

**Prof. Ing. Raffaele Campanella**

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**335 211609**

# **INDUSTRIAL PLANTS II**

**Chapter one ó part 7**

**Lean manufacturing**

**IMPLEMENTATION**

**DOUBLE DEGREE MASTER IN**

**òPRODUCTION ENGINEERING AND MANAGEMENTö**

**CAMPUS OF PORDENONE**

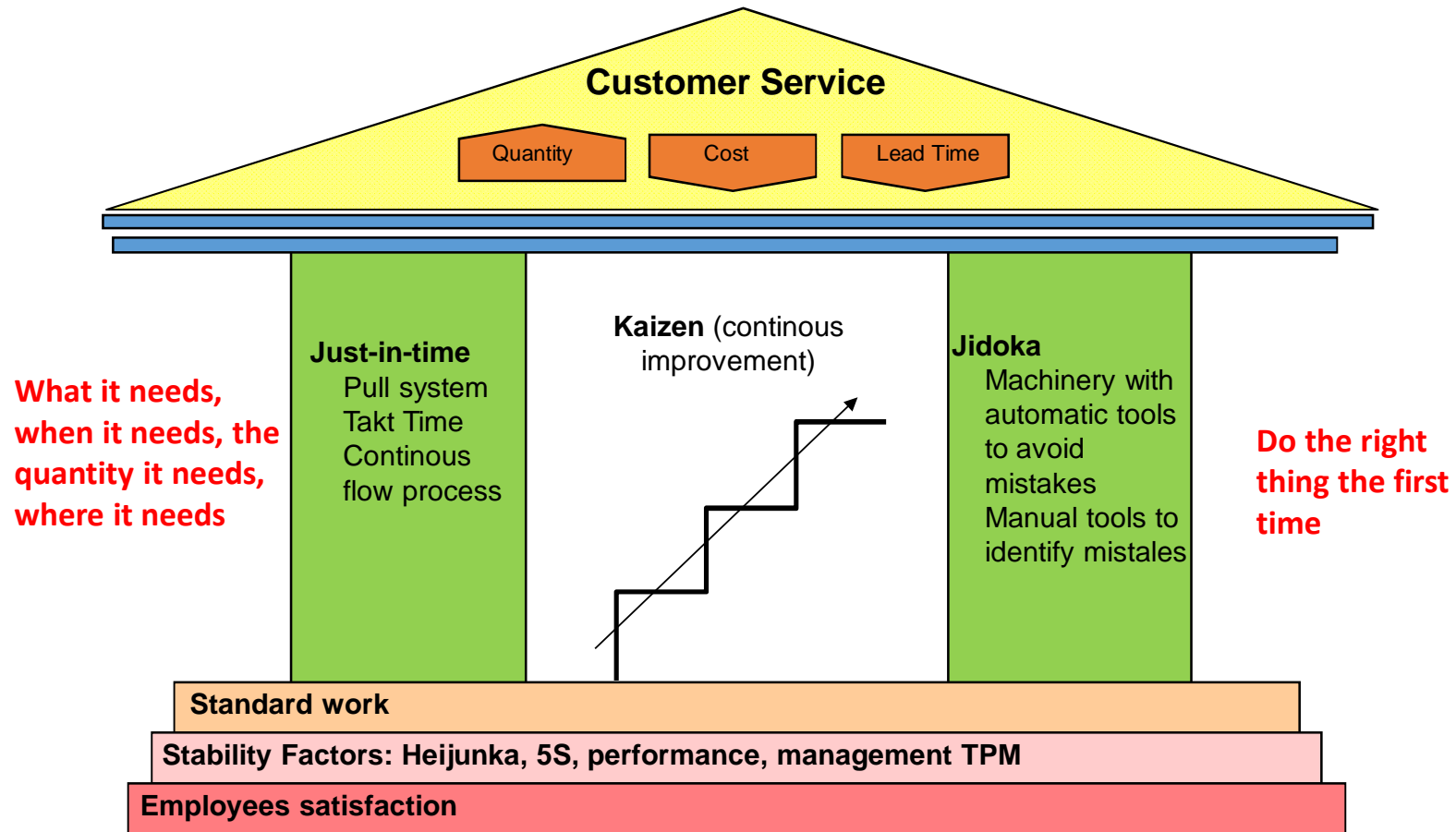
**UNIVERSITY OF TRIESTE**



<b>TECHNIQUES AND TOOLS</b>					<b>7 TOOLS</b>	<b>DATA COLLECTION SHEETS</b>	
						<b>STRATIFICATION</b>	
						<b>CORRELATION</b>	
						<b>PARETO'S DIAGRAM</b>	
						<b>ISTOGRAMS</b>	
						<b>CONTROL CHARTS</b>	
						<b>ISHIKAWA DIAGRAM</b>	
					<b>ONE POINT LESSON</b>		
					<b>A3</b>	<b>5 WHYS</b>	
					<b>KEY PERFORMANCE INDICATORS</b>		
					<b>5 S</b>		
				<b>YAMAZUMI</b>	<b>ANDON</b>	<b>FLASH MEETINGS</b>	
				<b>TAKT TIME</b>	<b>VISUAL MANAGEMENT</b>	<b>GROUP WORK</b>	
			<b>ERGONOMY</b>	<b>KANBAN</b>	<b>STANDARDIZATION</b>	<b>EMPOWERMENT</b>	
			<b>TPM</b>	<b>KAIKAKU</b>	<b>PDCA</b>	<b>INVOLVEMENT</b>	
			<b>SMED</b>	<b>JIT</b>	<b>POKAYOKE</b>	<b>AGREEMENT</b>	
		<b>SPAGHETTI CHART</b>	<b>OEE</b>	<b>HEIJUNKA</b>	<b>KAIZEN</b>	<b>INFORMATION</b>	
	<b>WASTES</b>	<b>LABOUR TIMES STUDY</b>	<b>ONE PIECE FLOW</b>	<b>FROM PUSH TO PULL</b>	<b>SIX SIGMA</b>	<b>COMMUNICATION</b>	
	<b>HOSHIN KANRI</b>	<b>CURRENT VMS</b>	<b>FUTURE VSM</b>	<b>PULL</b>	<b>JIDOKA</b>	<b>MOTIVATION RESEARCH</b>	
<b>PRINCIPLES</b>	<b>DEFINE THE VALUE</b>	<b>IDENTIFY THE VALUE FLOW</b>	<b>SET UP FLOW ACTIVITIES</b>	<b>MANUFACTURE PULLING THE PRODUCTION</b>	<b>RESEARCH PERFECTION</b>	<b>ATTENTION TO PEOPLE</b>	
<b>FOCUS</b>	<b>CUSTOMER</b>			<b>QUALITY</b>		<b>EMPLOYEES</b>	



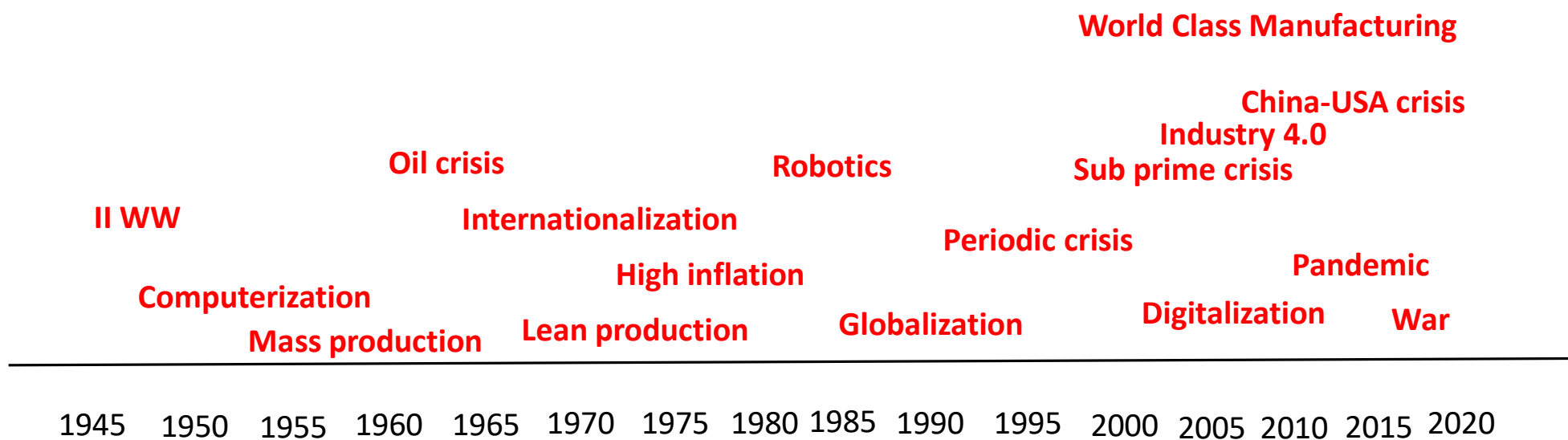
# Il Toyota Production System



**Why is it so important the change for  
the companies's success?**

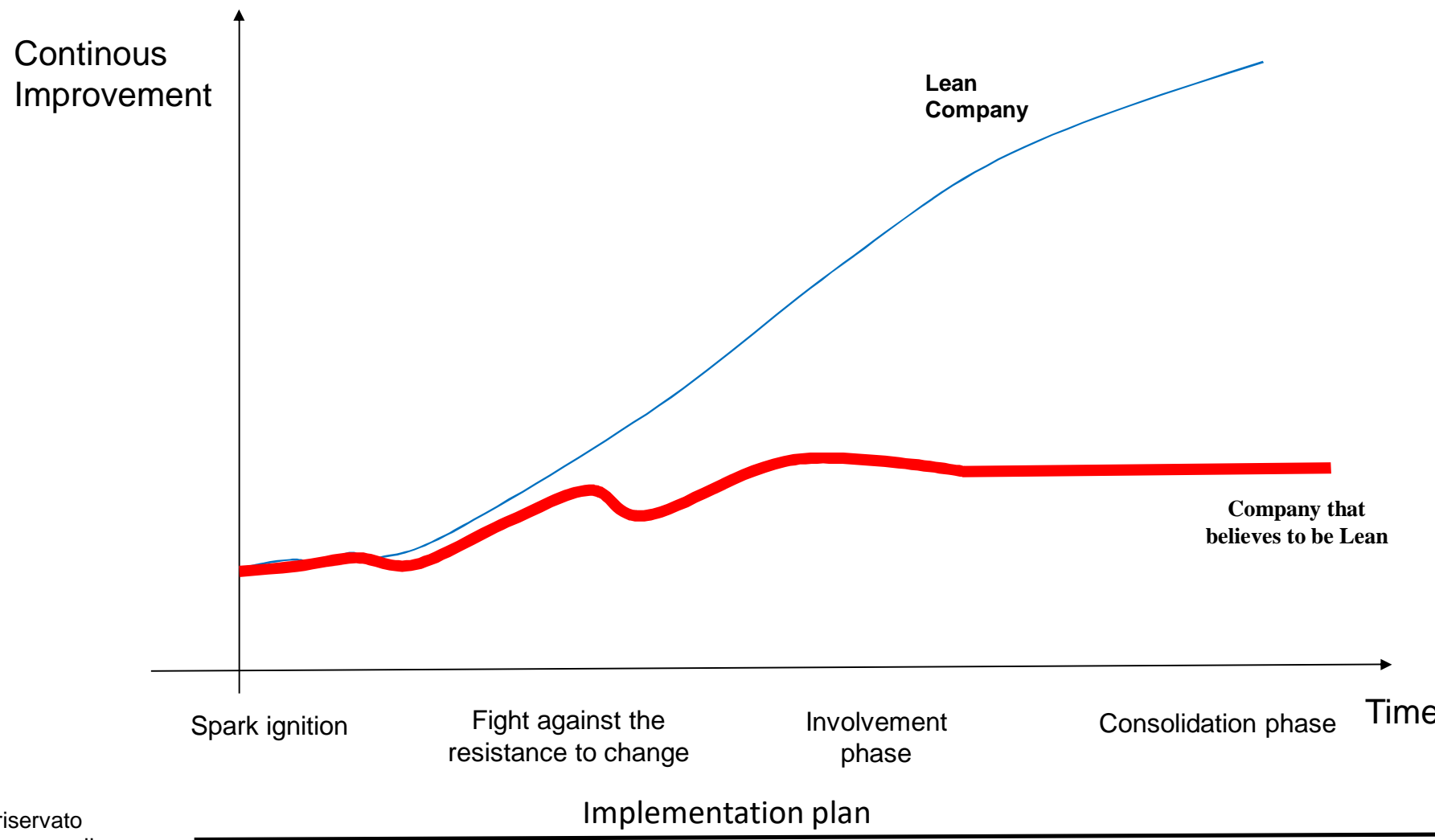


# Because the business environment change !

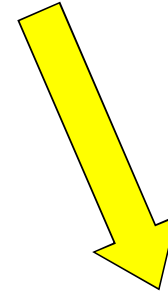
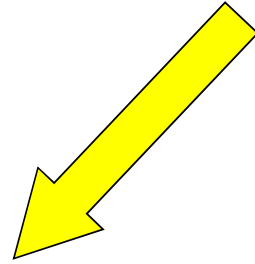




# Lean Transformation

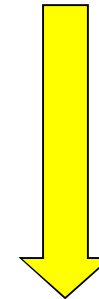
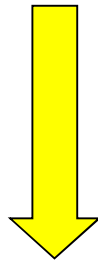


