

DEWI HARDININGTYAS, ST, MT, MBA



# #4\_PROSES PRODUKSI, NILAI TAMBAH, & PRODUKTIVITAS

ANALISA DAN PENGUKURAN KERJA



# OUTLINE

**Aktivitas Produksi**

**Sistem Produksi**

**Produktivitas**

***Productivity Improvement***

# ABAD – ABAD PERUBAHAN

Alfin Toffler

Agricultural Age

Industrial Age

Information Age

Next Age ...

Wealth definition

*food*

*food &  
things*

*knowledge*

People work as

*slaves/serfs  
(man power)*

*employees  
(human resource)*

*partners  
(human capital)*

People work in

*hierarchies  
organization*

*bureaucracies  
organization*

*Team-nets/networks  
organization*

Production  
system

*one-piece  
customization*

*mass-production  
mfg system*

*mass-customization  
mfg-system*

Scarcity of resources

Abundance of information



# PERKEMBANGAN ATRIBUT KOMPETENSI



Cost

Quality

Delivery

Flexibility/  
Responsiveness

Innovation

1800

1960

1970

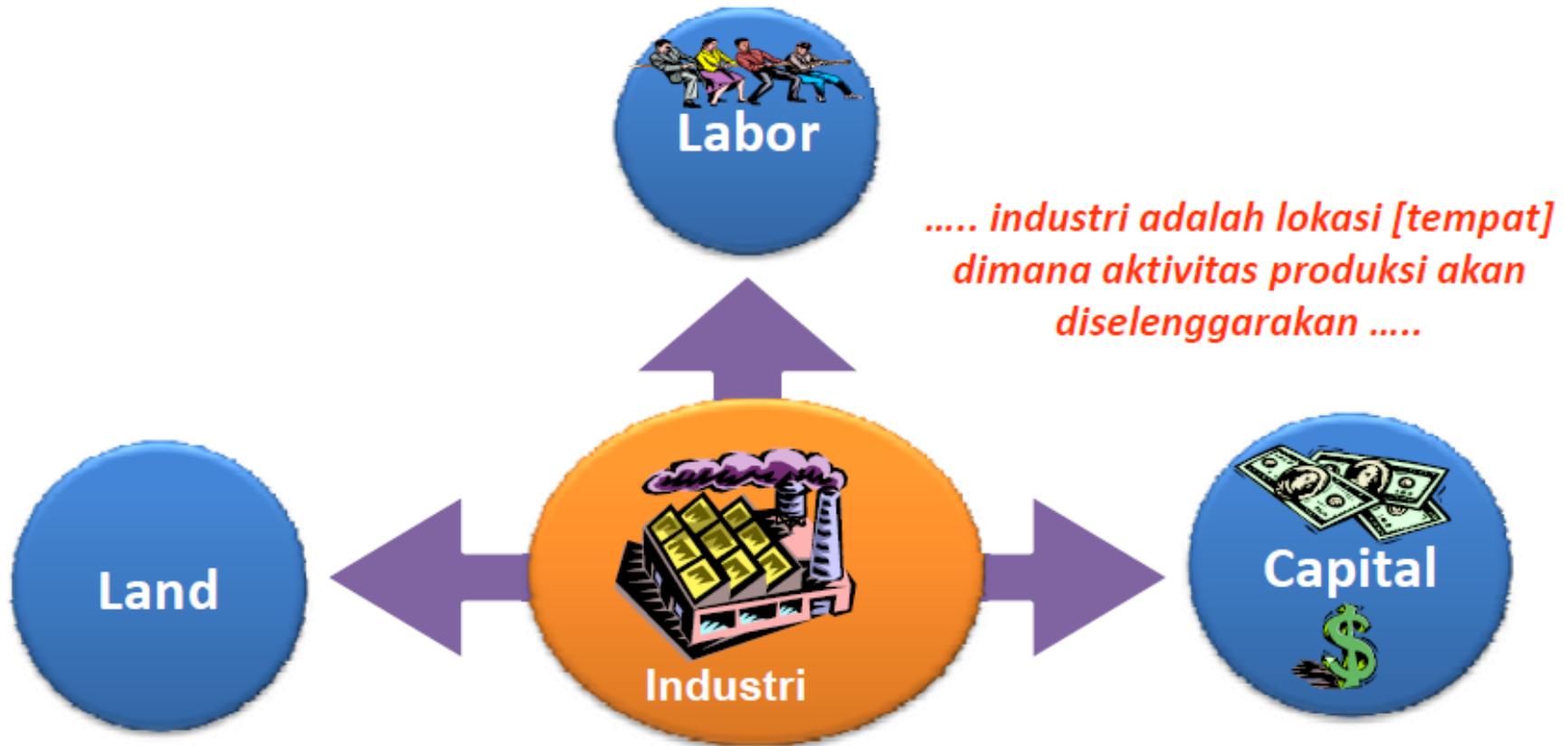
1980

1990

2000

Hemat energi ???  
Environmental friendly???

# AKTIVITAS PRODUKSI



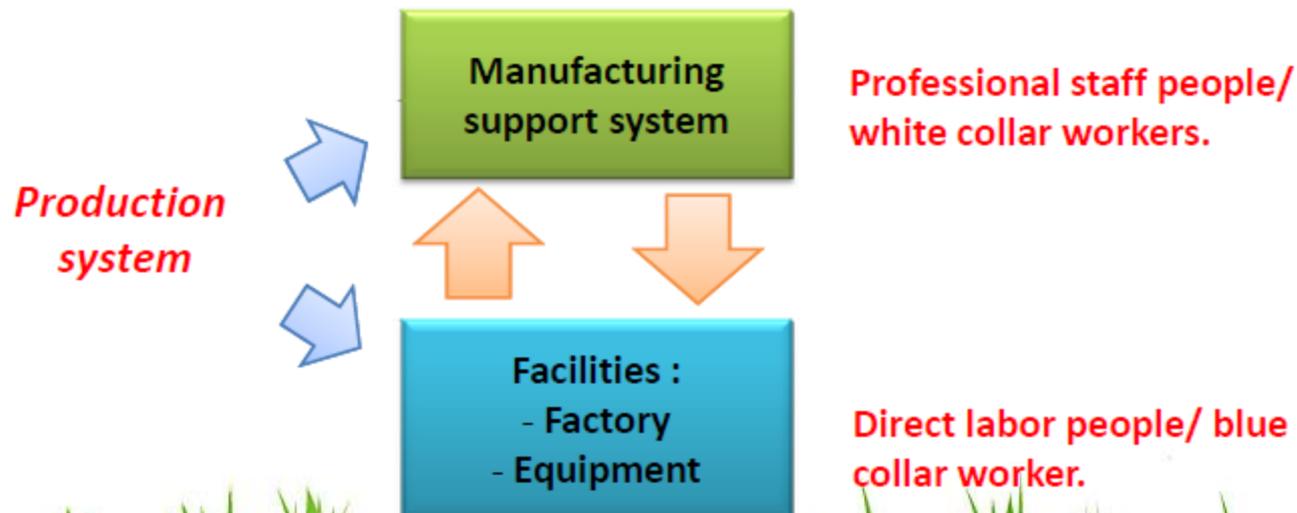
**AKTIVITAS PRODUKSI** : sekumpulan aktivitas yang diperlukan untuk merubah satu kumpulan masukan [inputs] menjadi produk luaran akhir [finished goods output] yang memiliki nilai tambah

