INTRODUCTION TO OPERATIONS AND SUPPLY CHAIN MANAGEMENT

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

WHAT IS THE MOST IMPORTANT? WHY?

- ❑ STRATEGIC MANAGEMENT
- ❑ OPERATIONS MANAGEMENT
- ❑ COMPANY POLICY

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DEFINITIONS

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

“The best supply chains aren't just **fast and cost-effective**. They are also **agile and adaptable**, and they ensure that **all their companies' interests stay aligned.**”

Hau L. Lee
US Professor of Operations,
Information and Technology in Harvard Business Review

DEFINITION

Supply Chain and Supply Chain Management

Supply chain refers to a system of organizations involved in all moving processes of a product or service, including the extraction of raw materials, production and delivery of the finished product to the end customer.

Supply chain management consists of monitoring, establishing and managing materials, information and finances across the entire value chain. SCM also coordinates and integrates separate company operations, both internally and externally.

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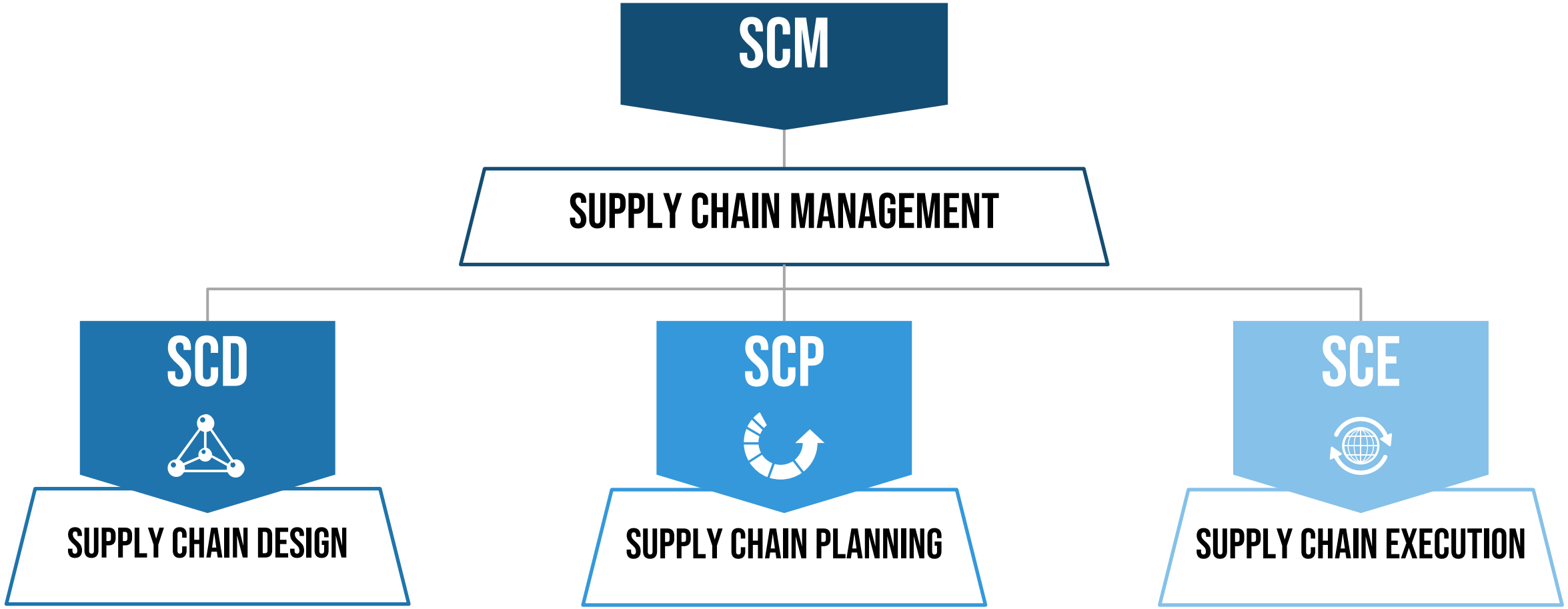
DEFINITION

Abbreviations



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Value Chain can be defined as:
a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. It encompasses all the value-creating activities, from raw materials to final product/service delivery, and includes both primary and support activities.

Porter, M. E. (1985). Competitive Advantage: Creating and Sustaining Superior Performance. New York: Free Press.

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classes@doctor.eco

Operations Management can be defined as:
the administration of business practices to create the highest level of efficiency possible within an organization. It is concerned with converting materials and labor into goods and services as efficiently as possible to maximize profits.

Mateusz PANEK PhD, DBA, LL.D
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Heizer, J., Render, B., & Munson, C. (2016). Operations Management: Sustainability and Supply Chain Management (12th ed.). Boston: Pearson.

S&OP (SALES AND OPERATIONS PLANNING)

	June 2022	July 2022
Marketing	1 000 000 leads	**1100 000 leads**
Sales	20% max. 200 000	20% max. 220 000
Procurement	250 000	250 000
Production	300 000	300 000
Warehouse	**100 000**	250 000
Transportation	400 000	400 000
Customer service	**150 000**	200 000
	sell 100 000	**sell 220 000**

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BASICS

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classes@doctor.eco

BASICS

SCOR Model

Supply Chain Operations Reference MODEL

The SCOR model is a management tool that analyzes and evaluates the performance of supply chains.

It provides a consistent structure for setting metrics, processes, best practices, staff skills and their networks.

It also describes the entire value chain process, from suppliers to the end customer.

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SCOR Model – 6 Main Processes

This is where the basis for downstream processes is formed.

Rules, conditions and policies are set here.

This includes all the actions necessary for procuring materials to meet the proposed or actual demand.

Transport management and the storage for finished products are assigned to this area.

This is where supply and demand are merged.

All other processes within this value stage are coordinated here (also across companies).

This is where the actual manufacturing process takes place.

This process often includes returns of goods or information about the supplier.

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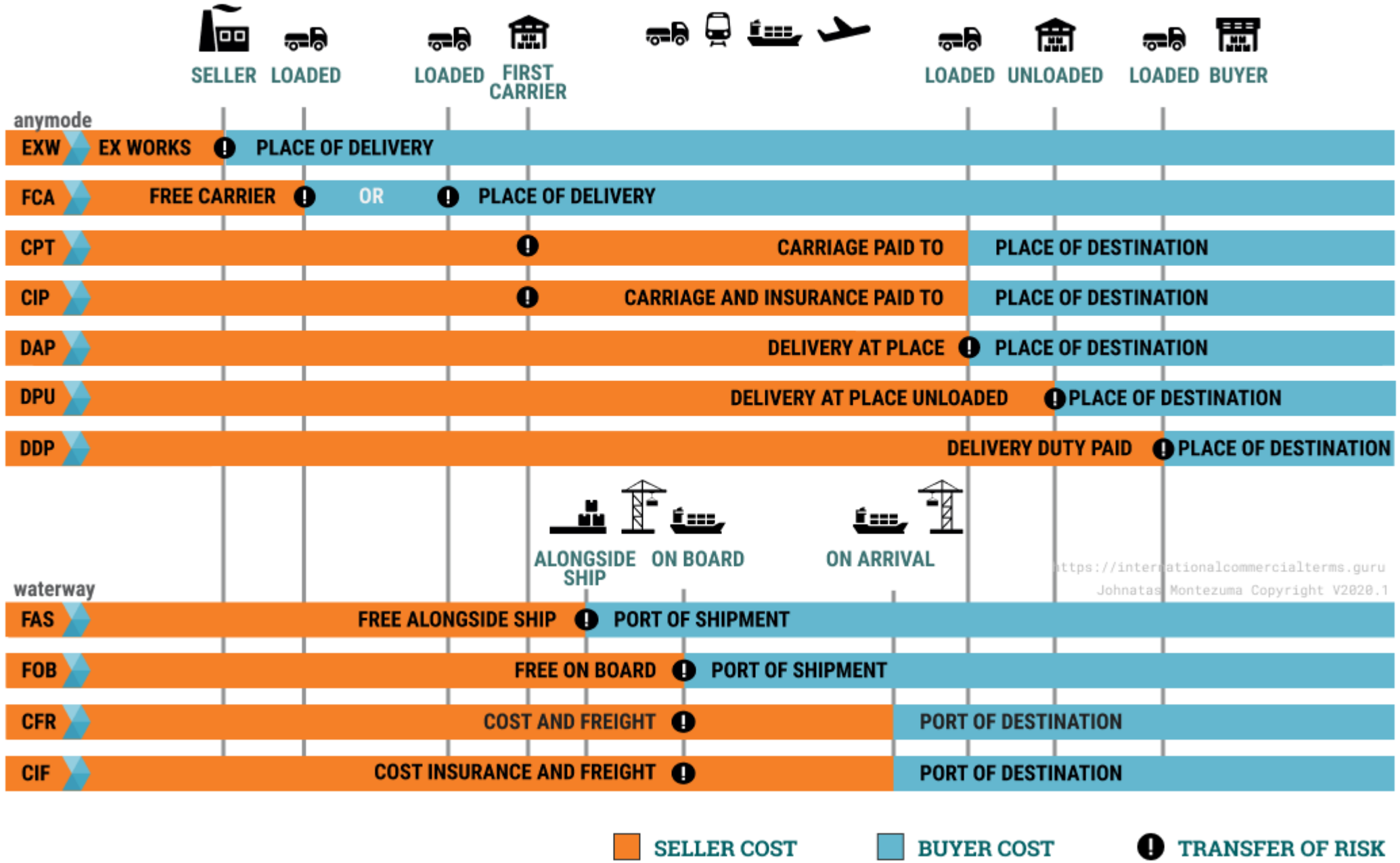

BASICS d'impact sur les zones de Supply Chain

Supply Chain Management Overview – 1

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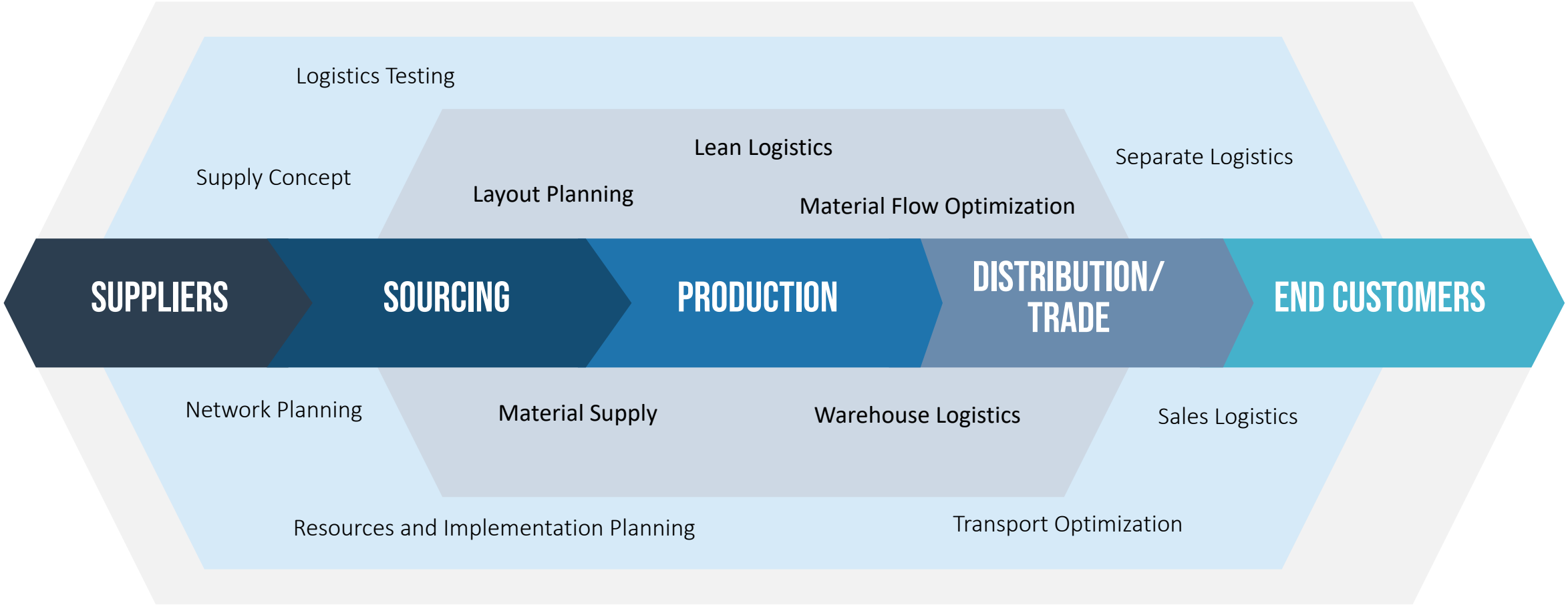
Supply Chain Management Overview



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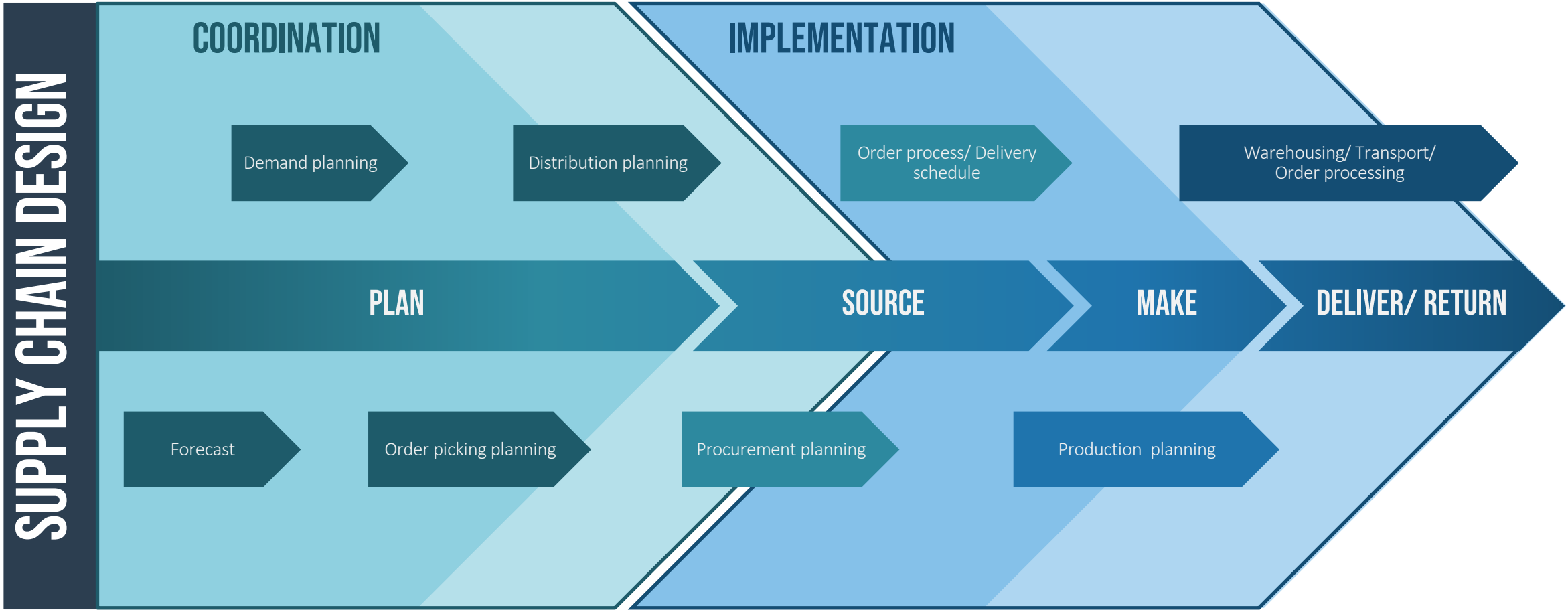
Supply Chain Management Overview



