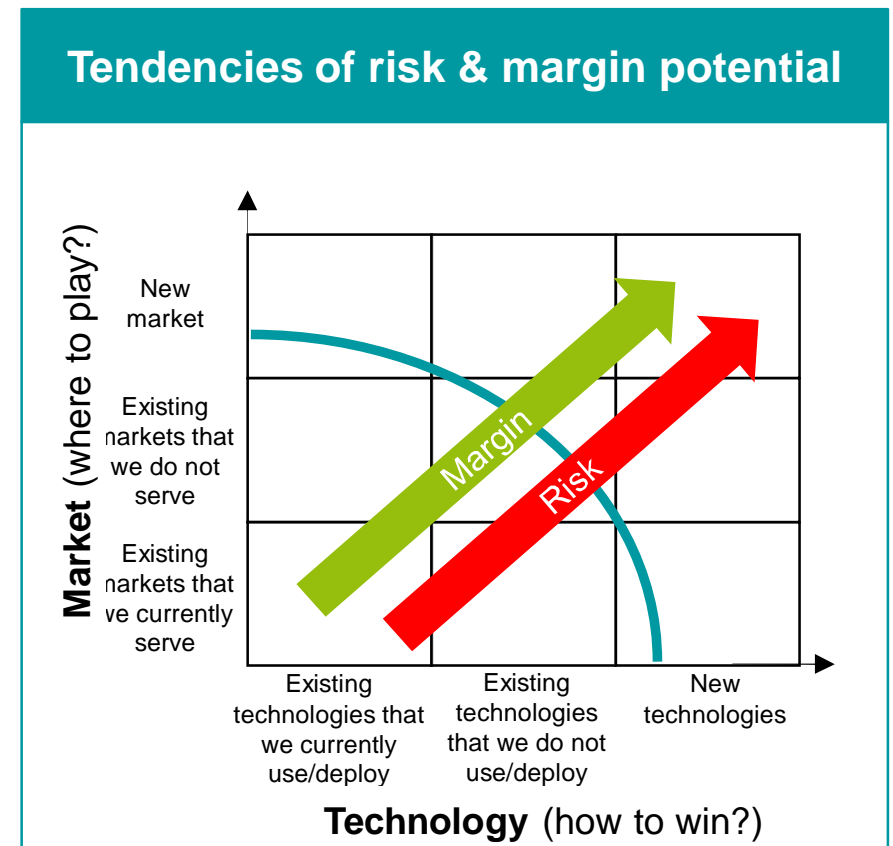
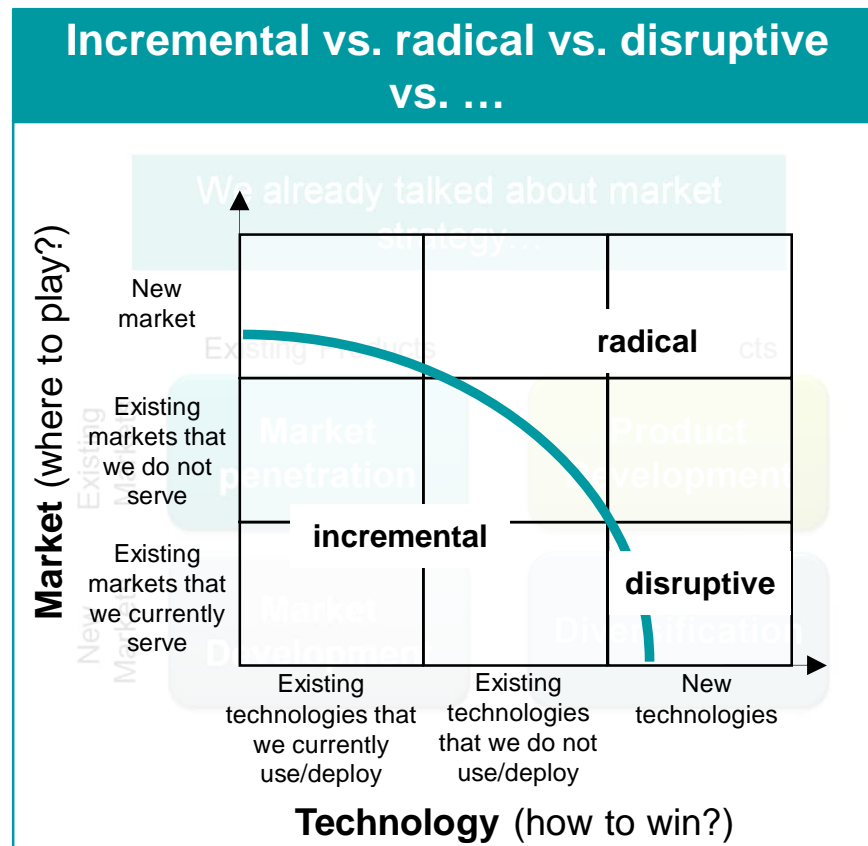
Business Case PHOENIX CONTACT Part II

Innovation level: radical vs. incremental



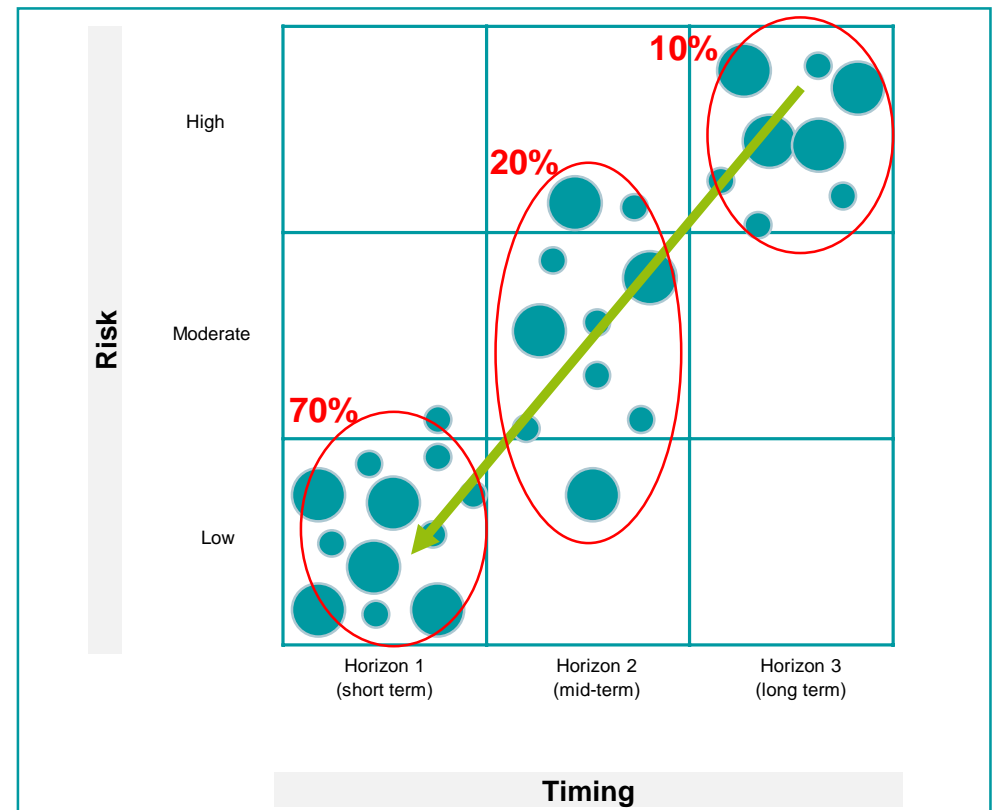
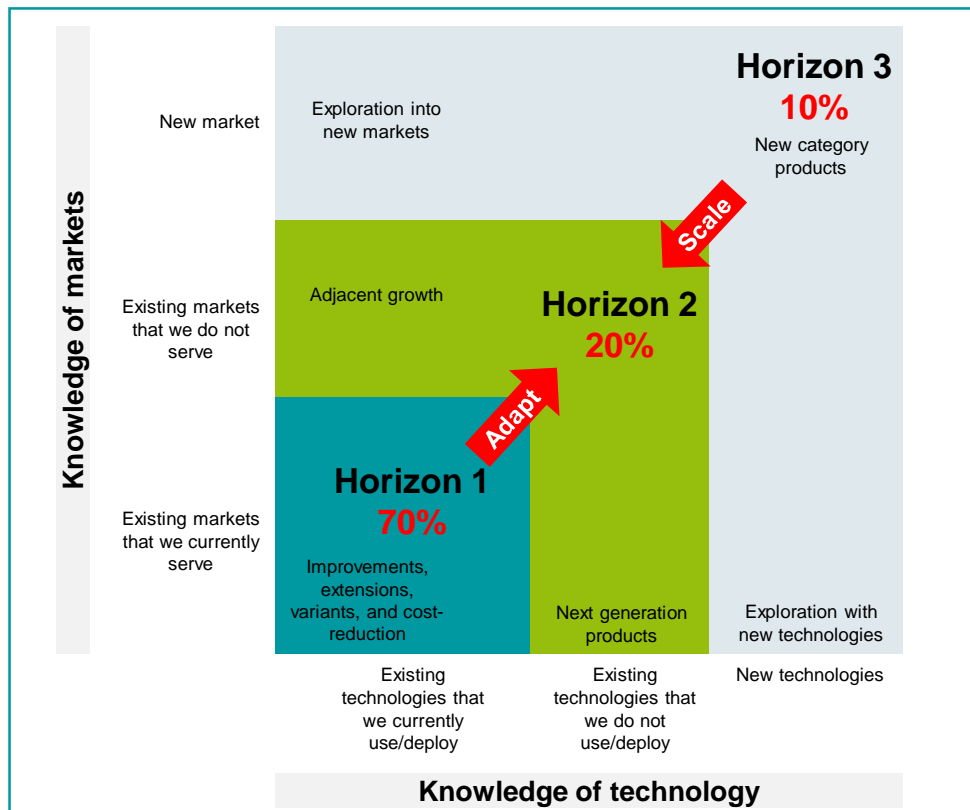
Business Case PHOENIX CONTACT Part II