**KAIZEN**



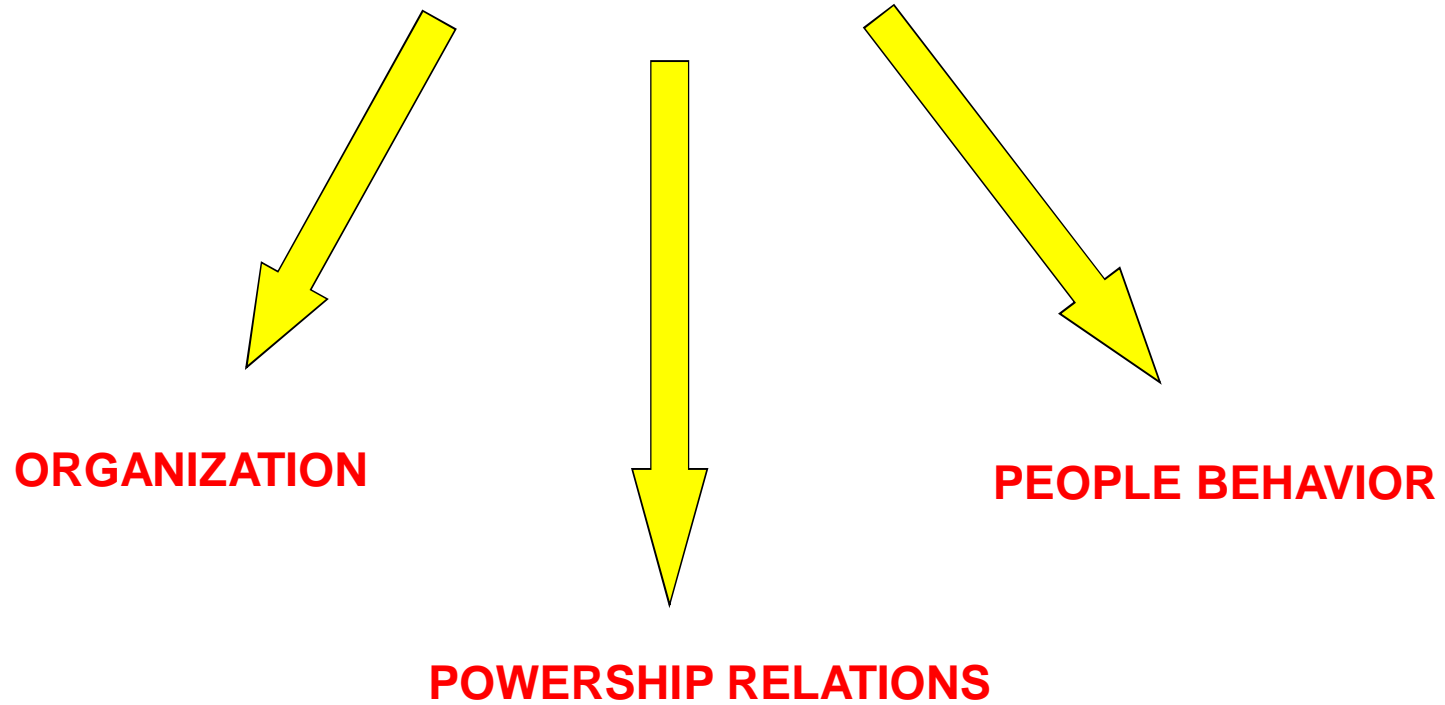
**CHANGE**

**IMPROVEMENT**



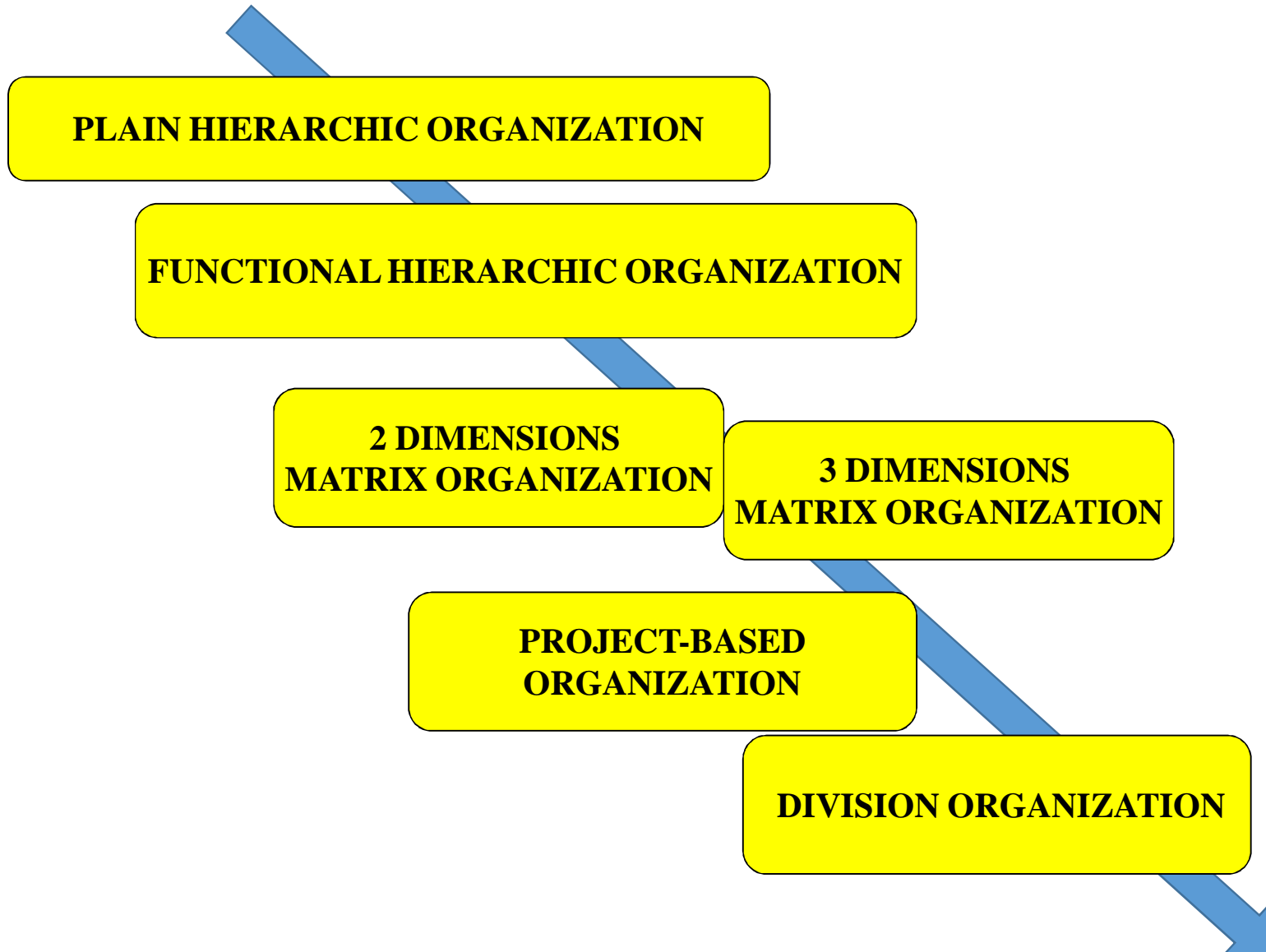
**PERFORMANCE**

## CHANGE WHAT?

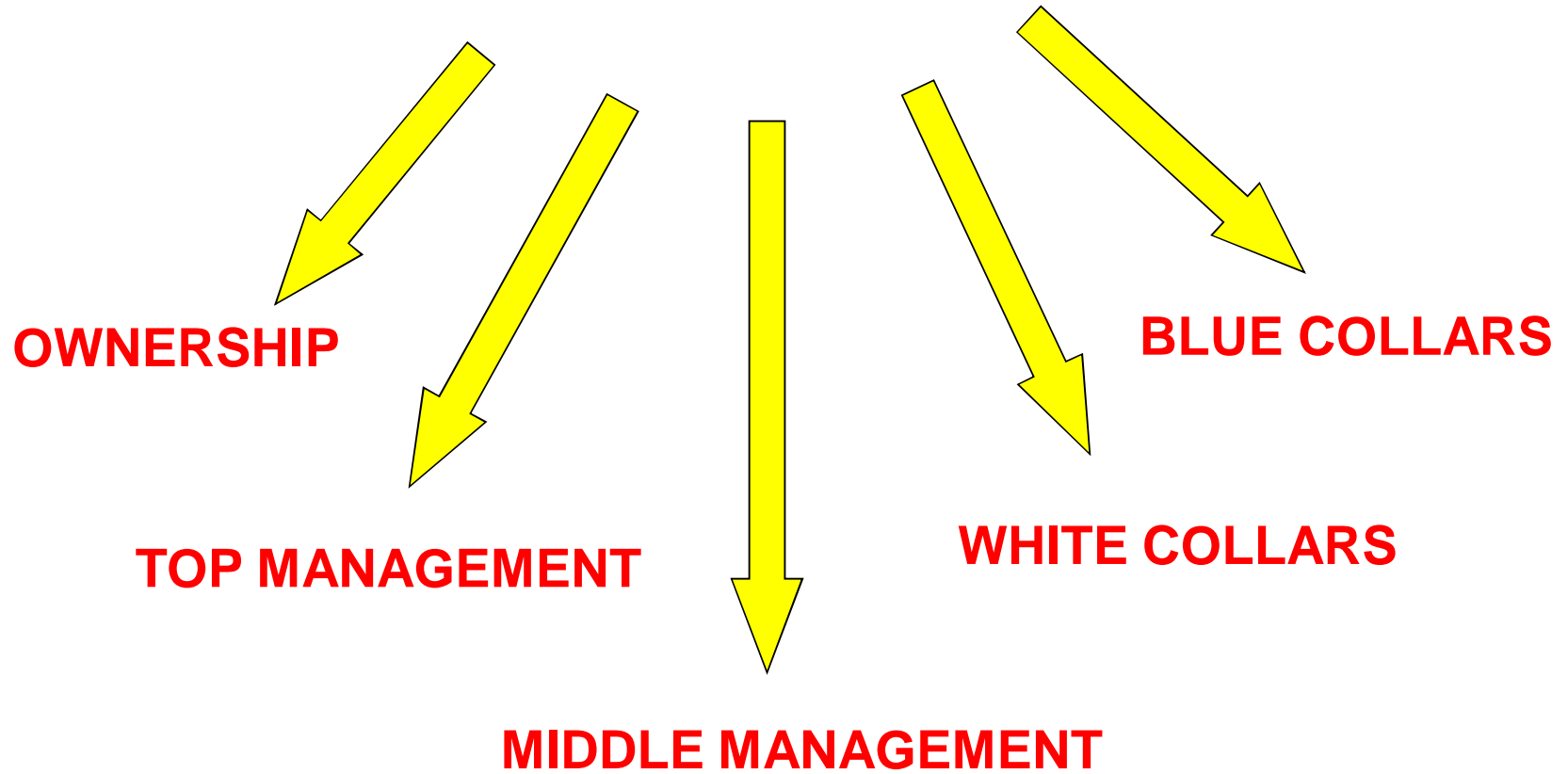




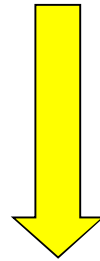
# THE CHANGE IN THE ORGANIZATIONS



# CHANGE IN THE POWER RELATION



# THE PERSONAL CHANGE



## PARADIGM

**The paradigm is a model, a rule, a way of thinking that influences the way we see or interpret a situation.**

**This leads to a usual, almost stereotyped, reaction to the situation that arises.**



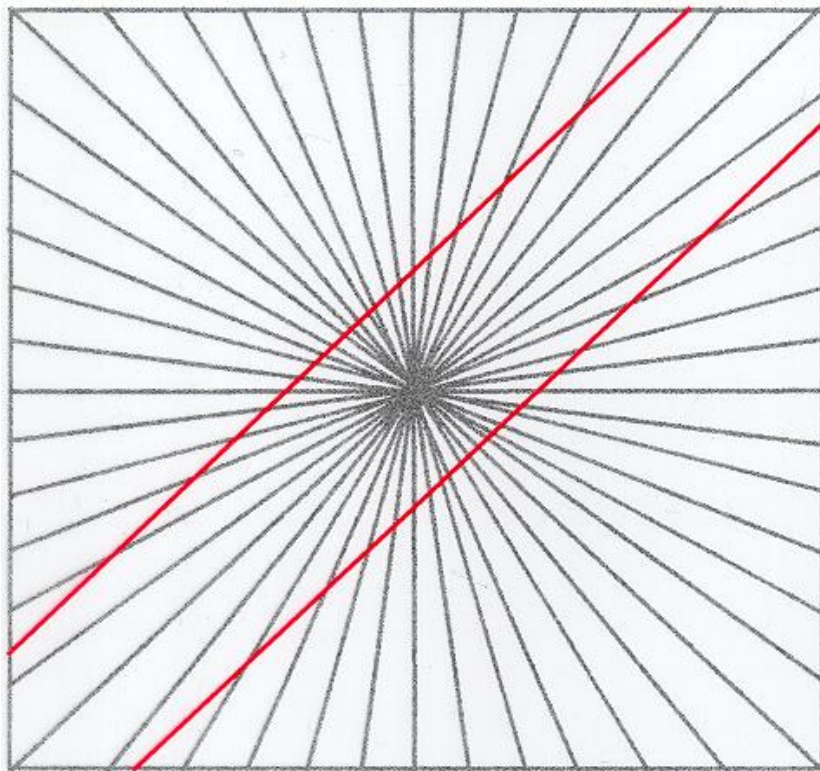
UNIVERSITÀ  
DEGLI STUDI  
DI TRIESTE



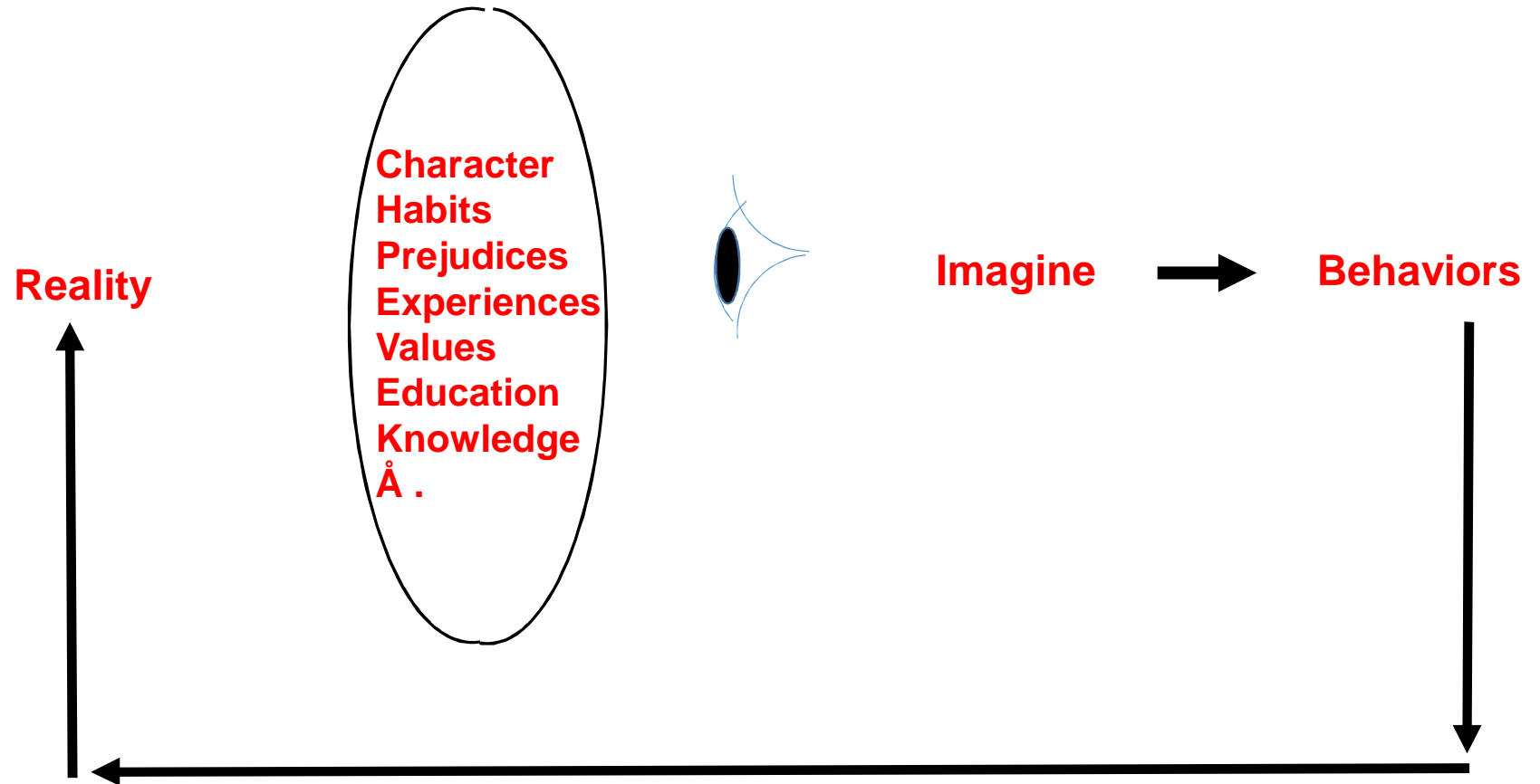
**W. E. Hill, 1915**



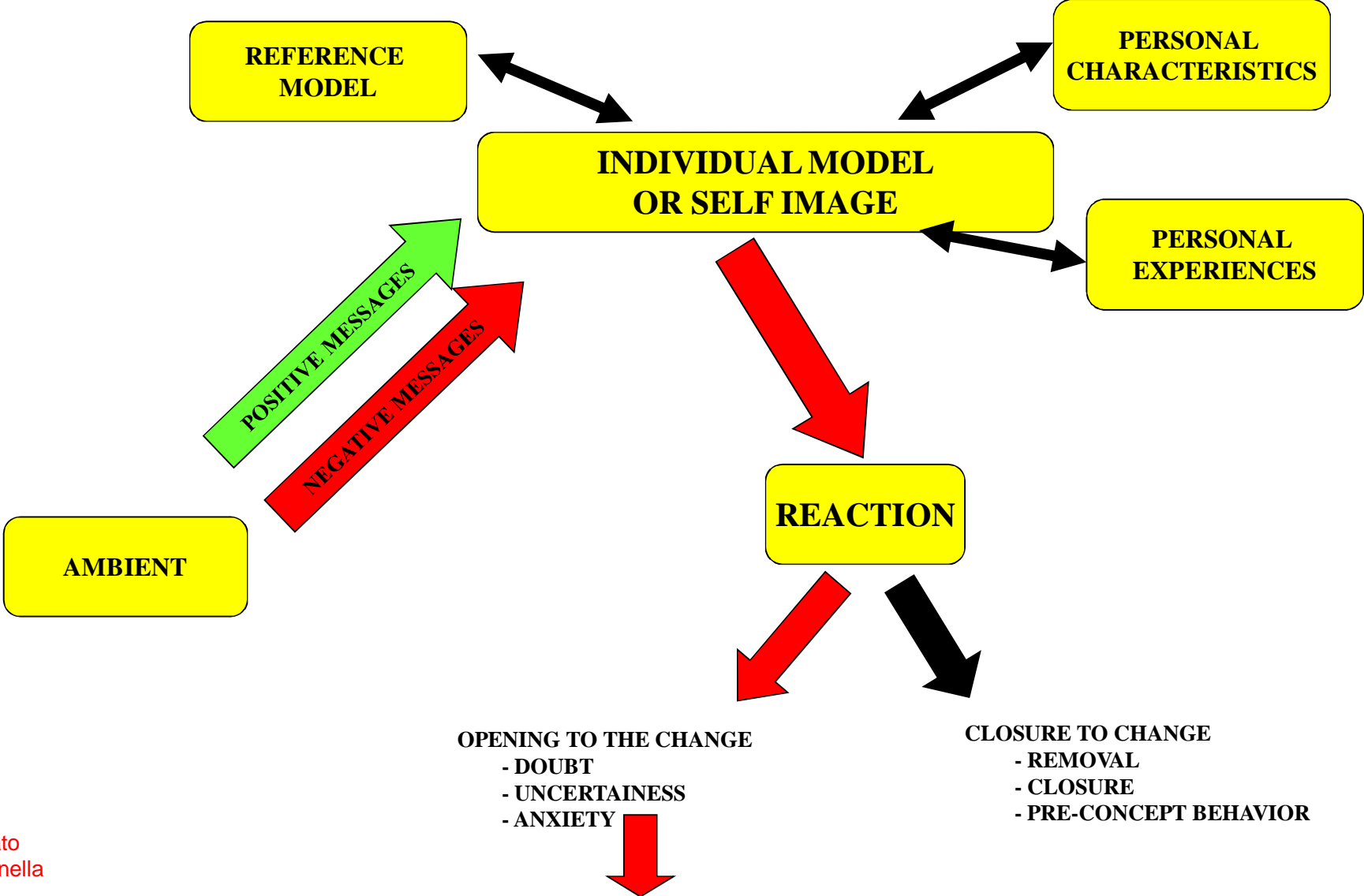
Landscape



# PARADIGM

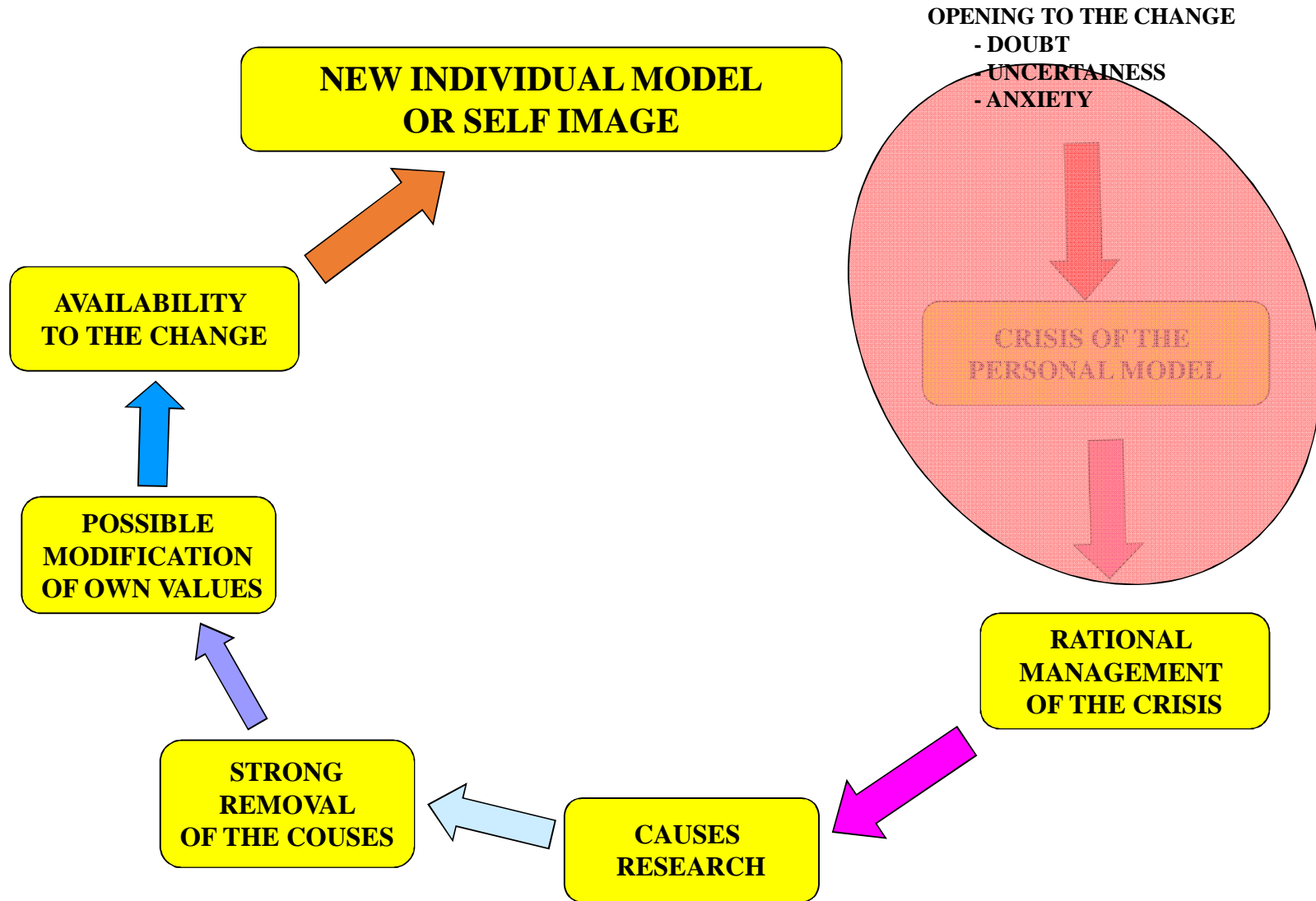


# THE INDIVIDUAL CHANGE





# THE INDIVIDUAL CHANGE



## ACTIVITIES/FUNCTIONS

## CLASSIC APPROACH

## LEAN APPROACH

### STOCK MANAGEMENT

- “ MRP
- “ BATCHES
- “ PRODUCTION BASED ON FORECAST
- “ FORKLIFTS
- “ BIG CONTAINERS

- “ VISUAL MANAGEMENT
- “ ONE PIECE FLOW
- “ FIFO-KANBAN
- “ WATER-SPIDER
- “ SMALL CONTAINERS

### PRODUCTION CONTROL

- “ AT THE END OF THE DAY/BATCH
- “ DONE BY SUPERVISORS

- “ CONSTANT DISPLAY
- “ DONE BY ASS. LINE WORKERS

### PRODUCT/PROCESS IMPROVEMENTS ACTIVITIES

- “ DONE BY SPECIALISTS
- “ LONG PROCEDURE FOR APPROVAL
- “ ONLY PLANNED CHANGES

- “ DONE BY WORKERS (TEAM)
- “ SHORT PROCEDURE FOR APPROVAL
- “ WHEN NEEDED

### PROBLEM SOLVING

- “ ACTION LIKE A FIREMAN
- “ SPECIALIST

- “ QUALITY FIRST-ANDON
- “ IMMEDIATE TEMPORARY SOLUTION
- +PDCA (TEAM)

## ACTIVITIES/FUNCTIONS

## CLASSIC APPROACH

## LEAN APPROACH

### RELATIONS AMONG PERSONS/ FUNCTIONS

- " HIERARCHIC APPROACH
- " INDIVIDUAL (EGO)
- " FUNCTIONAL APPROACH
- " SMALL PRIVATE GARDEN

- " ORIZONTAL ORGANIZATION
- " TEAM (US)
- " INTERFUNCTIONAL TEAMS
- " PROCESS
- " LEADERSHIP

### SUPPLIERS MANAGEMENT

- " OFFER-ORDER-DELIVERY
- " CALL-OFF

- " PARTNERSHIP
- " LONGTERM AGREEMENTS
- " OPEN ORDER

### ORGANIZATION

- " HIERARCHIC-FUNCTIONAL
- " DEFINITE ROLES