# PRODUCTION SYSTEM

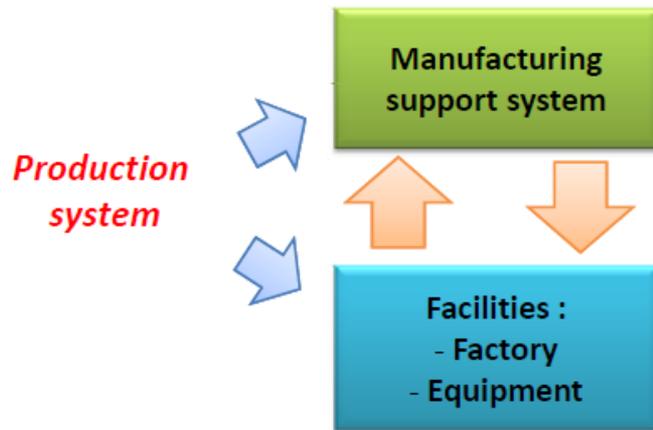


# PRODUCTION SYSTEM

- *The production system is the collection of people, equipment, and procedures organized to accomplish the manufacturing operations of a company (or other organization).*
- **Sistem produksi adalah kumpulan orang, peralatan, dan prosedur/ aturan – aturan yang dikelola sedemikian rupa dalam rangka melaksanakan operasi – operasimanufaktur dalam sebuah pabrik.**
- *Production system can be divided into two categories or levels :*



# PRODUCTION SYSTEM

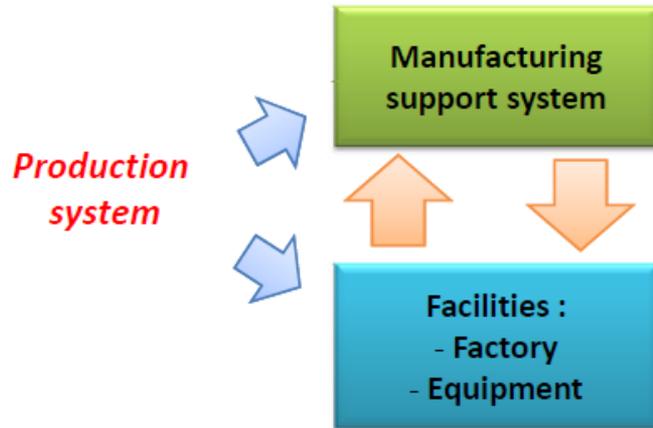


**MANUFACTURING SUPPORT SYSTEM** : terdiri atas karyawan dan suatu rangkaian prosedur/ aturan yang digunakan oleh perusahaan u/ me-manage produksi, memecahkan problem teknis dan logistik yang terkait dengan order material, menjamin kesesuaian kualitas, perancangan produk, dan fungsi – fungsi bisnis lainnya.

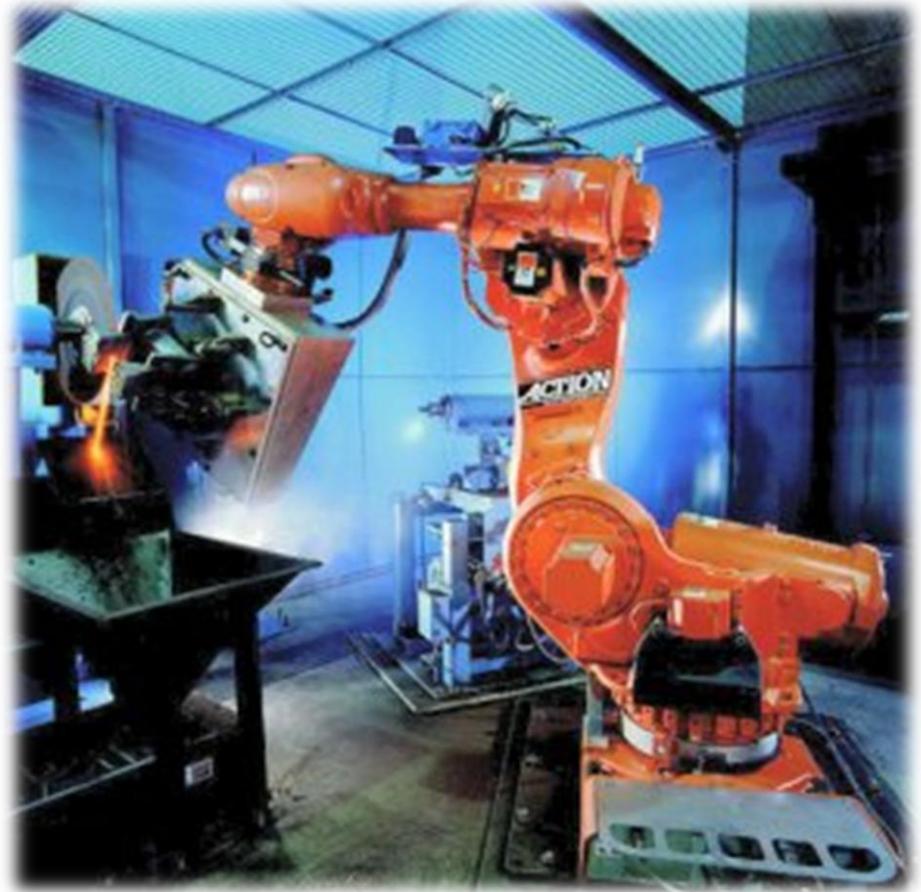
MSS dalam sistem produksi secara umum tidak memiliki kontak langsung dengan benda kerja yang sedang mengalami proses produksi.