Innovation level: radical vs. incremental



Business Case PHOENIX CONTACT Part II

Composition of the innovation portfolio



Business Case PHOENIX CONTACT Part II

Managing the tension: exploration vs. exploitation

Exploitation

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



Exploration

- instills novelty
- involves search, experimentation, discovery and risk taking
- thrives on 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

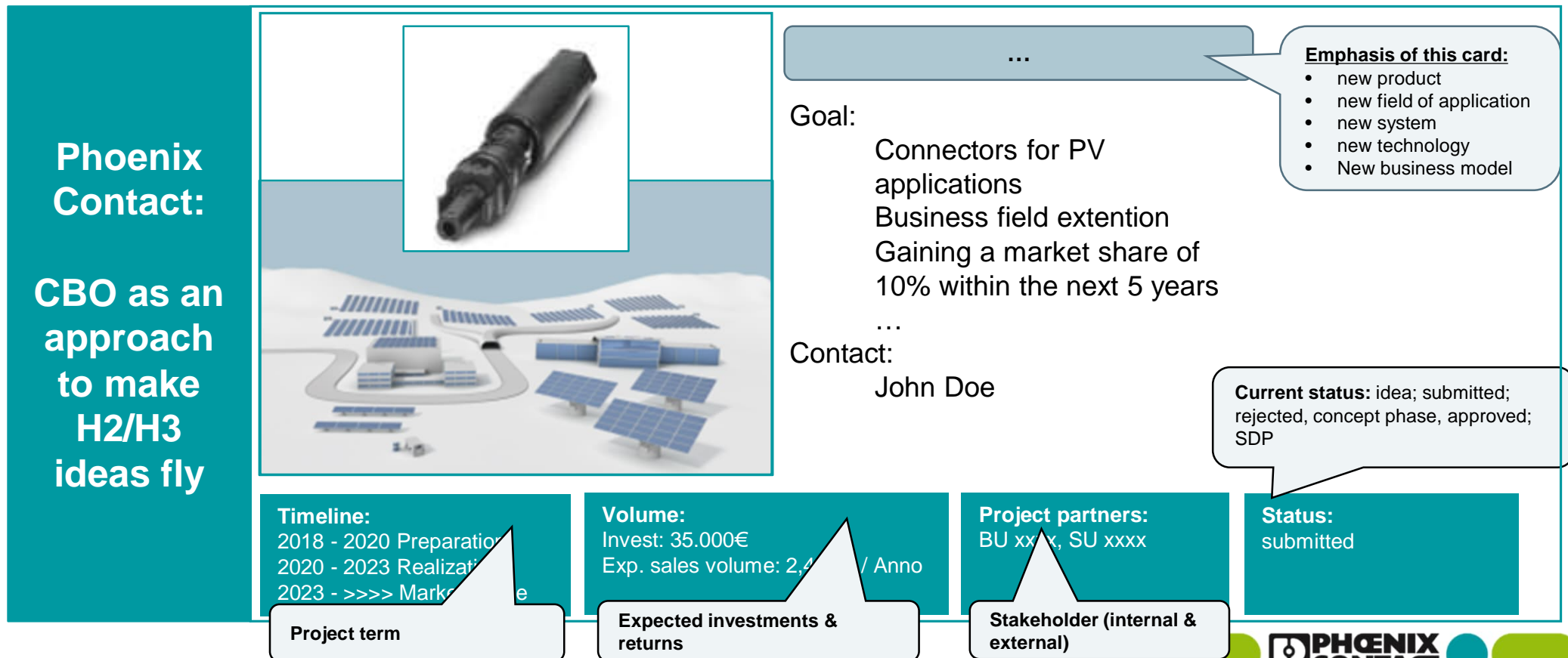
Composition of the innovation portfolio

Innovation portfolio			
Direction of impact	Exploitation (execution / value capturing)		Exploration (search / value creation)
Organizational anchoring	Operational division Exec. Mgmt / innovation board		Exploration unit Chief explorer / corporate innovation board
Funding	Annual budgeting		Corporate fund / Staged investment
Horizon	H1 – Core (short-term)	H2 – Growth (mid term)	H3 – Future (Long-term)
Strategic scope and objective	Core business Existing markets / business models, products & technologies; extend the core: optimization, improvement & exploitation of the existing.	Growth business Expand adapt existing and build new business. Existing markets that we don't serve / Existing technologies that we don't use. Mostly build out from status/ development of new opportunities	Future business New/shaping market / new technologies / new product categories. Discovery & validation of new business models, technologies and categories of products. Place small bets on emerging opportunities / viable options
Capabilities	Fully assambled / Leveraging on existing capabilities	To be acquired or developed / emerging or extending capabilities	Requirements uncertain, plenty of unknown / exploring radical new capabilities
Activities	Pure market research / Invent, develop, deploy	Needs related, research, demonstrate, disrupt/discover	Trending & narratives. Envision and explore
Innovation type	Incremental Innovation	Adjacent innovation	Radical innovation
Leadership	Traditional / adaptive	Ambidextrous	Entrepreneurial
People	Maintainers	Business builders, Intrapreneurs	Explorers, Mavericks, Visionaries
Metrics	RoI, NPV	ROV	More on exploring; ROV
Enabler	Idea management system / open, collaborative culture and infrastructure		

Source: <http://integrative-innovation.net/>

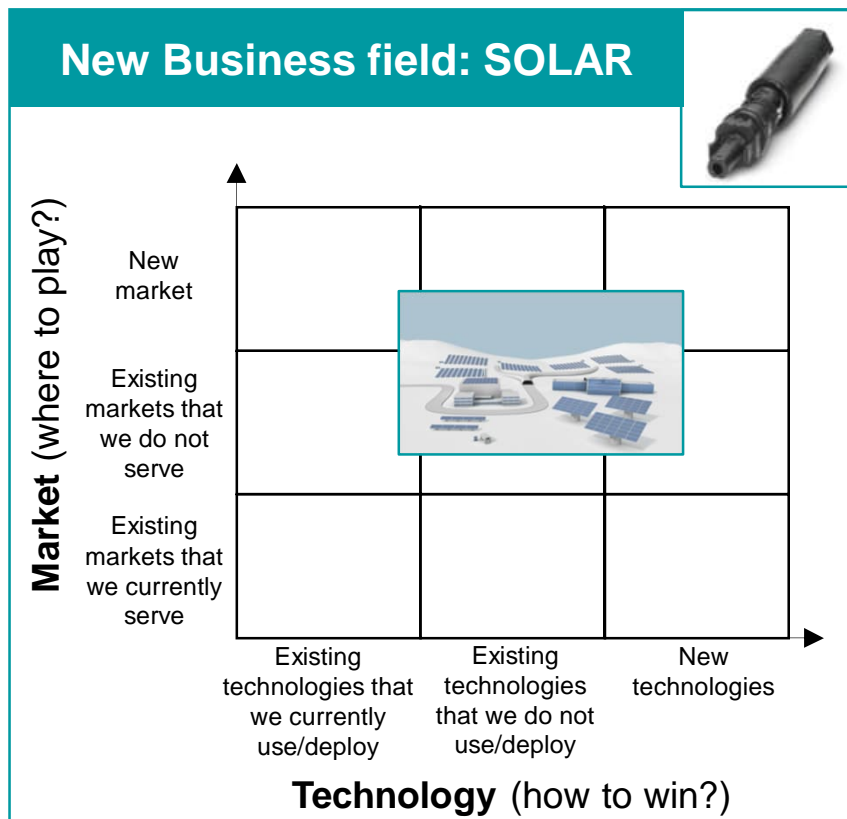
Business Case PHOENIX CONTACT Part II

Capturing new business opportunities (exploration)



Business Case PHOENIX CONTACT Part II

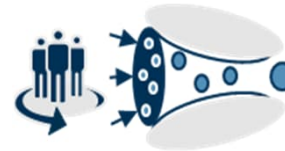
EXAMPLE: Getting ideas for new business fields