- " COMPETENCES AND RESPONSIBILITIES
- " CLEARLY DEFINED
- " SPECIALIZATION

- " GROUP TARGET
- " DIFFUSION OF COLTURE THROUGH COMPANY
- " TRAINING-INFORMATION È COMMUNICATION /INVOLVEMENT
- " MULTIDISCIPLINARITY

## SENTENCES COLLECTION

- “ We have always done like this and it was right
- “ It is not my responsibility
- “ I wait for the boss to ask him
- “ This is not my job
- “ I didn't think it was important
- “ I don't have time to do it, because I'm already charged
- “ We've already tried this and it didn't work
- “ Why do we have to change?
- “ Impossible
- “ All machines, sooner or later, give problems
- “ The set-up times are already stretched to the maximum
- “ The warehouse is necessary: it is a value
- “ Better double check so we are sure of the quality
- “ Å Å Å Å Å ..

# THE RESISTANCE TO THE CHANGE

FRUSTRATION IN FRONT TO  
DIFFICOLTIES AND THE FAILURES

THE WORRYING CONNECTED TO  
WORKPLACE KEEPING

SKEPTICISM

MANAGEMENT UNCOHERENT BEHAVIOR

LACK OF EVIDENT  
PERSONAL ADVANTAGES

UNCERTAINESS ABOUT CAPACITY  
TO HAVE HIGHER RESPONSIBILITY

FEAR NOT TO SUCCESS  
LEARNING NEW METHODS

THE FEAR OF THE CHANGE, SEEN LIKE A  
THREAT TO THE PRESENT SITUATION, LIVED  
AS SATISFACTORY

THE LIMITED  
COMPREHENSION OF  
CHANGE NEED

THE FEAR TO LOOSE POWER  
AND INFLUENCE

LACK OF RECOGNITION ABUT  
THE GOOD JOB DONE

LACK OF SUPPORT AND ENCOURAGEMENT

# THE CHANGE OF COMPANY CULTURE



# THE CHANGE OF COMPANY CULTURE

«UNFREEZING»



ACQUISITION OF THE NEW  
CONCEPTS AND NEW  
INTERPRETATION OF THE OLD  
ONES



CONVINCED SHARING OF  
THE NEW CONCEPTS

# THE CHANGE OF COMPANY CULTURE

OFFICIAL DECLARATION OF THE GENERAL MANAGER



STRONG INVOLVEMENT OF MIDDLE  
MANAGEMENT

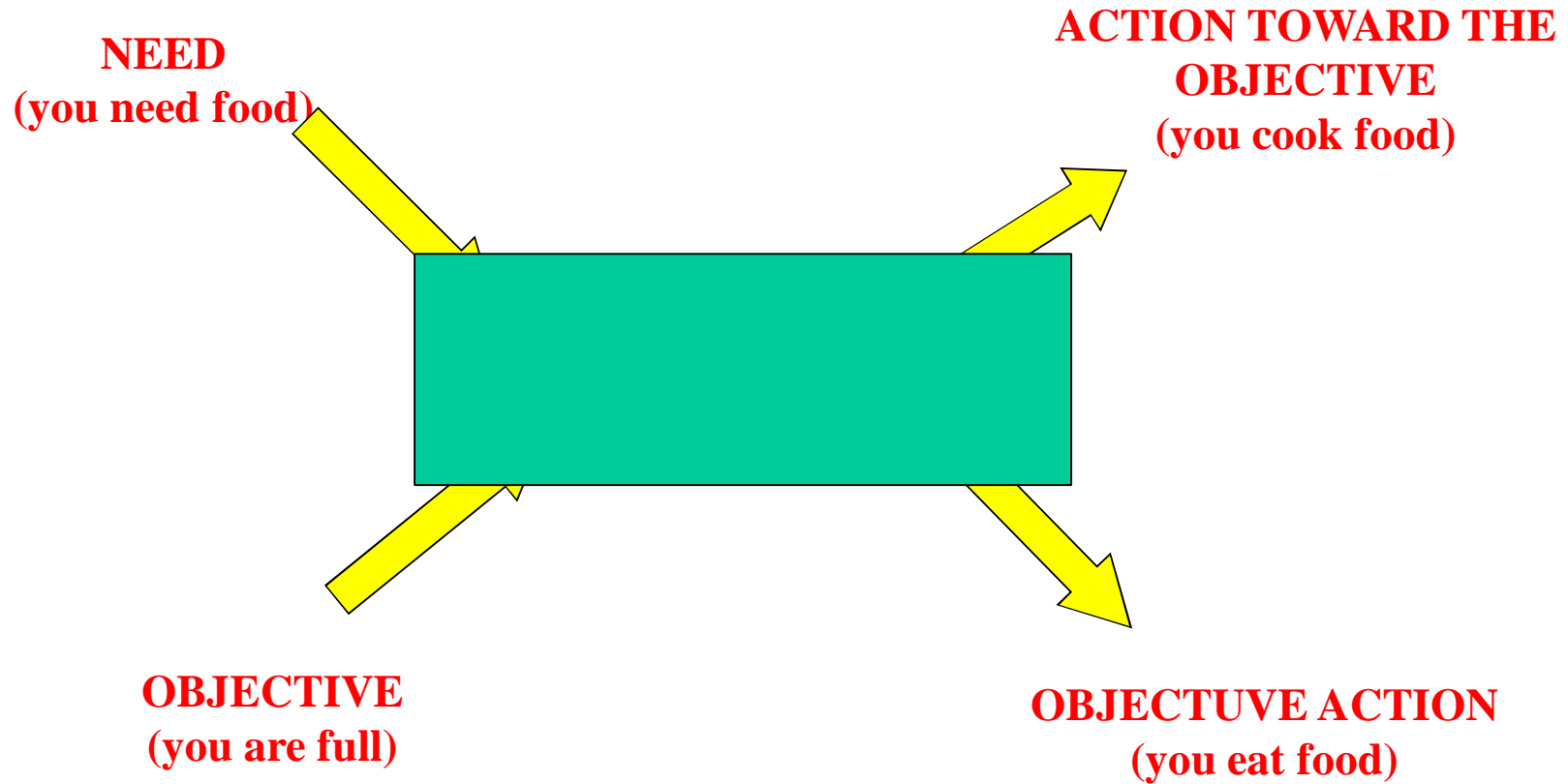


RESEARCH AND SUSTAINABILITY  
OF PEOPLE MOTIVATION





# THE INDIVIDUAL CHANGE, BEHAVIOR AND MOTIVATION

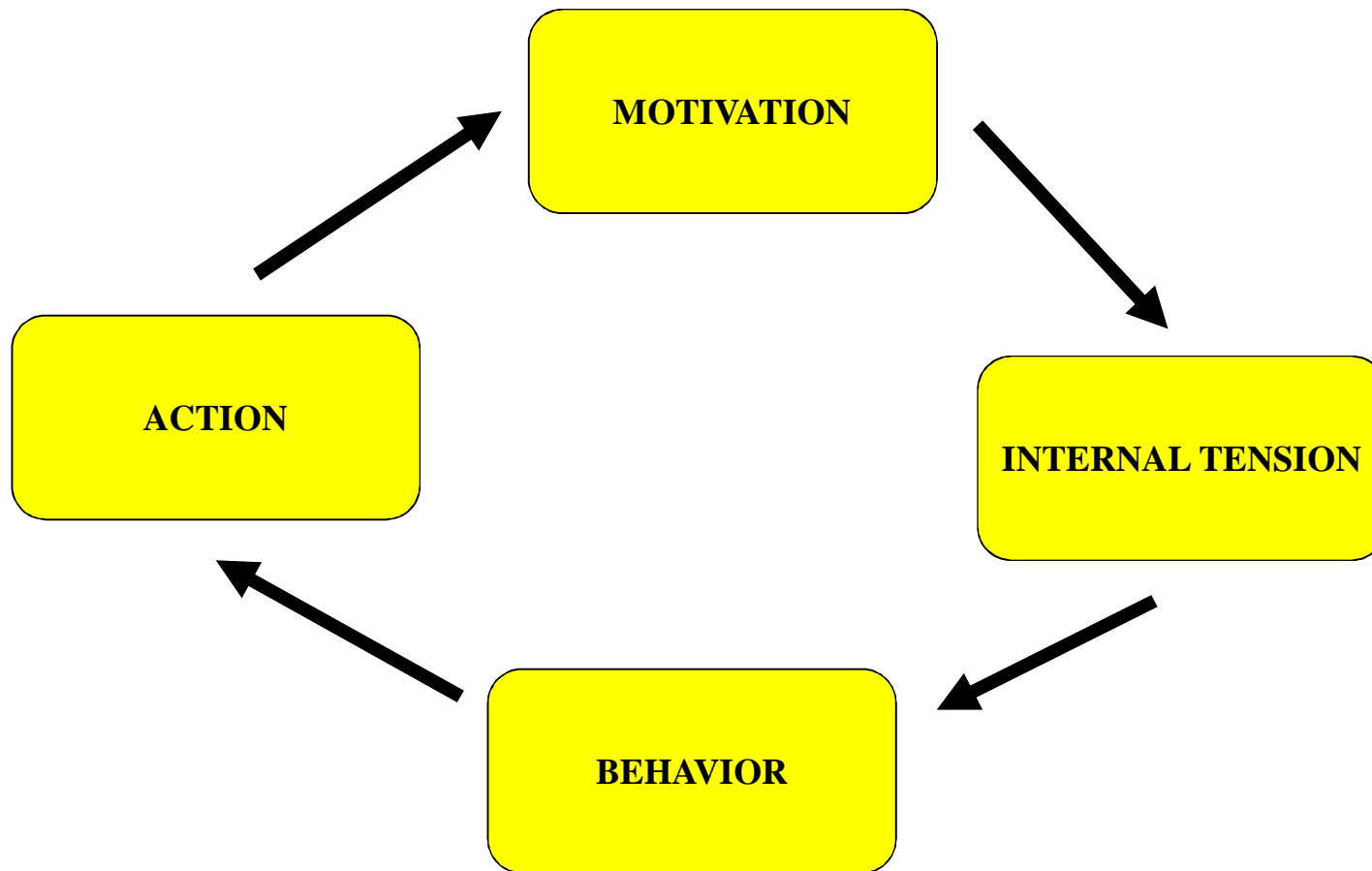


# MOTIVATION

**MOTIVATION CAN BE SEEN AS AN INTERNAL TENSION THAT  
COMES FROM A NEED AND BRINGS TO ITS SATISFACTION**



# MOTIVATION

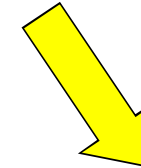
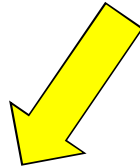