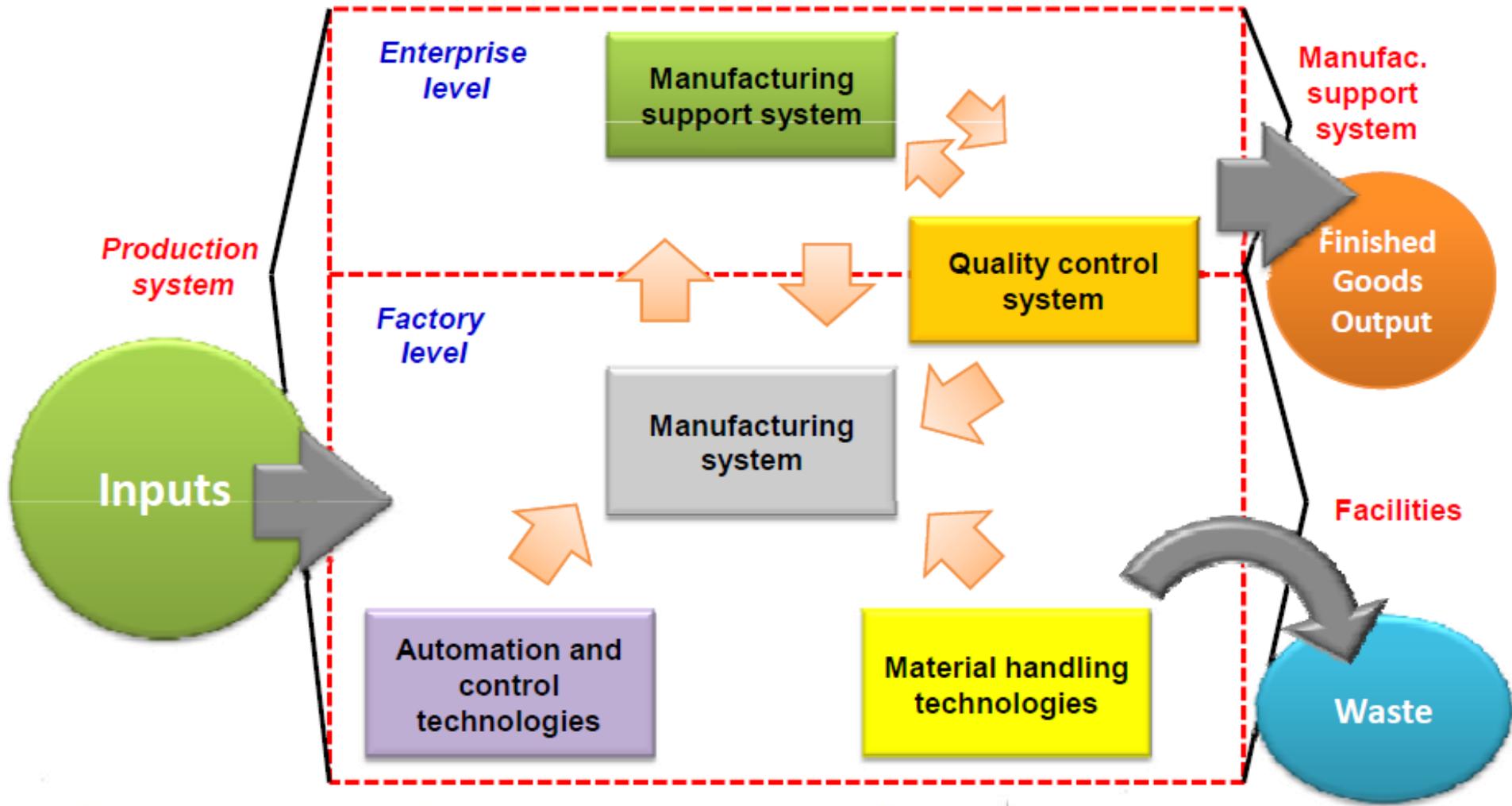
# PRODUCTION SYSTEM



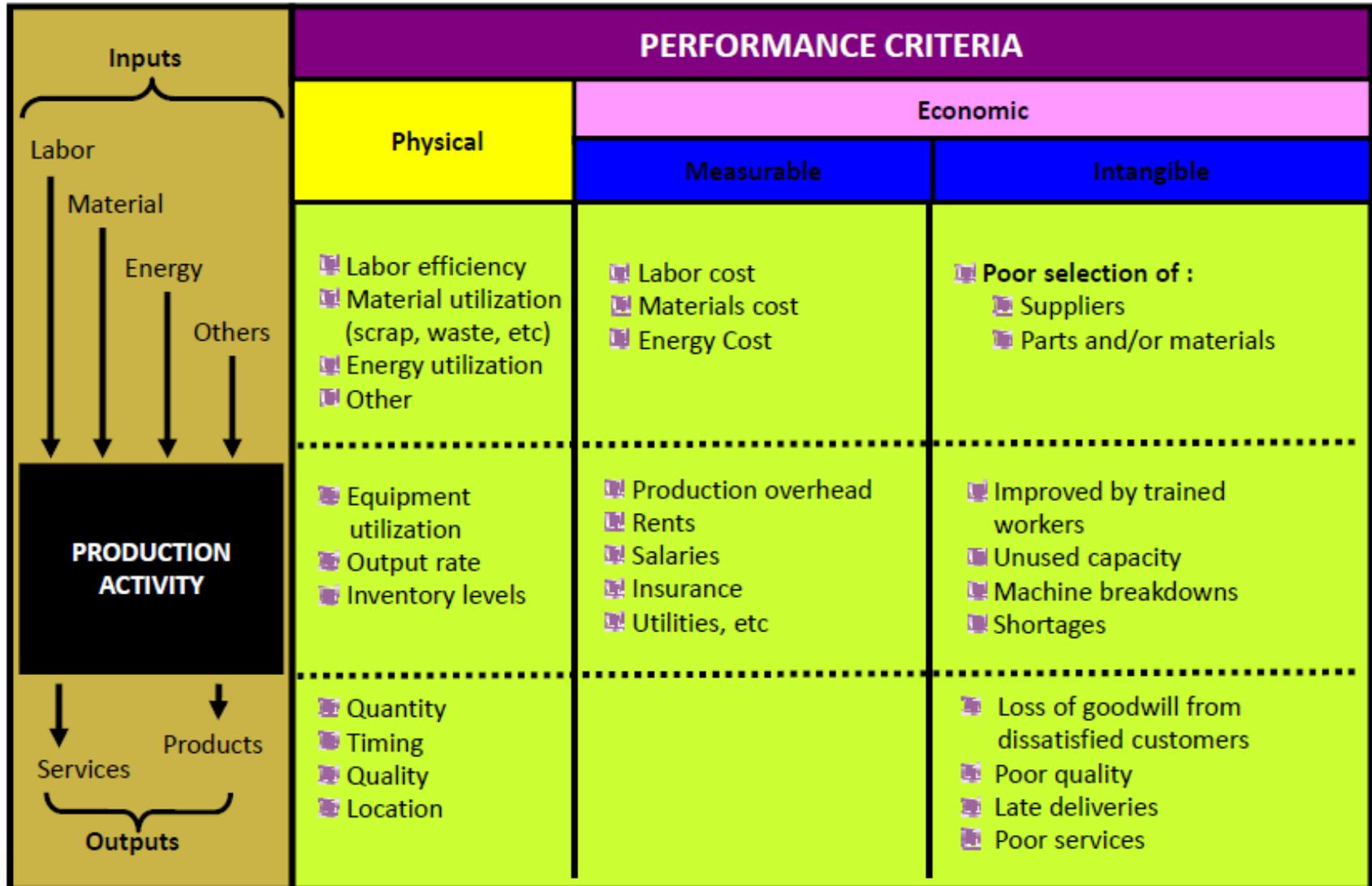
**FASILITAS PRODUKSI** : terdiri atas pabrik, peralatan – peralatan produksi yang ada didalamnya, dan cara pengorganisasian peralatan tersebut.



# PRODUCTION SYSTEM : a big picture



# EVALUATING PRODUCTION SYSTEM



# PRODUCTIVITY

DEFINITION	REFERENCE
Productivity is what man can accomplish with material, capital and technology. Productivity is mainly an issue of personal manner. It is an attitude that we must continuously improve ourselves and the things around us	Japan Productivity Centre, 1958
Productivity $\frac{1}{4}$ units of output/units of input	Chew, 1988
Productivity is defined as the ratio of what is produced to what is required to produce it. Productivity measures the relationship between output such as goods and services produced, and inputs that include labour, capital, material and other resources	Hill, 1993
Productivity means how much and how well we produce from the resources used. If we produce more or better goods from the same resources, we increase productivity. Or if we produce the same goods from lesser resources, we also increase productivity. By “resources”, we mean all human and physical resources, i.e. the people who produce the goods or provide the services, and the assets with which the people can produce the goods or provide the services	Bernolak, 1997
Productivity is the ability to satisfy the market’s need for goods and services with a minimum of total resource consumption	Moseng and Rolstada’s, 2001

# EFFICIENCY, EFFECTIVENESS, AND PRODUCTIVITY



## DEFINITION of EFFICIENCY

Efficiency is a measure of how economically the firm's resources are utilised when providing the given level of customer satisfaction