30 Business Case PHOENIX CONTACT | Part II

Market pull: open innovation workshops

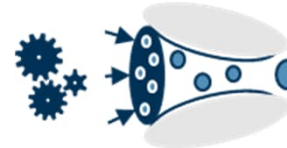
Market driven ideation



- Identifying unmet needs
- Workshops with large inverter supplier
- Worker community consultation

Technology push elements

Technology driven ideation

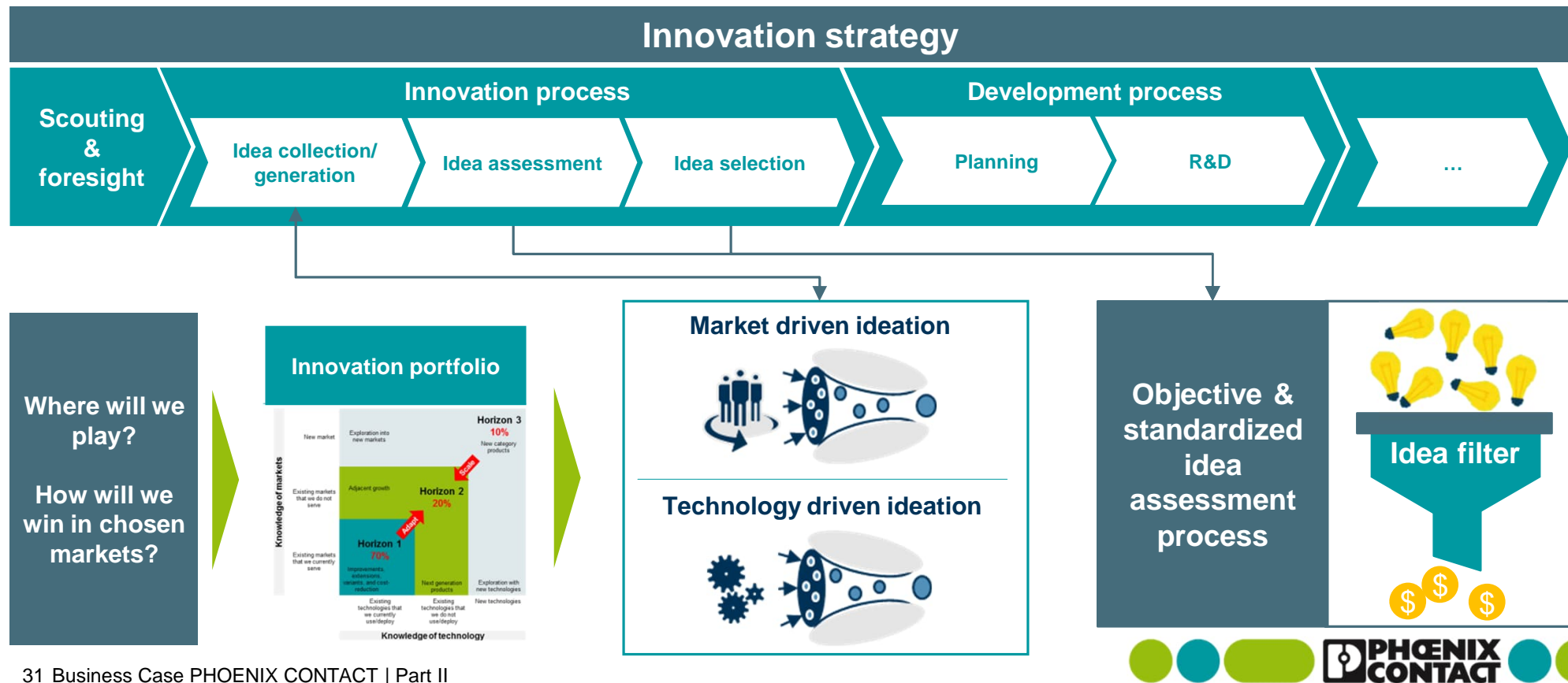


- Transfer of technology & product knowledge from other industries
- Expand existing PxC-technology knowledge into the new field



Business Case PHOENIX CONTACT Part II

Idea assessment & selection process



Business Case PHOENIX CONTACT Part II

Today's agenda

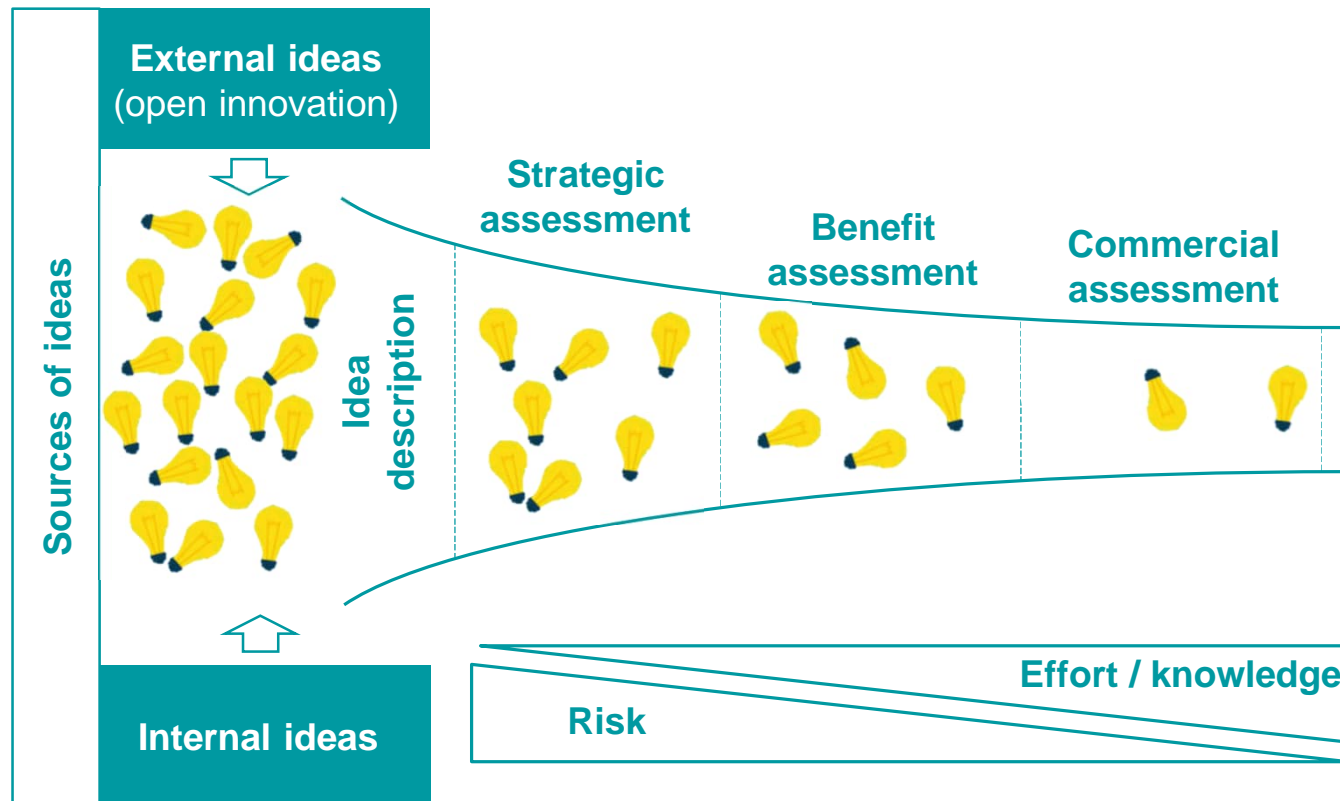
- Sources of ideas
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Why & how to assess ideas?

What are crucial assessment criteria from your point of view?

