Core Competence Evaluation

Strategy Framework, Methodology & Execution

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Challenges with the Core Competence Definition

A **Core Competence** could be described as the combination of processes, capabilities, resources, and technologies to **serve a customer** need and which a company can execute **more efficient than anyone else** in the network. If it can be done even **more effective than the competition**, it is a **Competitive Advantage**.

But **how** can core competencies been identified, evaluated, and developed further?

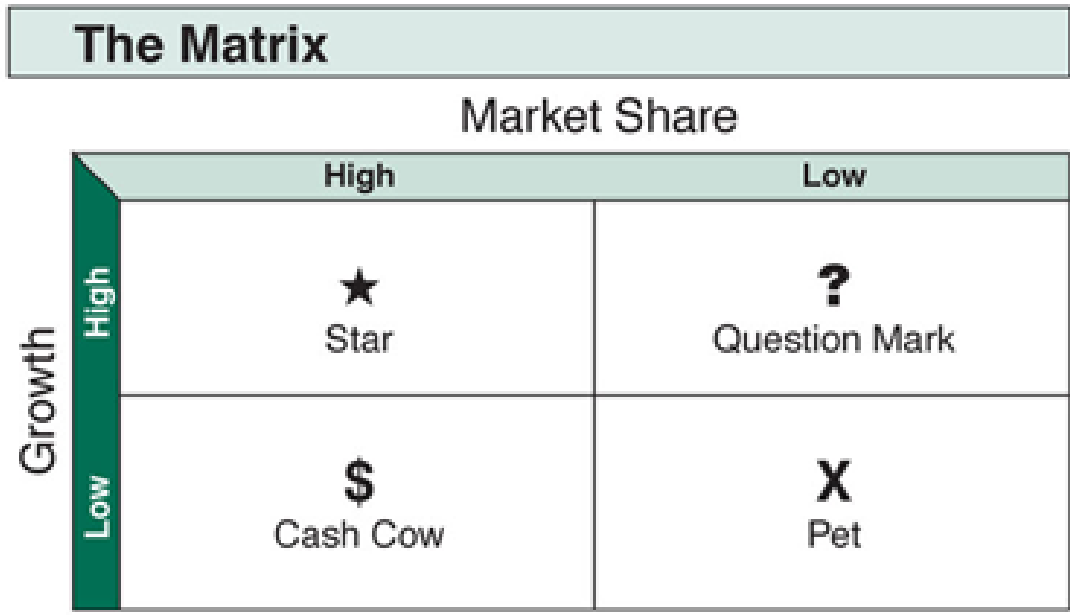
And **what** would be the **best source** to make it to a competitive advantage?

A potential idea how to address this, supported by an **analytical methodology** for a more objective view, is shared with this presentation!

Leverage of known Strategic Management & Process Analysis Tools

Combination of BCGM and FMEA

BCG Portfolio growth-share Matrix



Ref1: BCG Matrix

Ref2: BCG Strategic Portfolio Management

Failure Mode & Effects Analysis

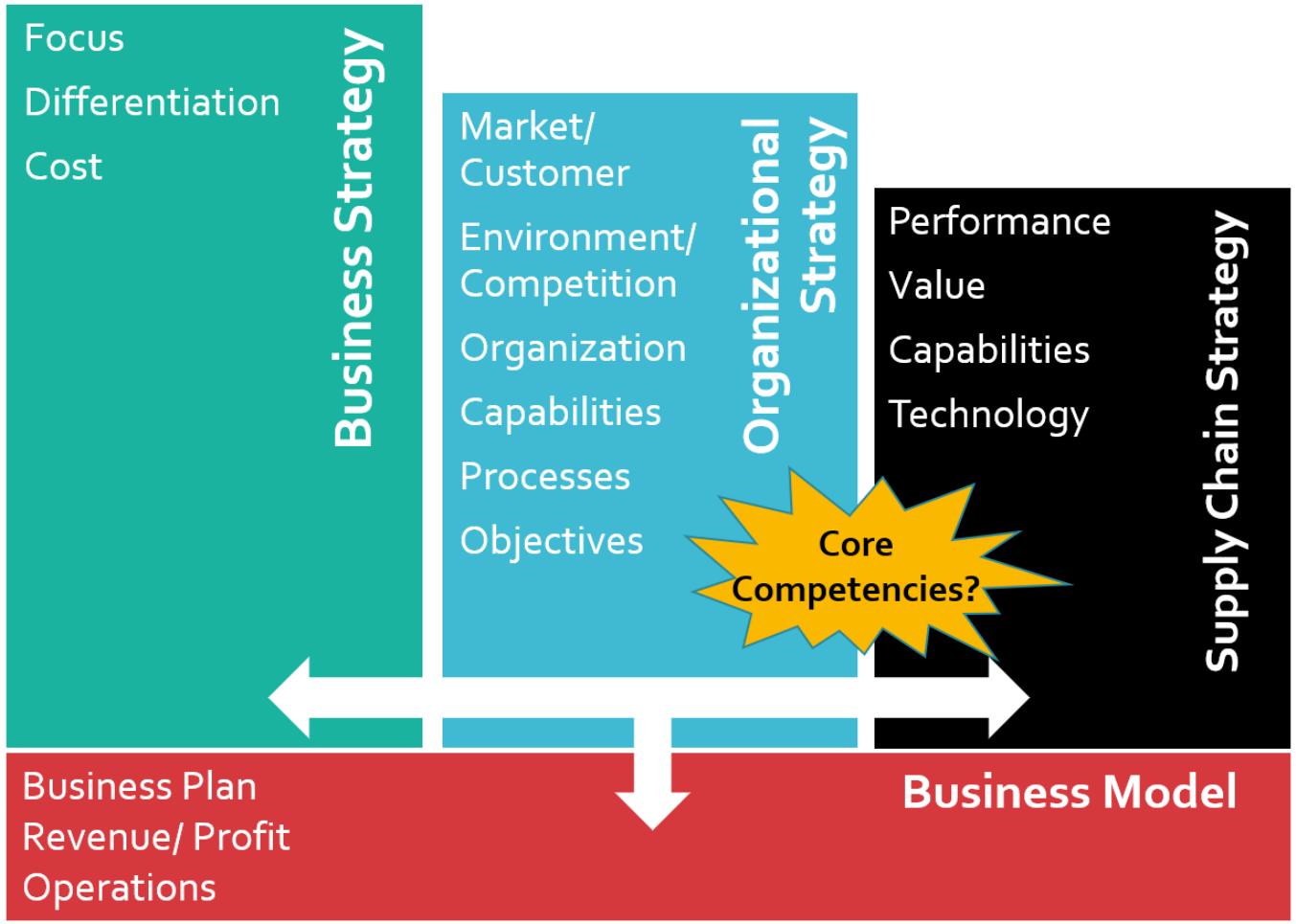
FMEA Ref.	Item	Potential failure mode	Potential cause(s) / mechanism	Mission Phase	Local effects of failure	Next higher level effect	System Level End Effect
1.1.1.1	Brake Manifold Ref. Designator 2b, channel A, O-ring	Internal Leakage from Channel A to B	a) O-ring Compression Set (Creep) failure b) surface damage during assembly	Landing	Decreased pressure to main brake hose	No Left Wheel Braking	Severely Reduced Aircraft deceleration on ground and side drift. Partial loss of runway position control. Risk of collision