# MOTIVATION ABRAHAM MASLOW





# LA MOTIVAZIONE FREDERICK HERZBERG

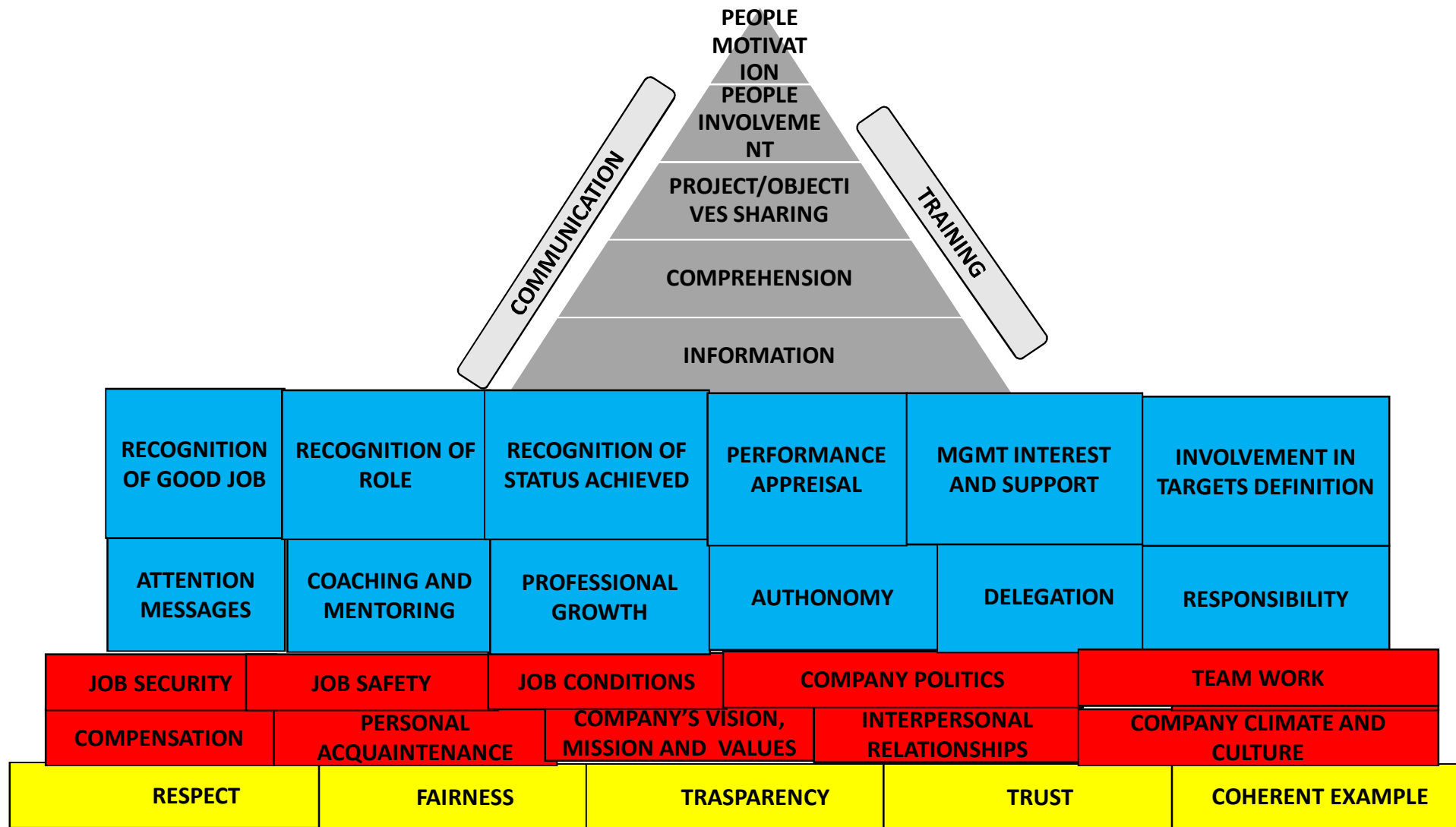


## HYGIENIC FACTORS

## MOTIVATION FACTORS

**Factors that, if present, do not give any particular satisfaction but, if absent, provoke high level of dissatisfaction**

**Factors that, if present, do give a particular satisfaction and motivation at work but, if absent, provoke a certain level of dissatisfaction**





**General top-down**  
 Vision, mission, values markets  
 Company Performances, new initiatives  
 í ..

One or two time a year, in plenary m meetings

Technical and managerial info necessary to operate correctly the production activities

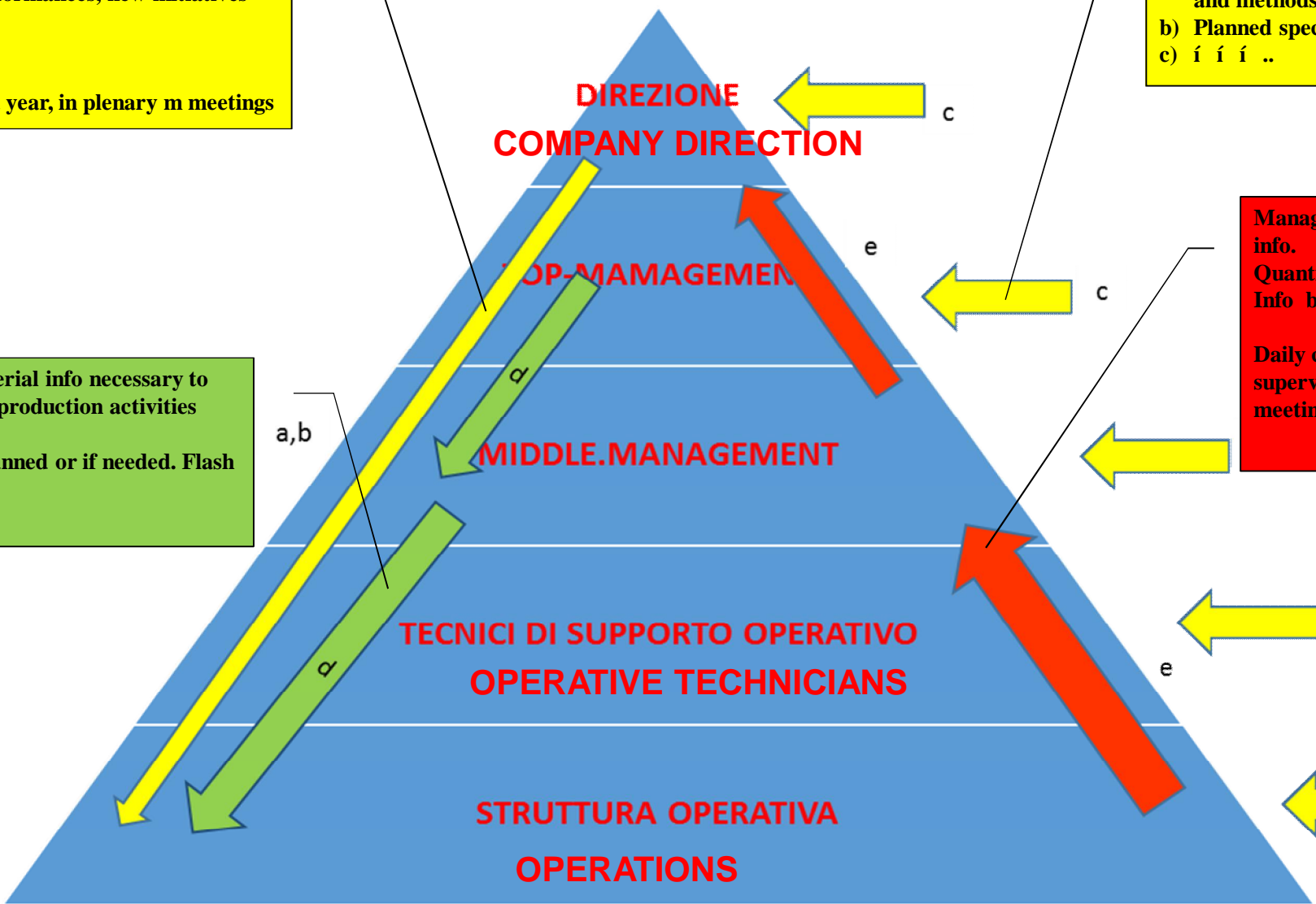
Iperiodic meeting, planned or if needed. Flash meetings.

a) Specific training about Lean principles and methods  
 b) Planned specific meetings  
 c) í í í ..

Managerial and technical info.  
 Quantitayive and qualitative Info bottom-up

Daily contact with supervisors and Flash meetings

# INFORMATION





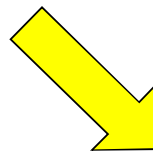
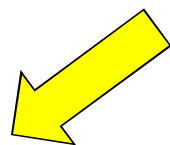
# COMMUNICATION





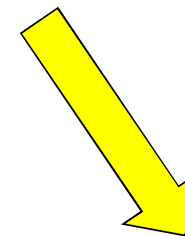
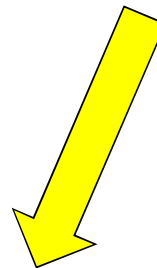
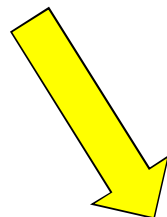
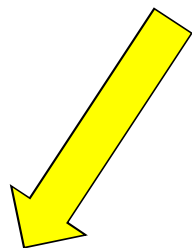


**COMMUNICATION**



**COMMUNICATION  
ABILITY**

**ABILITY OF  
EXPLANATION AND  
POSITIVE DISCUSSION**



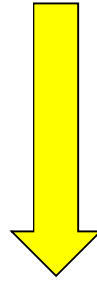
**EXPLAIN  
CLEARLY**

**SYNTHESIS  
CAPACITY**

**CONVINCTION**

**SUBJECT KNOWLEDGE**

## LISTENING CAPACITY

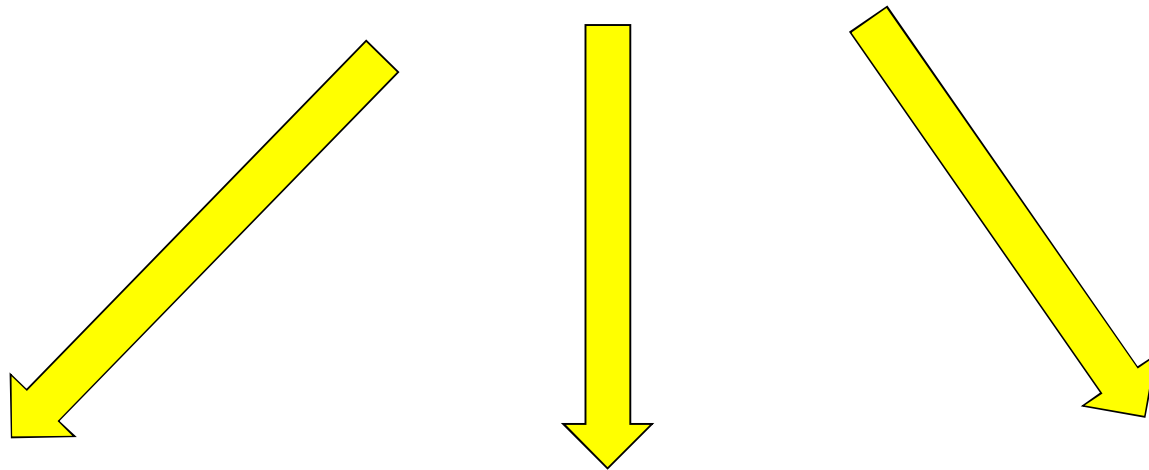


**Each person has two ears, two eyes and one mouth, to hear and see twice as much as they speak.**

**Arabic proverb**



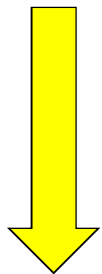
# LISTENING CAPACITY



**ACTIVE  
LISTENING**

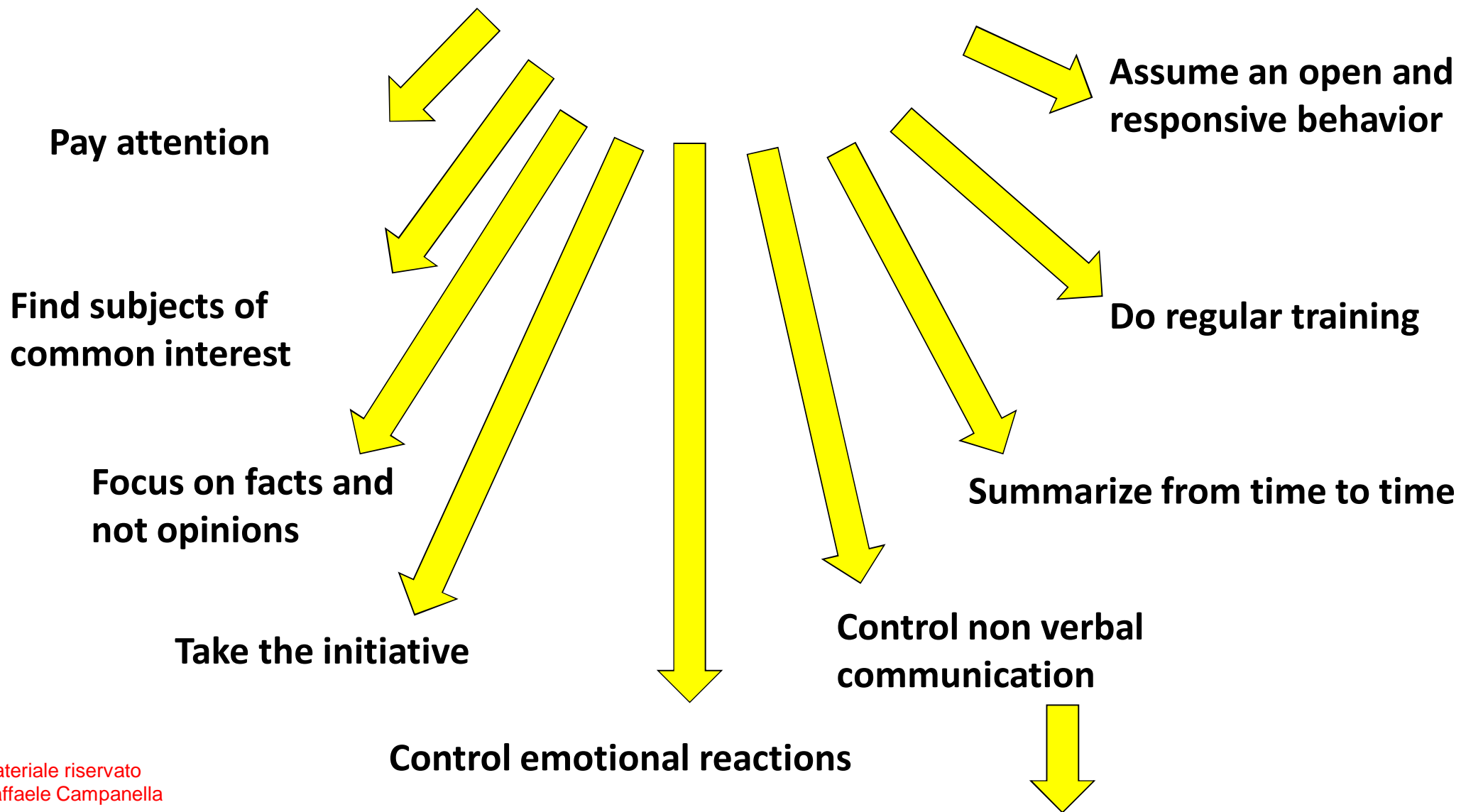
**SUPERFICIAL  
LISTENING**

**OCCASIONAL  
LISTENING**





# LISTENING CAPACITY





# NON VERBAL COMMUNICATION

## SOUNDS

- " TONE
- " FREQUENCY
- " INTENSITY
- " RITHM

## MOVEMENTS

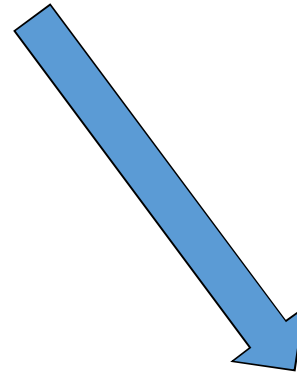
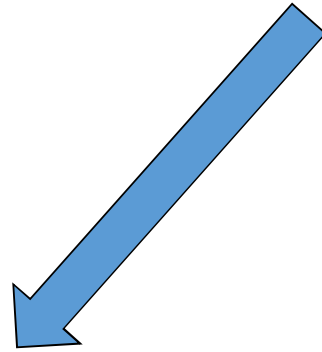
- " EYES
- " FACE
- " BODY