Business Case PHOENIX CONTACT Part II

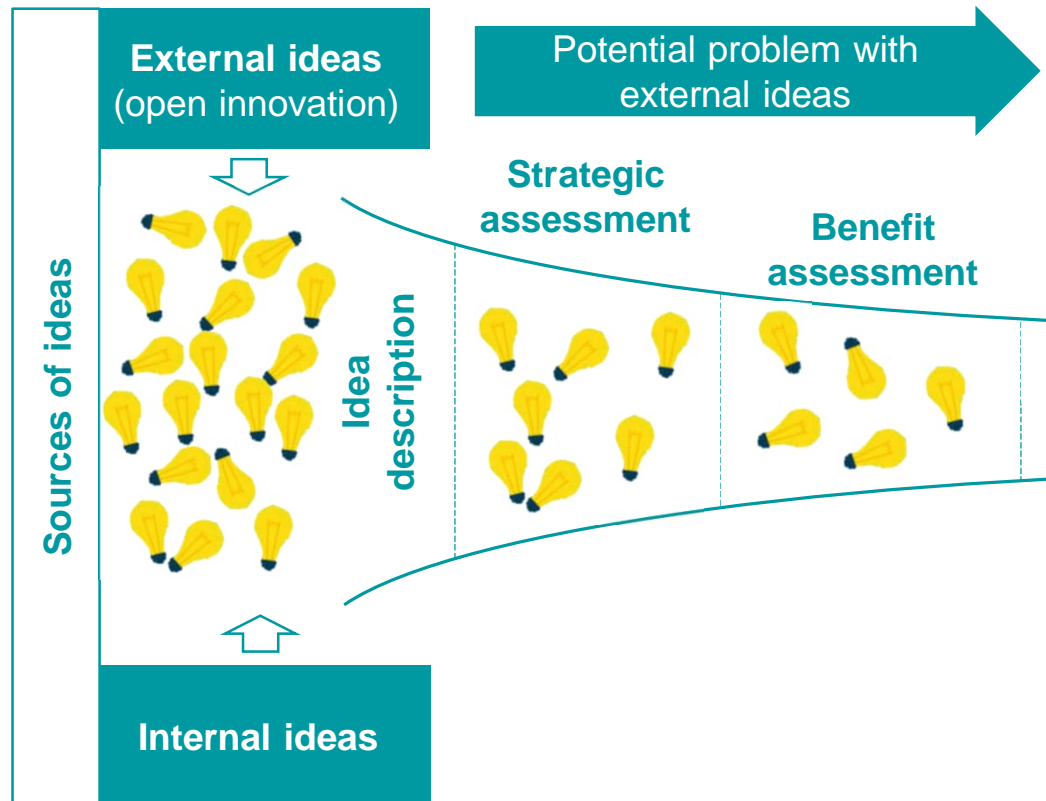
Idea funnel



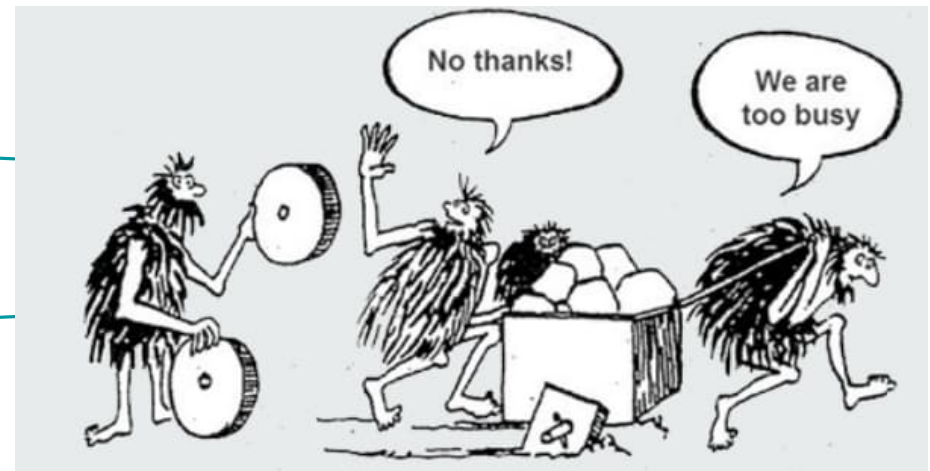
Idea competition list
(central database for all assessed ideas)

Business Case PHOENIX CONTACT Part II

Idea funnel



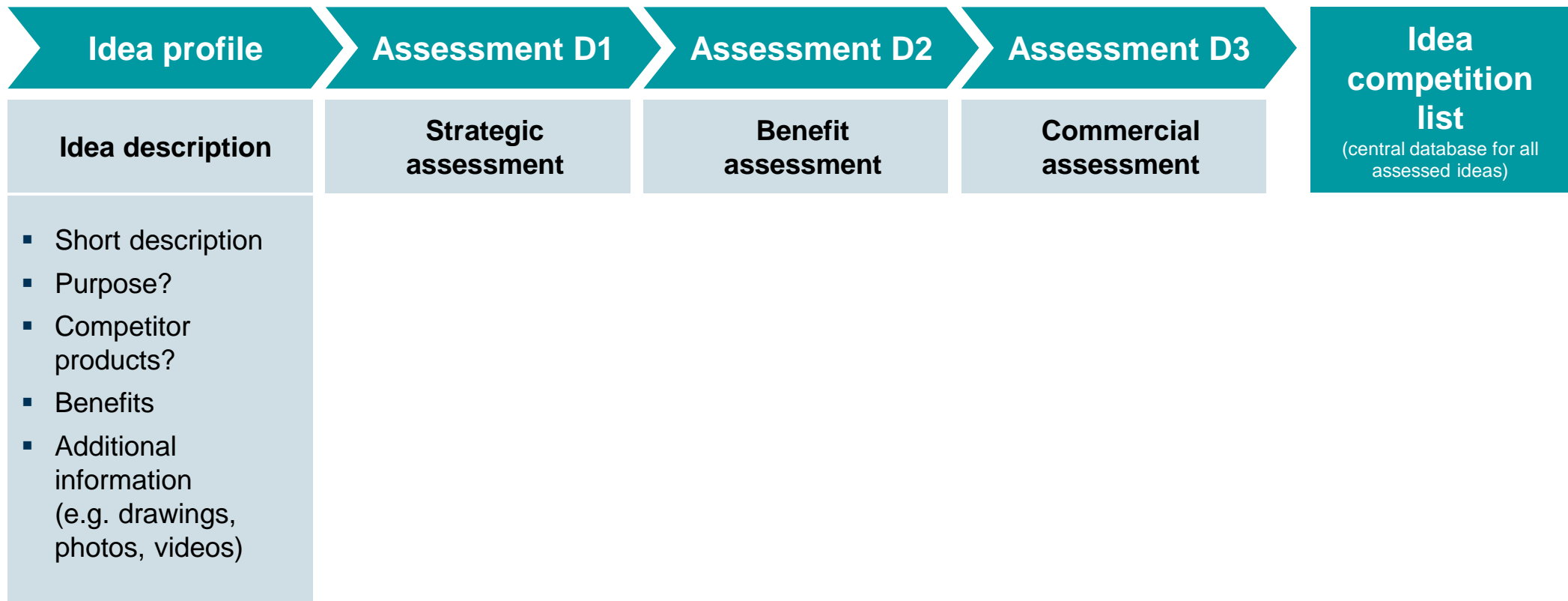
Not-invented-here syndrome (NIH)