(P) Probability (estimate)	(S) Severity	(D) Detection (Indications to Operator, Maintainer)	Detection Dormancy Period	Risk Level P*S (+D)	Actions for further Investigation / evidence	Mitigation / Requirements
(C) Occasional	(V) Catastrophic (this is the worst case)	(1) Flight Computer and Maintenance Computer will indicate "Left Main Brake, Pressure Low"	Built-In Test interval is 1 minute	Unacceptable	Check Dormancy Period and probability of failure	Require redundant independent brake hydraulic channels and/or Require redundant sealing and Classify O-ring as Critical Part Class 1

Ref3: FMEA

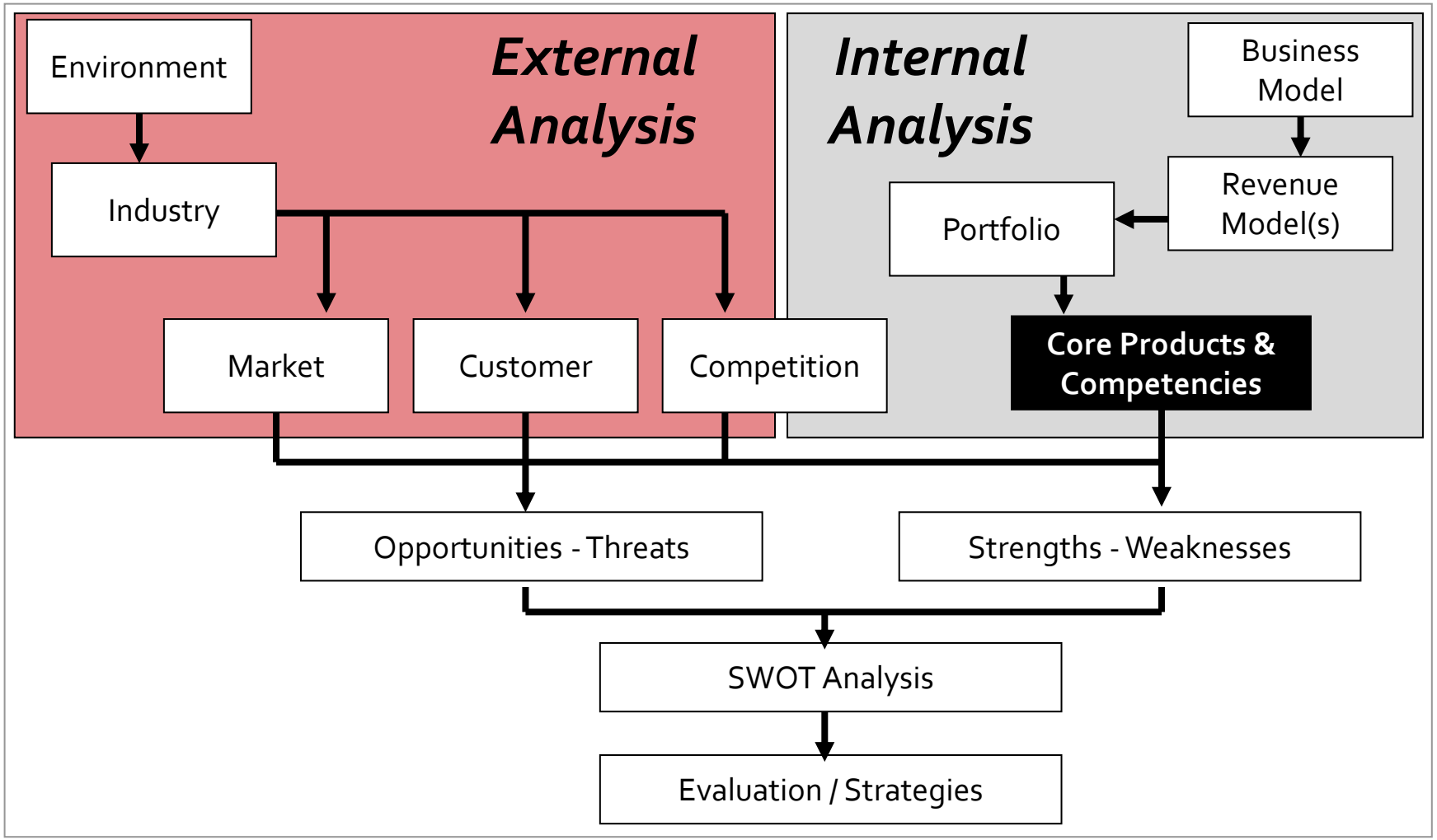
Core Competence evaluation as part of Organizational Strategy

The Core Competence **Evaluation** …



… should be an integral component as part of the Organizational Strategy Planning, Analysis and Definition.