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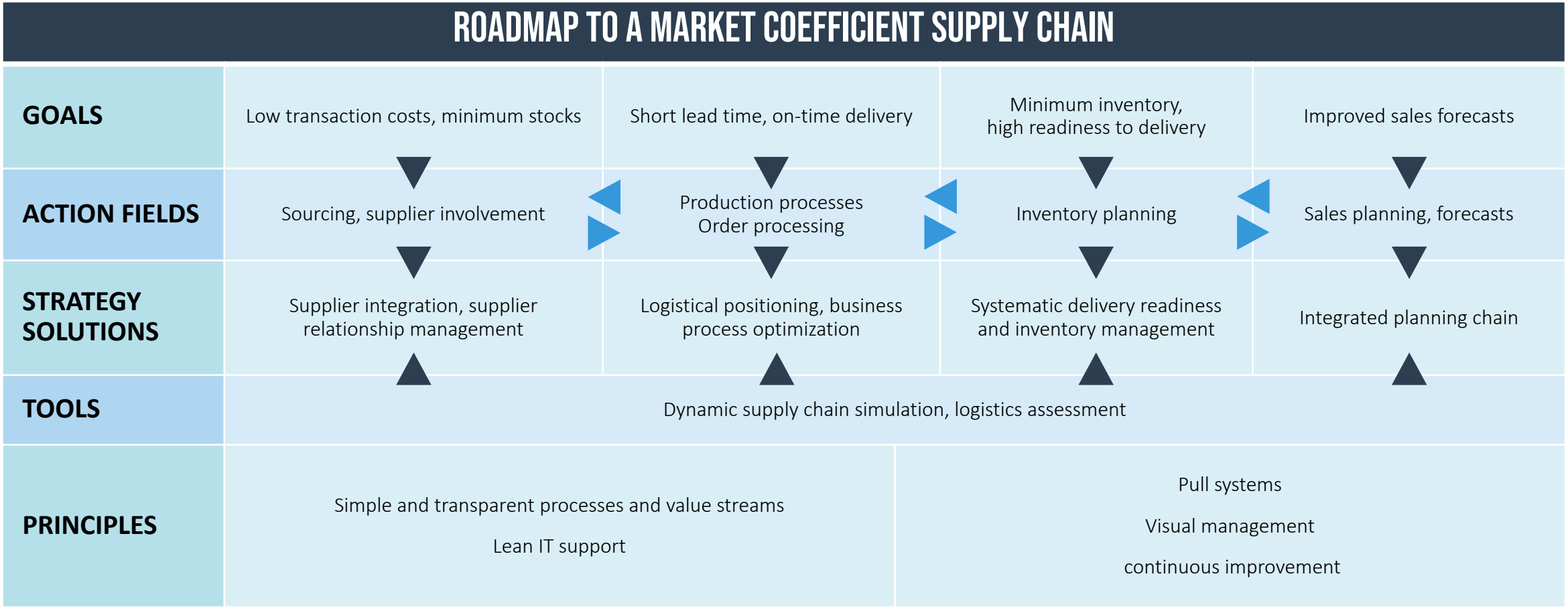
Roadmap to a Market Coefficient Supply Chain



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A Supply Chain Process

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LET'S DEFINE TECHNICAL LANGUAGE

PoC MVP EVP

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BASICS

Distinction of Various Supply Management Systems

	SOURCE	MAKE	DELIVER	SELL	
Supply chain configuration	Supply chain modelling		Supply chain optimization		Strategic planning system
Supply chain planning	Supplier management	Comprehensive planning	Inventory and warehouse management	Customer order management	Optimizing tools
	Procurement program planning	Master planning	Distribution planning	Sales and demand planning	
		Production planning		Customer order simulation	
Supply chain performance (Enterprise Resource Planning)	Procurement processing	Production processing	Warehousing and shipping	Sales processing	Advanced **ERP** system

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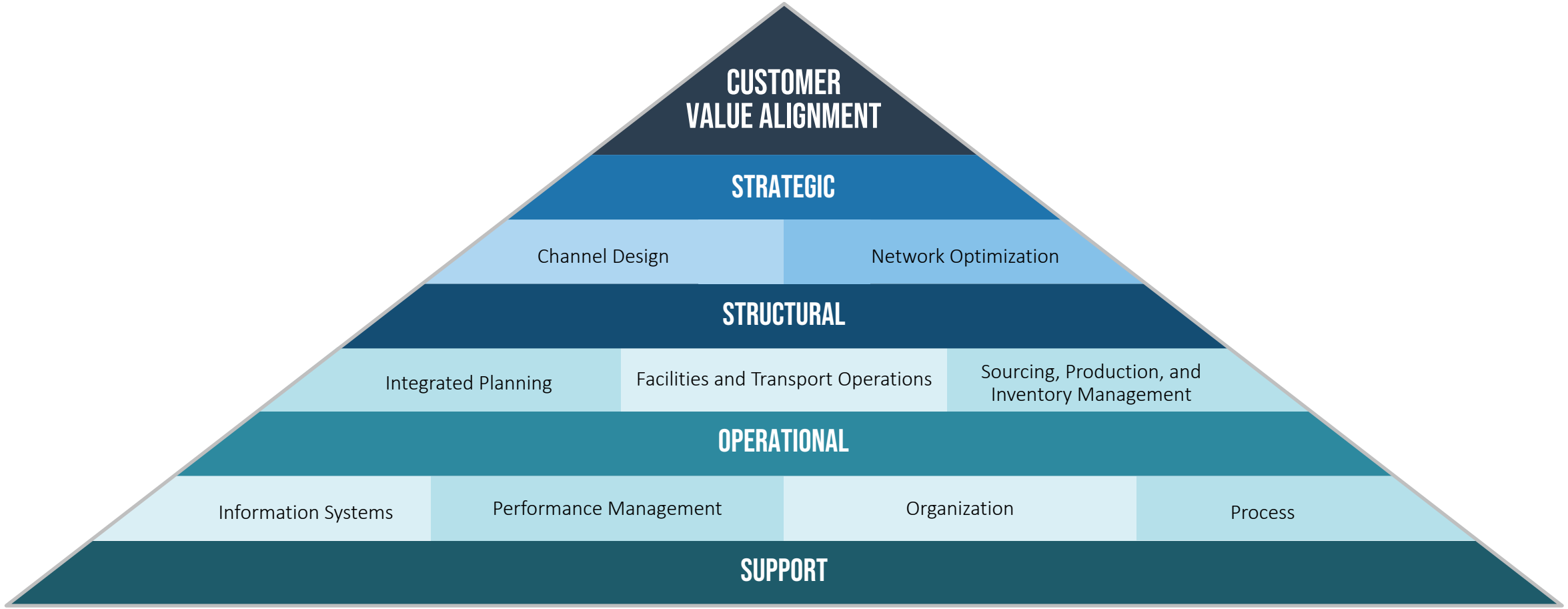
Supply Chain Organization Pyramid



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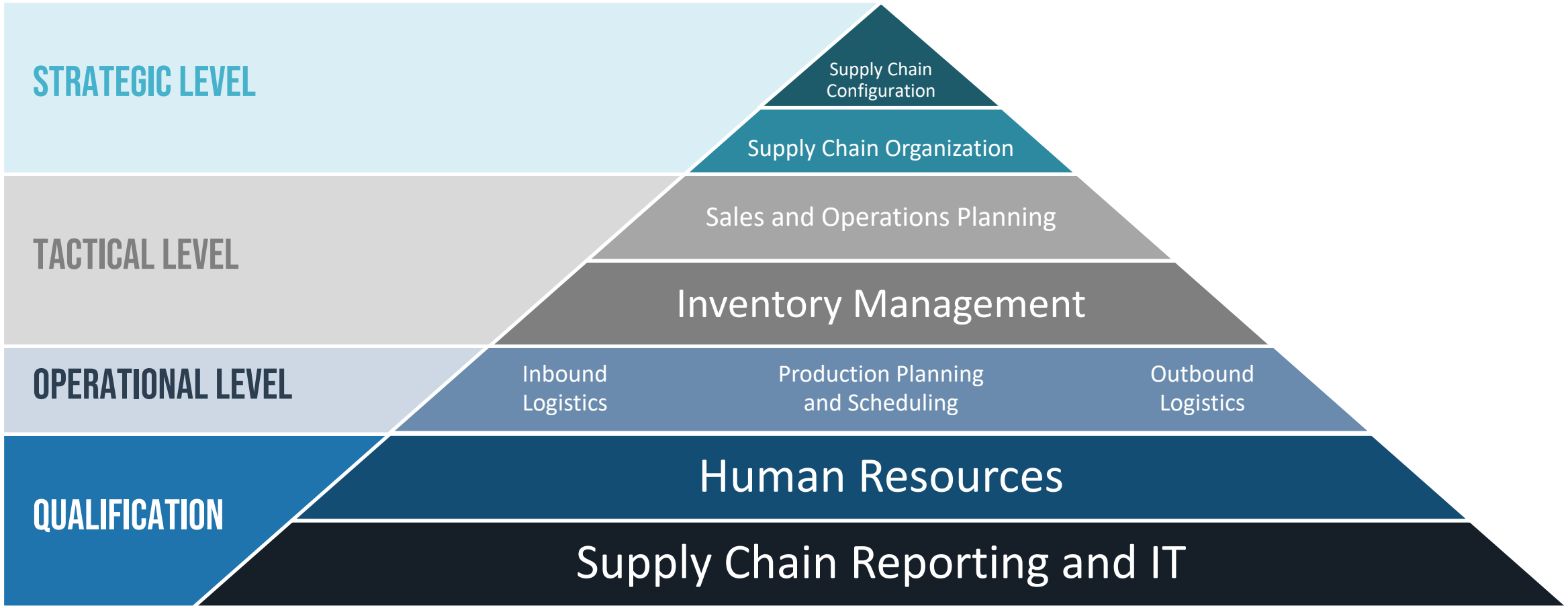
Supply Chain Organization Pyramid



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BASICS

Supply Chain Management Strategies

EFFICIENT CONSUMER RESPONSE

Synchronized production of Vendor Managed Inventory (VMI) for consumption

CUSTOMER RELATIONSHIP MANAGEMENT

Continuous improvement of customer satisfaction and customer loyalty

POSTPONEMENT STRATEGIES

Reduce inventory at semi-finished and finished stages

REFERENCE STRATEGIES

A type of market development for systematically expanding the sourcing policy at the international level

PRODUCTION AND SOURCING STRATEGIES

Create transparency between supplier and customer

SUPPLIER MANAGEMENT

Purchasing, logistics and quality

ELECTRONIC MARKET PLACES

Commercial exchange of goods passed via platforms with the possibility of establishing a product's time and place

COLLABORATIVE PROCESSING

Inter-organizational coupling of legally independent partners in a supply chain network over the Internet

VIRTUAL FREIGHT EXCHANGE

Better transport utilization and price reduction by tracking and tracing

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

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classes@doctor.eco

QUALITY
SIX SIGMA

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DEFINITION – WHAT IS SIX SIGMA?

INDICATOR OF

Efficiency of processes

PROCESS IMPROVEMENT

Operative and productive processes

PROBLEM SOLVING METHOD

Systematically , data oriented,
(DMAIC-Method, DMADV)

CUSTOMER REQUIREMENTS

Not quality improvement at all costs

TOOLBOX

Process, analysis, statistics,
problem solving strategy

QUALITY INITIATIVE

Resounding measurable success like
increased revenue and lowered costs

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classes@**doctor.eco**

THE SIGMA-LEVEL

Measuring Method to Determine Process Performance

SIGMA	ERROR RATE	DEFECTS PER MILLION*	SUCCESS RATE (Y%)	PROCESS CAPABILITY (C_p)
1	69%	691.462	31	0,33
2	31%	308.538	69	0,67
3	6,7%	66.807	93,3	1,00
4	0,62%	6.210	99,38	1,33
5	0,023%	233	99,977	1,67
6	0,00034%	3,4	99,9997	2,00
7	0,0000019%	0,019		

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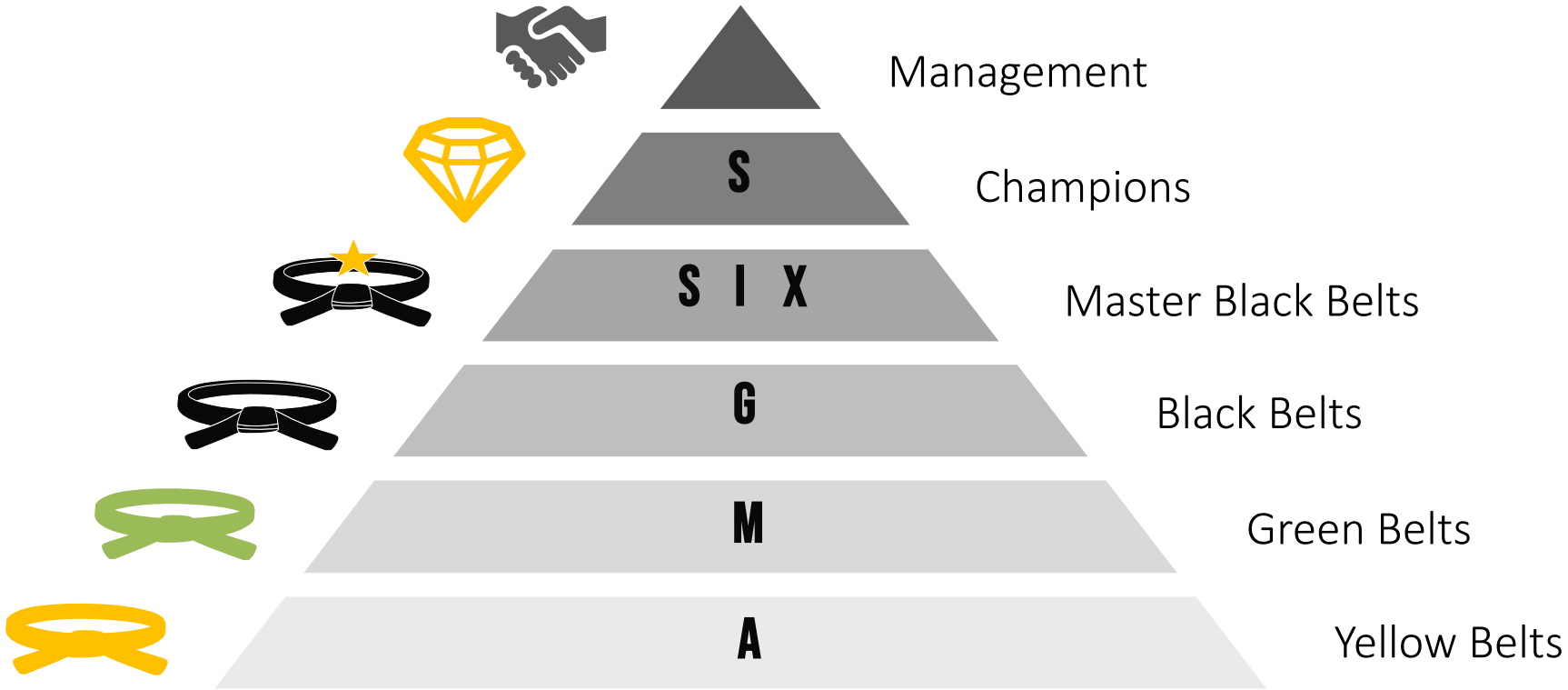
The higher the value, the more efficient is the process