„We are best-in-class. Solutions from outside (the firm) cannot be better...“

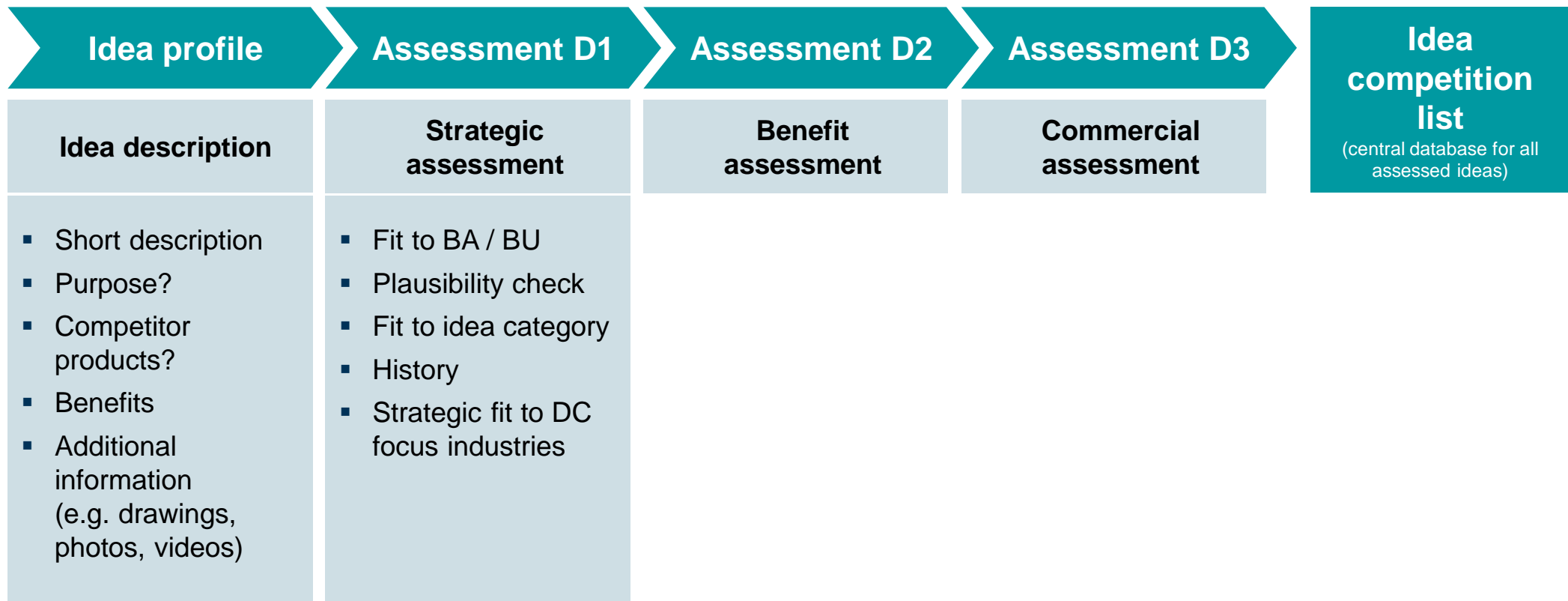
Business Case PHOENIX CONTACT Part II

Idea assessment process



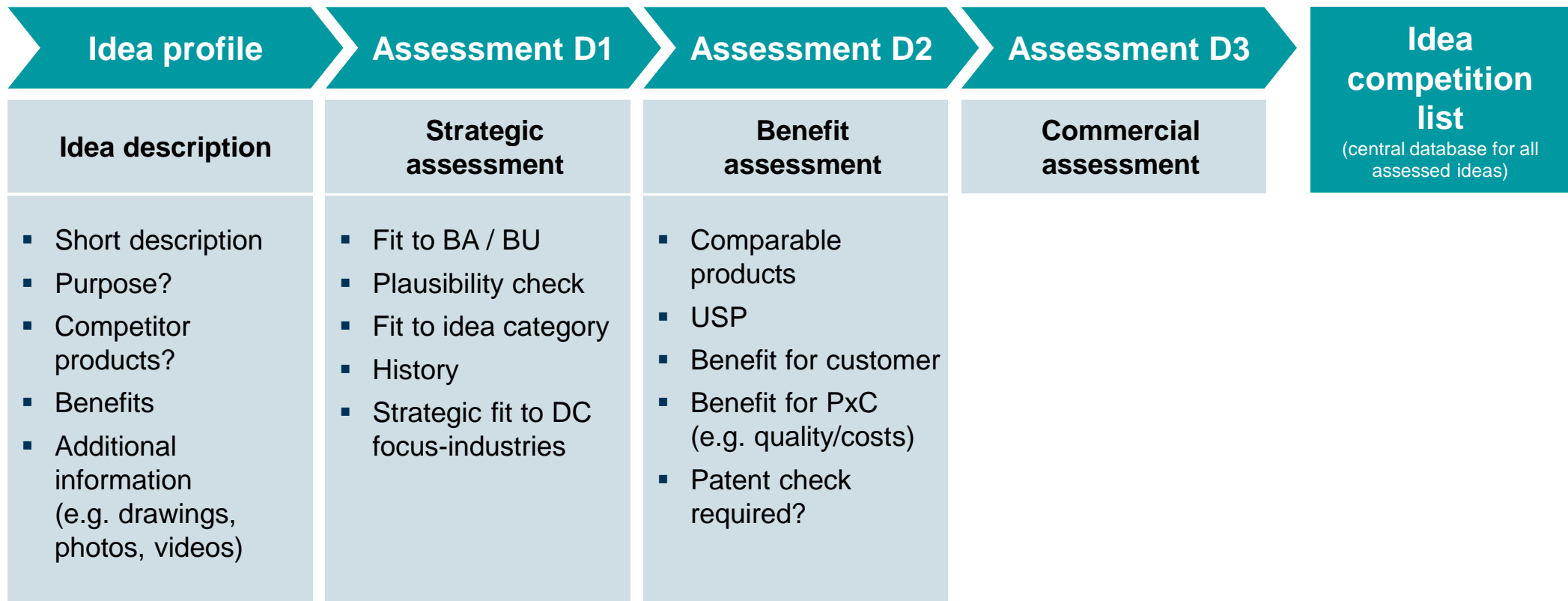
Business Case PHOENIX CONTACT Part II

Idea assessment process



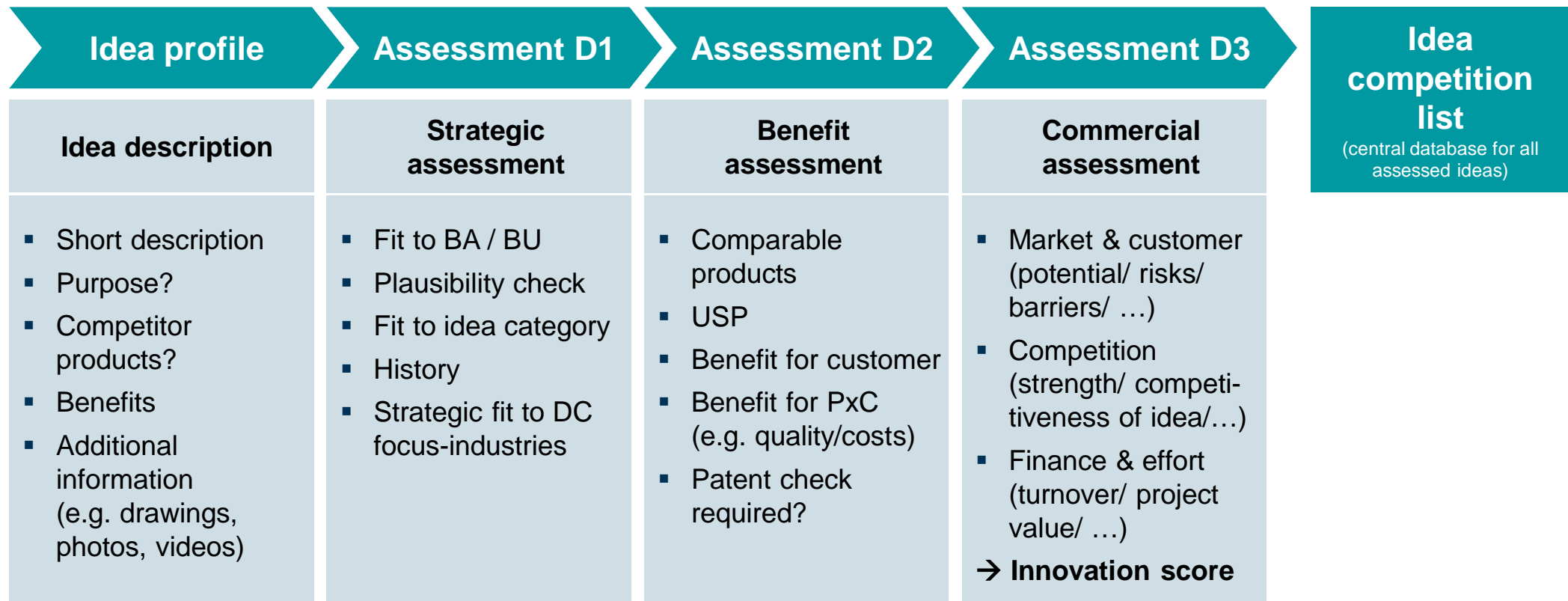
Business Case PHOENIX CONTACT Part II

Idea assessment process



Business Case PHOENIX CONTACT Part II

Idea assessment process



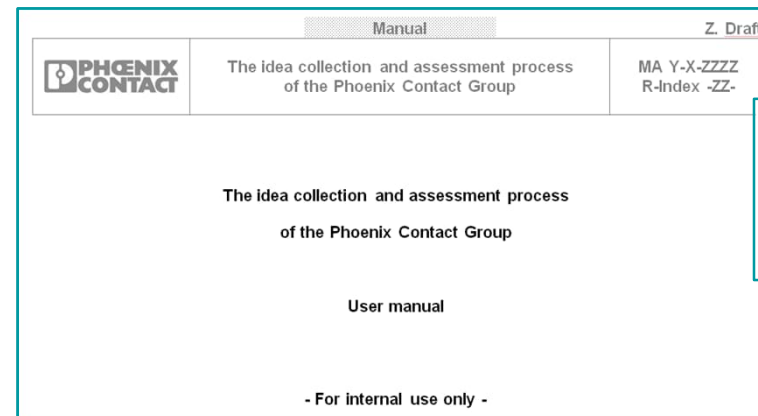
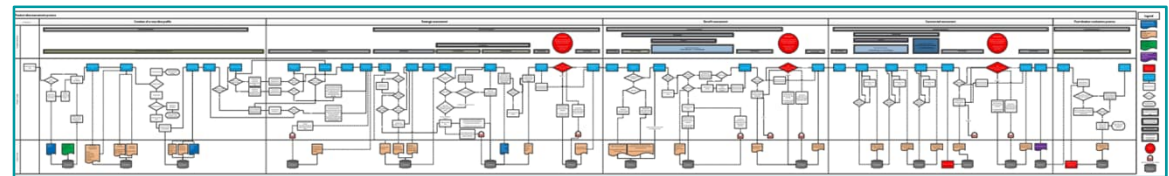
Business Case PHOENIX CONTACT Part II

Idea assessment process

Formalisation of the idea assessment process

User manual:

- Definitions/ abbreviations
- Roles, responsibilities
- Description of the three different processes
- Process visualizations
- ...