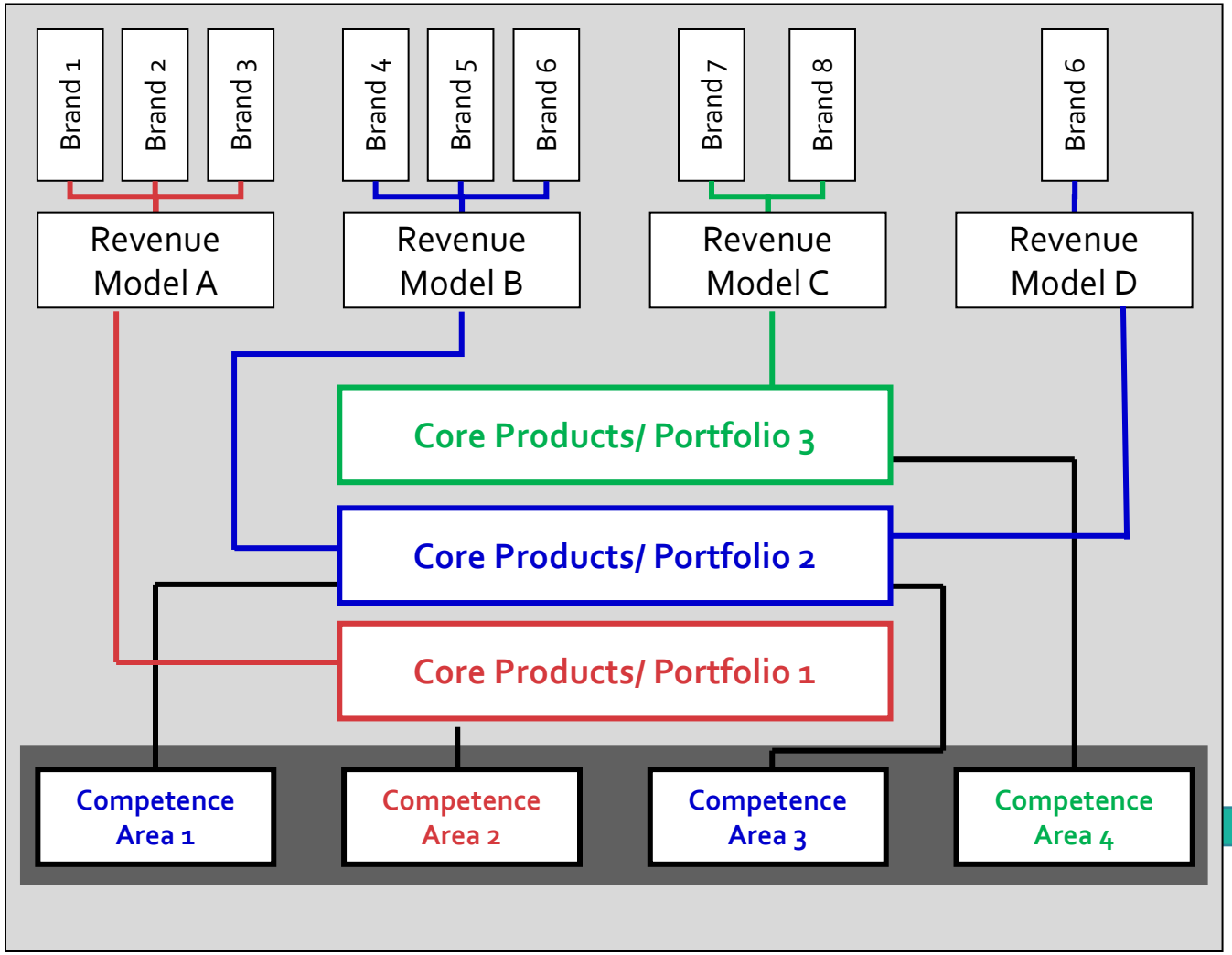
The Core Competence Analysis …



Ref4: Strategic Management

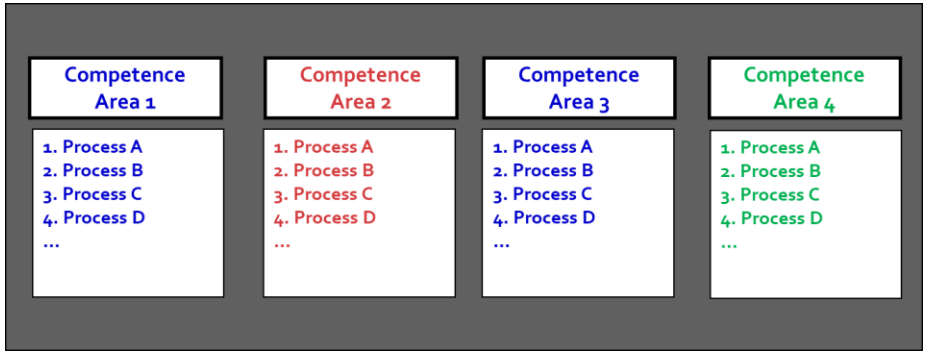
… is an element within the Strategic Analysis process!