PROJECT ORGANIZATION AND ROLES

Leading Positions and Roles within the Six-Sigma-Program



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PROJECT ORGANIZATION AND ROLES

Description of roles and related skills

CONTROL CIRCUIT

CHAMPION

Responsible for budget and resources; sponsor of Six Sigma projects

MASTER BLACK BELT

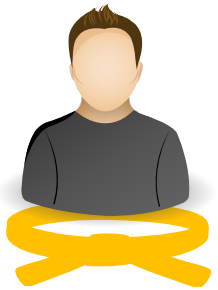
Experienced senior project manager; management of cross-sectional strategic projects

BLACK BELT

Project manager and Coach; executes projects together with other business divisions

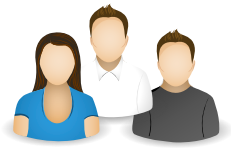
GREEN BELT

Leads projects within his sector of responsibility; implementation of smaller Six-Sigma projects



YELLOW BELT

Part of the project team, which applies Six Sigma methods; supports execution of projects



TEAM MEMBER

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

LEAN MANAGEMENT

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DEFINITION

Lean Management

Multitude of tools, instruments and philosophies to optimize business processes and increase effectiveness

Customer focus and cost reduction with regard to internal and cross-company processes and structures

Focus on value adding processes, optimization of the value chain to “just-in-time” effectiveness

Involvement of employees and use of existing competencies motivates staff and strengthens consciousness for Lean Management in all areas

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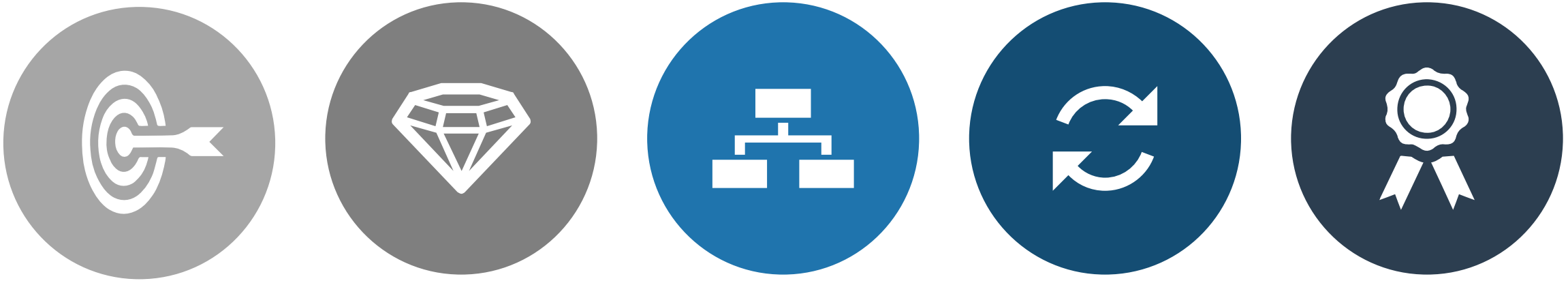
OBJECTIVES OF LEAN MANAGEMENT

Lean Management



EFFICIENCY

Process oriented business management & highest possible effectiveness

CLEARNESS

Explicitly defined processes and workflows

STRUCTURE

Logical arrangement of responsibilities & communication channels

OPTIMIZATION

Minimization of wastage and optimization of processes

QUALITY

Reduction of error rates and functional cases of damage

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OBJECTIVES OF LEAN MANAGEMENT

Lean Management

PRODUCTIVITY

Increasing productivity through elimination of unnecessary activities

KEY FIGURES

Advancement of existing process models with clearly defined KPIs (Key Performance Indicators)

ORGANIZATION

Re-organization with clear focus on customer needs and legal requirements

VALUES

Establishment of a modern management and value structure

RESPONSIBILITY

Encouragement of employees to assume personal responsibility

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

TOTAL QUALITY MANAGEMENT

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

QUALITY MEANS DOING IT RIGHT WHEN NO ONE IS LOOKING.

Henry Ford

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

IMPORTANCE OF GOOD QUALITY

Good quality leads to higher customer satisfaction and is rewarded with increased profits

IMPROVED QUALITY

- Higher Customer Satisfaction
- Increased Sales Volume
- Company's Reputation
- Product Liability
- Market Gains
- Higher Price
- Reduced Costs
- Higher Productivity
- Lower Rework / Scrap

INCREASED PROFIT

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DETERMINANTS OF PRODUCT QUALITY

An approach of the product quality determinants

PERFORMANCE	main product characteristics/ everything works
CONFORMANCE	specifications, standards and customer expectations
CONFORMANCE	indirect evaluation of quality, reputations and ratings
AESTHETICS	design, taste, soft touch, fit and finish, grade of material used
RELIABILITY	consistency of performance, frequency of breakdowns
SPECIAL FEATURES	extra characteristics
SERVICE AFTER SALE	warranties, maintenance and handling of complaints
DURABILITY	long life of the product, resistance
SAFETY	risk of injury

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DETERMINANTS OF SERVICE QUALITY (SERVQUAL)

A system approach of the customer satisfaction through the different attributes of service quality

INPUT – CUSTOMER REQUIREMENTS

Responsiveness	Empathy
Availability/ Access	Assurance
Courtesy/ Friendliness	Credibility
Reliability	Assurance/ Security
Communication	Time
Competence	Courtesy
Tangibles	Understanding Customers

OUTPUT CUSTOMER SATISFACTION

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

CONSEQUENCES OF POOR QUALITY (COST OF POOR QUALITY)

Products of poor quality may disappoint the buyer and lead to product failure

LOSS OF BUSINESS

The customer will not buy the product or any other product again.

LOSS OF REPUTATION

Customers complain about their bad experience to friends and relatives.

HIGHER COSTS

Poor quality costs money and reduces profitability.

A study showed: while a satisfied customer will tell a few people about his or her experience, a dissatisfied person will tell an average of 19 others.

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

TOTAL QUALITY MANAGEMENT (TQM)

Definition

TOTAL

Quality Management involves customers, employees and management as well as all tasks and activities of a company.

QUALITY

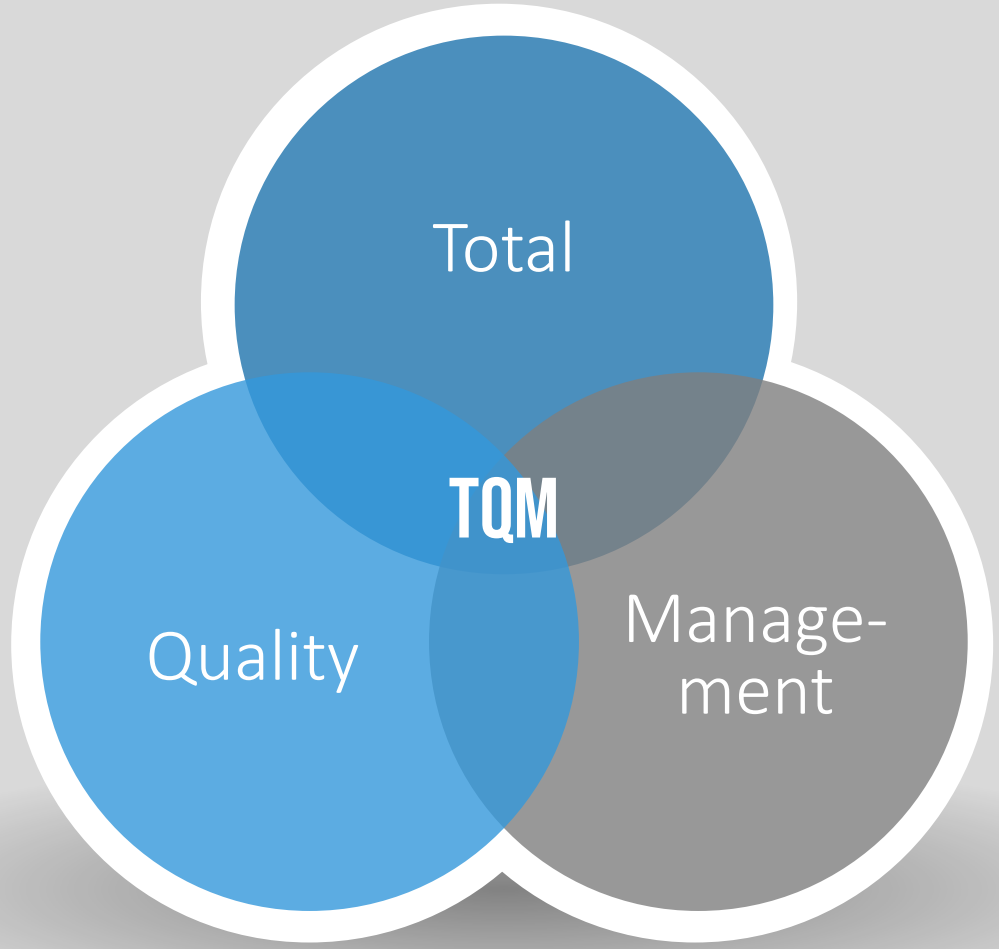
Degree to which the product (or service)
meets the costumer expectations or was produced correctly.

MANAGEMENT

Quality must be managed by planning , organizing , leading and controlling.

TQM

An integrative management philosophy for continuously improving the quality of products and processes.



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classes@doctor.eco

THE TQM SYSTEM MODEL

Leading with objectives

Customer-oriented

Internal and external customer relations

Zero-error program

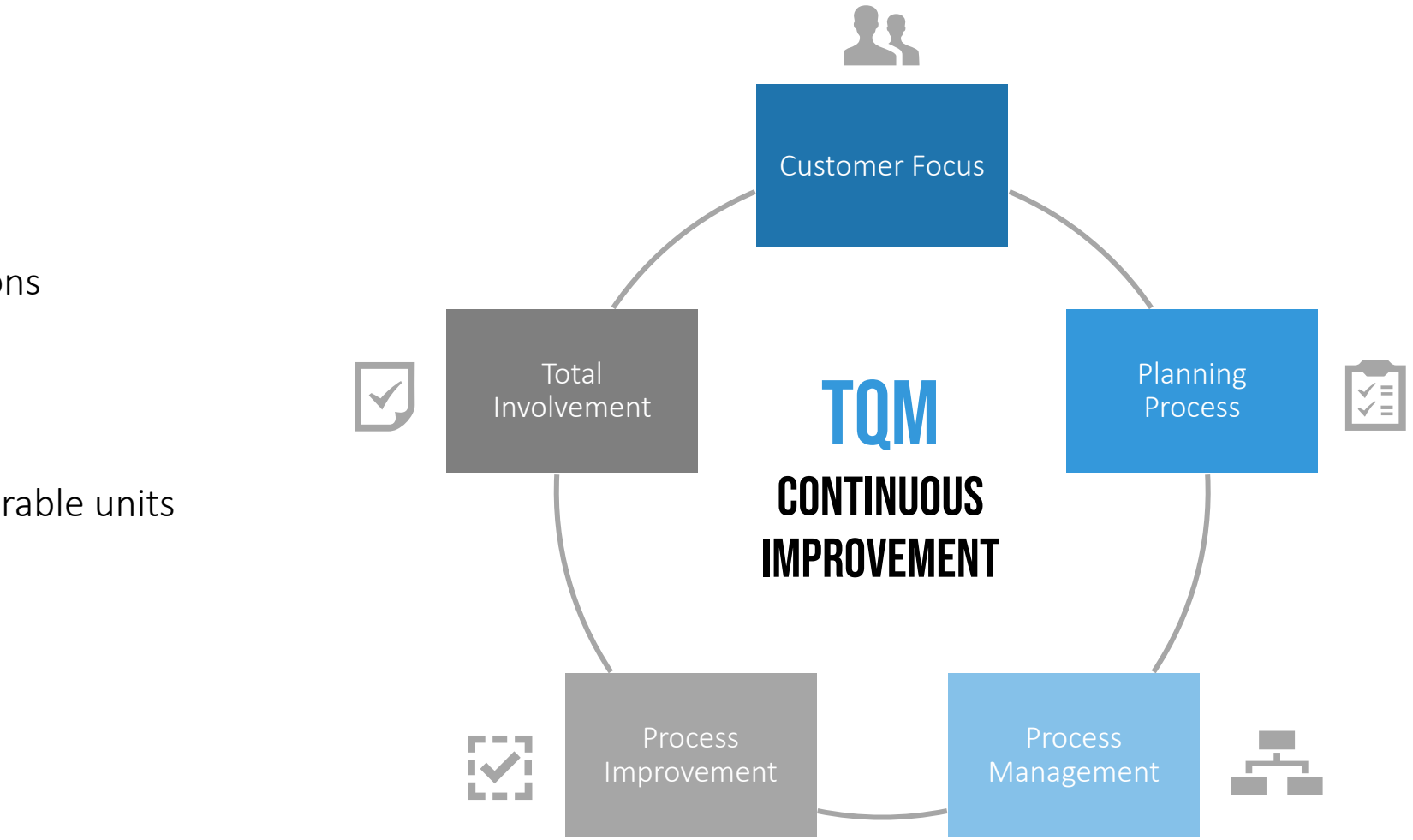
Work in processes

Continuous improvement with measurable units

Involvement of all employees

Trainings and further education

Frequent management audits



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DIN EN ISO 9001

The DIN EN ISO 9001 certification demonstrates if you have established an effective quality management system.

ISO 9001 is a set of international standards for quality management systems.

Companies that meet the requirements of that standard can be registered as IS0 900.