Business Case PHOENIX CONTACT Part II

Idea competition list

Idea competition list:

Getting the best out of the idea portfolio

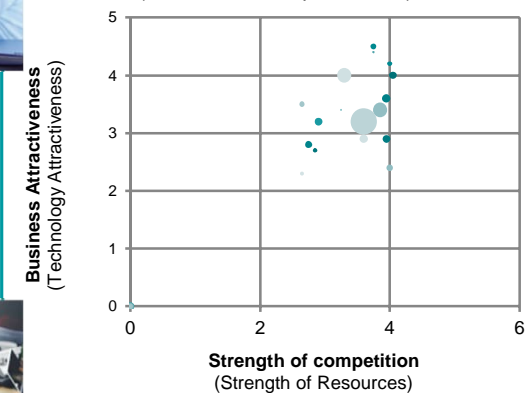
Project #	Name	Innovation score
		95
		95
		89
		86
		85
		81
		68
		65
		65
		65
		56
		54
		47
		45
		41
		32
		28
		25
		24
		23
		15
...



...further decision boards...



Idea Portfolio Analysis
(bubble size = exp. turnover)



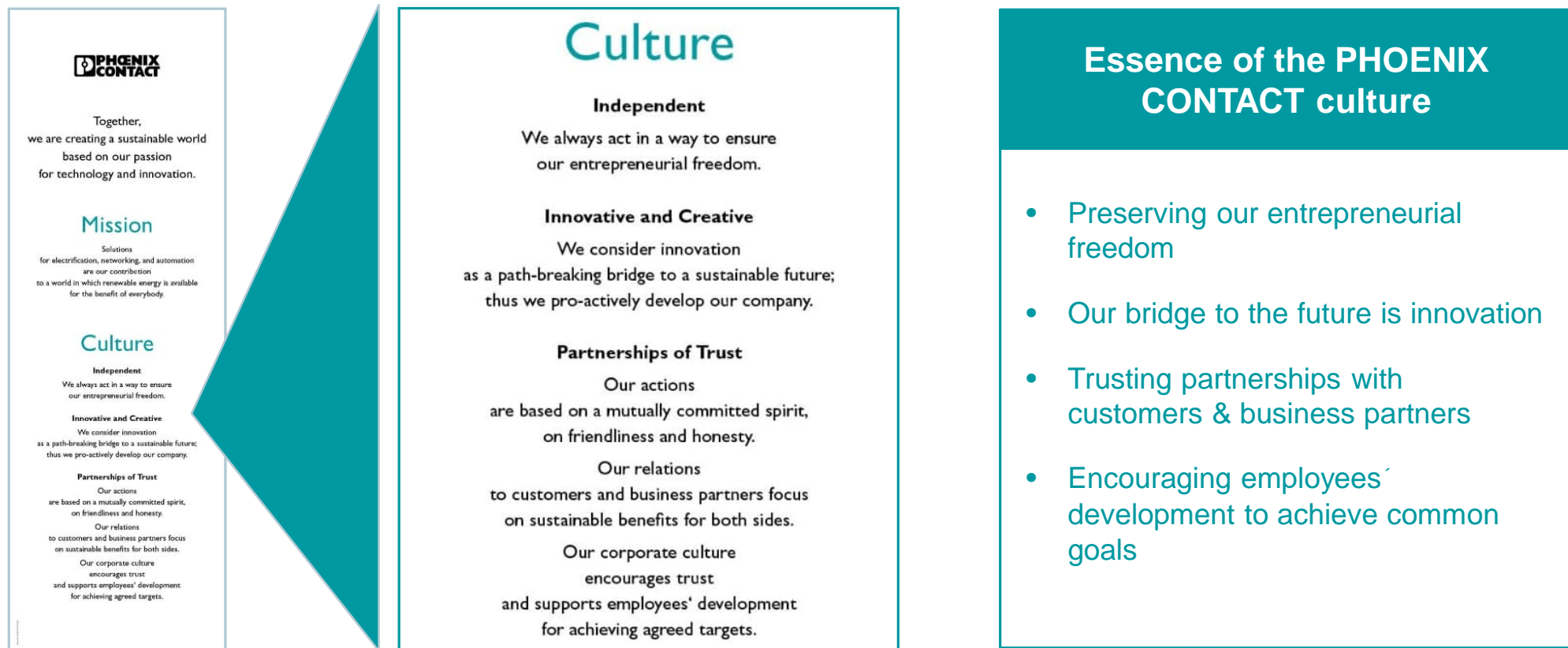
Business Case PHOENIX CONTACT Part II

Today's agenda

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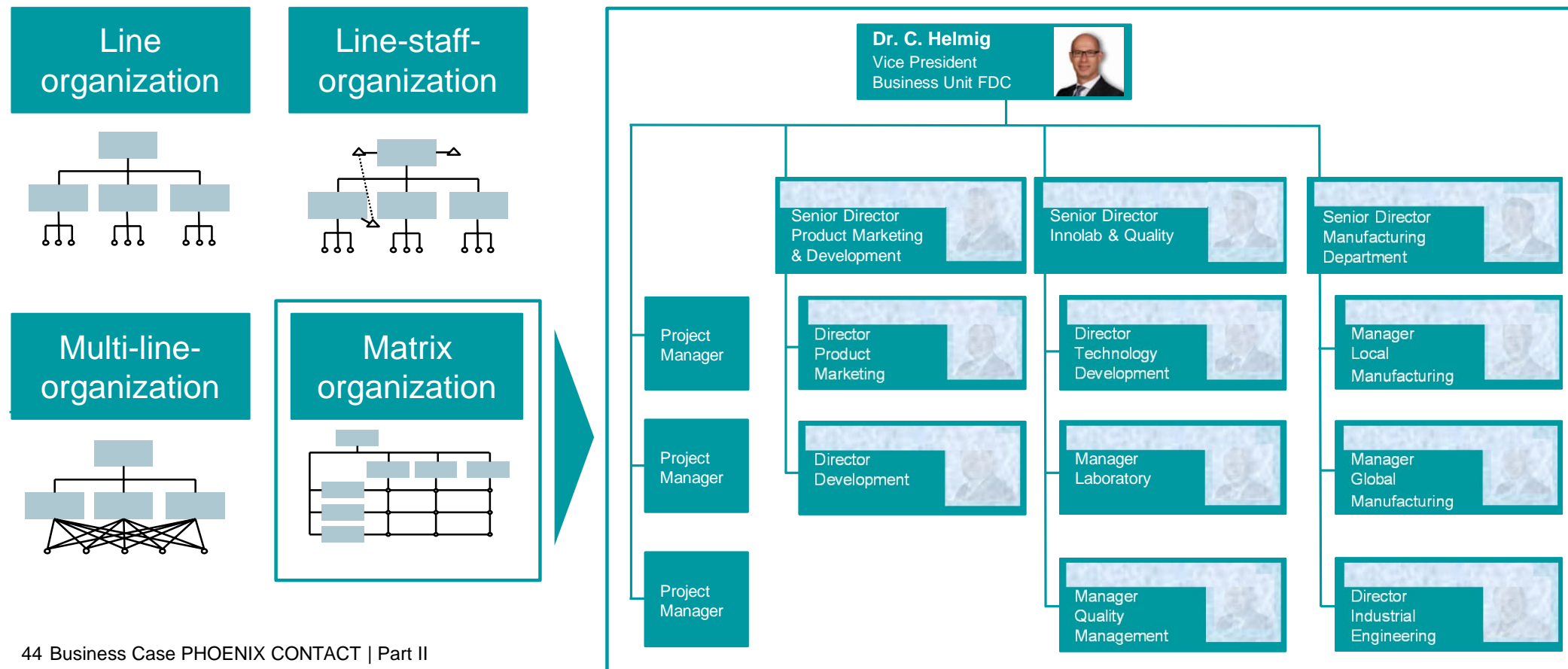
Business Case PHOENIX CONTACT Part II

Phoenix`s culture: innovation is a key part



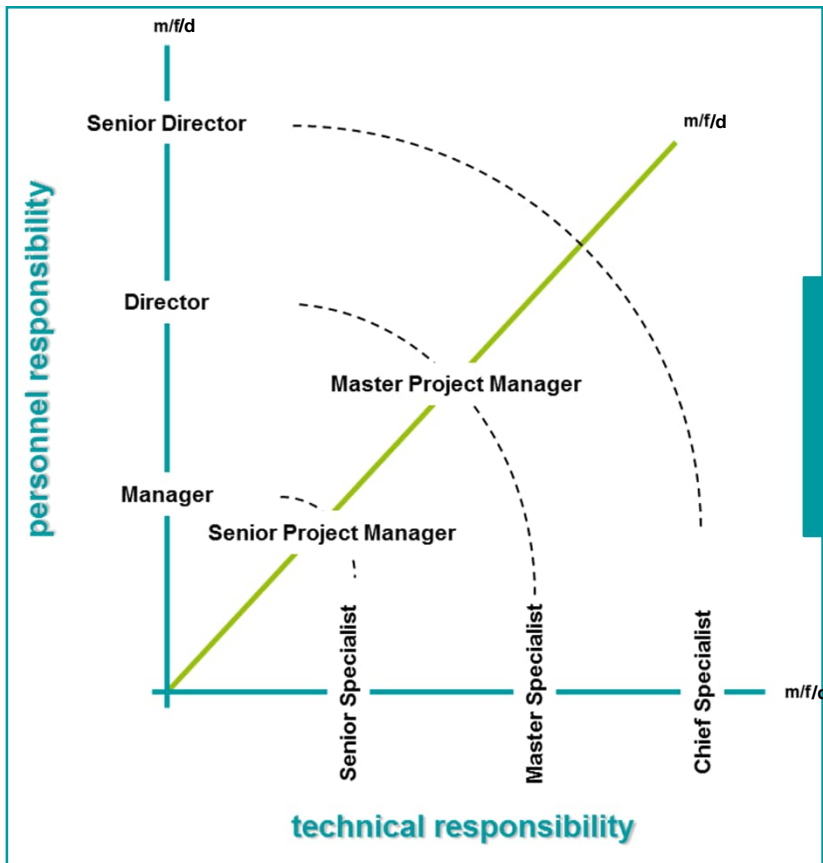
Business Case PHOENIX CONTACT Part II

Organizing innovation projects: organizational setup



Business Case PHOENIX CONTACT Part II

Phoenix Contact: career model



Different career options: finding a suiting career model for employees to gain maximum for both, employee & Phoenix Contact