The **Competence Tree** Approach



- Adjustable to the Company's business model
- Translates and maps:
  - Customer requirements
  - Key Brand(s)
  - Revenue Model(s)
  - Core Product Portfolio(s)
  - Competence Area(s)
- Competence Areas could be:
  - ✓ Manufacturing capabilities
  - ✓ Service network
  - ✓ Technology know how

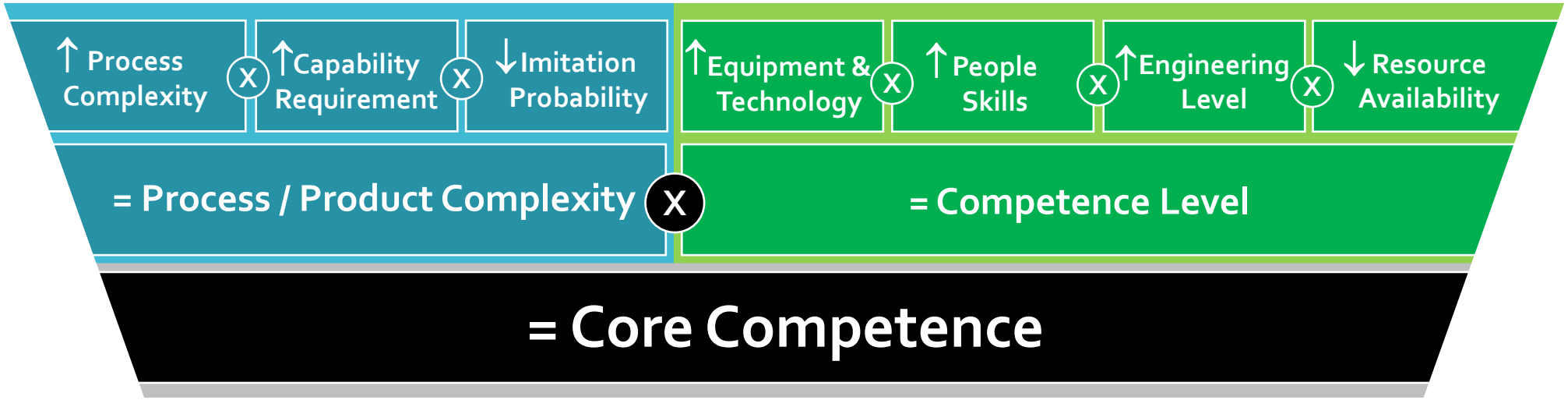
  … or any other major business process cluster



The Core Competence Evaluation

Core Competence **Analysis & Rating**

Core Competence Evaluation Tool (CCET)