do the things right

## DEFINITION of EFFECTIVENESS

Effectiveness refers to the extent to which the customer requirements are met

do the right things

The



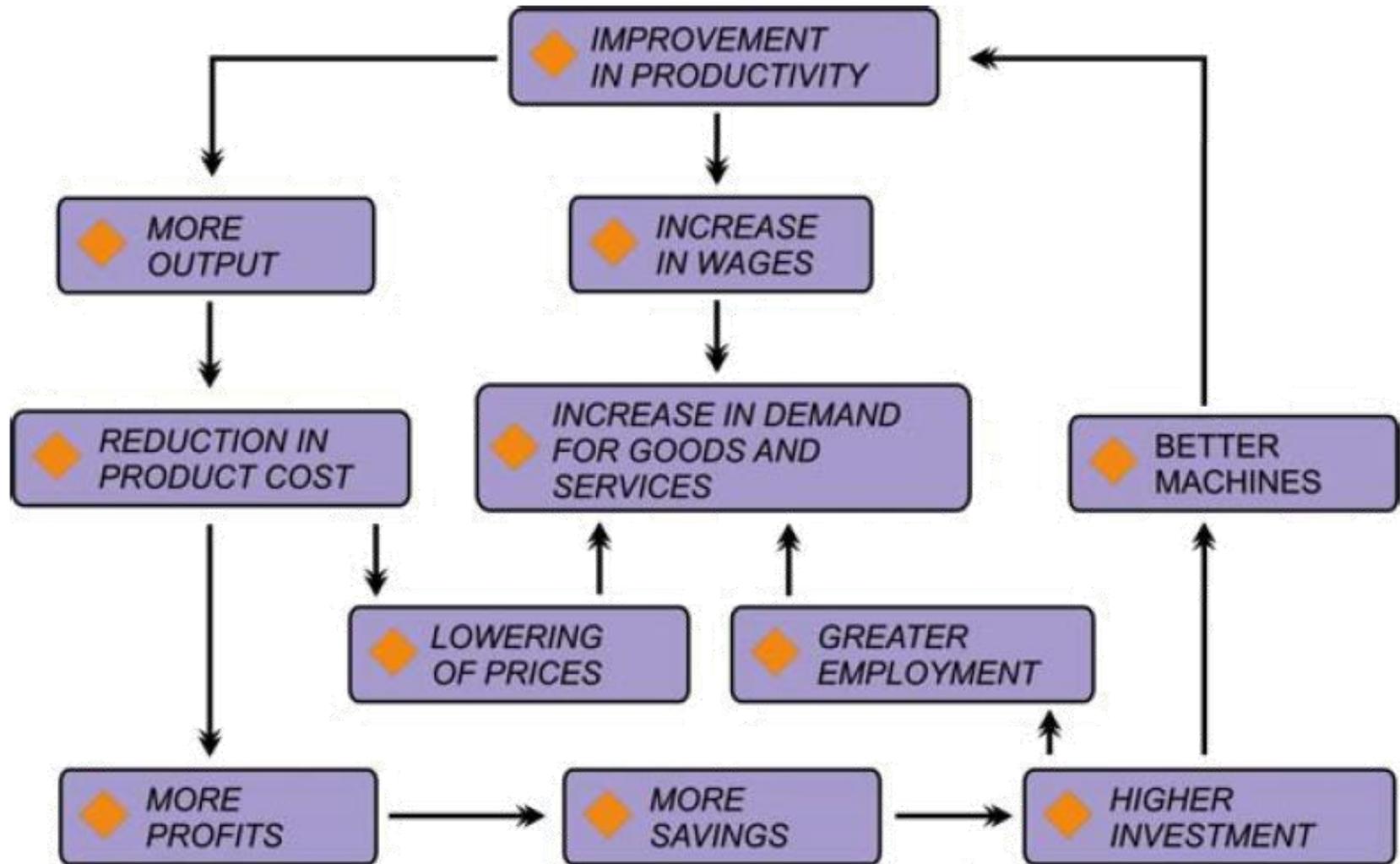
of Personal  
Productivity

$$\text{produktivitas} = \frac{\text{output yang dihasilkan}}{\text{input yang dikeluarkan}}$$

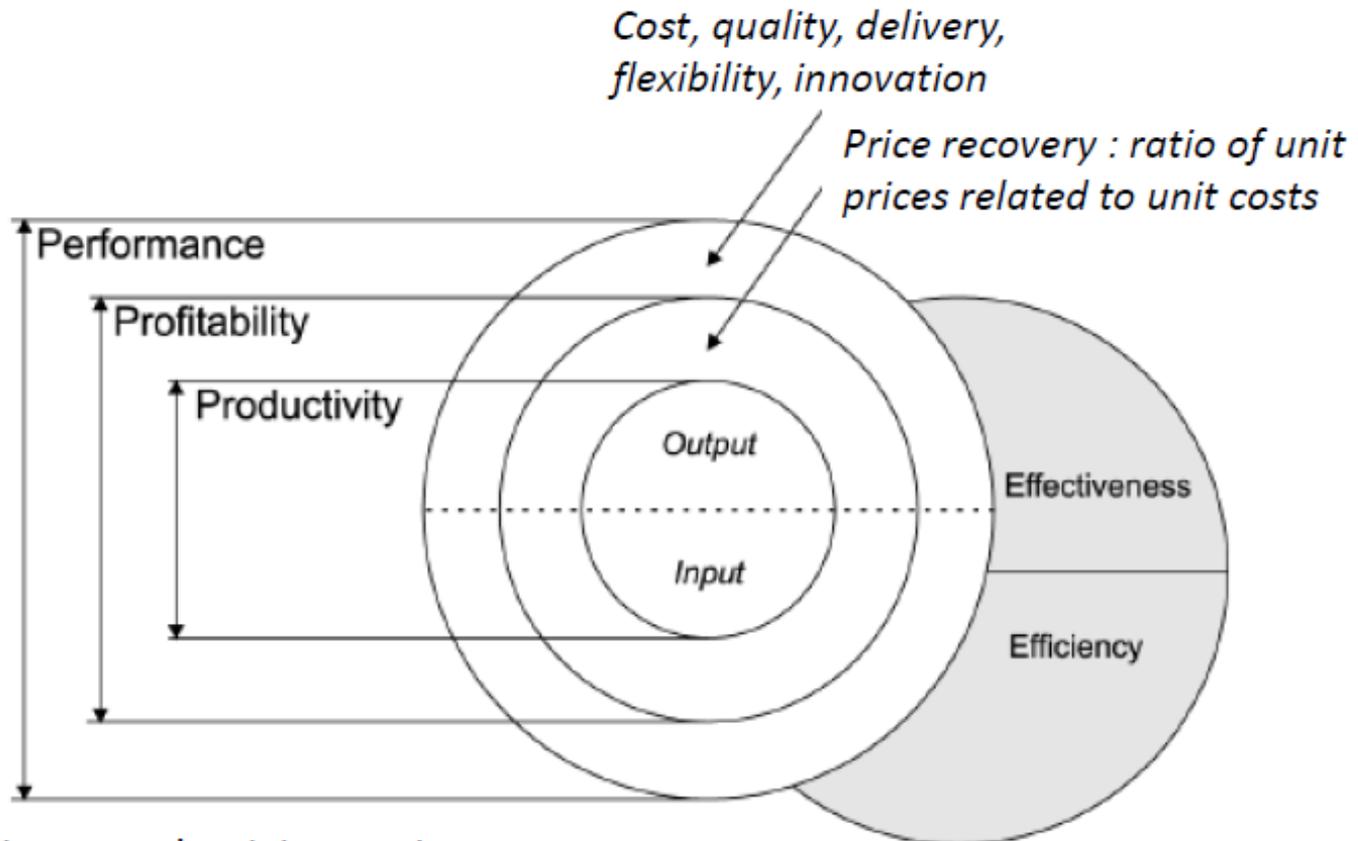
$$\text{produktivitas} = \frac{\text{hasil yang sukses dicapai}}{\text{sumber daya yang dikonsumsi}}$$

$$\text{produktivitas} = \frac{\text{efektivitas}}{\text{efisiensi}}$$

# DINAMIKA PRODUKTIVITAS

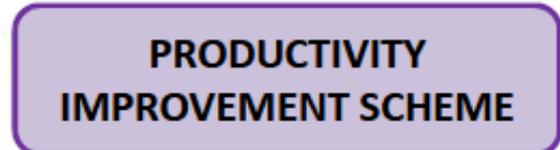


# THE TRIPLE P MODEL



- $\text{profitability} = \text{productivity} + \text{price recovery}$
- Performance is the umbrella term of excellence and includes profitability and productivity as well as other non-cost factors such as quality, delivery, flexibility, and innovation