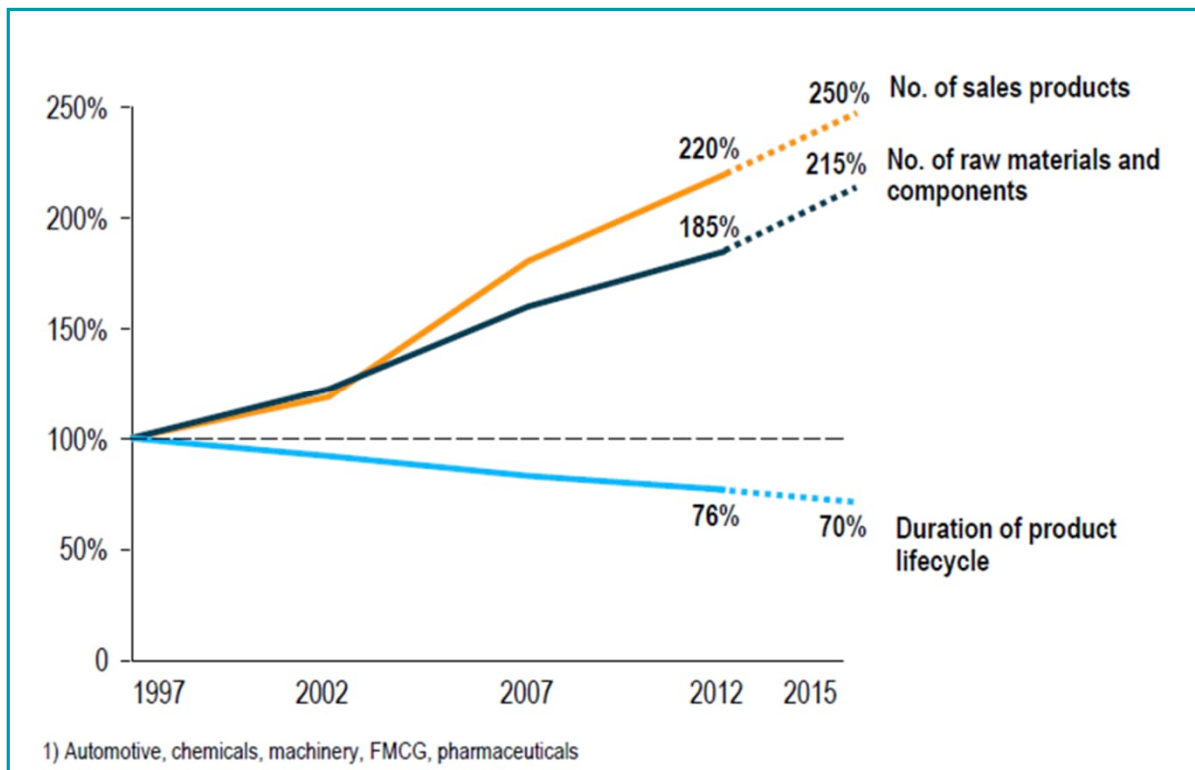
Business Case PHOENIX CONTACT Part II

Today's agenda

- Sources of ideas
- Lifecycle management
- Innovation portfolio
- Idea assessment
- Culture & innovation organization
- Mass customization
- Technology development

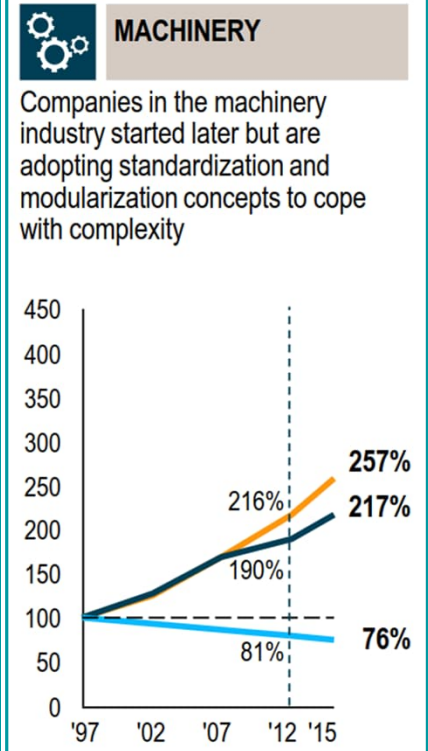
Business Case PHOENIX CONTACT Part II

Challenging: product variety & product life cycles



Across
different
industries:

increasing
product variety
& shortening
product life
cycles are
challenging
firms



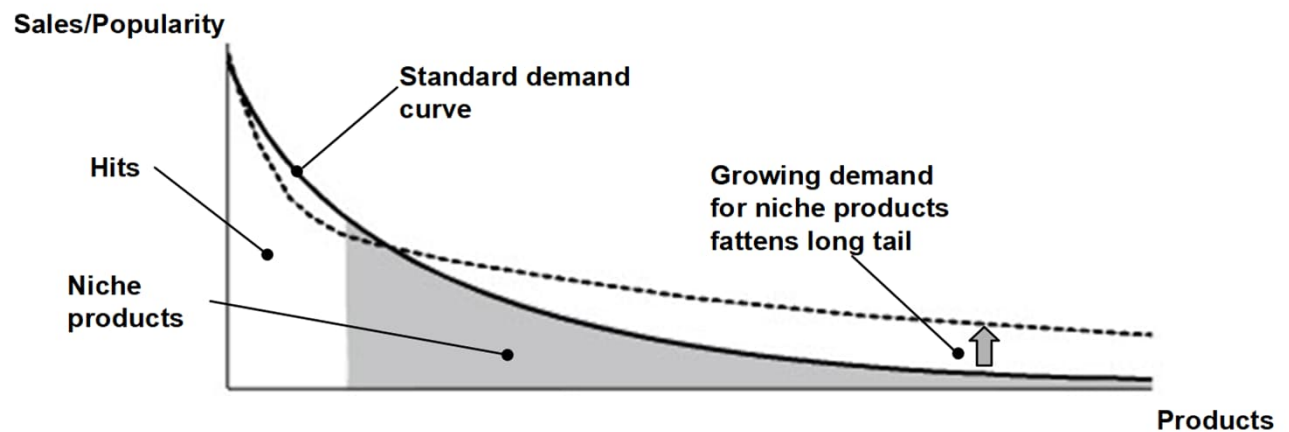
Business Case PHOENIX CONTACT Part II

Translating ideas into products

Challenging market conditions

- Shortening product life cycles
- Increase of product variety
- Increasing heterogeneity in customer needs