## SPACE

## PHYSICAL CONTACT

# COMMUNICATION

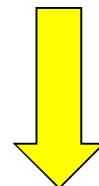
**FORMAL**



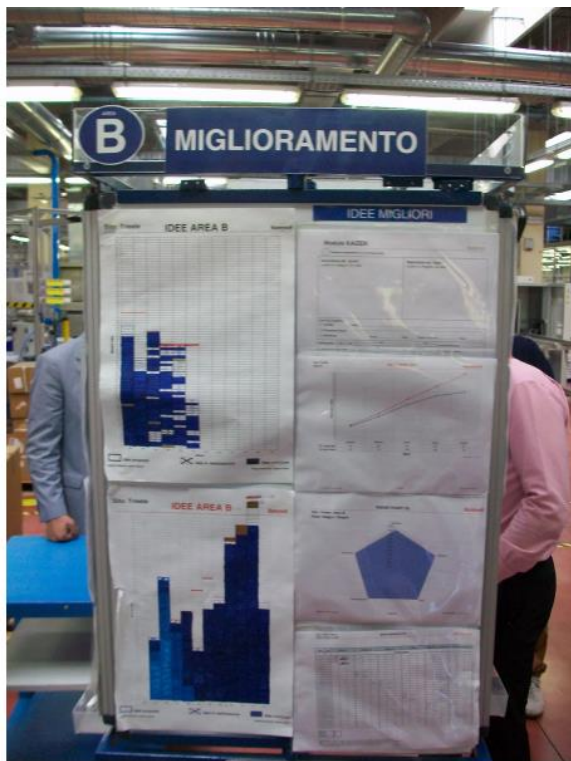
**UNFORMAL**



# COMMUNICATION

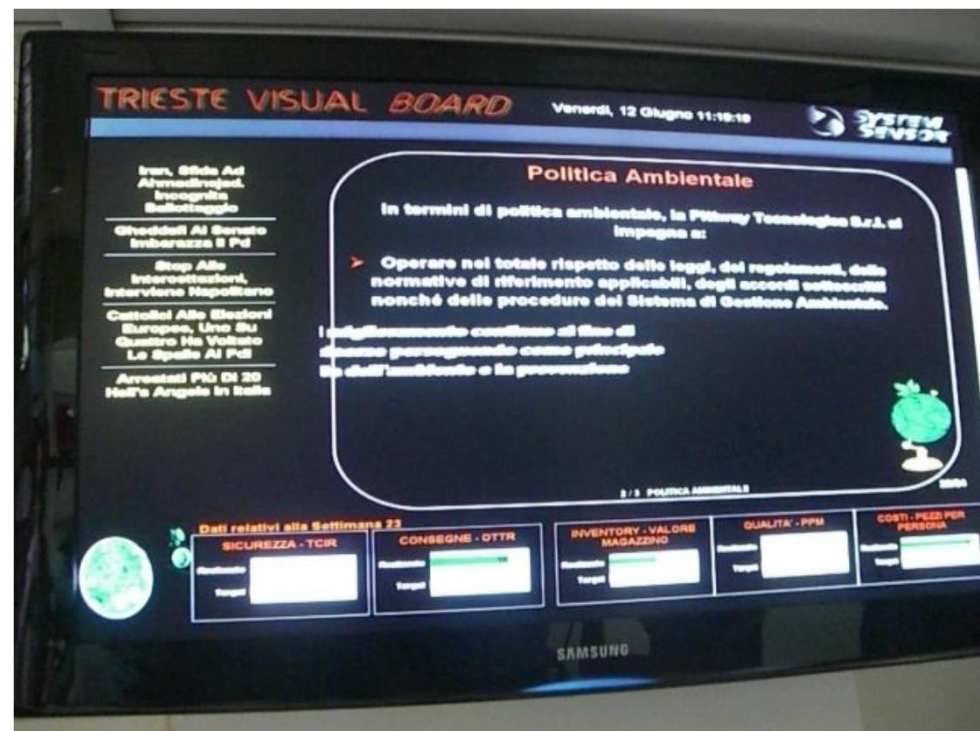


## VISUAL MANAGEMENT



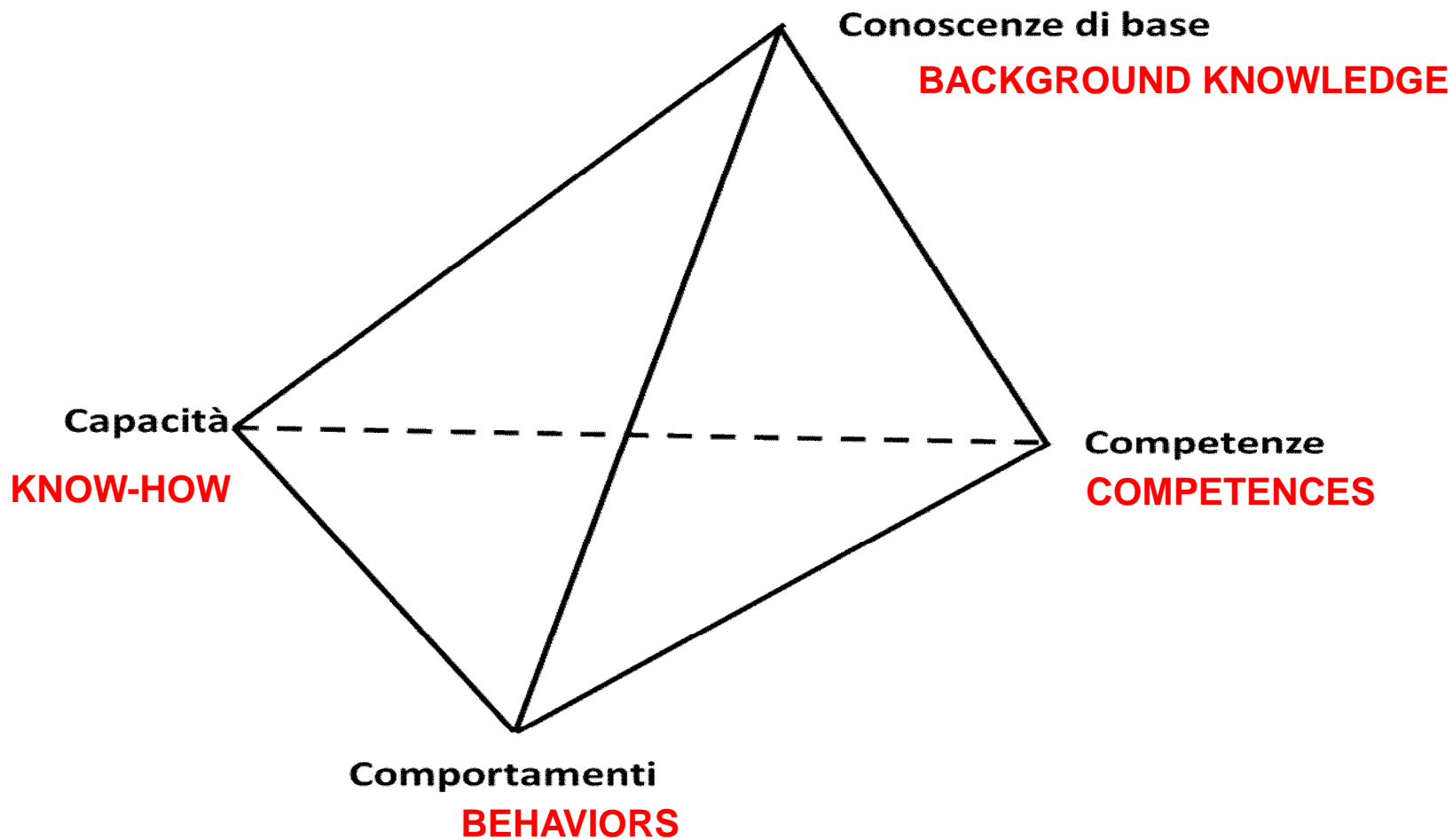
Tabellone a quattro facce con obiettivi e risultati di minifabbrica

- Red/yellow floor lines
- Use of colors
- Comparison situation
- Pictures
- Schemes / Graphs
- Signals
- Manual/Digital Displays
- Containers/cards
- Boards





# TRAINING





## TRAINING



**Comprehension of the  
subjects related to  
company business**



**Acquisition of methods and  
specific tools of *Lean  
Manufacturing***

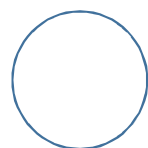


**Acquisition of competences to  
increase job flexibility**

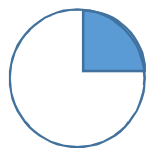


# TRAINING

ID	TURNO	Cognome	Nome	Postazione di lavoro	TABELLA DELLE COMPETENZE PER REPARTO CILINDRI											
					Tornitura	Fresatura	Fresatura	Aggiustag	Rettifica	Lucidatura lavaggio	Controllo tecnologico	Piantaggio bocca	Tornitura bocca	Equilibrat	Equilibratura automatica	
1	2	A	X	Equilibratura							2		2		3	3
3	1	B	Y	Controllo Tec.	4	3	3	4	4		3	4	4	4		
6	2	C	W	Fresatura		4	2								2	
7	2	D	Z	Aggiustaggio		3		4	2		3	4	3		4	3
8	1	E	X	Tornitura	4	4		4	3			4	3	4	3	
9	1	F	Y	Lucidatura							3					
10	1	G	W	Equilibratura							3				4	4
11	1	H	Z	Aggiustaggio		4	3	3	2		3	3	3	3		
12	2	I	X	Controllo Tec.				4	4		4	4	4	4	4	
13	2	L	Y	Tornitura		2			3		3		4	4		3
14	1	M	W	Tornitura		2			2					2	2	
15	1	N	Z	Controllo Tec.		3		4	3		3	4	4	3	3	2
16	1	O	X	Aggiustaggio		3		4	2		3	4	4		4	2
17	1	P	Y	Fresatura		4	4									
18	1	Q	W	Rettifica	3	3	3		4			3	4	4	4	4
19	2	R	Z	Controllo Tec.		4	4	4			3	4	4		2	2
20	2	S	X	Rettifica		2			3		3			2		
21	2	T	Y	Equilibratura	4	3	3	3	3		4	3	4	4	4	3
22	G	U	W	Piant.boccola		2					3		4			
23	2	V	Z	Tornitura	4	4	4		2		2		2	2		
<b>Totale operatori autonomi per postazione</b>					<b>5</b>	<b>12</b>	<b>7</b>	<b>9</b>	<b>8</b>	<b>14</b>	<b>9</b>	<b>12</b>	<b>8</b>	<b>9</b>	<b>6</b>	



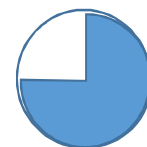
Livello 0



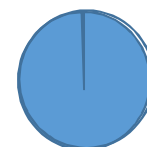
Livello 1



Livello 2



Livello 3



Livello 4

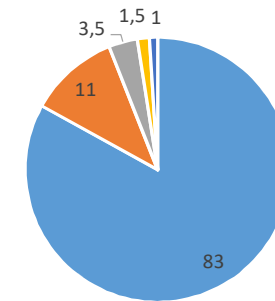
# TRAINING ON LEAN TECHNIQUES

Recognition of pertinent facts  
within pictures and videos

Simulation of a small  
production ward

Use of systems like games, LEGO...

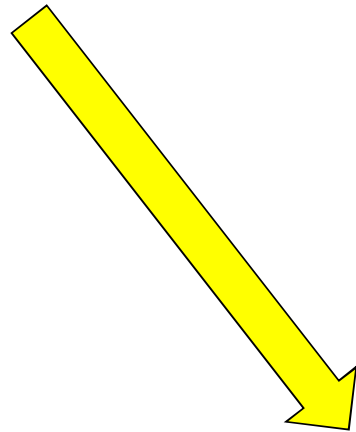
Visual management



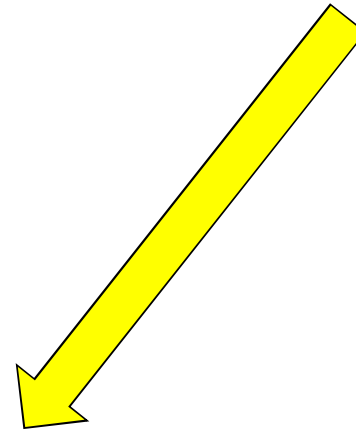
■ Senso della Vista ■ Senso dell'Udito ■ Senso dell'Olfatto  
■ Senso del Tatto ■ Senso del Gusto



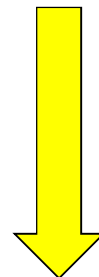
**OBJECTIVES SHARING**



**INVOLVEMENT**



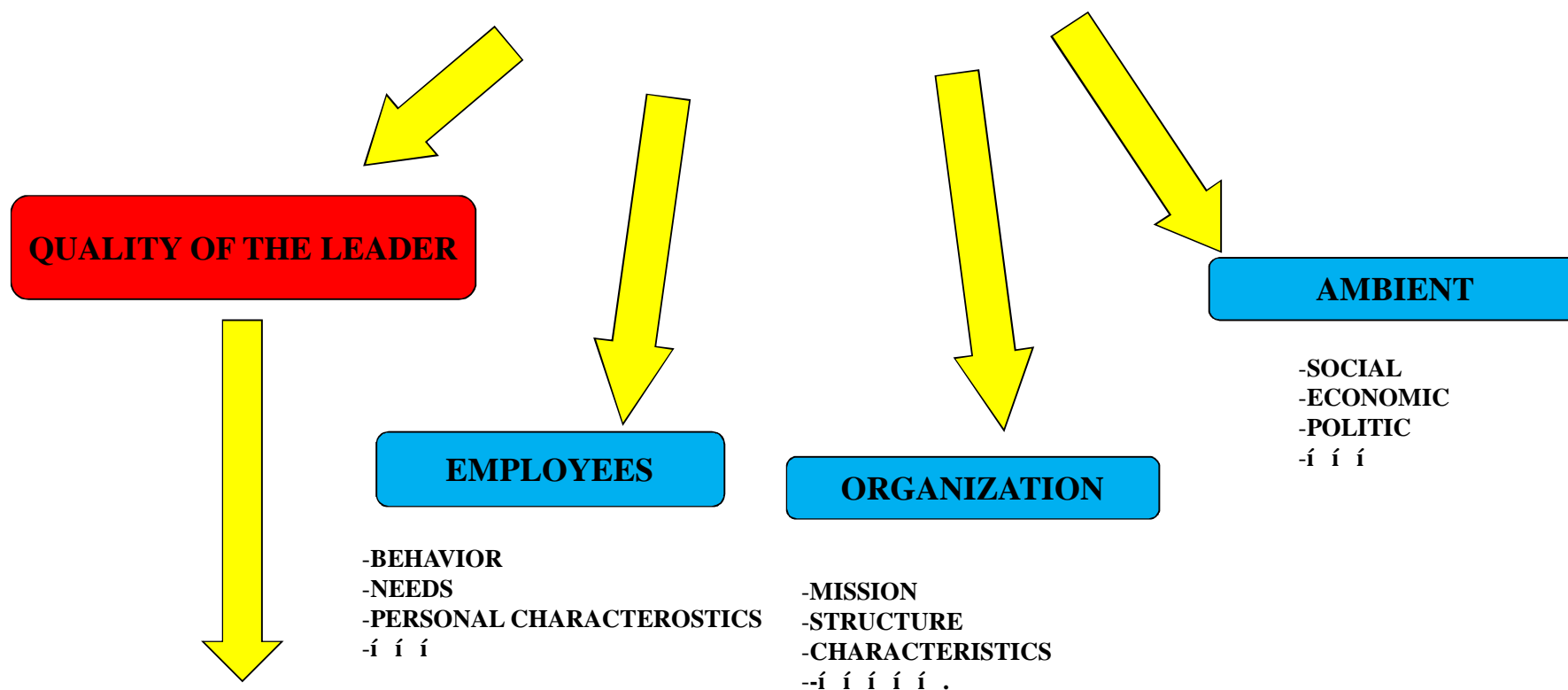
**LEADERSHIP**





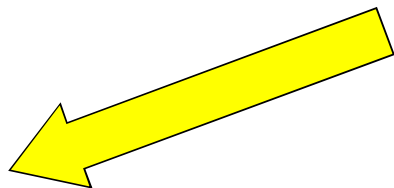
# LEADERSHIP

LEADERSHIP IS NOT AN INBORN, NATURAL CHARACTERISTIC OF THE INDIVIDUAL, BUT IS THE RESULT OF A COMPLEX RELATIONSHIP AMONG SEVERAL VARIABLES



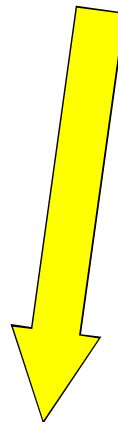


## THE LEADER



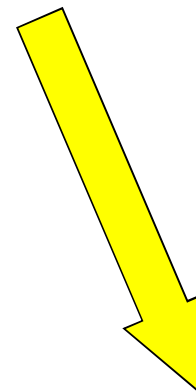
## CULTURE

- Individual cultural background.
- Knowledge of the company
- Skills.
- Work organization in general
- Management and control
- Basic techniques
- Technology in the sector where the company operates
- Market and business of the company
- Administrative Labor legislation
- Specifications of the function held in the company



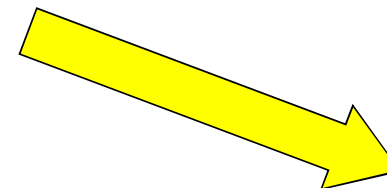
## BRAIN

- Emotional solidity
- Positivity
- Creativity
- Mental agility
- Learning ability and willingness
- Self-knowledge



## KNOW-HOW

- Sensitivity to events.
- Decision-making skills.
- Ability to make decisions in front of complex situations, independently.
- Ability to interpersonal relationships and to motivate and influence people to achieve the Company's objectives
- Knowing how to do things together with others
- Communicating, delegating, negotiating, resolving conflicts, persuading
- Knowing how to manage your network of relationships both within the company and