# PRODUCTIVITY IMPROVEMENT SCHEME



◆ WORK SMARTER

$$\frac{\text{OUTPUT}}{\text{INPUT}} = \frac{\uparrow}{=}$$

◆ REDUCE COST

$$\frac{\text{OUTPUT}}{\text{INPUT}} = \frac{=}{\downarrow}$$

◆ PARE DOWN

$$\frac{\text{OUTPUT}}{\text{INPUT}} = \frac{\downarrow}{\downarrow\downarrow}$$

◆ WORK EFFECTIVELY

$$\frac{\text{OUTPUT}}{\text{INPUT}} = \frac{\uparrow}{\downarrow}$$

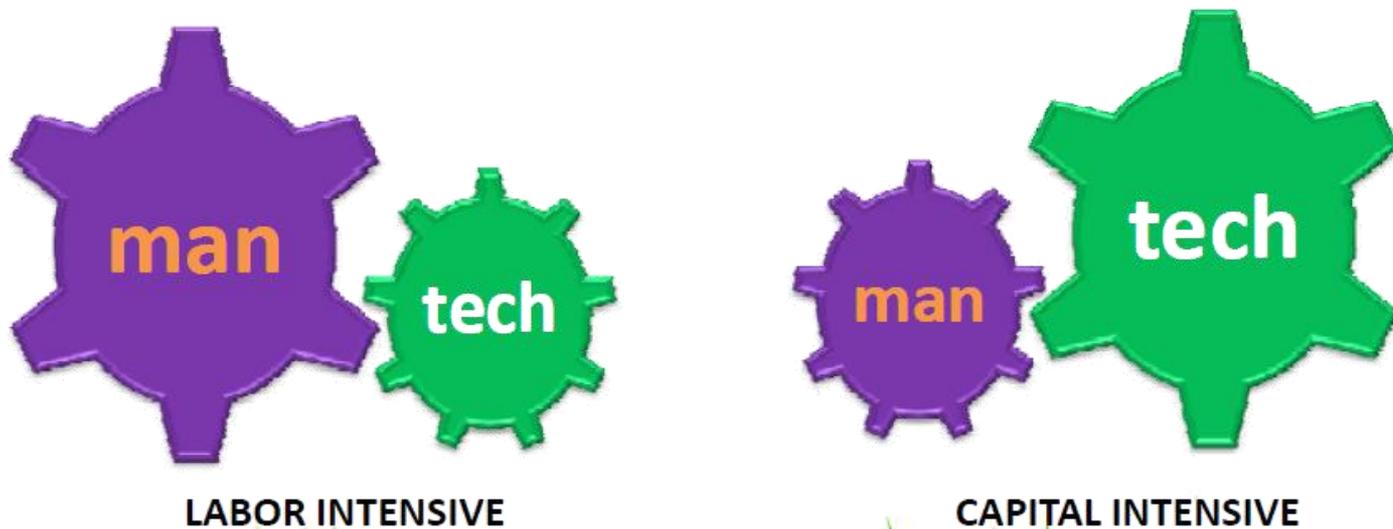
◆ MANAGE GROWTH

$$\frac{\text{OUTPUT}}{\text{INPUT}} = \frac{\uparrow\uparrow}{\uparrow}$$

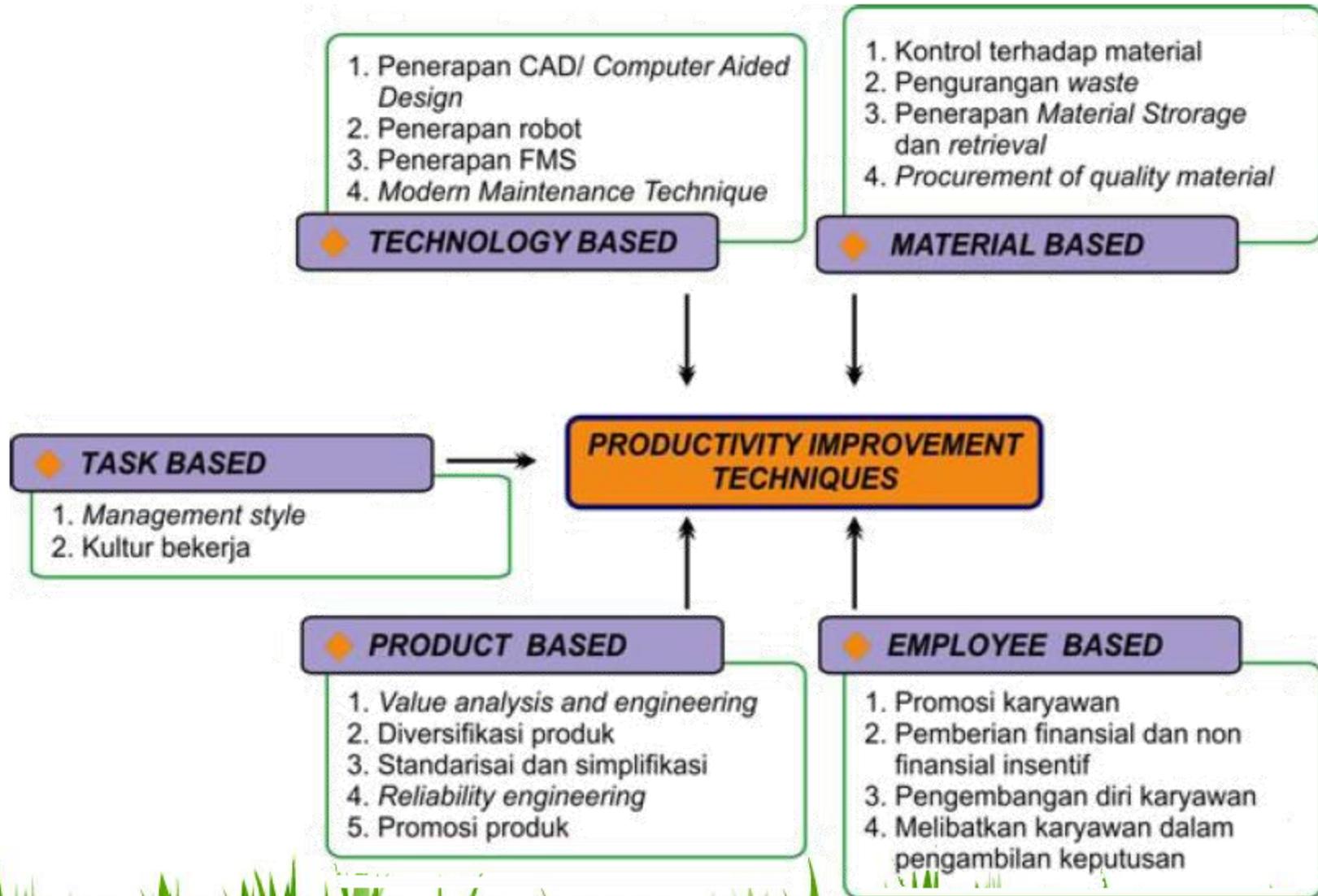


# PRODUCTIVITY IMPROVEMENT STRATEGY

- **TEKNOLOGI** : Hardware [mesin & fasilitas produksi] dan Software [metode kerja yang lebih sistematis, sederhana, logis dan efisien]. Pengembangan konsep "*Scientific Management*" [F.W. Taylor].
- **MANUSIA/TENAGA KERJA [brainware, human system approach]** : Ability (knowledge, skill) dan motivasi, attitude, dsb. Pengembangan pemikiran ttg perilaku manusia dalam aktivitas kerja [Frank & Lillian Gilbreth].