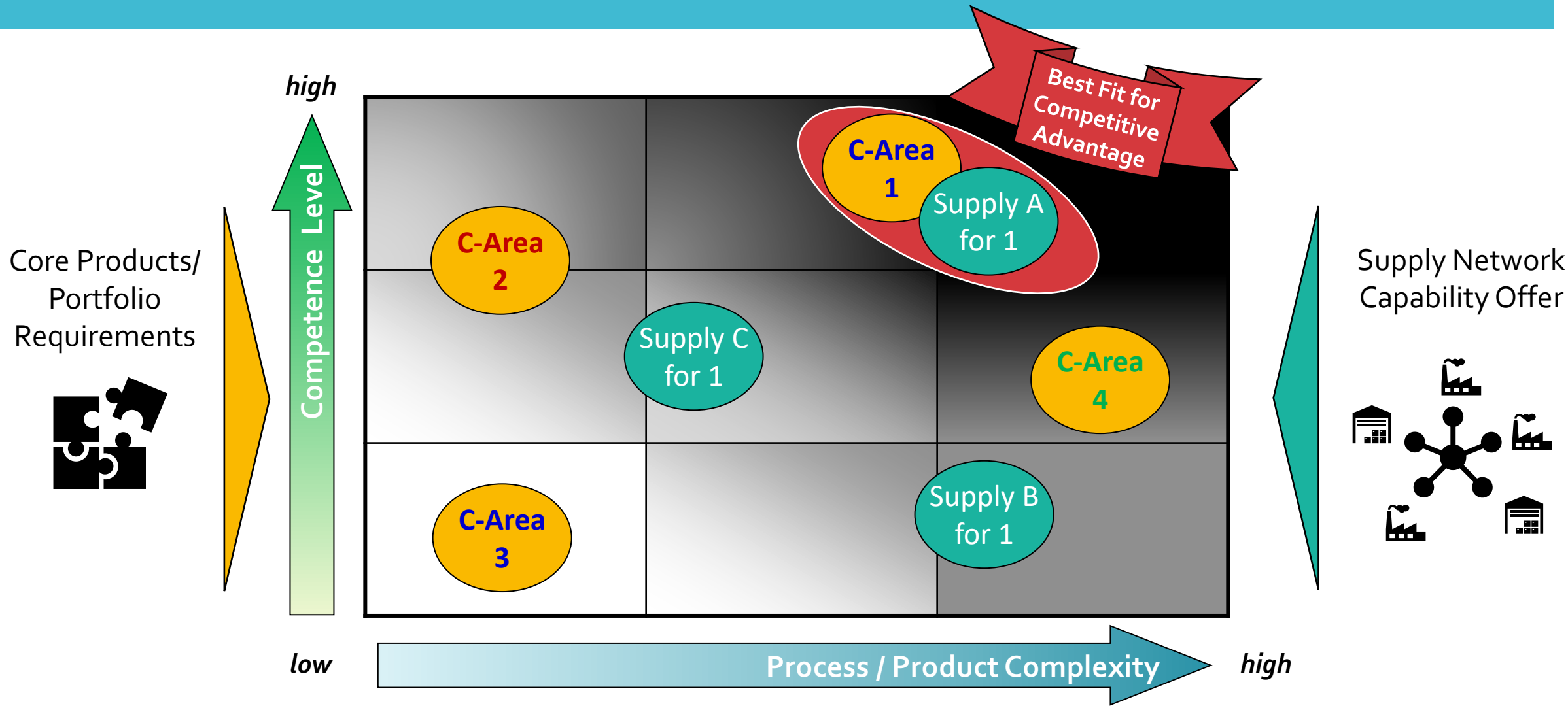


1. Competence Area Evaluation → Core Competence Level needed for Core Products/ Portfolio

2. Supply Network Evaluation → Core Competence Level provided from internal / external Sources

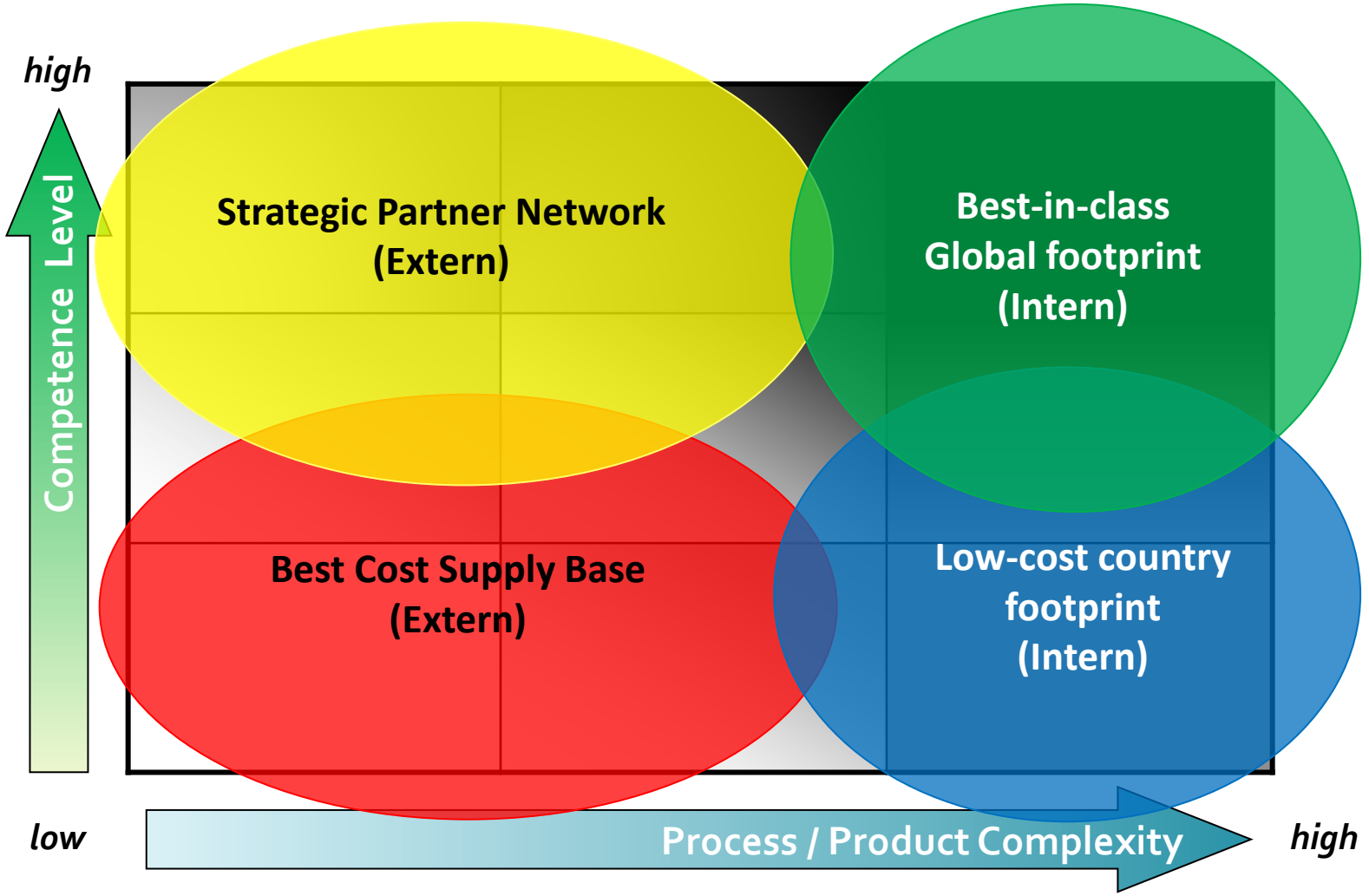
- Leverage of FMEA know how and process
- FMEA is based on a **Risk Level** calculation driven by probability, severity and detection capability
- CCET is based on a **Core Competence Level** calculation based on complexity, capability, imitation probability, technology, people, engineering and resources

The Core Competence **Matrix** …



… arises by mapping the evaluated Customer / Product requirements with the Supply Network capability offer!

A Global Supply strategy **framework** …



… can be developed, deducted from the BCGM methodology, to support the overall footprint development!