ISO 9000 series consists of 3 documents:

- ISO 9000:2005; fundamentals
- ISO 9001:2008; requirements
- ISO 9004:2000; guidelines for performance improvements

Mateusz PANEK PhD, DBA, LL.D
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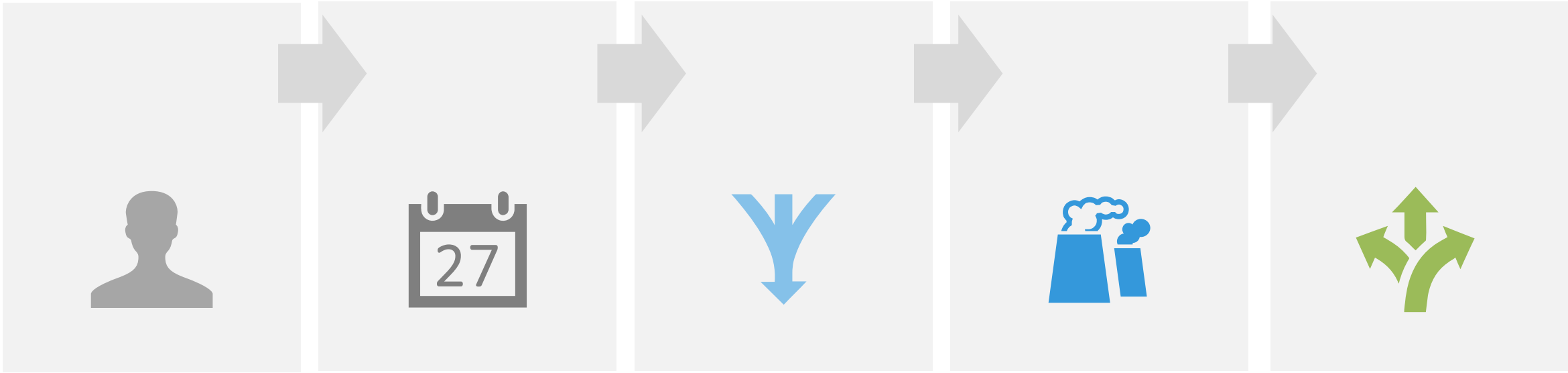
JUST-IN-TIME (JIT)

JiT is a set of activities designed to achieve high-volume production using minimal inventories and eliminating waste in the production effort.



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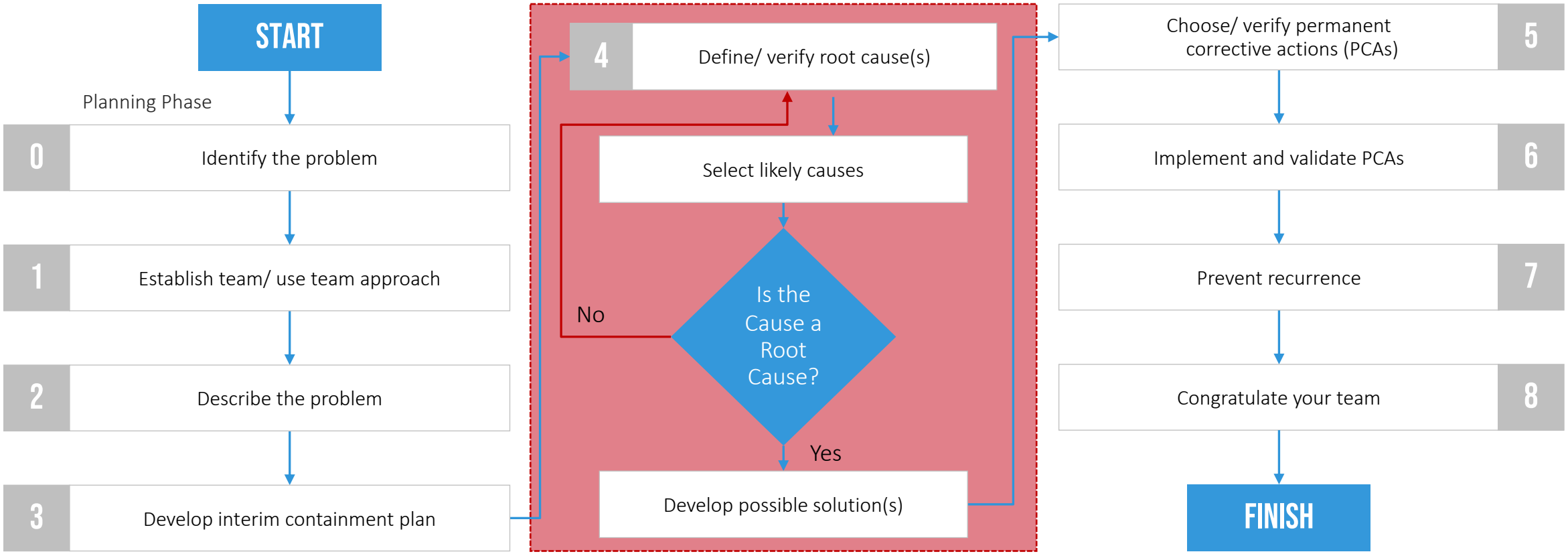
8-D PROBLEM SYSTEM (8 DISCIPLINES PROBLEM SOLVING)

Eight Disciplines Problem Solving is a method used to approach and to solve problems, usually applied by quality engineers or other professionals.



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ROBUST DESIGN (OFF-LINE QUALITY CONTROL)

The Robust Design method is used to achieve defect free products even when influenced by disturbances

Disturbances are divided into three categories:

EXTERNAL DISTURBANCES	INTERNAL DISTURBANCES	DEVIATION FROM TARGET VALUES
Variations in the environment during product usage	Wear and tear inside a specific unit	Disturbances in the manufacturing process

Disturbances are divided into three categories:

CONCEPT DESIGN → PARAMETER DESIGN → TOLERANCE DESIGN

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classes@doctor.eco

MISTAKE PROOFING/ POKA YOKE

Mistake Proofing, or poka yoke, means taking action to eliminate product defects by preventing, correcting, or drawing attention to human errors when they occur.

1 CONTACT TYPE

testing shapes, size or physical attributes
to detect errors

Poka Yoke

3 MOTION-STEP TYPE

determine whether the prescribed steps
of the process have been executed

2 FIXED-VALUE TYPE

alerting operator when action steps are left out

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Poka yoke is a Japanese term that means "fail-safing" or "mistake-proofing“ adopted by Shigeo Shingo as part of the Toyota Production System

DESIGN OF EXPERIMENTS (DOE)

DOE is the design of any information-gathering exercise where variations are present – whether under full supervision of the experimenter or not.

SCREENING EXPERIMENTS

MIXTURE EXPERIMENTS

FRACTIONAL FACTORIAL EXPERIMENTS

POWERFUL DESIGNED EXPERIMENTS

(improvement techniques)

RESPONSE SURFACE ANALYSIS

EVOLUTIONARY OPERATIONS (EVOP)

FULL FACTORIAL EXPERIMENTS

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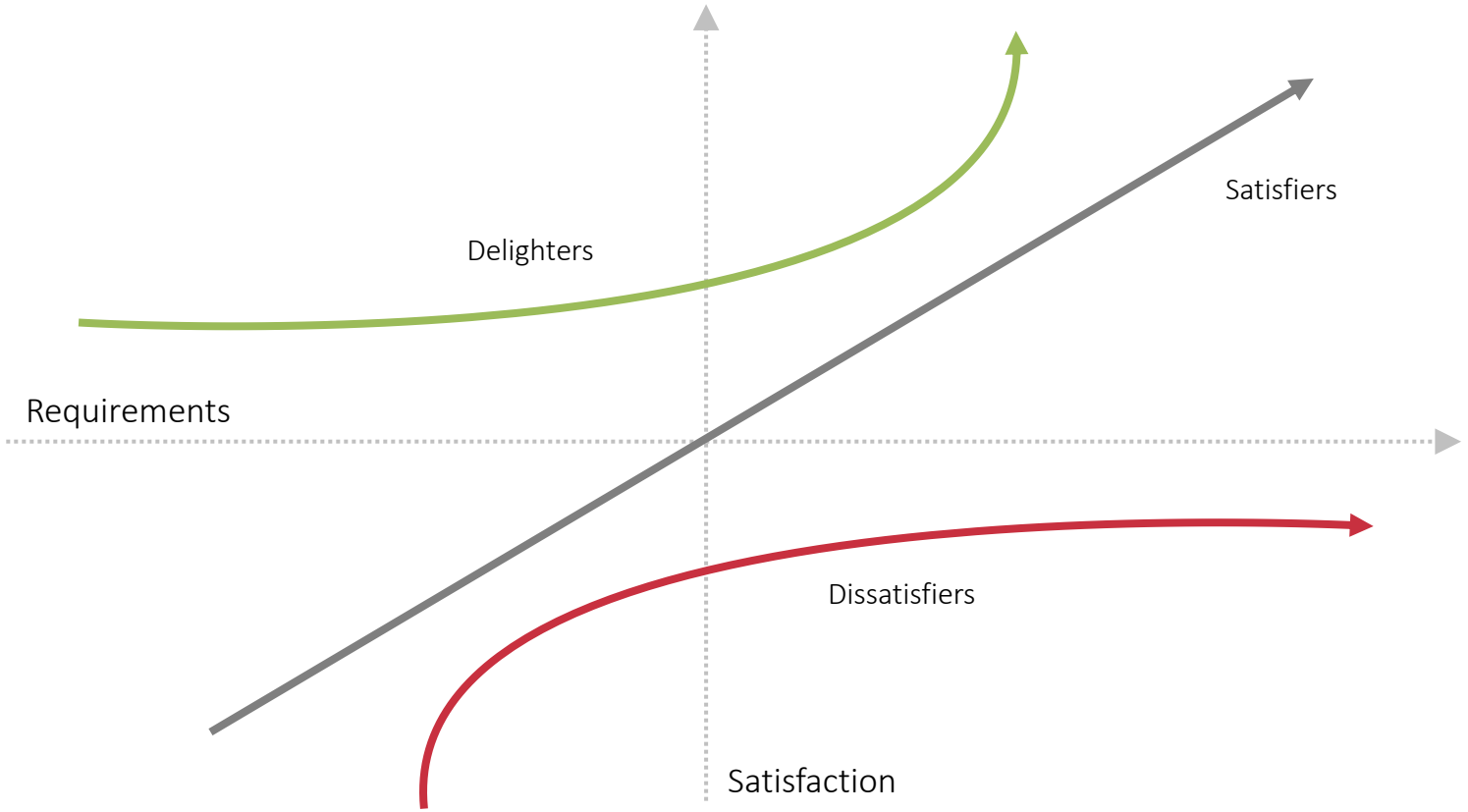
KANO MODEL (QUALITY FUNCTION DEPLOYMENT/ QFD)

The Kano model is a theory of product development and customer satisfaction developed by Noriaki Kano which categorizes customer preferences.



- **Satisfiers**
  The factors that increase customer satisfaction when delivered (but do not cause dissatisfaction if they are not delivered).
- **Dissatisfiers**
  The minimum requirements which will cause dissatisfaction.
- **Delighters**
  Delighters are not expected and excite customers because they exceed their expectations.

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

KAIZEN

Kaizen is a Japanese term meaning “improvement“ or “change for the better.“
This concept focuses on continuous improvement of all company processes.

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DEPARTMENT PURPOSE ANALYSIS (DPA)

The DPA is an analysis of internal customer systems to improve the quality of the department.

Key skills and roles of the department	Mission, strategies and group functions	Identify customers and suppliers	Collect information (time/ resources)	Prioritize improvement methods
Identify top ten activities	Get permission from management	Agree requirements and measurements	Identify value-adding activities	Implement actions and monitor progress

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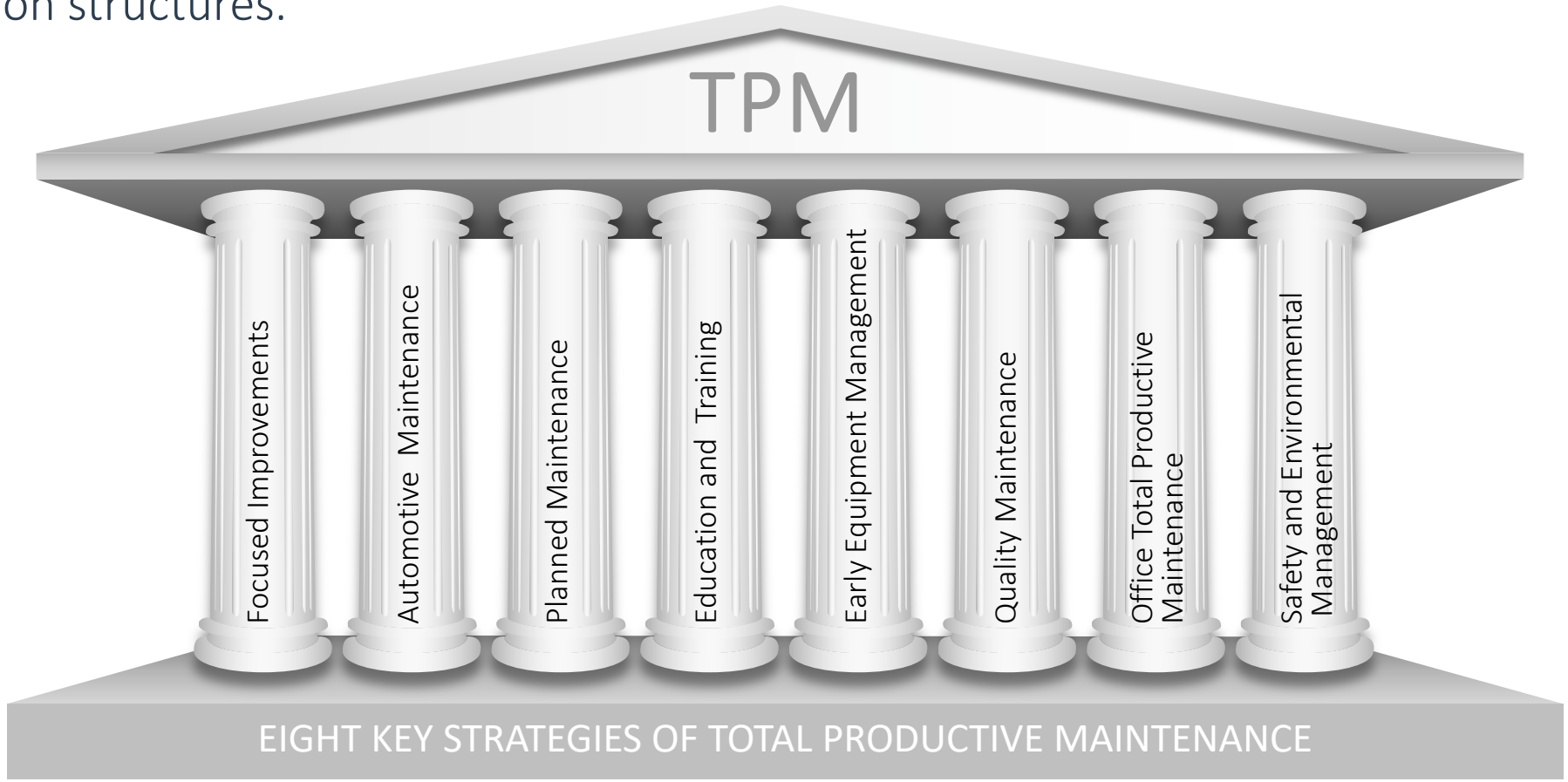
TOTAL PRODUCTIVE MAINTENANCE

TPM is a technique that uses the entire work force to make the most effective use of equipment and existing production structures.