→ Long-tail markets*



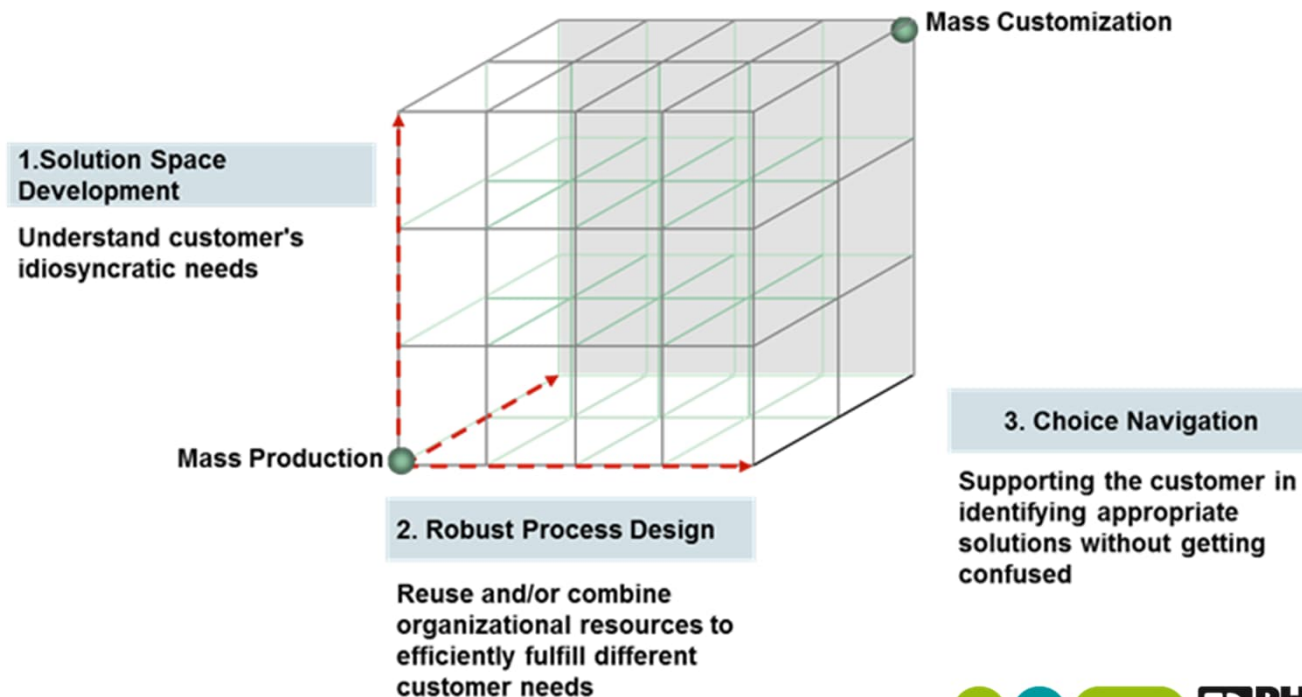
→ Translating ideas into marketable product offering oftentimes requires the creation of a high product variety to be able to meet the heterogeneous customer needs in the market

Capabilities for mass customization

Mass Customization:

Promising strategic business model capable to deal with such market conditions

Employing mass customization requires to develop a set of specific organizational capabilities....



Capabilities for mass customization

Solution space development:

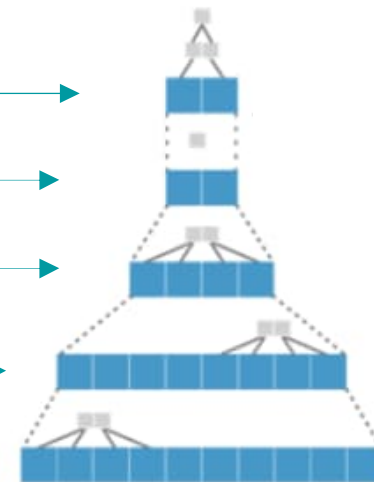
identifying the product attributes along which customer needs mostly diverge

What are the relevant attributes / functions of the SUNCLIX?



- Contacts
- Cable types
- Cable lengths
- Cable printings
- Ferrules
- ...

Exemplary: resulting variant tree

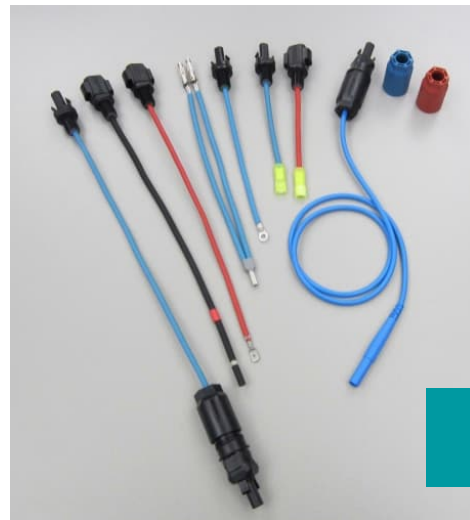


Business Case PHOENIX CONTACT Part II

Capabilities for mass customization

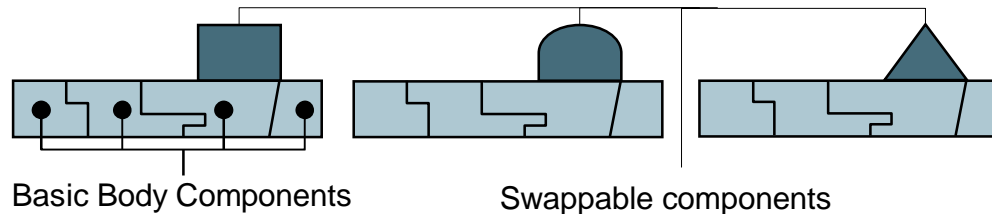
Product & process design for process robustness:

Defining a product & production system architecture that facilitate an efficient and flexible production



Modular product architecture

Flexible automated production



Business Case PHOENIX CONTACT Part II

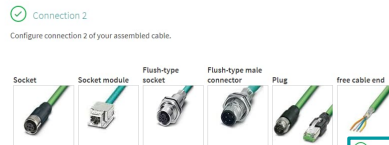
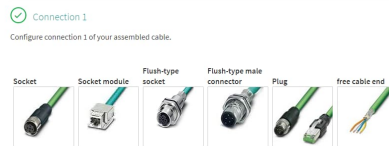
Capabilities for mass customization

Customer interaction competence:

Helping customers to find their solution by minimizing the complexity caused by high variety

Assembled cables and lines

LOAD SOLUTION ID



Example

Product configurators are one good approach finding suitable solutions within high variety offerings

General information / cables
Configure the general parameters for your assembled cable here.

Cable length * m Cable type * Number of positions

Application

Transmission category

Signal type

<input type="radio"/> CANopen®	<input type="radio"/> CC-Link
<input type="radio"/> CC-Link IE	<input type="radio"/> DeviceNet™
<input type="radio"/> EtherCAT®	<input type="radio"/> Ethernet
<input type="radio"/> Ethernet hybrid	<input type="radio"/> FOUNDATION Fieldbus
<input type="radio"/> INTERBUS	<input type="radio"/> PROFIBUS
<input type="radio"/> PROFIBUS PA	<input type="radio"/> PROFINET
<input type="radio"/> Sercos	<input type="radio"/> Single-Pair Ethernet
<input type="radio"/> VARAN	

Business Case PHOENIX CONTACT Part II

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Business Case PHOENIX CONTACT Part II

Technology development can be necessary...

...during the ideation phase



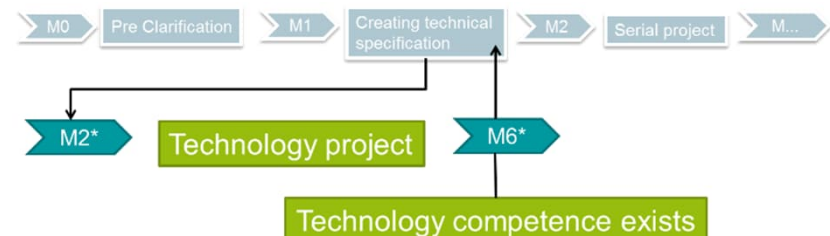
SUNCLIX:
combining
existing
solutions to a
new one



...to extend knowledge base for current & future business fields

- New / substitute materials
- Pre-clarification of other upcoming technologies
- Improving products / processes / ...
- ...

...in parallel to the product development



Business Case PHOENIX CONTACT Part II

Technology development: example



SUNCLIX:
technology
research
project:

material
weathering



- Natural & artificial weathering
- Mechanical & functional testing of material changes after 0,5-10 years
- ...

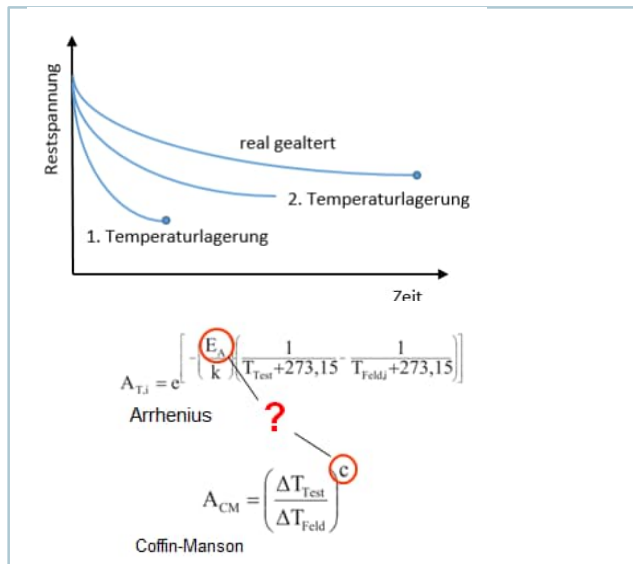


Business Case PHOENIX CONTACT Part II

Technology development: example



Technology
research
project:
„Halt-fit“



Topic	Description	Status
Timeline	2015-2020	
Volume	x	x
Consortium	BA DC; HS OWL	

Target:

- Development of an time lapse test reflecting natural exposure profile of connector systems
- Shortening required test time significantly
- Reliable life time prediction
- ...

To do's:

- Long-run tests (reference)
- Failure analysis / failure rates detection
- Mathematical model description
- ...

Many thanks for your attention.