Execution, Tool and Conclusion

General strategic idea & **execution**

(1) Core Products/ Portfolio Evaluation

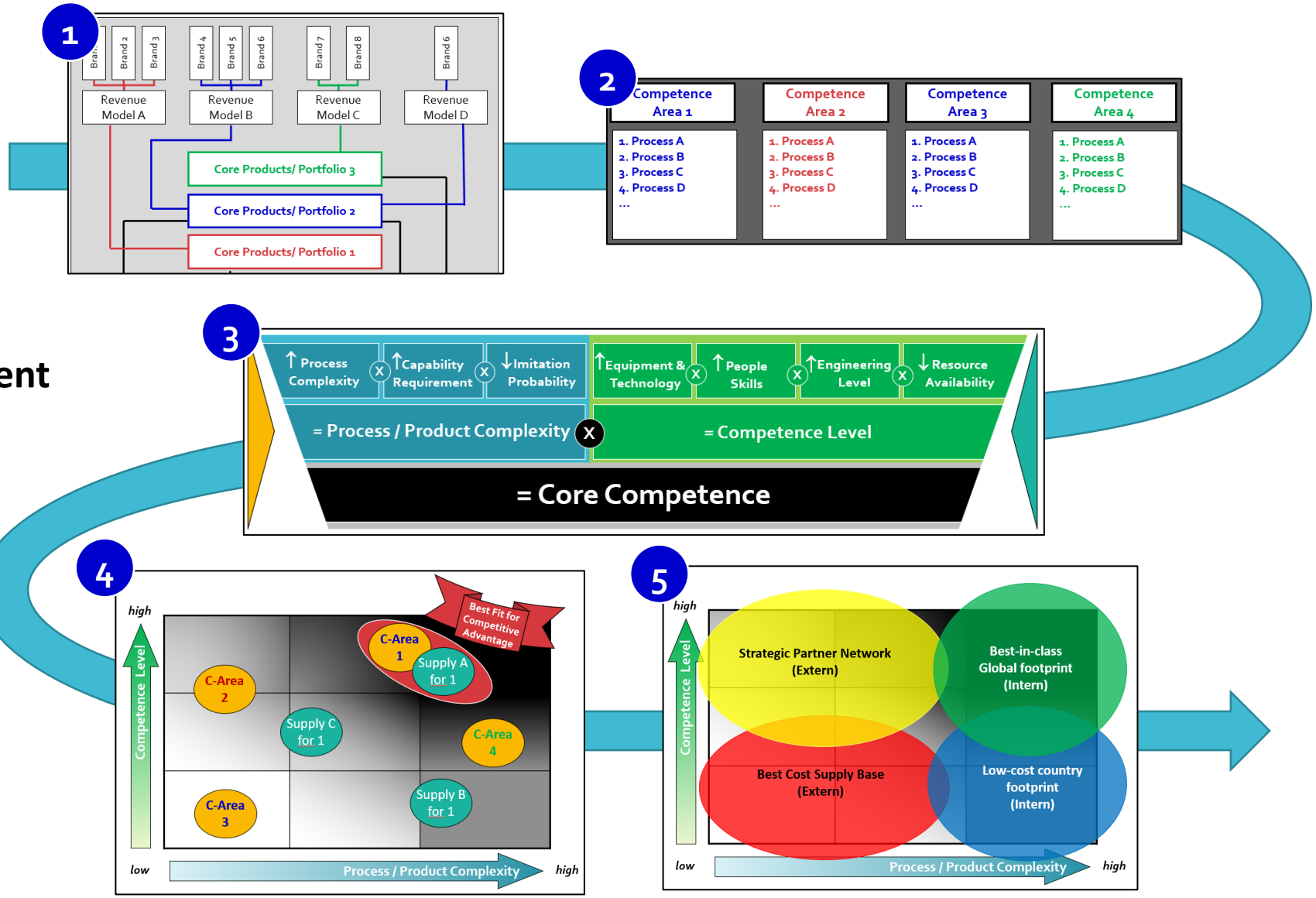
(2) Competence Area/ Process Identification

(3) Core Competence Requirement & Offer Evaluation

(4) Competence Cluster Matrix Deduction

(5) Definition of "Standard Strategies"

(6) Strategy Execution



The Core Competence Evaluation **Tool** (CCET)

Step1: Define and describe the Business & Competence Parameters for your Industry

Core Competence Evaluation Tool (CCET)

1) Competence Parameter Definition

1.1) Business Process Descriptions

Description	Comment	Level
Assembly - Basic		
Assembly - Medium		
Assembly - Complex		
Drilling - Small Dimensions		
Drilling - Mid Dimensions		
Drilling - Big Dimensions		
Grinding - Fine		
Grinding - Rough		
Milling - Small Dimensions		
Milling - Mid Dimensions		
Milling - Big Dimensions		
Packaging - Basic		
Packaging - Medium		
Packaging - Complex		
Polishing - Fine		
Polishing - Rough		
Turning - Small Dimensions		
Turning - Mid Dimensions		
Turning - Big Dimensions		
3D Printing - Basic		
3D Printing - Medium		
3D Printing - Complex		

1.2) Equipment & Technology Descriptions

Description	Comment	Level
5+X - CNC - Milling - High		
5+X - CNC - Milling - Mid		
5+X - CNC - Milling - Low		
3+X - CNC - Milling - High		
3+X - CNC - Milling - Mid		
3+X - CNC - Milling - Low		
CNC - Turning - High		
CNC - Turning - Mid		
CNC - Turning - Low		
Workplace		
Other		

1.3) People Skill Levels

Description	Comment	Level
Engineer - High	> 10 years job experience	5
Engineer - Mid	> 5 years job experience	4 - 5
Engineer - Low	> 5 years job experience	4
Technician - High	> 10 years job experience	3 - 4
Technician - Mid	> 5 years job experience	3
Technician - Low	> 5 years job experience	2 - 3
Specialist - High	High Training Level & Skills	3
Specialist - Mid	Mid Training Level & Skills	2 - 3
Specialist - Low	Low Training Level & Skills	2
Worker - High	High Training Level & Skills	2 - 3
Worker - Mid	Mid Training Level & Skills	2
Worker - Low	Low Training Level & Skills	1 - 2

1.4) Engeneering Level Decription

Description	Comment	Level
Industry 4.0 / Cloud / Global		
Enterprise Integrated		
CAD / CAM		
Procedure based		

The Core Competence Evaluation **Tool** (CCET)

Step2: Evaluate and rate the identified Competence Areas

Core Competence Evaluation Tool (CCET)

2) Competence Demand Evaluation

Core Competence =
Process/Product Complexity x Competence Level

Process/Product Complexity =
Process Complexity x Capability Requirement x Imitation Probability per major Business Process

Competence Level =
Technology Level x People Skilss x Engineering Level x Ressource Availability per major Equipment