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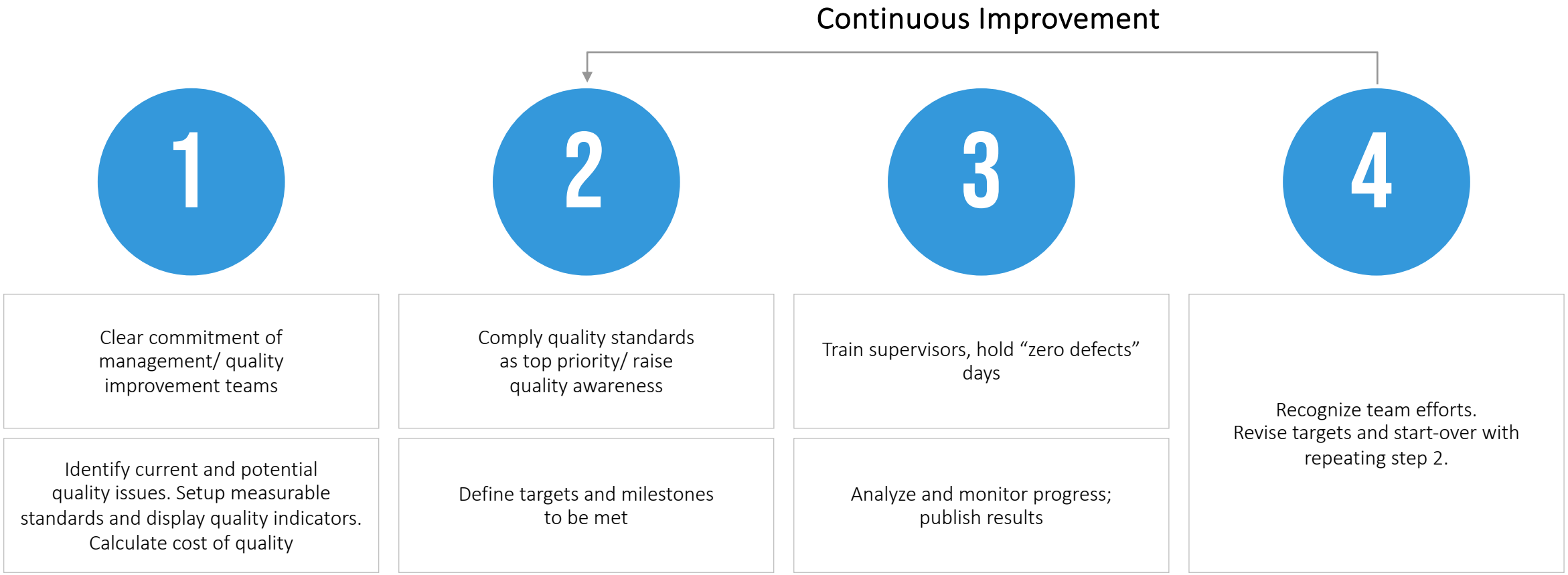
ZERO DEFECTS

Zero defects is a quality control technique directing towards an error free performance by defining targets and measuring improvements.



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classes@doctor.eco

INTERNAL NETWORKING

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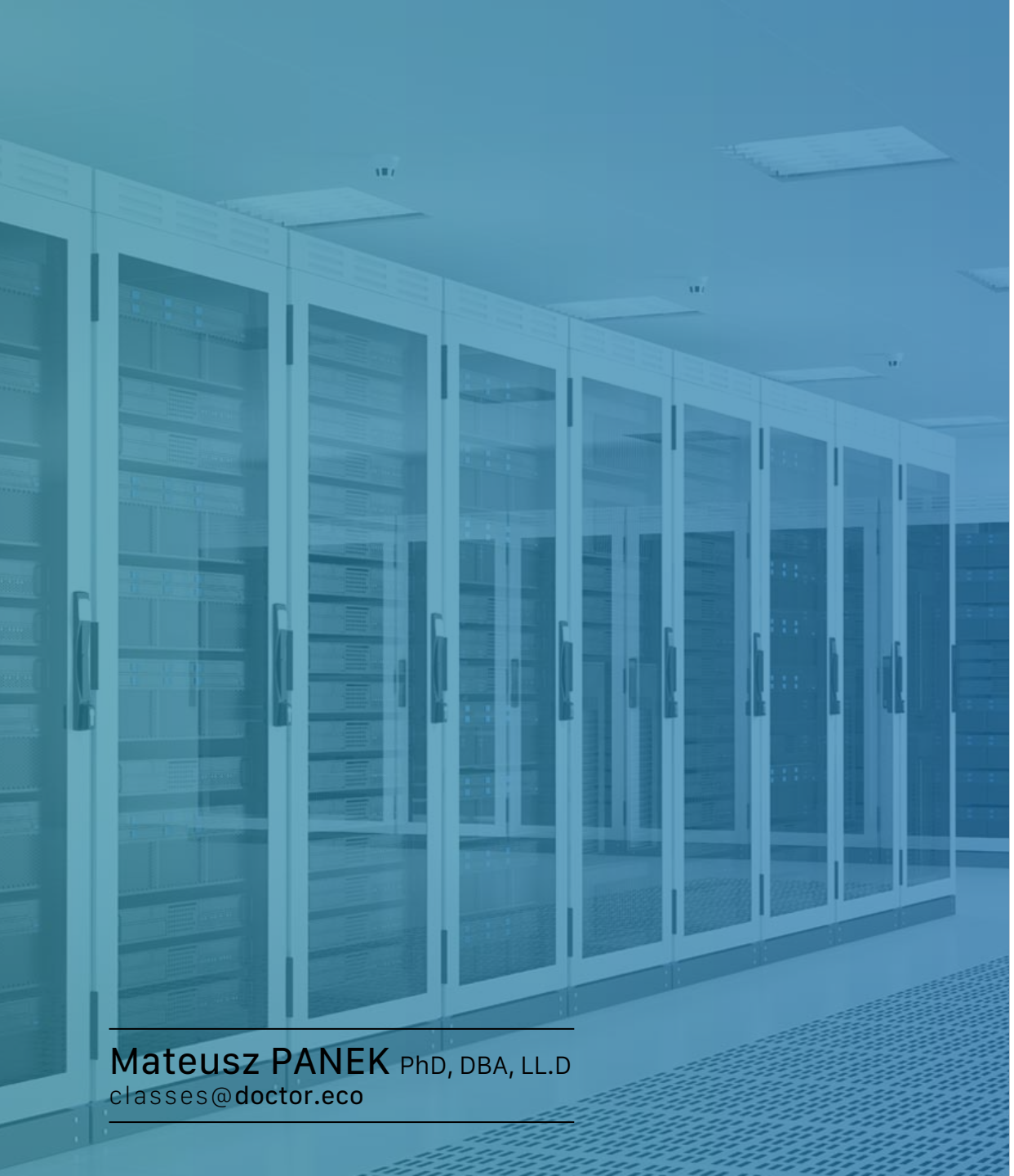

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INTERNAL NETWORKING

Benefits of Internal Networking

Supply chain networking is developed both between company interfaces and within the company itself. This is reflected by an optimal flow of information and communication between EDP systems of different companies, and internally between each department such as Marketing, Development, Purchasing, Finance, or Production.

INTERNAL NETWORKING

Marketing and Distribution

- One of the most important tasks of Marketing in the supply chain network is an effective customer approach. This helps to increase sales.
- When sales can be accurately determined, resources for Production and Procurement can be purchased and planned.
- It is therefore important for Marketing and Distribution to have a high degree of network integration.

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INTERNAL NETWORKING

Marketing and Distribution

USEFUL POINTS TO KNOW IN ADVANCE:

- When can we expect customer demands (day, week, month)?
- What products need to be ordered and in what quantity?
- Are there any specific demands that need to be considered?

Distribution can be more accurately determined with this information, which in turn impacts the planning and management of other divisions. For example, resources for Production and Procurement can be more effectively organized and purchased.

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classes@doctor.eco

INTERNAL NETWORKING

Marketing and Distribution

Marketing and Distribution provide various ways to determine meaningful sales and production figures:

CUSTOMER SURVEYS, DIALOGUE WITH CUSTOMERS

MARKET RESEARCH, COMPETITOR ANALYSIS

ECONOMIC AND INDUSTRY ANALYSIS

The subsequent or downstream areas and their tasks can now be adjusted accordingly :

PURCHASING

- Demand pooling
- Negotiations with suppliers
- Agreement on framework conditions

PRODUCTION PLANNING

- Determination of a production schedule
- Agreement on the production order sequence
- Capacity planning

TRANSPORT AND DISTRIBUTION

- Transport capacity commitment
- Agreement on the loading sequence
- Route planning

CUSTOMER AND AFTER-SALES SERVICE

- Clear product description and documentation
- Simple usability
- Exchangeability of replacement parts
- Prompt, round-the-clock service

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classes@doctor.eco

INTERNAL NETWORKING

Development and Quality Assurance

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classes@doctor.eco

- The predetermined quality standards have an impact on product development and material selection.
- Such standardization allows for additional cost savings in the development phase.

INTERNAL NETWORKING

Development and Quality Assurance

THROUGH EFFECTIVE COOPERATION BETWEEN DEVELOPMENT, PRODUCTION AND QUALITY MANAGEMENT, THE FOLLOWING QUESTIONS CAN BE ANSWERED:

Will additional machinery or tools be needed due to new goods?

Is staff training needed?

What goods can be standardized?

Do individual parts of production need to be outsourced?

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Purchasing and Distribution

Purchasing is used to coordinate a networked supply chain. In the development of goods, it should guarantee that these products are available the purchasing market.

Additionally, Purchasing must pay attention to quality assurance and take sales and sourcing into consideration.

Inventory planning can relieve the strain on Purchasing when an accurate and early assessment is available.

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Purchasing and Distribution

FUNCTIONS OF PURCHASING AND DISTRIBUTION IN THE NETWORKED SUPPLY CHAIN:

Cooperating between development, manufacturing, quality assurance and pre-suppliers

Determining delivery strategies

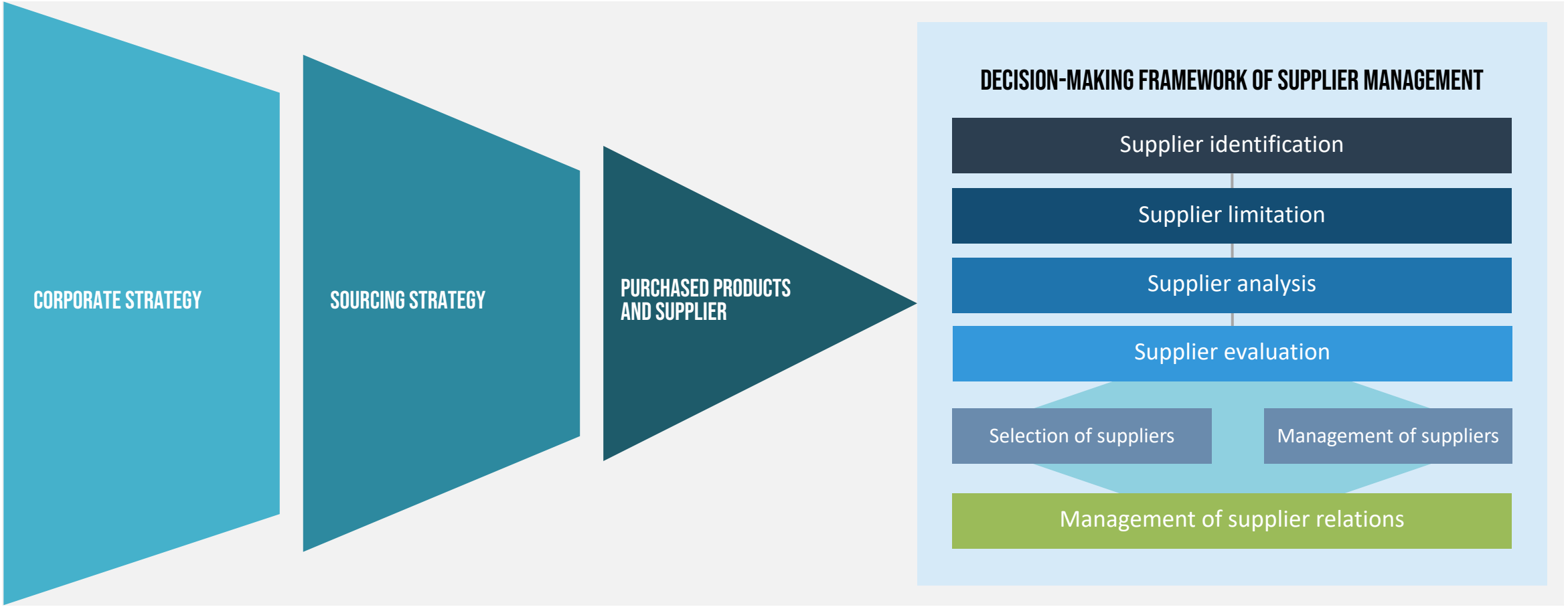
Establishing strategies such as demand blocking, lot size optimization and the institution of security stocks or optimal transport units

Determining warehousing strategies

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Supplier Management Processes



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Warehouse Management

With its information and cooperation, warehouse management should help avoid unnecessary commitment costs.

Capital commitment costs arise, for example, when customer payment terms are extended.

The opposite of fixed capital is liquidity.

A company always strives to be "solvent" or "liquid".

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Warehouse Management

RESPONSIBILITIES OF WAREHOUSE MANAGEMENT IN THE SUPPLY CHAIN:

- Turnover rate of products
- Hazardous material, spoilage, other storage specifications
- Seasonal products, trending products or standard products
- Container type or transportation aids
- Coordinating loading and unloading times
- Coordinating traffic status for smoother operations

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Controlling, Financial and Accounting

This division, together with other divisions such as Purchasing, Production and Distribution, is responsible for deciding and determining competitive sale prices.

Additionally, Controlling and Accounting play an important role in assisting the establishment and data disclosure.