# PRODUCTIVITY IMPROVEMENT STRATEGY



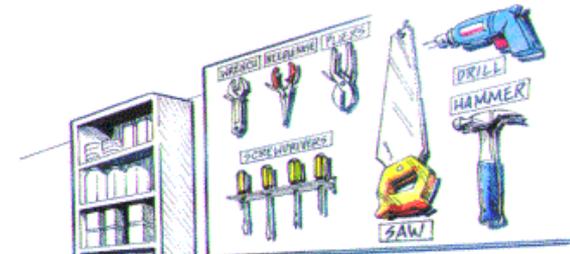
# PRODUCTIVITY IMPROVEMENT TOOLS

## Japanese Techniques:

- 5S
- QCC
- Lean production/ TPS
- Six sigma
- etc.



**1. Sort**



**2. Stabilize**

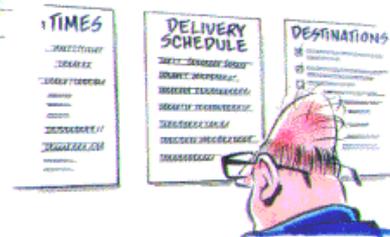


**5. Sustain**

# 5 S's

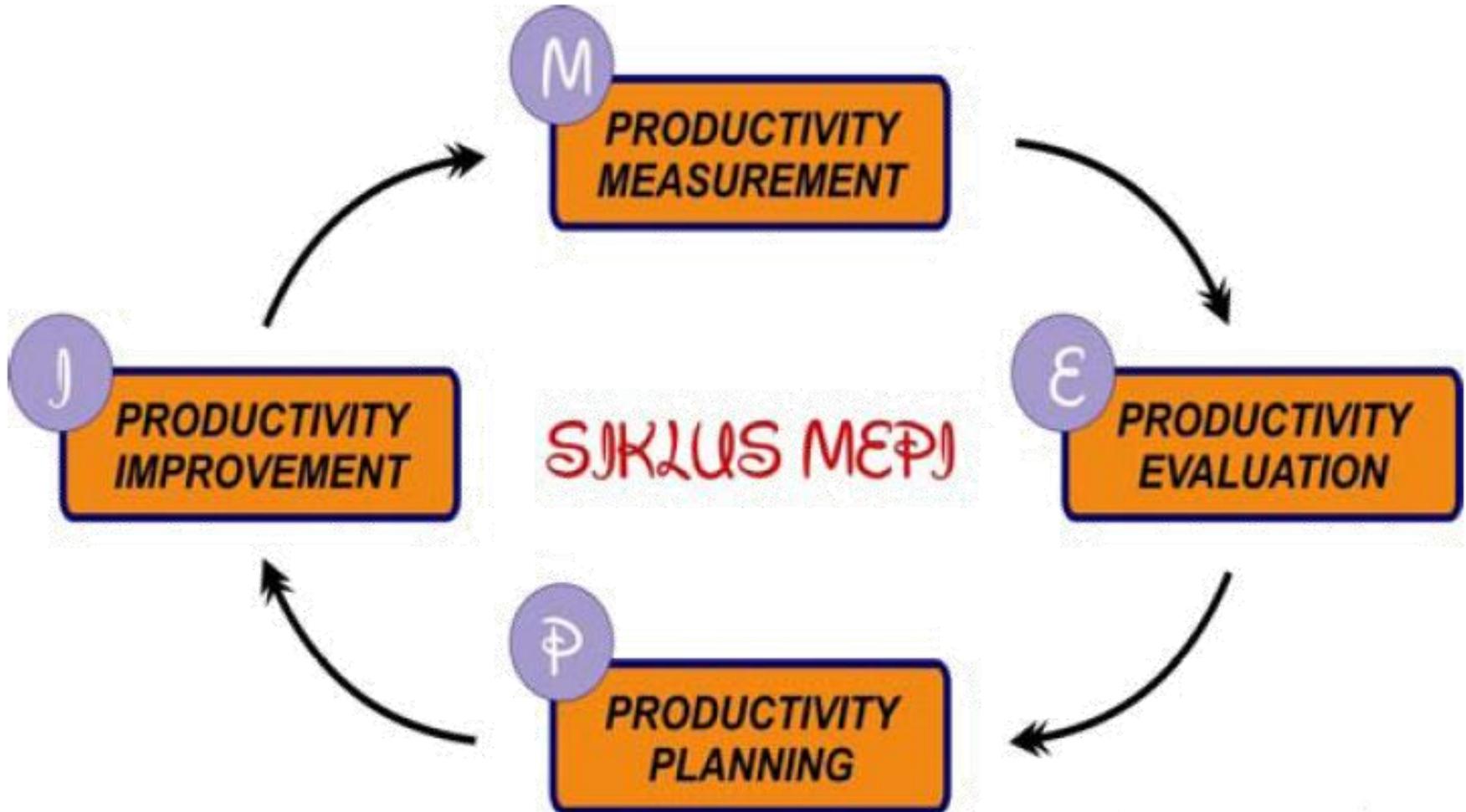


**3. Shine**



**4. Standardize**

# SIKLUS MEPI



# PRODUCTIVITY IMPROVEMENT TECHNIQUES

## PARTIAL PRODUCTIVITY MEASURE [PPM]

Adalah rasio dari output terhadap satu kelas *input*. Kelas *input* yang dimaksud disini adalah *input* material, modal, manusia, energi dan lain-lain