Competence Area	*Process / Product Complexity*	*Comptence Level*	*# Main Processes*	*Strategy Suggestion*
Area 1	83,8	323,5	4,0	(1) Best-in-Class
Area 2	24,0	232,3	4,0	(3) Strategic Partner
Area 3	18,0	115,5	4,0	(4) Best Cost Supply
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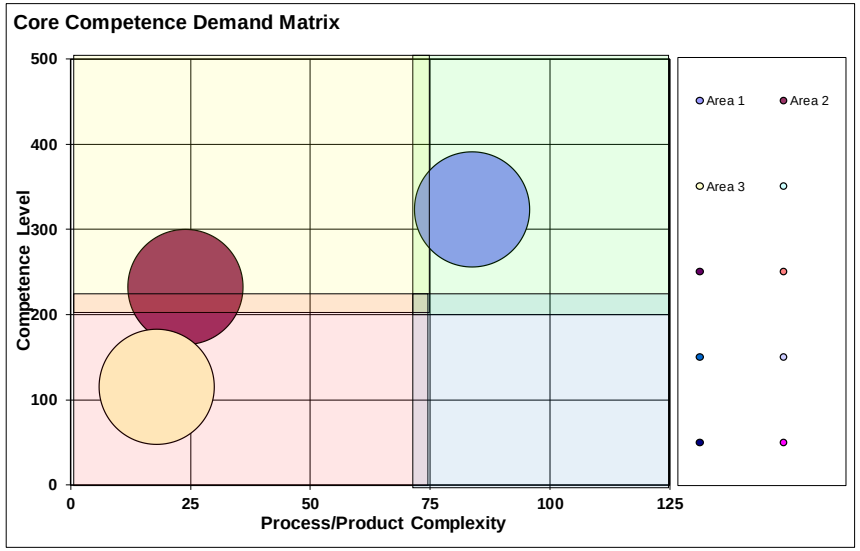

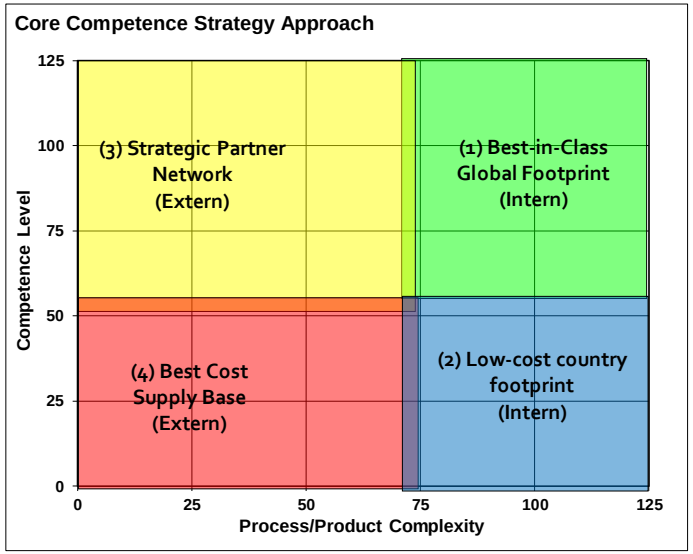

			A	B	C			D		E		F	G			
Competence Area	Process Step	Business Process	Process Complexity (1-5)	Capability Requirement (1-5)	Imitation Probability (5-1)	*Process / Product Complexitiy*	Equipment & Technology	Know How Level (1-5)	People Skill	Know How Level (1-5)	Engineering Level	Know How Level (1-5)	Ressource Availabilty (5-1)	*Comptence Level*	*# Main Processes*	*CC Points*
Area 1	1	Milling - Small Dimensions	5	5	5	*125*	5+X - CNC - Milling - High	5	Technician - Mid	4	Enterprise Integrated	5	5	*500*		62.500
	2	Turning - Small Dimensions	5	3	5	*75*	CNC - Turning - High	5	Technician - Mid	4	Enterprise Integrated	5	5	*500*		37.500
	3	Polishing - Fine	4	3	5	*60*	Other	4	Worker - High	3	CAD / CAM	3	4	*144*		8.640
	4	Assembly - Complex	5	3	5	*75*	Workplace	5	Specialist - High	5	Procedure based	2	3	*150*		11.250
	5															
Core Competence Evaluation Metric						*84*								*324*	*4*	

The Core Competence Evaluation **Tool** (CCET)

Step3: Evaluate and rate the existing Supply Network capabilities

Core Competence Evaluation Tool (CCET)

3) Supply Network Capability Evaluation

Location =
Name (Strategy Support) **(1) Best-in-Class, (2) Low-Cost Country, (3) Strategic Partner, (4) Best Cost Supply**

Process/Product Complexity (PP) =
Offer Evaluation (Manufacturing Process Complexity x Process Cabability x Imiatation Probability)

Competence Level (CL) =
Offer Evaluation (Equipment & Technology x Labor Skill x Engineering Level x Ressource Availabilty)

			A	B	C			D		E		F	G		
Location	Process	Business Process	Process Complexity Offer (1-5)	Capability Requirement Offer (1-5)	Imitation Probability (5-1)	*Process / Product Complexitiy*	Equipment & Technology	Know How Level Offer (1-5)	People Skill	Know How Level Offer (1-5)	Engineering Level	Know How Level Offer (1-5)	Ressource Availabilty (5-1)	*Comptence Level*	*CC Points*
Source A (1)	1	Milling - Small Dimensions	5	4	5	*100*	5+X - CNC - Milling - High	5	Technician - Mid	4	Enterprise Integrated	5	5	*500*	50.000
	2	Turning - Small Dimensions	5	4	5	*100*	CNC - Turning - High	5	Technician - Mid	4	Enterprise Integrated	4	5	*400*	40.000
	3	Polishing - Fine	4	4	4	*64*	Other	5	Worker - High	4	CAD / CAM	3	4	*240*	15.360
	4	Assembly - Complex	5	4	5	*100*	Workplace	5	Specialist - High	5	Procedure based	3	4	*300*	30.000
	5	Milling - Mid Dimensions	4	3	3	*36*	5+X - CNC - Milling - High	5	Technician - Mid	4	Enterprise Integrated	4	5	*400*	14.400
	6	Turning - Mid Dimensions	4	3	3	*36*	CNC - Turning - High	5	Technician - Mid	4	Enterprise Integrated	4	5	*400*	14.400
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The Core Competence Evaluation **Tool** (CCET)