## FEELING

- Empathy. It is the particular sensitivity to put oneself in the shoes of others and to realize the reason for their behavior.
- Feeling. It is the ability to establish constructive and positive relationships with colleagues aimed at improving the climate and solving problems



# LEADER'S QUALITIES

## GIVES DIRECTION

- " gives clear and defined goals
- " Involves colleagues on the objectives
- " Stimulates individual creativity
- " supports
- " Delegates
- " Motivates

## AGGREGATE

- " Gives ambitious and achievable goals
- " Acts as a coach
- " Train the colleagues
- " Create positive situations
- " Stimulates collaboration and team spirit
- " Seek concreteness from all

## IS ORGANISED

- " Defines the weak points
- " Knows the processes
- " Defines the changes to be implemented
- " Pursues results
- " Supports improvement

## IS OBJECTIVE

- " Defines individual performance
- " Evaluates performance
- " Manages conflicts
- " Celebrates the positive results
- " Tracks the results

## IS BALANCED

- " Communicates effectively
- " Has a great listening capacity
- " Does not seek the guilty but stimulates to find the causes
- " Create moments of aggregation

## IS CULTURALLY INNOVATIVE

- " Love to learn
- " Is curious
- " Love to teach
- " is a mentor
- " is an enthusiast



## LEADERSHIP AND TEAM

### LEAD TO WIN

- RESPECT IS EARNED...NOT GIVEN
- COMMUNICATE VISION
- DELEGATE AND RESPECT THE STRUCTURE
- TAKE THE BLAME AND SHARE THE CREDIT
- FEEL THE FINE LINE BETWEEN AUTHORITY AND FRIENDSHIP



### SET THE BAR HIGH

- WINNERS ALWAYS RESET THE BAR
- LOOK YOURSELF IN THE MIRROR
- MEASURE RESULTS-360
- EXPECT TO WIN



Paul Cayard





## LEADERSHIP AND TEAM

### MORE THAN THE SUM OF THE INDIVIDUALS

- AMORTIZE THE UPS AND DOWNS
- A CHALLENGE OR ERROR IS SIMPLY AN OPPORTUNITY TO REBOUND
- MORE COVERAGE-MULTIPLE DISCIPLINES
- CHEMISTRY-A GOOD TEAM DOES MORE THAN WORK TOGETHER



### UNITE MEMBERS

- ALL IN THIS TOGETHER
- TRUST
- EVERYONE HAS THEIR ROLES
- INVOLVE TEAM IN DECISIONS
- LOOK YOURSELF IN THE MIRROR
- LOYALTY IS TO TEAM



Paul Cayard



## LEADERSHIP AND TEAM

### BUILD THE RIGHT TEAM

- MIX YOUTH WITH EXPERIENCE
- MIX LOYALTY WITH INNOVATION
- INSTILL A CULTURE
- PERFORMANCE REVIEW
- RUN A TIGHT SHIP-DISCIPLINE



### A WINNING TEAM HAS P.R.I.D.E.

- **P**RECISION-CLARITY OF TASK
- **R**ELATIONSHIPS-COMMUNICATION
- **I**NTERDEPENDENCE-TRUST, HONESTY, COOPERATION
- **D**EFINED MEMBERSHIP-OWNERSHIP AND ACCOUNTABILITY
- **E**NERGY-ENTHUSIASM, PASSION, DRIVE



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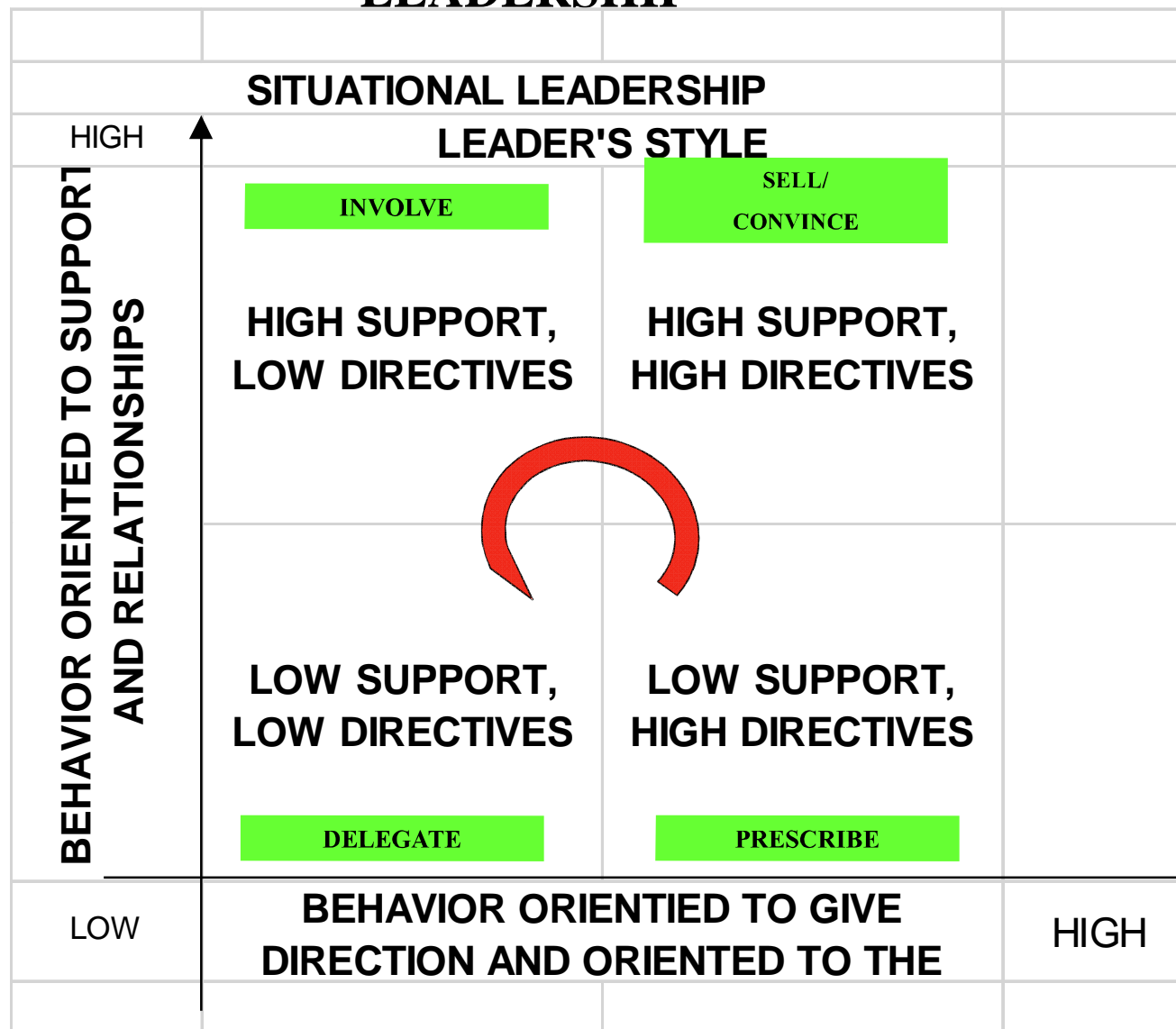
# SITUATIONAL LEADERSHIP

As a function of the employees characteristics

<b>Immaturity</b>	<b>Maturity</b>
<ul style="list-style-type: none"><li><b>Passive</b></li><li><b>Dependent</b></li><li><b>Limited types of behaviors</b></li><li><b>Limited interests</b></li><li><b>Short perspective</b></li><li><b>Subordinate position</b></li><li><b>Lack of self-confidence</b></li></ul>	<ul style="list-style-type: none"><li><b>Active</b></li><li><b>Independent</b></li><li><b>Behaviors suitable to situations</b></li><li><b>Wide range of interests</b></li><li><b>Long perspective</b></li><li><b>Equal position - interdependent</b></li><li><b>Self-confidence and self-control</b></li></ul>

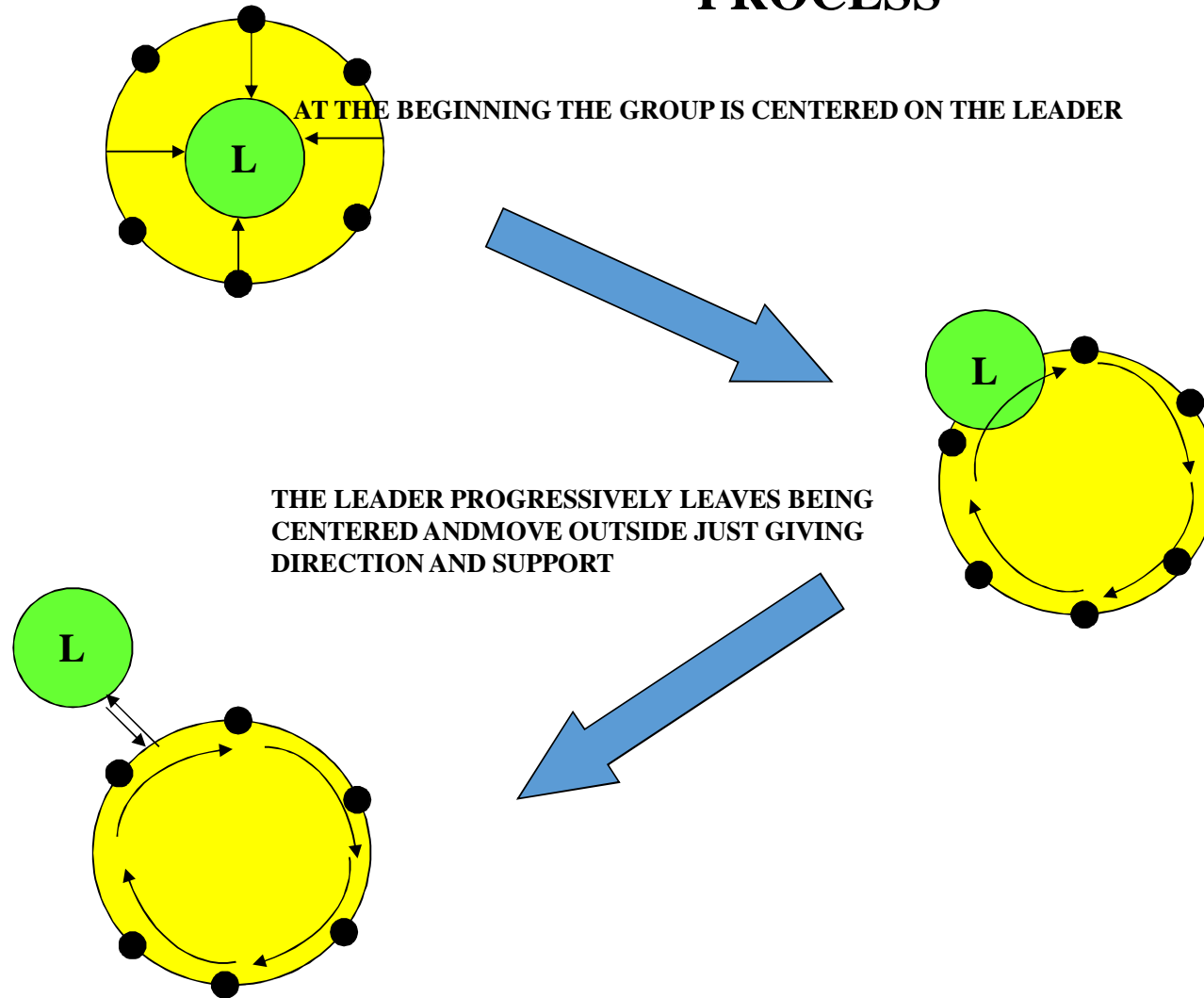


# LEADERSHIP





# THE DEVELOPMENT OF THE LEADERSHIP PROCESS





## DA CAPO A LEADER

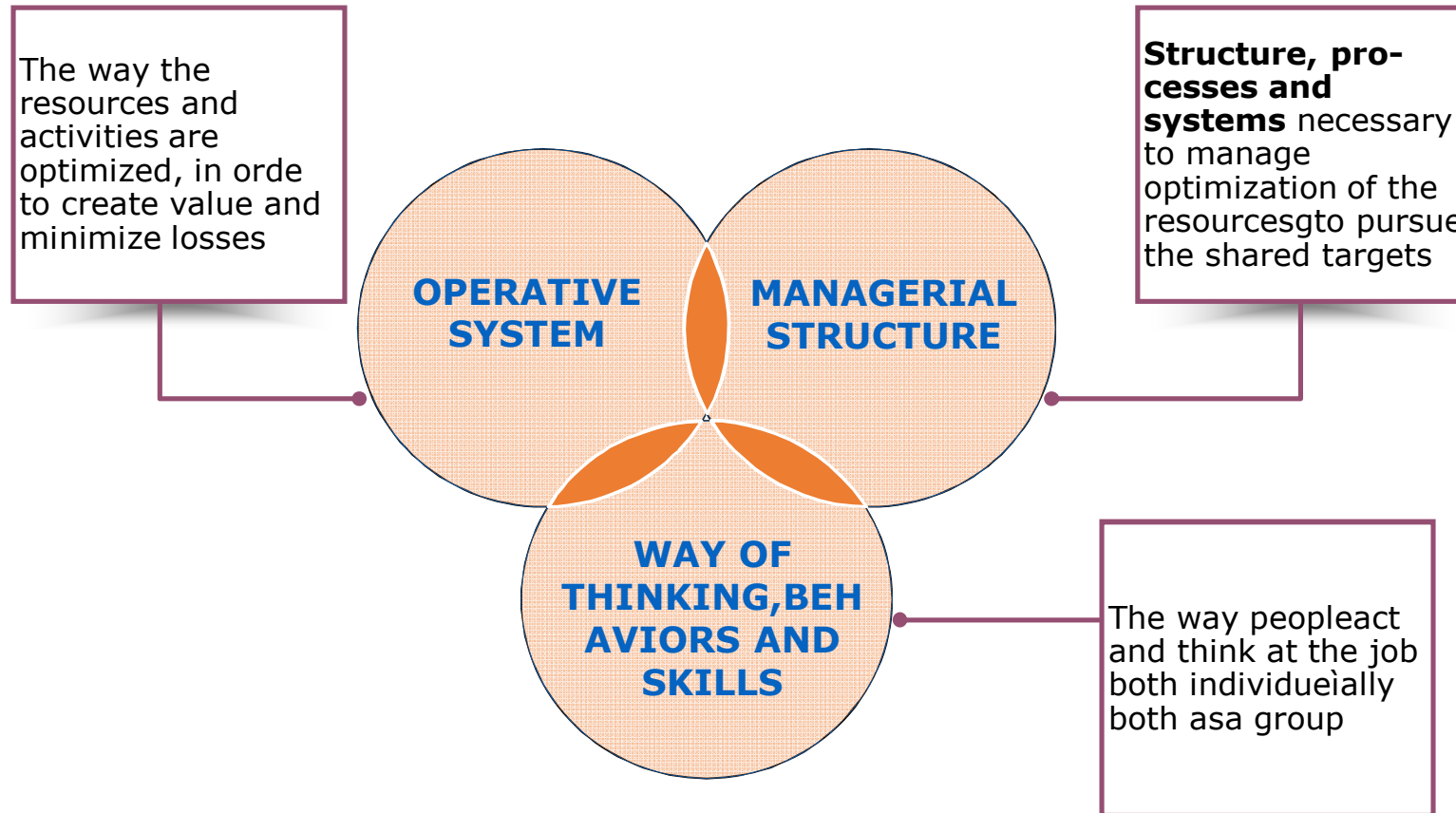
**The Boss draw his employees;  
The Boss rely on authority  
The Boss evokes fear;  
The Boss says "I";  
The Boss demands respect;  
The Boss knows how to do it;  
The Boss indicates the problem;  
responsible**

**The leader inspires them  
The Leader rely on authority  
The Leader radiates enthusiasm.  
The Leader says "we".  
The leader gets it.  
The leader how to get it done;  
The leader takes responsibility and  
indicates the problem**

# LEAN TRANSFORMATION: HOW COULD IT BE SUSTAINABLE?



## 3 KEY DIMENSIONS







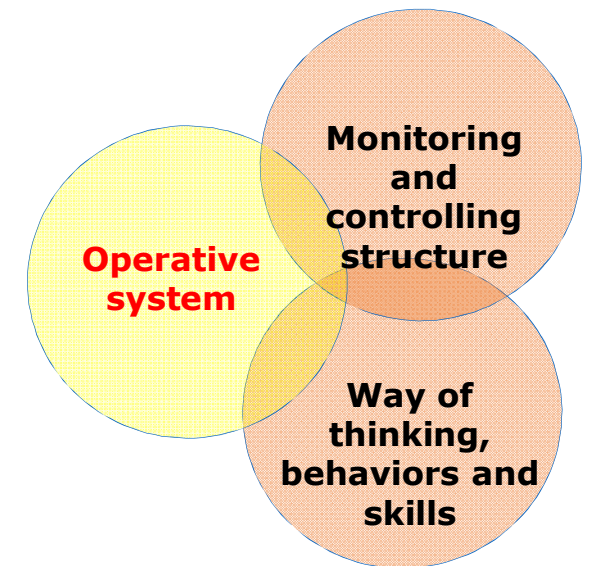
# OPERATIVE SYSTEM

## Principles:

1. Continuous elimination of waste present in the various activities
2. Development of "from start to finish" value flow chains to get the overall performance of the system
3. Priority on people - focus on ergonomics and safety needs in every decision-making process
4. Reduction of the variability elements
5. Continuous improvement  $\ddot{E}$
6. use of process and product improvement techniques