$$\text{produktivitas } n = \frac{\text{Output}}{\text{Input } n}$$

## TOTAL PRODUCTIVITY MEASURE [TPM]

Adalah rasio dari total *output* dengan akumulasi dari keseluruhan faktor *input*. Pengukuran ini merefleksikan seluruh dampak dari keseluruhan *input* di dalam memproduksi *output*

$$\text{produktivitas total} = \frac{\text{output total}}{\text{Input total}}$$

## TOTAL FATCTOR PRODUCTIVITY MEASURE [TFPM]

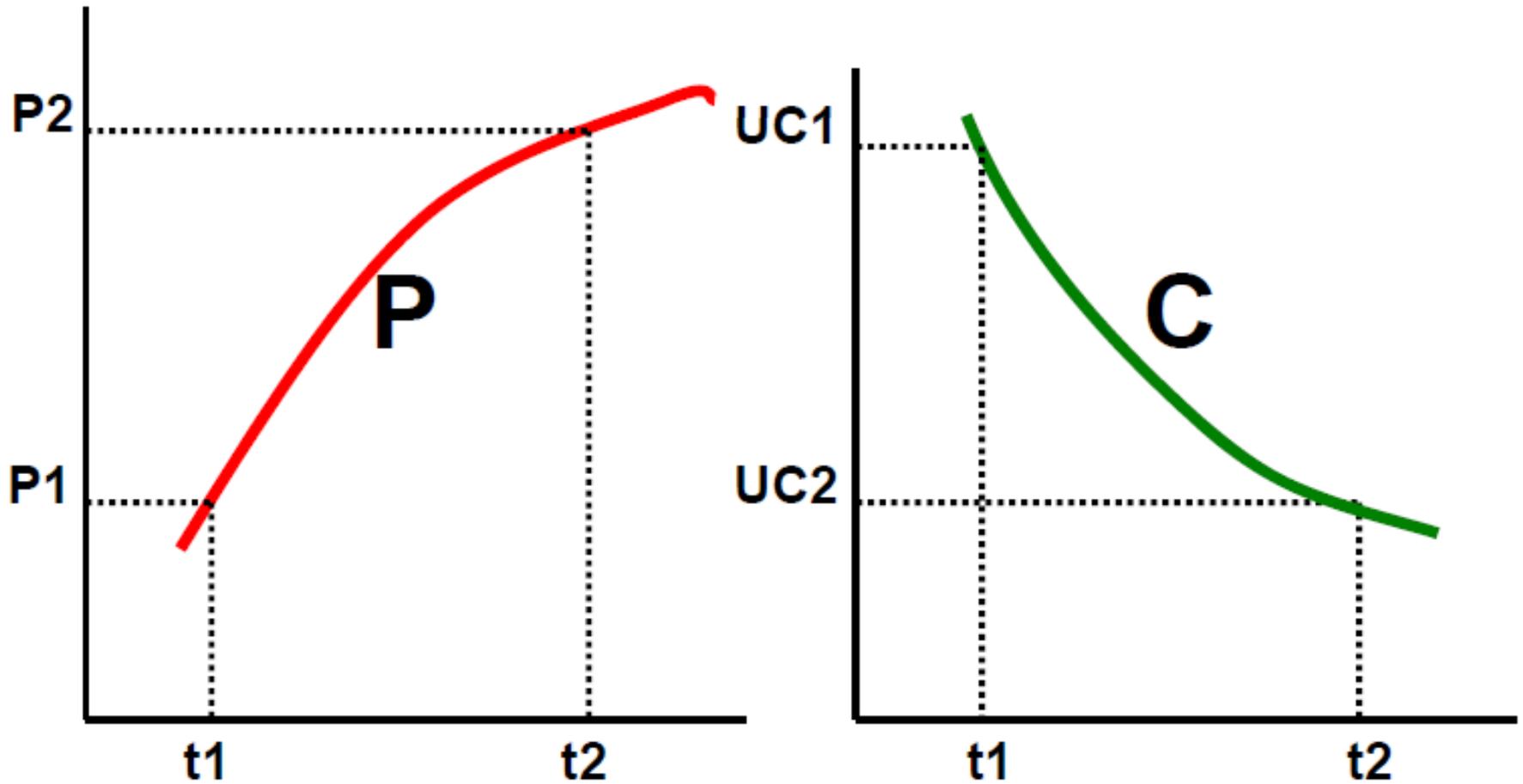
Adalah rasio dari net *output* terhadap penjumlahan dari *input* tenaga kerja dan modal (meliputi mesin dan peralatan). *Net output* adalah total *output* dikurangi biaya material dan biaya servis

$$TFPM = \frac{\text{output total} - \text{material dan servis}}{\text{Input (Tenaga kerja+modal)}}$$

# PRODUCTIVITY IMPROVEMENT TECHNIQUES

ADVANTAGES	LIMITATIONS
<b>A. Partial Productivity Measures (PPM)</b>	
<ol style="list-style-type: none"><li>1. Mudah dipahami dan dikalkulasikan</li><li>2. Sebuah tool untuk menunjukkan dengan tepat peningkatan/ improvement yang ada.</li></ol>	<ol style="list-style-type: none"><li>1. Menyesatkan jika digunakan sebagai ukuran tunggal.</li><li>2. Tidak memiliki kemampuan untuk menjelaskan pengaruh keseluruhan dari peningkatan yang ada.</li></ol>
<b>B. Total Productivity Measures (TPM)</b>	
<ol style="list-style-type: none"><li>1. Mudah dan lebih akurat dalam merepresentasikan perusahaan secara keseluruhan</li><li>2. Mempertimbangkan seluruh output dan input.</li></ol>	<ol style="list-style-type: none"><li>1. Membutuhkan sistem pengumpulan data yang khusus.</li></ol>
<b>C. Total Factor Productivity Measures (TFPM)</b>	
<ol style="list-style-type: none"><li>1. Data yang diperlukan mudah untuk dikumpulkan.</li><li>2. Pendekatan value added.</li></ol>	<ol style="list-style-type: none"><li>1. Tidak mempertimbangkan input material dan input energi.</li><li>2. Manager operasional kesulitan menghubungkan value added output terhadap efisiensi produksi.</li></ol>

# PRODUKTIVITAS, UNIT COSTS, & DAYA SAING



**“Productivity is never an accident.  
It is always the result of a commitment  
to excellence, intelligent planning,  
and focused effort.”**

**- Paul J. Meyer -**

Thank you