Step4: Review Demand & Supply mapping and address Strategic actions

Core Competence Evaluation Tool (CCET)

4) Competence Demand & Supply Mapping

Core Competence (CC) =
Process/Product Complexity x Competence Level **(1) Best-in-Class, (2) Low-Cost Country, (3) Strategic Partner, (4) Best Cost Supply**

Process/Product Complexity (PP) =
weighted Requirements on (Manufacturing Process Complexity x Process Cabability x Imiatation Probability)

Competence Level (CL) =
weighted Requirements on (Equipment & Technology x Labor Skill x Engineering Level x Ressource Availabilty)

Mapping Results:
Supply offer is at or above required Competence Level Score
Supply offer is below required Competence Level Score -> Improvements needs to be addressed
Supply offer is not yet available -> Investments needs to be addressed or Source is not applicable

Competence Demand (Requirement) / ***Competence Supply (Offer)***

Product Cluster	Strategy Suggestion	Process Step	Business Process	Process / Product Complexitiy (PP)	Equipment & Technolgoy	Labor Skill Level	Engineering Level	Comptence Level (CL)	CC Points	Source A (1) PP	Source A (1) CL	Source A (1) CC	Source B (2) PP	Source B (2) CL	Source B (2) CC	Source C (3) PP	Source C (3) CL	Source C (3) CC	Source C (4) PP	Source C (4) CL	Source C (4) CC	Plant / Supplier PP	Plant / Supplier CL	Plant / Supplier CC
Area 1	(1) Best-in-Class	1	Milling - Small Dimensions	125	5+X - CNC - Milling - High	Technician - Mid	Enterprise Integrated	500	62.500	100	500	50.000	80											
		2	Turning - Small Dimensions	75	CNC - Turning - High	Technician - Mid	Enterprise Integrated	500	37.500	100	400	40.000	80											
		3	Polishing - Fine	60	Other	Worker - High	CAD / CAM	144	8.640	64	240	15.360				12			27					
		4	Assembly - Complex	75	Workplace	Specialist - High	Procedure based	150	11.250	100	300	30.000	100											
		5																						

Competence Demand (Requirement) / ***Competence Supply (Offer)***

Product Cluster	Strategy Suggestion	Process Step	Business Process	Process / Product Complexitiy	Equipment & Technolgoy	Labor Skill Level	Engineering Level	Comptence Level	CC Points	Source A (1) PP	Source A (1) CL	Source A (1) CC	Source B (2) PP	Source B (2) CL	Source B (2) CC	Source C (3) PP	Source C (3) CL	Source C (3) CC	Source C (4) PP	Source C (4) CL	Source C (4) CC	Plant / Supplier PP	Plant / Supplier CL	Plant / Supplier CC
Area 2	(3) Strategic Partner	1	Milling - Mid Dimensions	36	5+X - CNC - Milling - High	Technician - Mid	CAD / CAM	400	14.400	36			36	400	14.400	36	256	9.216	27					
		2	Turning - Mid Dimensions	36	CNC - Turning - Mid	Technician - Mid	CAD / CAM	320	11.520	36			36			36	320	11.520	18					
		3	Polishing - Fine	12	Other	Worker - High	Procedure based	81	972	64						12	60	720	27	300	8.100			
		4	Assembly - Medium	12	Workplace	Specialist - Mid	Procedure based	128	1.536							27	180	4.860	27	300	8.100			
		5																						

Competence Demand (Requirement) / ***Competence Supply (Offer)***

Product Cluster	Strategy Suggestion	Process Step	Business Process	Process / Product Complexitiy	Equipment & Technolgoy	Labor Skill Level	Engineering Level	Comptence Level	CC Points	Source A (1) PP	Source A (1) CL	Source A (1) CC	Source B (2) PP	Source B (2) CL	Source B (2) CC	Source C (3) PP	Source C (3) CL	Source C (3) CC	Source C (4) PP	Source C (4) CL	Source C (4) CC	Plant / Supplier PP	Plant / Supplier CL	Plant / Supplier CC
Area 3	(4) Best Cost Supply	1	Milling - Mid Dimensions	27	5+X - CNC - Milling - Low	Technician - Low	CAD / CAM	180	4.860	36			36			36			27					
		2	Turning - Mid Dimensions	27	CNC - Turning - Low	Technician - Low	CAD / CAM	180	4.860	36			36			36			18					
		3	Polishing - Fine	12	Other	Worker - Mid	Procedure based	54	648	64						12	60	720	27	300	8.100			
		4	Assembly - Medium	6	Workplace	Specialist - Low	Procedure based	48	288							27	180	4.860	27	300	8.100			
		5																						

Summary & conclusions

All in all, to **combine** the concept of the **BCG portfolio matrix** with the **FMEA methodology** to develop a **Core Competence Evaluation Tool** could be a great idea to support the strategic planning process within a company.

It helps to **objectify the Core Competence discussion**, to map demand requirements and supply offer, supports a competence gap analysis within the supply network and can finally **generate a Strategic Planning Framework** to support the footprint development roadmap.

A **CCET** should be developed in alignment with the industry requirements and can be **added** to the strategic **planning toolbox** of the company.

Author

Introduction summary

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Professional Background

- Supply Chain Management, Planning & Execution
- Operations & Plant Management
- Center of Excellence Leader within manufacturing footprint
- Business Process Development, Implementation & Validation
- ERP & IT Solutions
- Quality Management
- 20+ years in Metal Processing & Medical Device Industry

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