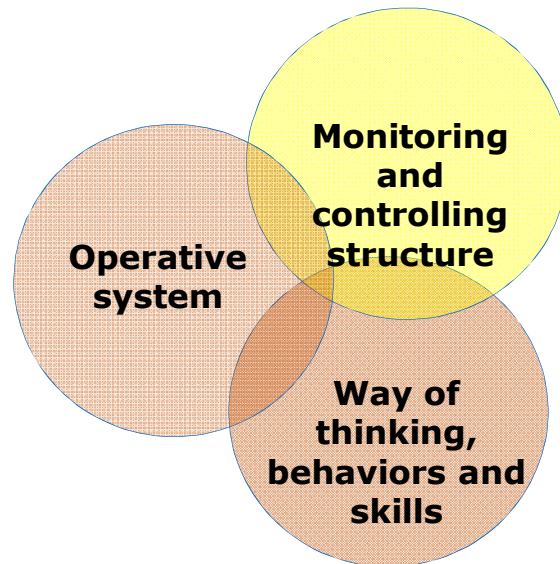
## Elements

1. Flows of materials and information designed to minimize waste
2. Quality system to ensure compliance of the product and processes with the specifications, at each production stage
3. Maintenance systems to maximize reliability and machine operating times at the lowest possible cost





# MONITORING AND CONTROLLING

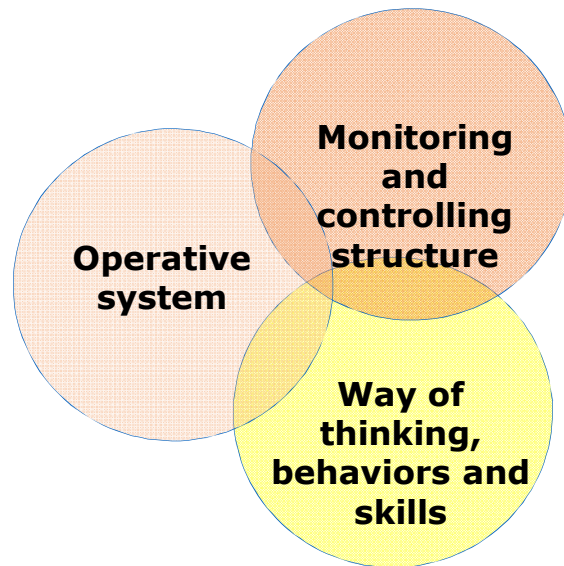


## Elements

1. **KPIs e incentivi** che guidano la trasparenza della performance con dialoghi "costruttivi"
2. **Visual Management** che permette una comunicazione coerente e trasparenza dello status
3. **Misura delle prestazioni del sistema produttivo** che guidano azioni correttive e assicurano l'assunzione di responsabilità
4. **Organizzazione**



# THE CULTURAL SYSTEM



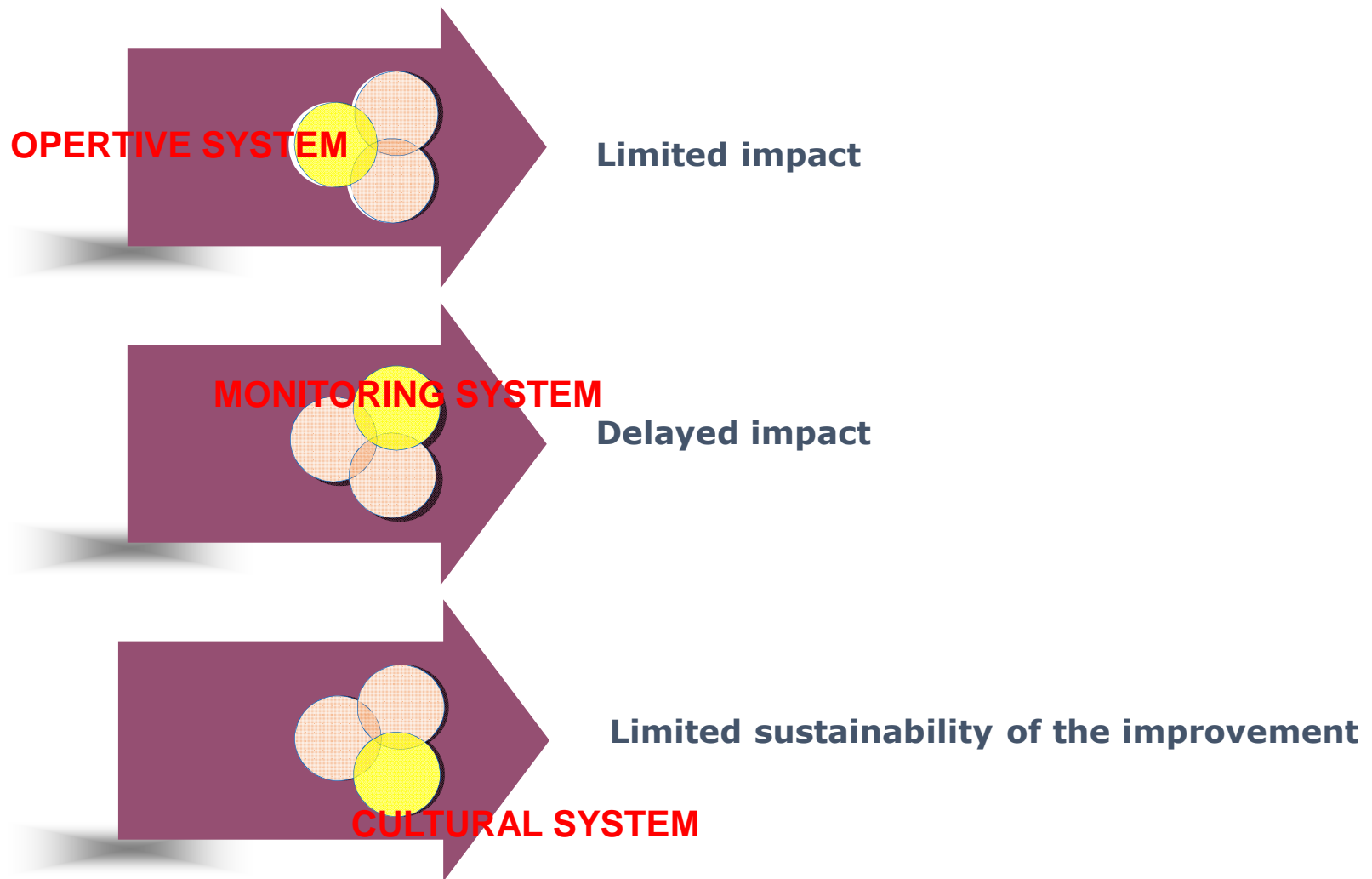
## Elementi

1. Culture of "example" in which leaders consistently adopt new behaviors towards the change
2. Communications that ensure understanding and commitment to improvement and that reach all levels of the organization
3. Development of specific skills and competences at all levels of the organization, both from a technical and managerial point of view / "soft skills"
4. Formal systems and structures that ensure that processes and goals reinforce desired changes and behaviors

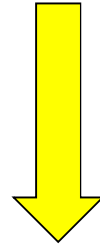


Critical area but often neglected

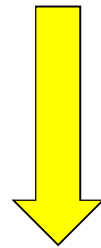
## IMPLEMENTATION OF THE THREE DIMENSIONS



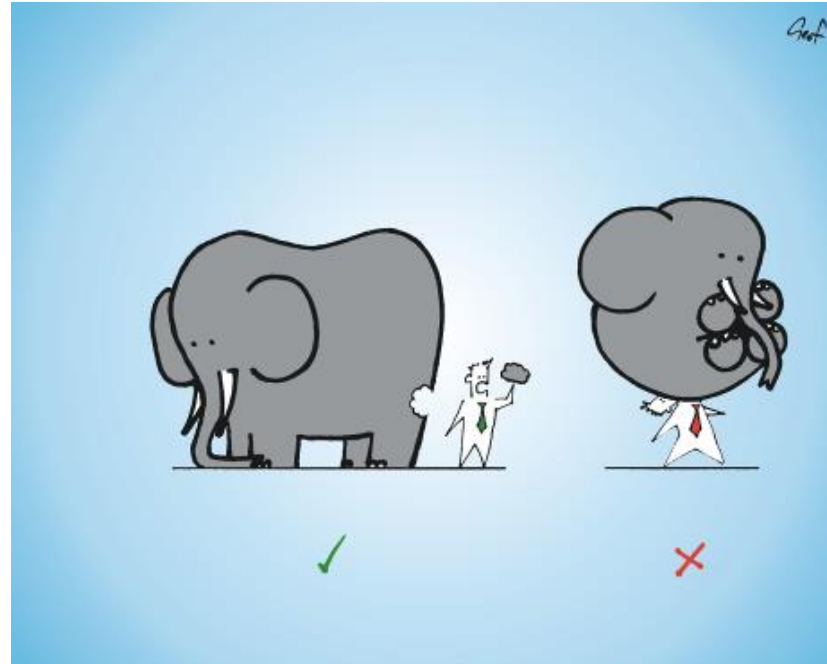
# THE IMPLEMENTATION PLAN



IS IT DIFFICULT TO IMPLEMENT?

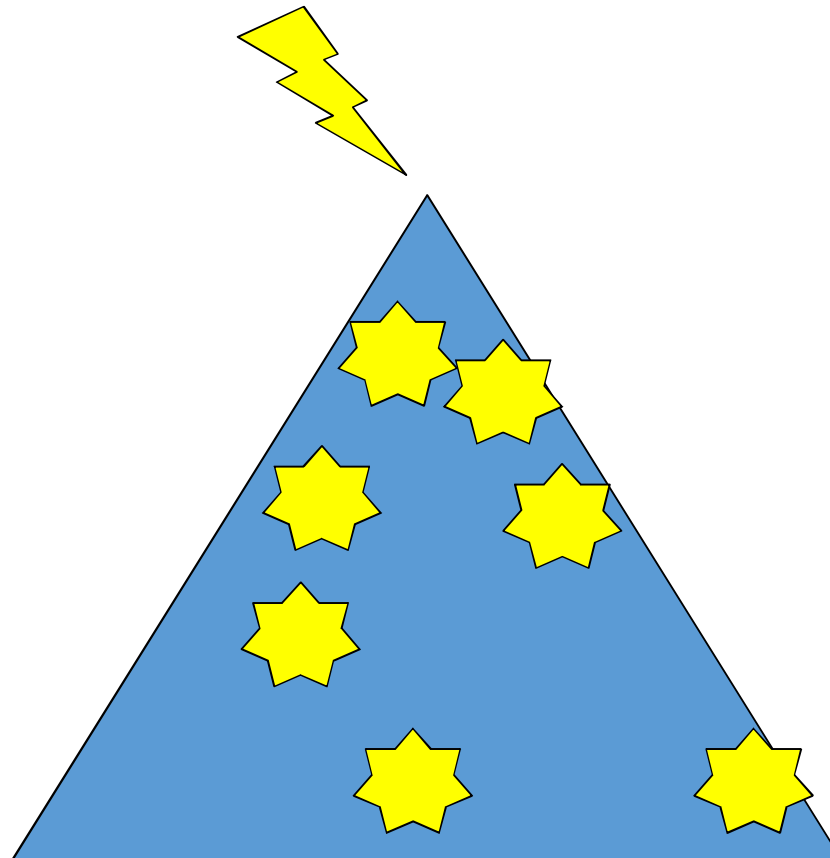


## IT IS LIKE TO EAT AN ELEPHANT

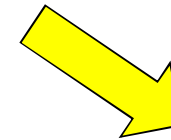


**ONE BITE AT THE TIME!!**

## THE SPARK IGNITES AT THE TOP ON THE COMPANY



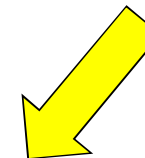
**IT RAISES THE NEED TO KNOW MORE ABOUT IT**



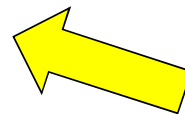
**INFORMATIVE PHASE  
(books, visits, internet,  
colleagues )**



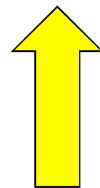
**SEARCH FOR AN EXPERT**



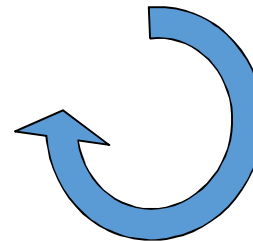
**BIRTH OF THE "PASSION"**



**INVOLVEMENT OF THE FIRST  
LEVEL**

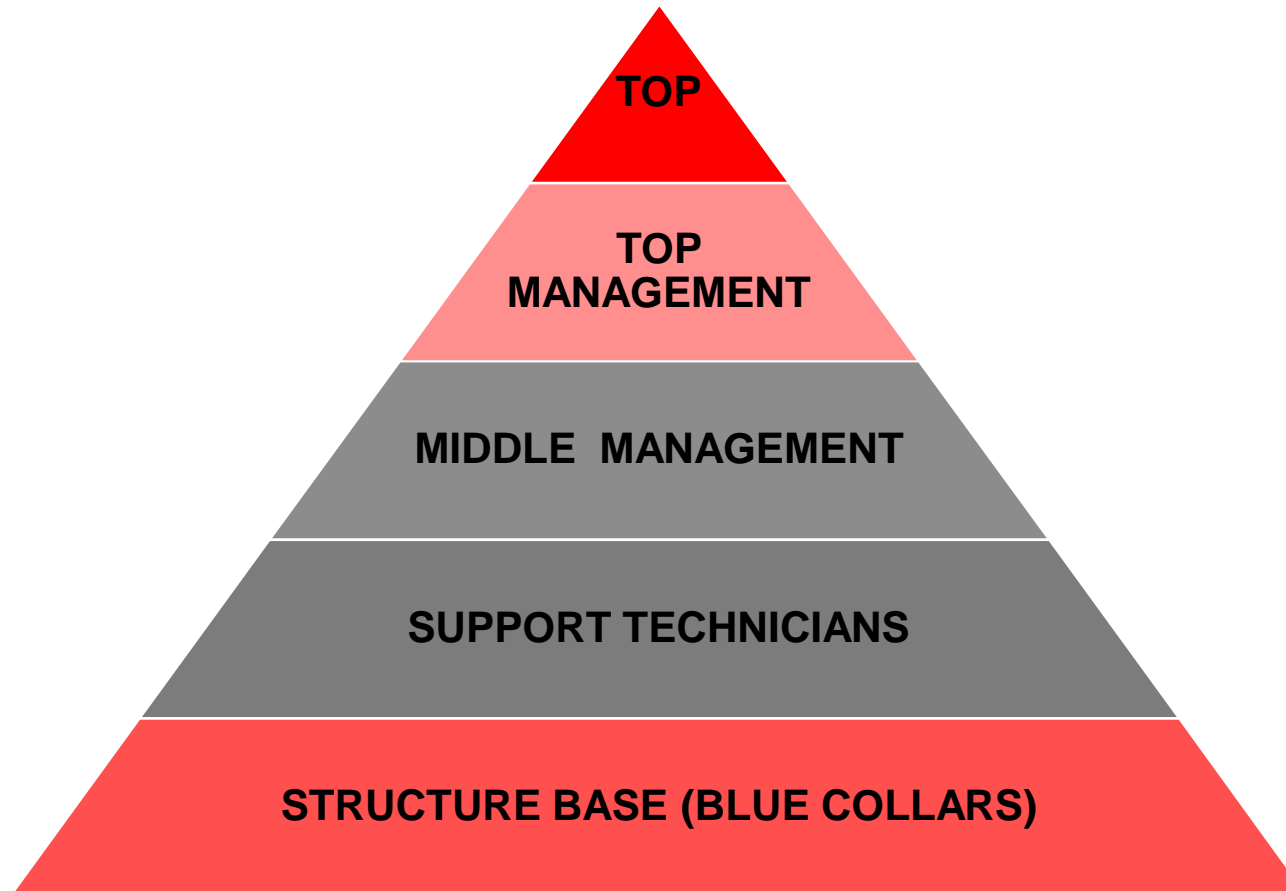


**EXTENSION TO THE REST OF  
THE COMPANY (Training,  
information )**



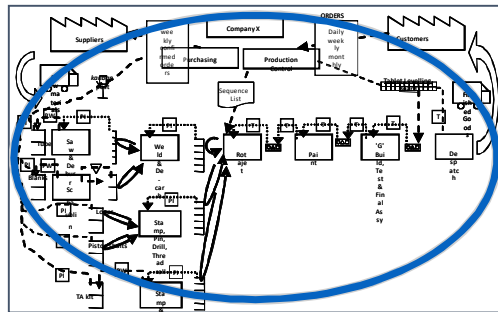


## PSYCHOLOGIC SITUATION AT THE BEGINNING



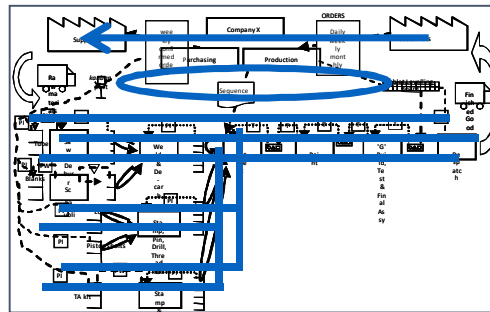
# LEAN TRANSFORMATION

## Carry out all at one



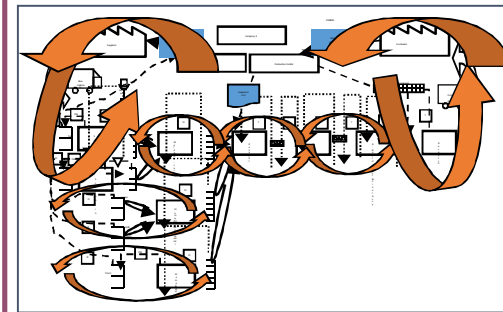
- ⊕ All the employees are aligned to the common targets
- ⊖ High discontinuity level in the system
- ⊖ High risk of poor implementation in some areas
- ⊖ Necessity of a huge amount of resources for training and implementation support