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

INTERNAL NETWORKING

Controlling, Financial and Accounting

RESPONSIBILITIES OF CONTROLLING, FINANCIAL AND ACCOUNTING:

Determining competitive sales prices	Determining turnover rate, inventory levels and capital commitment
Installing an early warning system	Determining revenue and sales figures, profit and loss
Determining and disclosing data	Payment and invoicing transactions

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

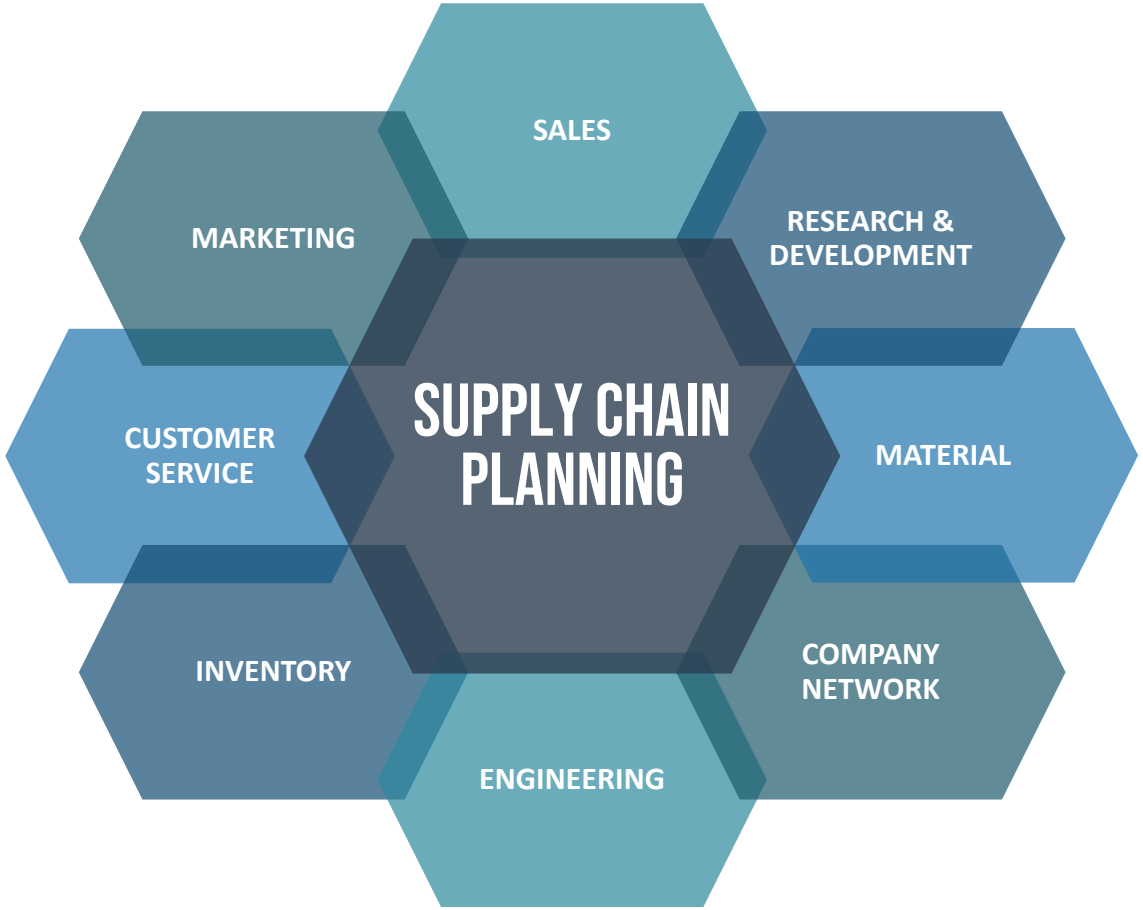
SUPPLY CHAIN PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

SUPPLY CHAIN PLANNING

Definition

Supply chain planning includes all functions of strategic, operational and tactical development. These contribute to improving the process execution of one or more companies in a networked supply chain.



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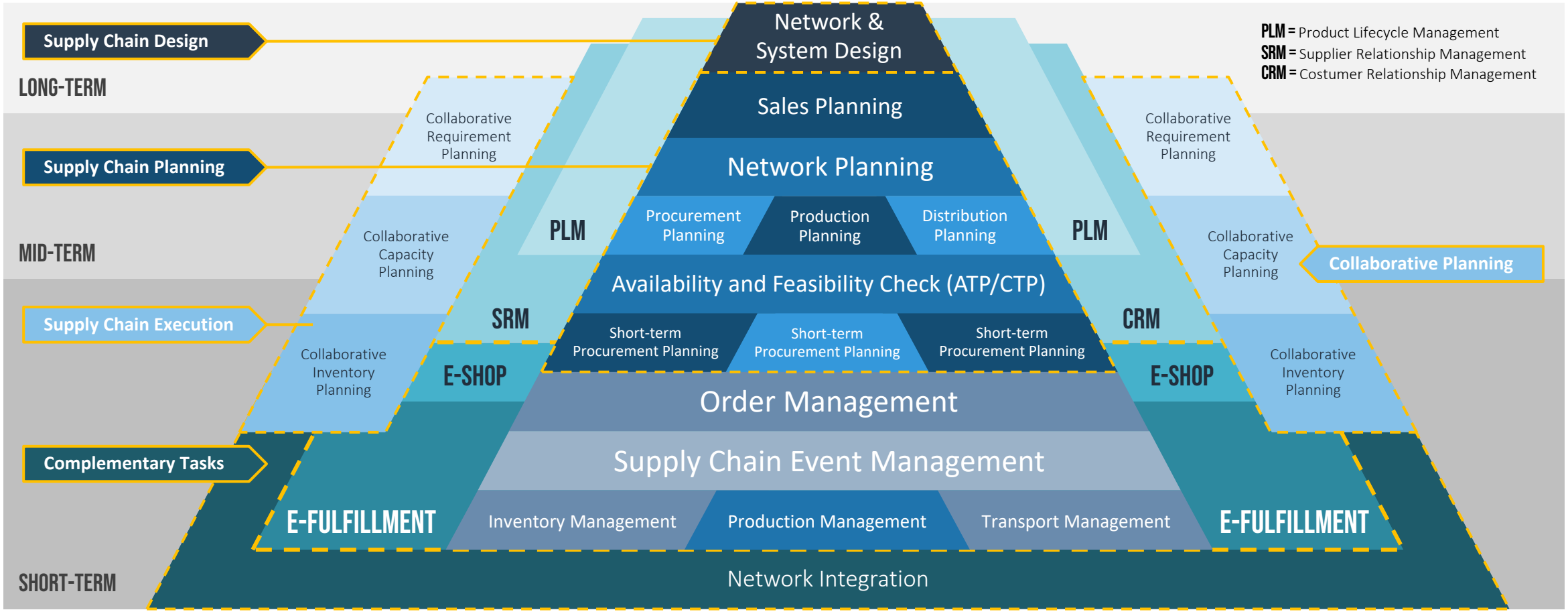
classes@doctor.eco

SUPPLY CHAIN PLANNING

Overview of the Supply Chain Planning Responsibilities



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classes@doctor.eco

SUPPLY CHAIN PLANNING

Properties of Supply Chain Planning Methodology – 1

INTEGRATIVE PLANNING

Involving partners along the supply chain

Integrating at least one first-tier supplier (a supplier who distributes directly to the manufacturer of a product) and the customer

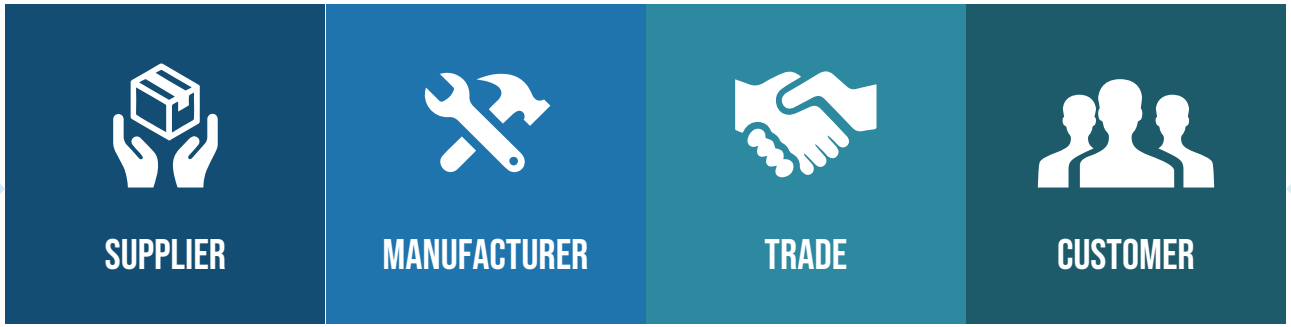
Challenging everyone to expand to a multi-tier network

OPTIMIZATION

Defining and establishing target levels and limitations for planning problems

Generating alternative solutions

Implementing optimization methods



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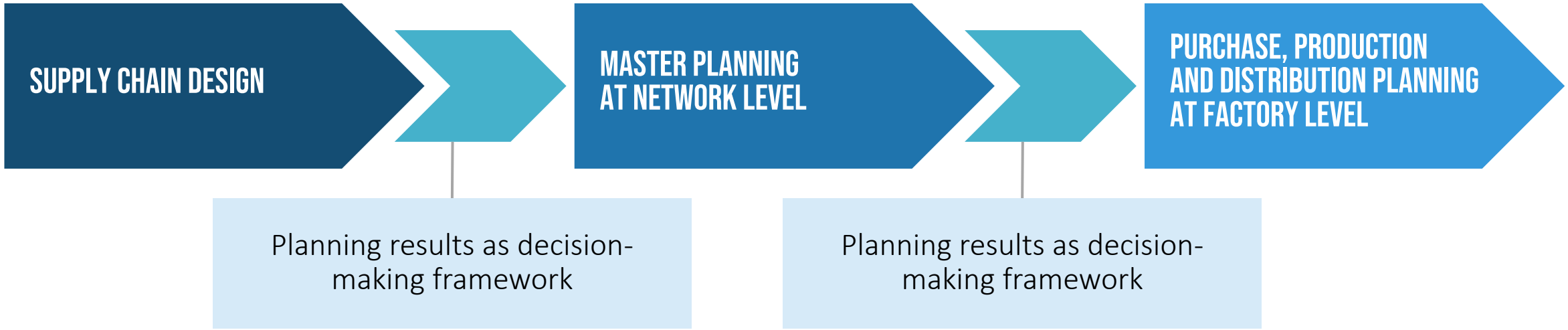
classes@doctor.eco

SUPPLY CHAIN PLANNING

Properties of Supply Chain Planning Methodology – 2

In supply chain management, it is impossible to carry out all planning tasks simultaneously. Therefore, it must be decided which plan is to be implemented first. The result of each planning decision then serves as the framework for the subsequent planning task:

HIERARCHICAL STRUCTURE IN SUPPLY CHAIN PLANNING:



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

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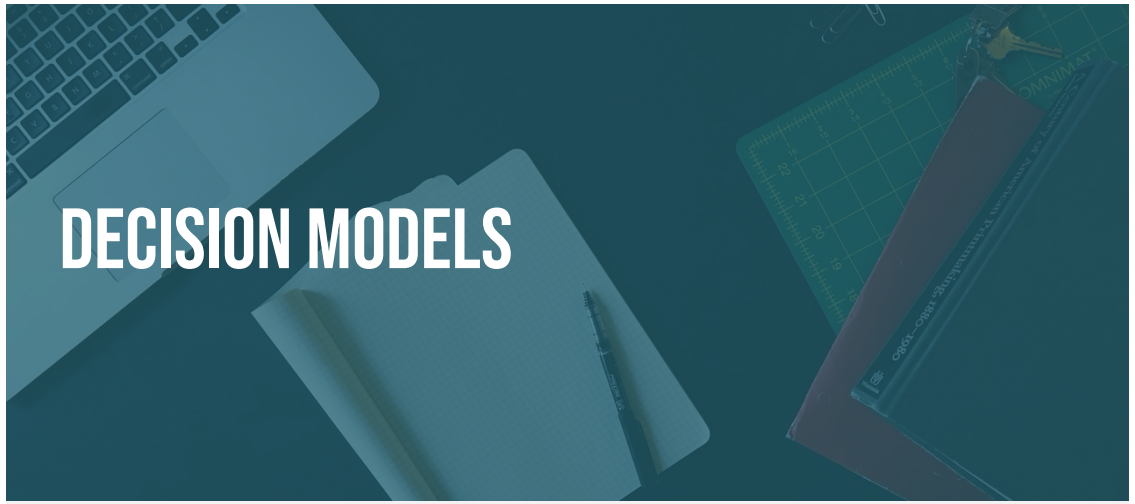
classes@doctor.eco

PLANNING MODELS

Forecast and Decision Models



Simplifies how optimal practices are determined through a transfer of knowledge that can be obtained in a how-to model

Determines consequences if specific previous assumptions in models are true

Predicts future development

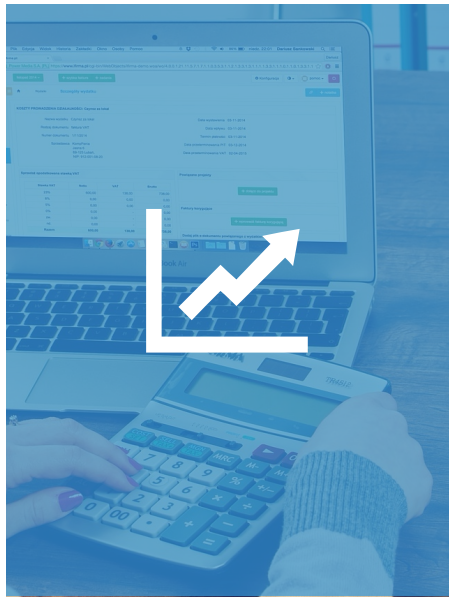
Explains the relationship between input und output in a complex system

Determines the most appropriate solution when a previous criterion wasn‘t possible to meet

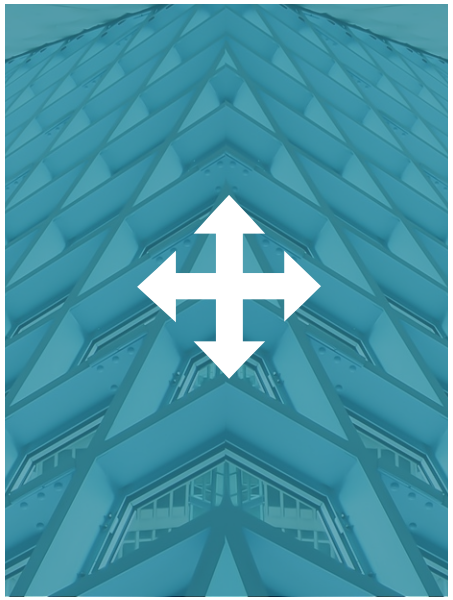
Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODEL

Various Planning Models in Supply Chain Management



DEMAND PLANNING



NETWORK PLANNING

PRODUCTION PLANNING

DISTRIBUTION PLANNING

SUPPLY PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DEMAND PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Demand Planning

DEFINITION:

- Predicts future demand.
- Also called **prognosis** or **forecast.**

TASKS TO PERFORM:

- Determining quantities which are to be predicted
- Summarizing past assets
- Establishing specific forecasting methods

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Demand Planning

TASK:

Forecast of customer demands in accordance with sales plans, financial budgets and future product portfolios

Comparison not typically made with the already existing production capacities

PLANNING LEVEL AND HORIZON:

Strategic

Tactical

Depending on industry : operational

RESPONSIBLE ORGANIZATIONAL UNITS:

Logistics

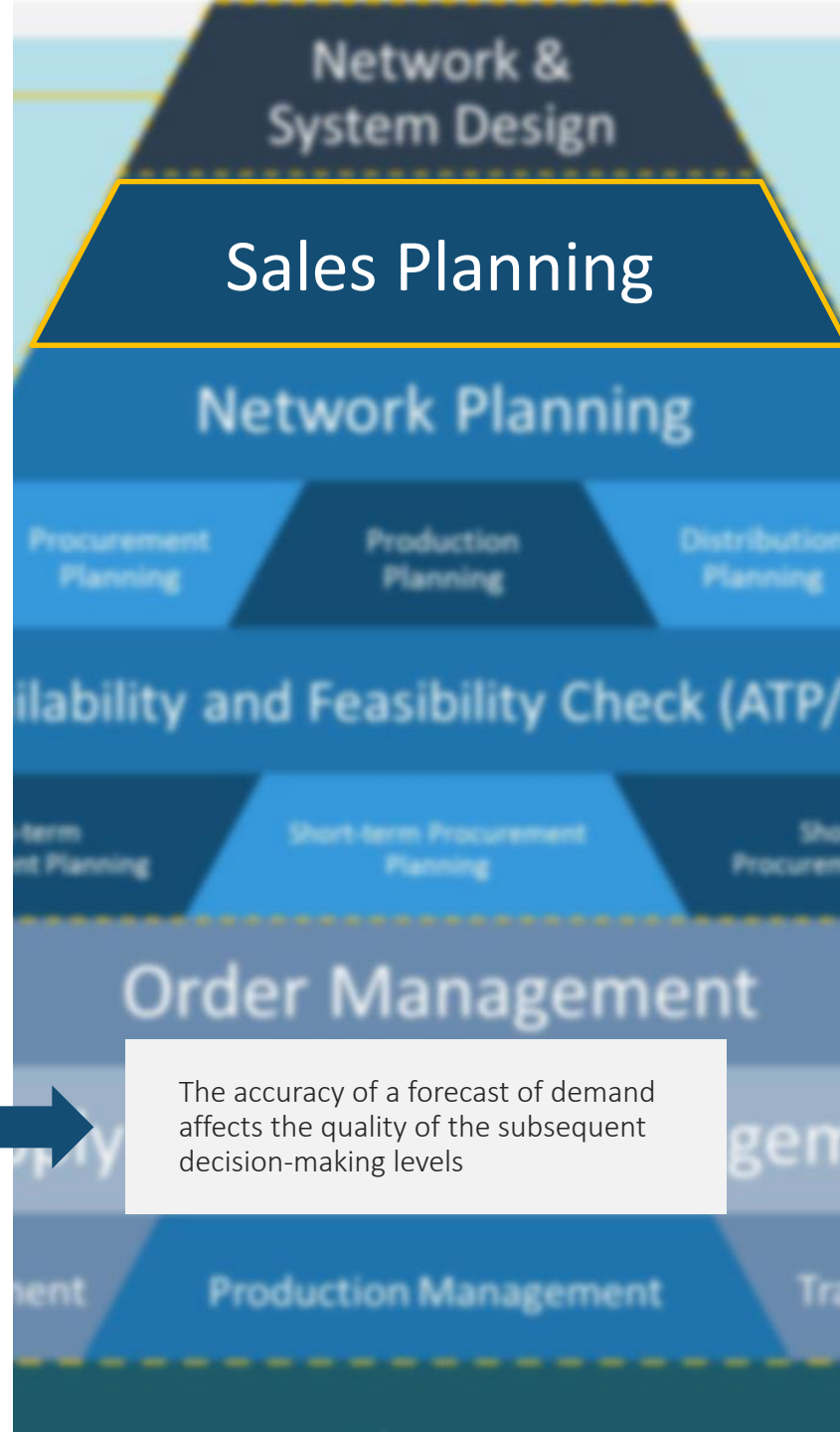
Distribution

CHALLENGE:

Procuring necessary and helpful information

Handling uncertainty in supply chain

Integrating different functions or supply chain partners in the preparation of the forecast



The accuracy of a forecast of demand affects the quality of the subsequent decision-making levels

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

NETWORK PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Network Planning

TASK:

Mid to long-term capacity planning at the network level

Improving demand requirements and accordingly, available capacities

Inventory volume planning for all levels, as well as partners in the supply chain

Production and resource planning of inbound and outbound logistics

PLANNING LEVEL AND HORIZON:

Strategic

Tactical

RESPONSIBLE ORGANIZATIONAL UNITS:

Production Management

Corporate Logistics

CHALLENGE:

Procuring necessary and helpful information

Handling uncertainty in supply chain

Integrating different functions or supply chain partners in the preparation of the forecast

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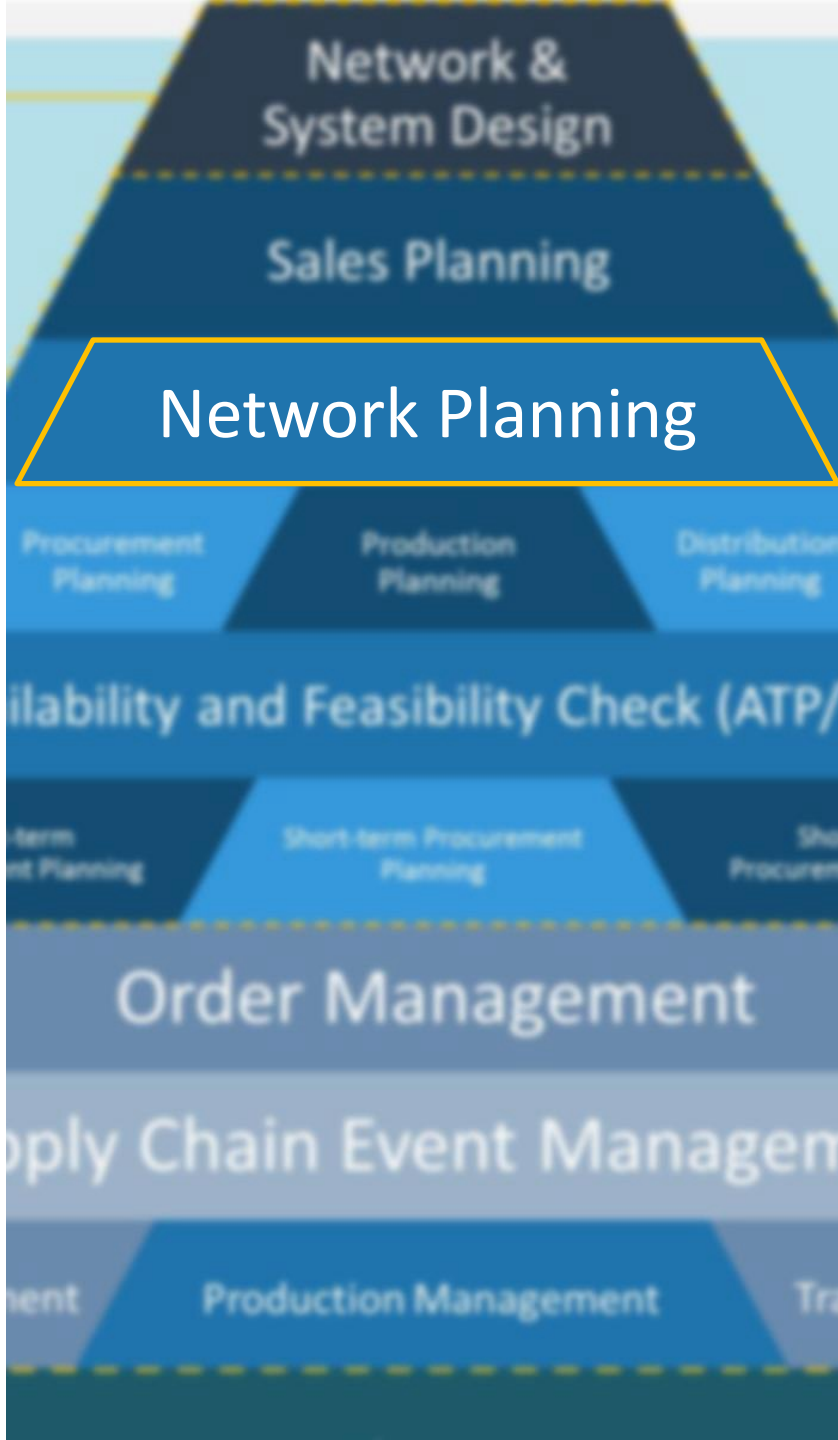
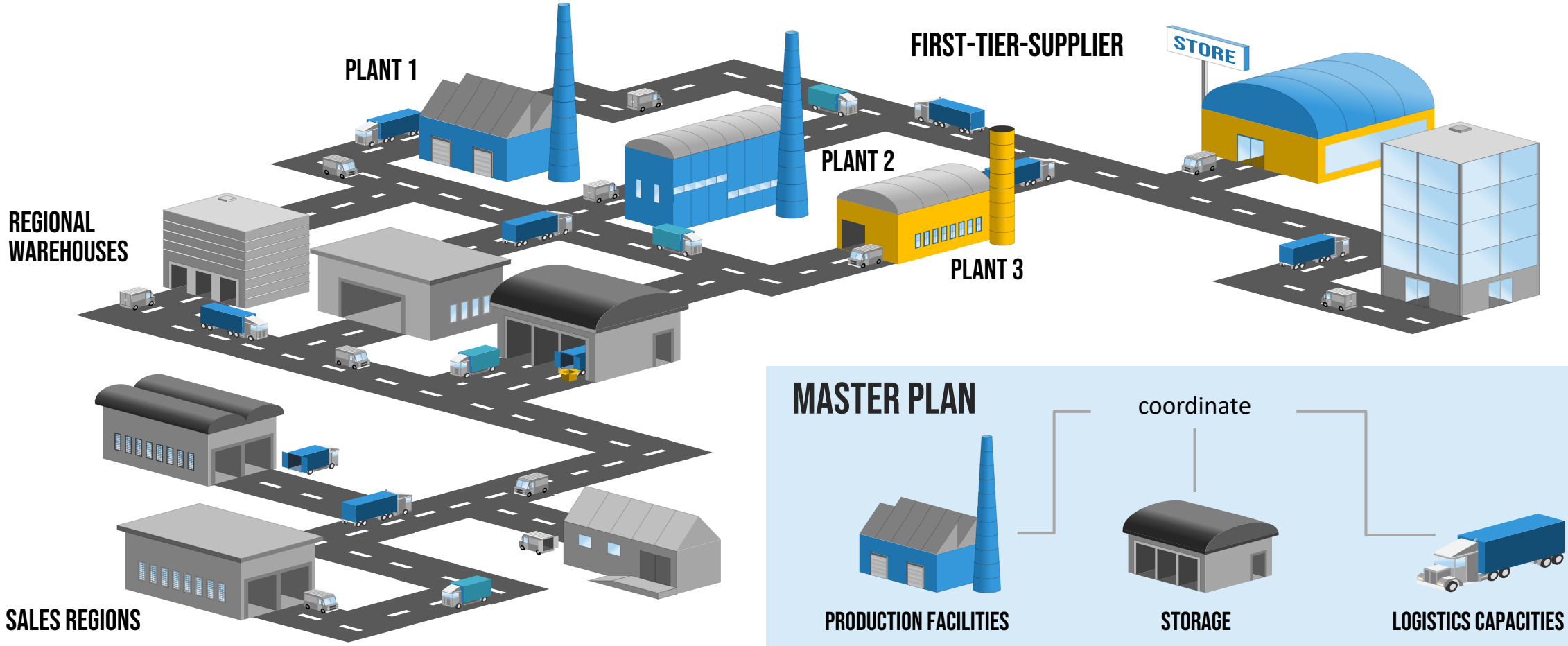
classes@doctor.eco



PLANNING MODELS

Network Planning



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

SUPPLY PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Supply Planning

TASK:

Optimizing scheduling relating to supply of materials

Optimizing the establishment of inventory in multi-level storage structures through the provision of safety stocks

Assessment of supply scenarios

Establishing improved delivery volumes

PLANNING LEVEL AND HORIZON:

Mid to short-term

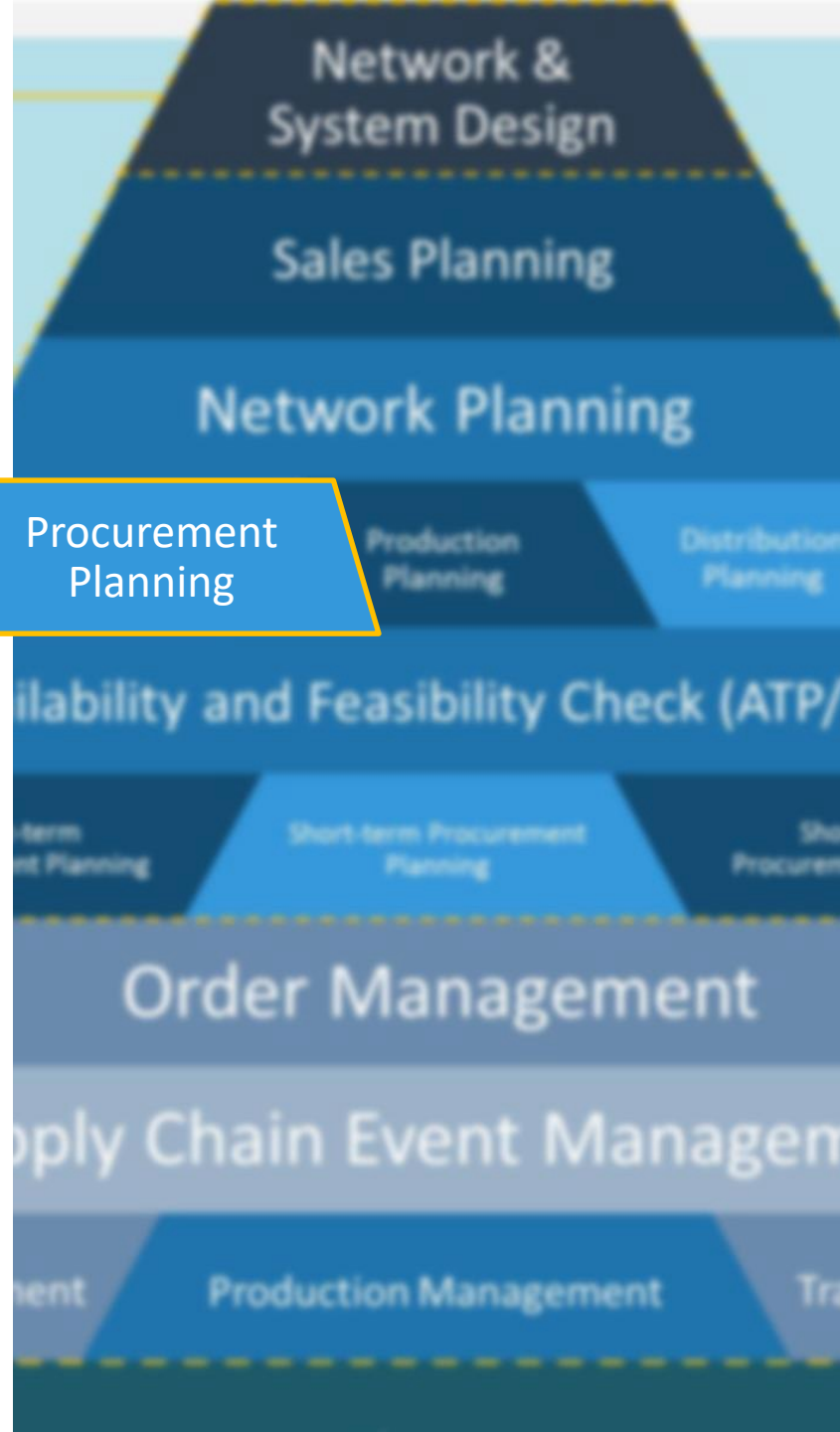
RESPONSIBLE ORGANIZATIONAL UNITS:

Logistics

CHALLENGE:

Market demand is determined by demand planning

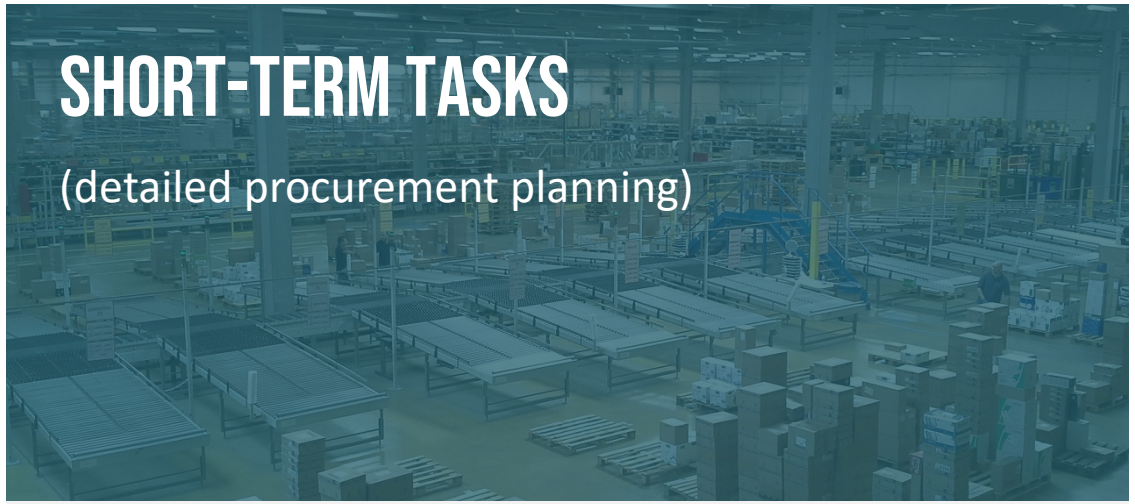
Results from network planning are taken into account



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Supply Planning



Determining gross and net dependent requirements

Determining the quantity of materials needed for manufacturing finished goods

Taking into account net and secondary demands with the remaining inventory

Optimized planning of production material supply

Developing a multi-level supply chain based on the findings of demand and network planning

Providing materials efficiently to satisfy manufacturing requirements

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PRODUCTION PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Production Planning

TASK:

At plant level: mid-term capacity planning

Determining lot sizes in production and the average processing times

Assessing actions in capacity utilization

PLANNING LEVEL AND HORIZON:

Tactical

Mid-term

Daily to monthly rolling basis

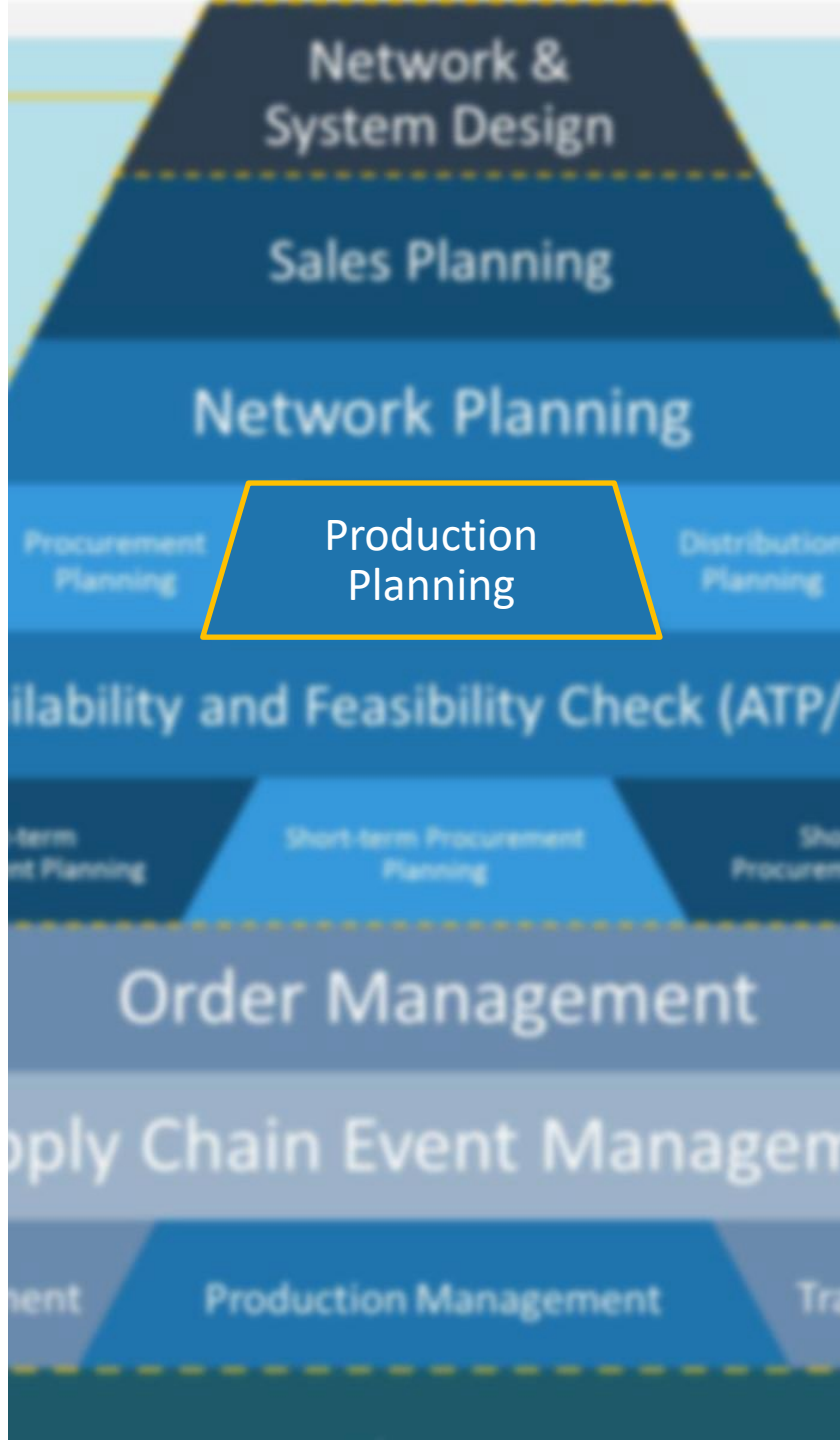
RESPONSIBLE ORGANIZATIONAL UNITS:

Production Planning

CHALLENGE:

Network Planning provides the framework

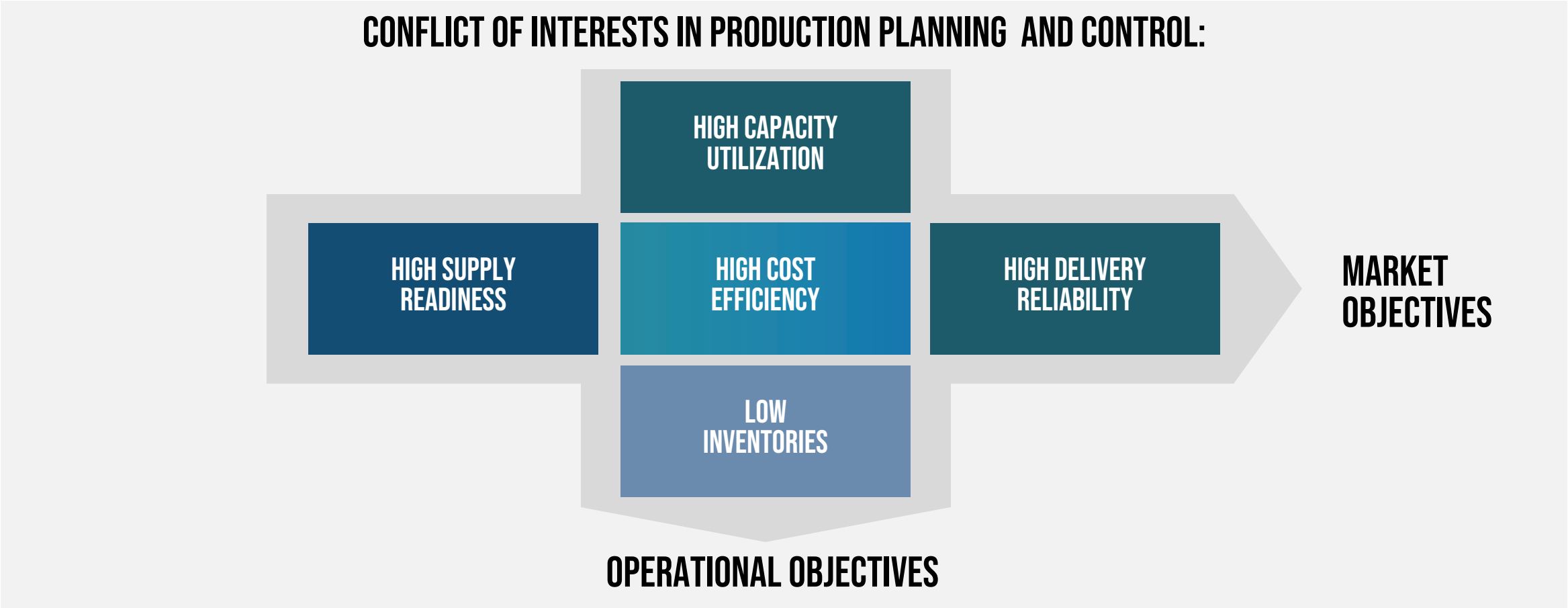
production capacity is set for short-term Production Planning



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Production Planning



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

DISTRIBUTION PLANNING

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Distribution Planning

TASK:

Better distribution planning for the customer in the case of minimal inventory

Better inventory determination in multi-level warehouses with provision of safety stocks

Determining transport

Creating transport routes and loading plans

PLANNING LEVEL AND HORIZON:

Mid to short-term

RESPONSIBLE ORGANIZATIONAL UNITS:

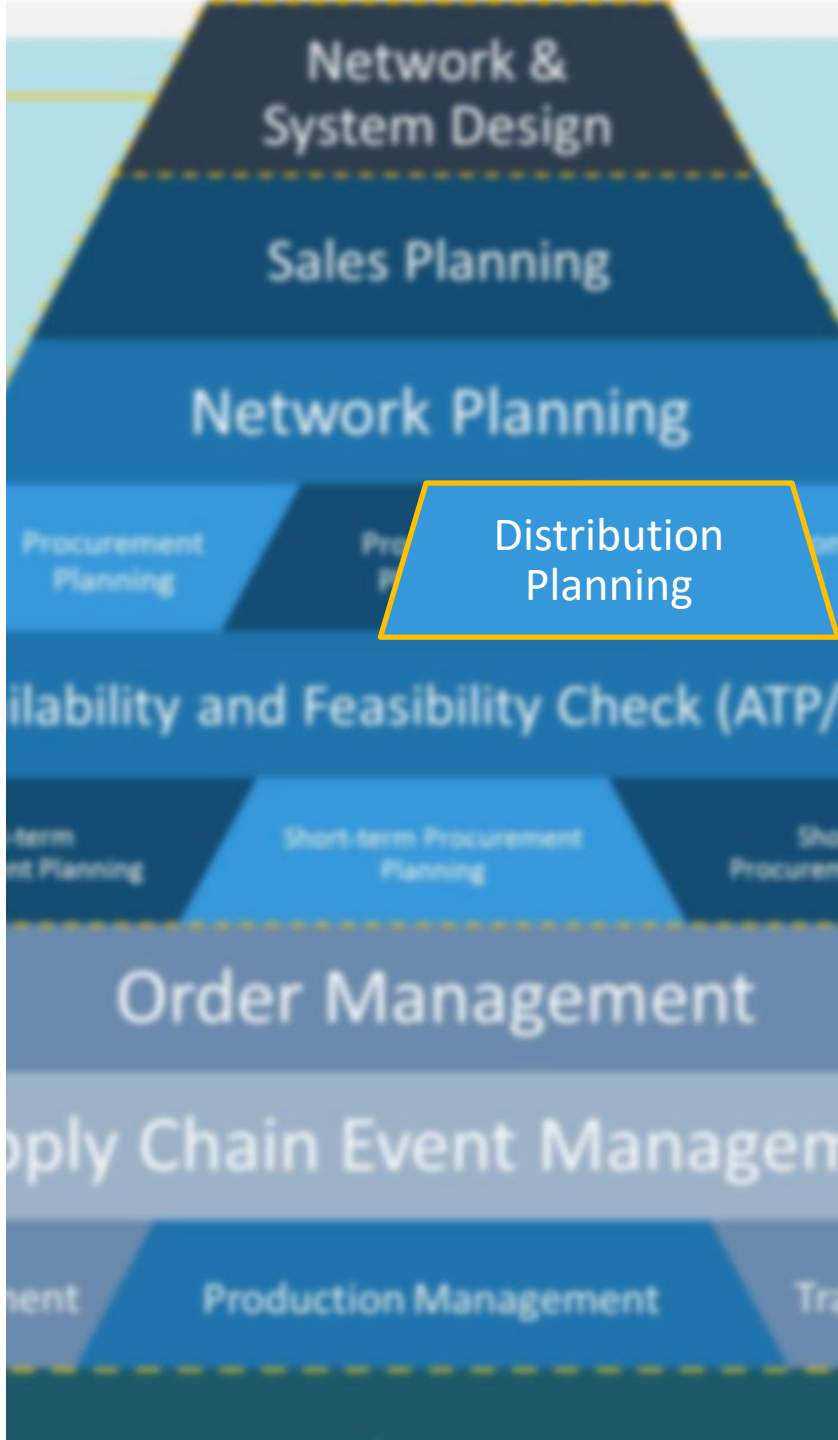
Logistics

CHALLENGE:

Concrete customer orders from order management are met

Projected requirements are met by demand planning

Results from production planning are taken into account



Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco

PLANNING MODELS

Distribution Planning

TARGET SYSTEM OF DISTRIBUTION PLANNING

DELIVERY PERFORMANCE

- Number of orders
- Number of batches
- Delivery weight
- Supply volume

DELIVERY SERVICE

- Supply readiness
- Availability rate
- Delivery flexibility
- Rush order rate
- Time frame for order intake

DELIVERY PERIOD

- Average
- Minimum
- Maximum
- Delivery frequency
- Stock levels

DELIVERY QUALITY

- Average
- Minimum
- Maximum
- Delivery frequency
- Stock levels

IMPLEMENTATION OF DISTRIBUTION GOALS WITH MINIMAL COSTS FROM:

Transport, Warehousing and Order Processing

Mateusz PANEK PhD, DBA, LL.D
classes@doctor.eco