## Involve progressively technological areas



- ⊕ There is a good chance to couple correctly techn. Areas and specialistic trainers
- ⊖ Difficulty to align correctly all the areas
- ⊖ Long time to see the impact of the changes
- ⊖ Necessity of a certain amount of resources for training and implementation support
- ⊖ Difficulty to maintain at high level the motivation

## Perform the change step by step following the Value Stream Mapping



- ⊕ Less time to realise the changes
- ⊕ Low risk to fail
- ⊕ Focalised work team
- ⊕ Less resources for the implementation
- ⊖ Difficulty to maintain a «systematic» perspective



## IMPLEMENTATION PLAN

**Choose lean experts and insist a lot with top management**

**extensive training Start with small examples with a high probability of success (5S, small Kaizens, simple PDCAs, Standards, wastes ...)**

**Never launch messages of elimination of human resources but of reuse for lean activities and growth**

**Simultaneously review the organization by designing a structure that tends to be of PROCESS (= FLOW)**

**Push the figures of Coach and Mentor**

**Always celebrate successes**

**Carefully choose and prepare team leaders**

**Prepare the most suitable indicators for individual areas and share them with operators, but initially focus on projects and activities: the numbers will follow**

**Appoint a "strong" leader to implement and manage the value stream Don't be discouraged by momentary small failures Å Å Å Å Å Å Å**

**ASSESSMENT and continuous benchmarking**

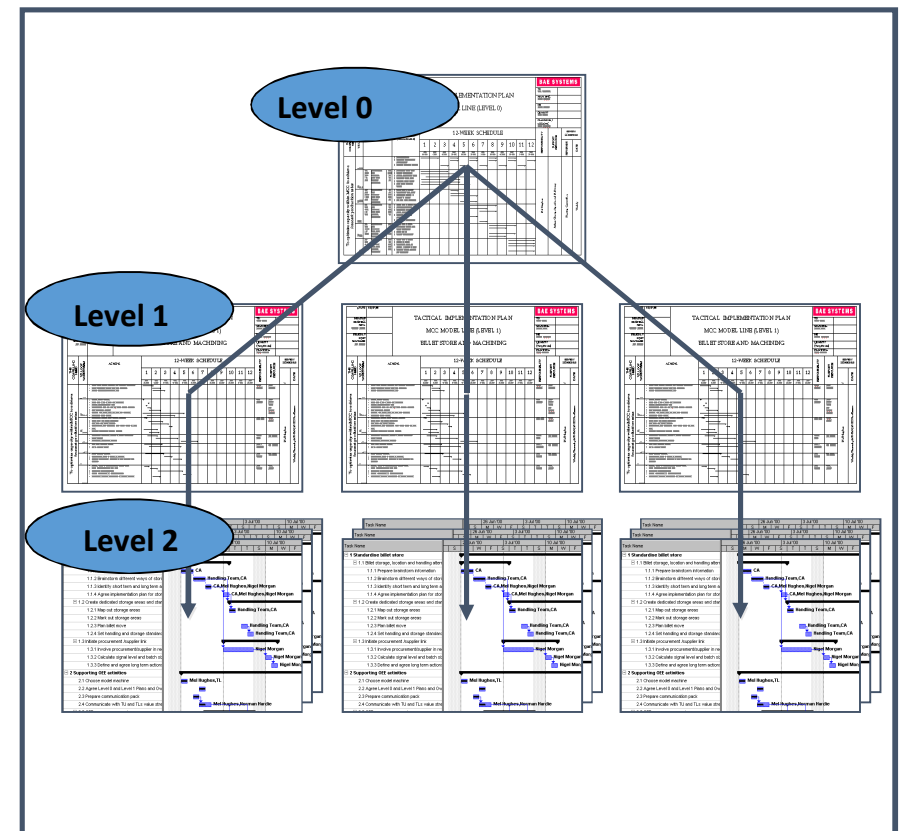
# IMPLEMENTATION PLAN

The implementation plan is a set of structured documents that guide the implementation of the Lean production as designed for the future, specifying necessary activities, their sequence and responsibilities

The implementation sequence is defined to maintain the integrity of the "value chain", driving the changes in order to minimize the discontinuity

The implementation plan is used as reference for the checks to be done during the transformation

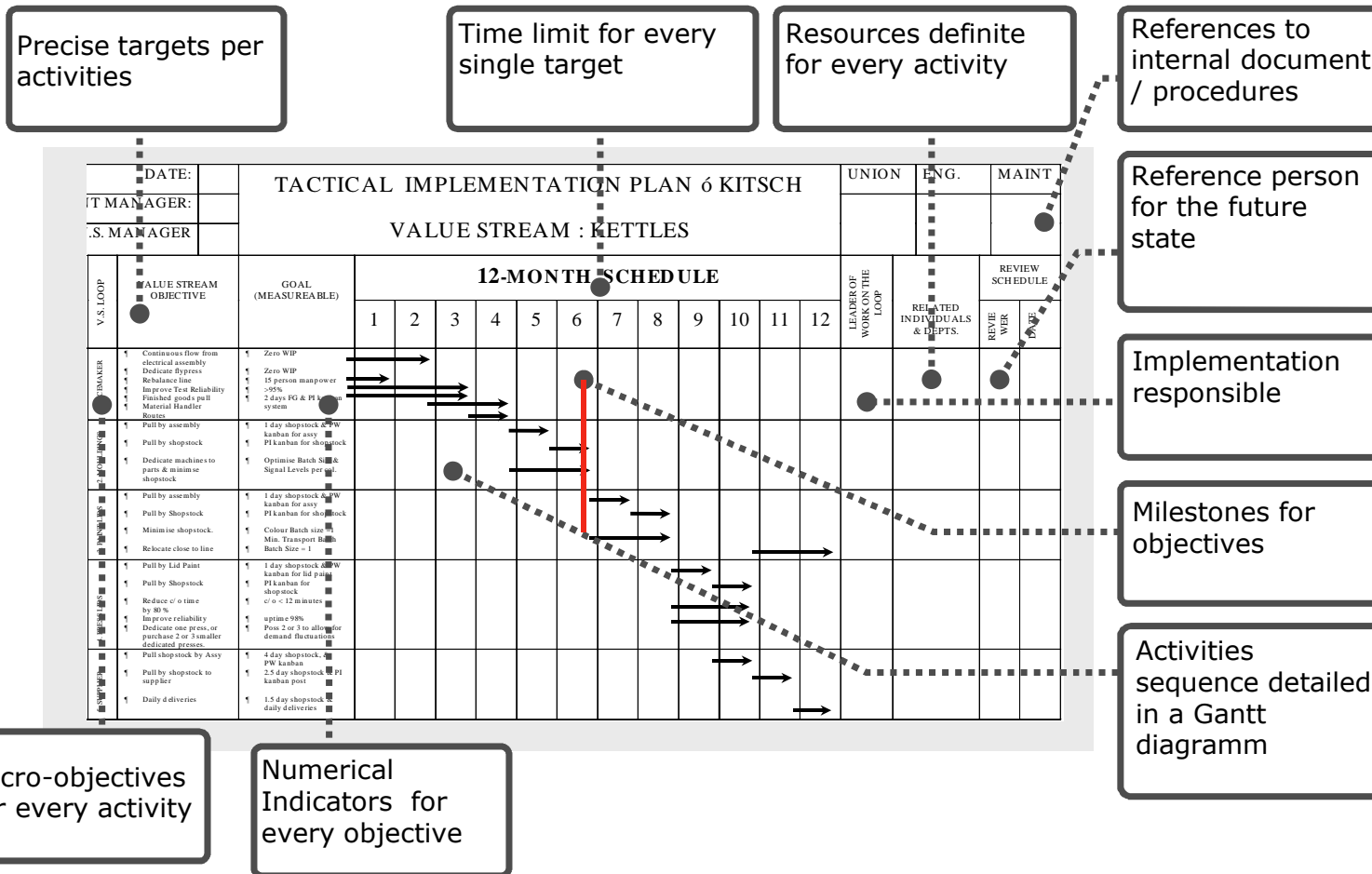
The implementation plan is developed at the beginning of the transformation and each subsequent change is approved by the steering committee



# IMPLEMENTATION PLAN SCHEME

ESEMPIO

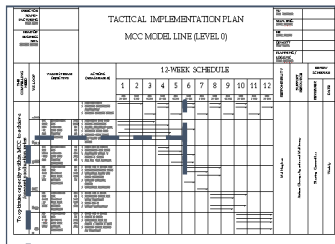
ESEMPIO



# IL PIANO DI IMPLEMENTAZIONE SI ARTICOLA A DIVERSI LIVELLI

Vari livelli di dettaglio per diversi utenti

## Level 0



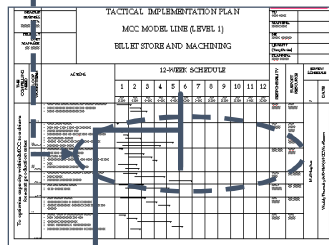
**Plan of the entire initiative at top-level** (e.g. over a 6-12 month time horizon), which includes all work areas / projects

Approved by the General or Production Manager  
Also approved by unit / functional managers  
Clear link between projects and expected impact

## Verifica di avanzamento

Discussions in the steering committee (eg. Monthly frequency)

## Level 1

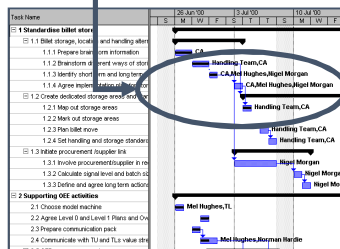


**Plan of activities by process** along the value chain  
Detailed activity week by week

Identification of the unit / functional manager  
Activities and responsibilities of the selected people of the working group  
Also approved by the support functions

Discussions with the Unit/Function responsible (eg. Cweekly frequency)

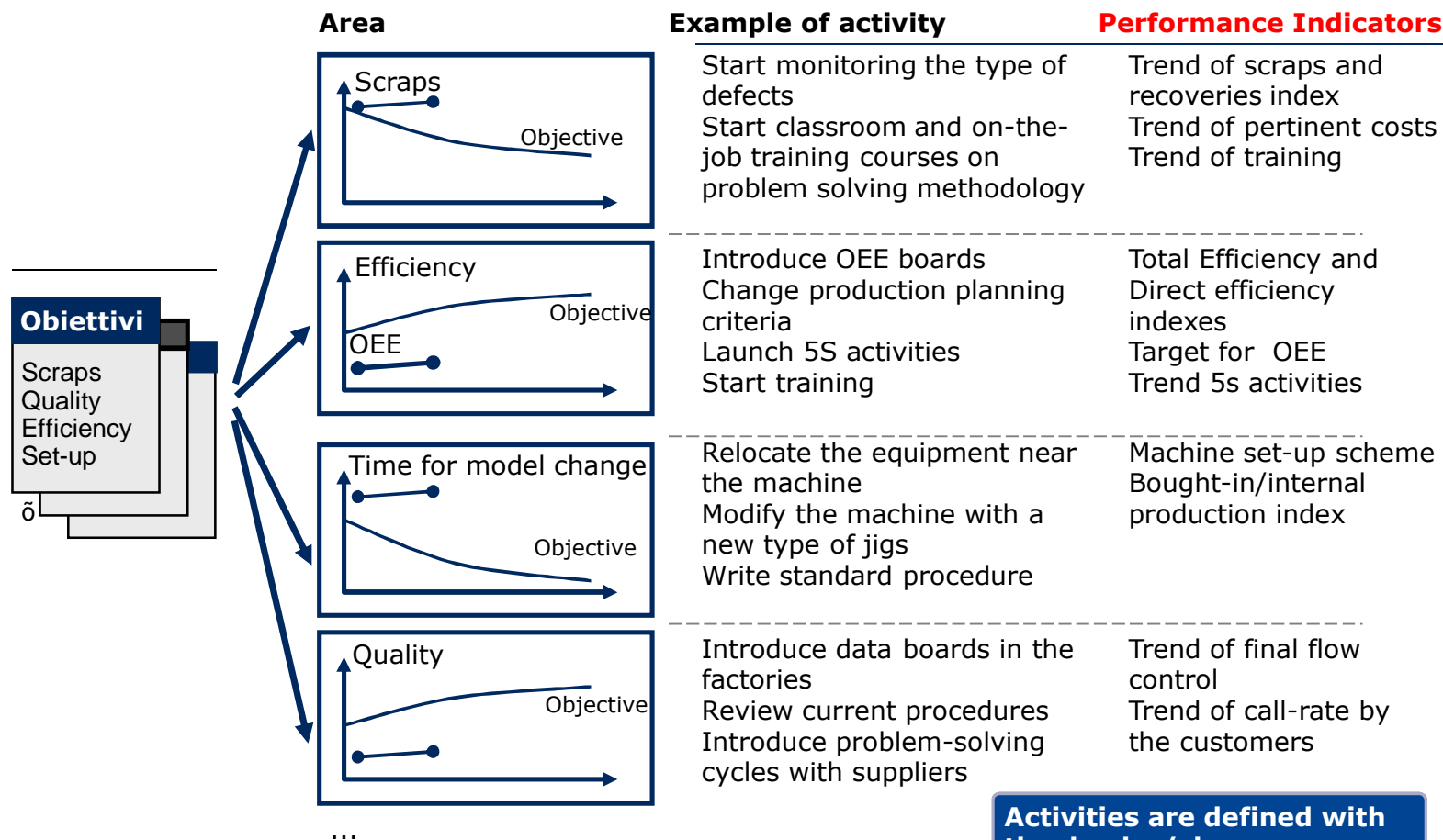
## Level 2



**Detailed plan for production line / area** (only for some complex activities)

Developed by change agents (at the start of activities or during execution)  
Clear definition of implementation responsibilities

Discussions with i /change leaders (eg. Daily frequency)



**Activities are defined with the leader/change responsible, coherent with the Future state**



<b>TECHNIQUES AND TOOLS</b>					<b>7 TOOLS</b>	<b>DATA COLLECTION SHEETS</b>	
						<b>STRATIFICATION</b>	
						<b>CORRELATION</b>	
						<b>PARETO'S DIAGRAM</b>	
						<b>ISTOGRAMS</b>	
						<b>CONTROL CHARTS</b>	
						<b>ISHIKAWA DIAGRAM</b>	
					<b>ONE POINT LESSON</b>		
					<b>A3</b>	<b>5 WHYS</b>	
					<b>KEY PERFORMANCE INDICATORS</b>		
					<b>5 S</b>		
				<b>YAMAZUMI</b>	<b>ANDON</b>	<b>FLASH MEETINGS</b>	
				<b>TAKT TIME</b>	<b>VISUAL MANAGEMENT</b>	<b>GROUP WORK</b>	
			<b>ERGONOMY</b>	<b>KANBAN</b>	<b>STANDARDIZATION</b>	<b>EMPOWERMENT</b>	
			<b>TPM</b>	<b>KAIKAKU</b>	<b>PDCA</b>	<b>INVOLVEMENT</b>	
			<b>SMED</b>	<b>JIT</b>	<b>POKAYOKE</b>	<b>AGREEMENT</b>	
		<b>SPAGHETTI CHART</b>	<b>OEE</b>	<b>HEIJUNKA</b>	<b>KAIZEN</b>	<b>INFORMATION</b>	
	<b>WASTES</b>	<b>LABOUR TIMES STUDY</b>	<b>ONE PIECE FLOW</b>	<b>FROM PUSH TO PULL</b>	<b>SIX SIGMA</b>	<b>COMMUNICATION</b>	
	<b>HOSHIN KANRI</b>	<b>CURRENT VMS</b>	<b>FUTURE VSM</b>	<b>PULL</b>	<b>JIDOKA</b>	<b>MOTIVATION RESEARCH</b>	
	<b>PRINCIPLES</b>	<b>DEFINE THE VALUE</b>	<b>IDENTIFY THE VALUE FLOW</b>	<b>SET UP FLOW ACTIVITIES</b>	<b>MANUFACTURE PULLING THE PRODUCTION</b>	<b>RESEARCH PERFECTION</b>	<b>ATTENTION TO PEOPLE</b>
<b>FOCUS</b>	<b>CUSTOMER</b>			<b>QUALITY</b>		<b>EMPLOYEES</b>	