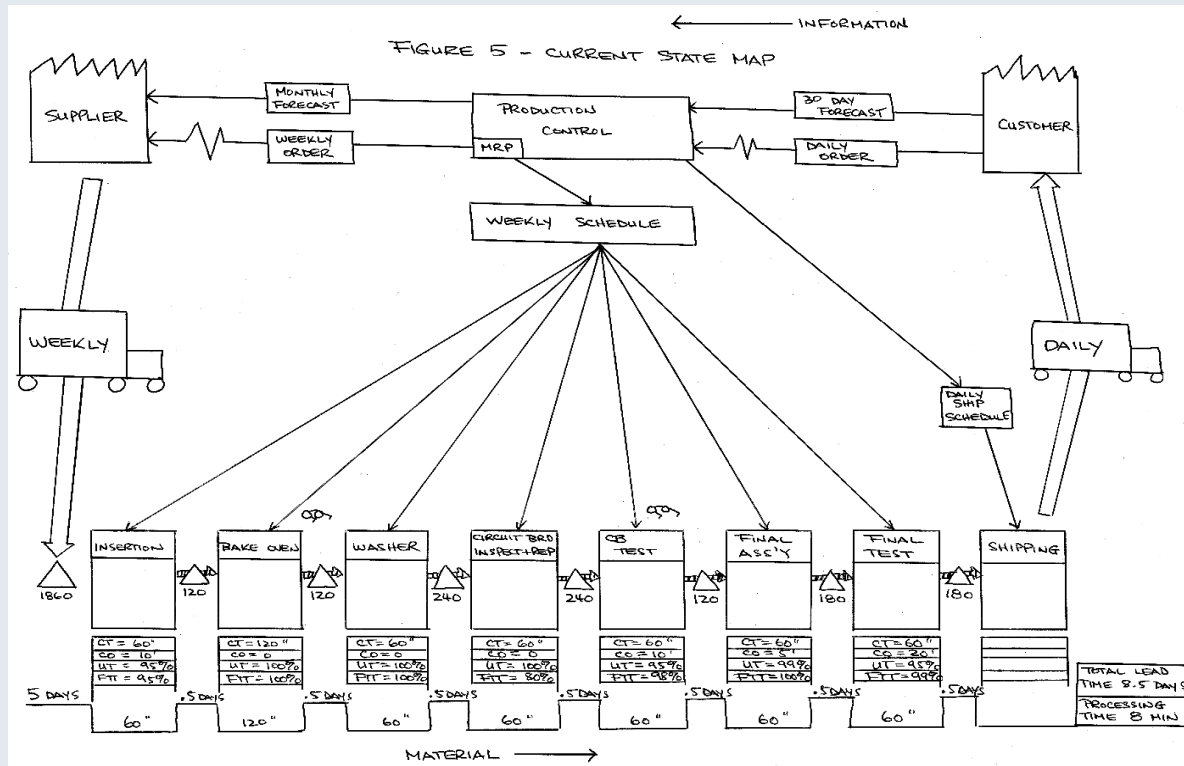# Value Stream Mapping

- Mappatura della Catena del Valore -

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# Analisi «Value Stream Mapping»

*"A Value Stream Map is **a simple, single, picture** that helps you focus on business flow and eliminate the waste"*

Elementi di una analisi VSM:

- **Macro view of material and information flow;**

- **Customer order through to delivery;**

- **Map of all the actions (both value and non-value) required to bring a product or service through the process into the hands of the customer.**

Cos'è una VSM …

A Value Stream **includes all elements** (both value added and non-value added) that occur to a given product **from its inception** through delivery **to the customer**.
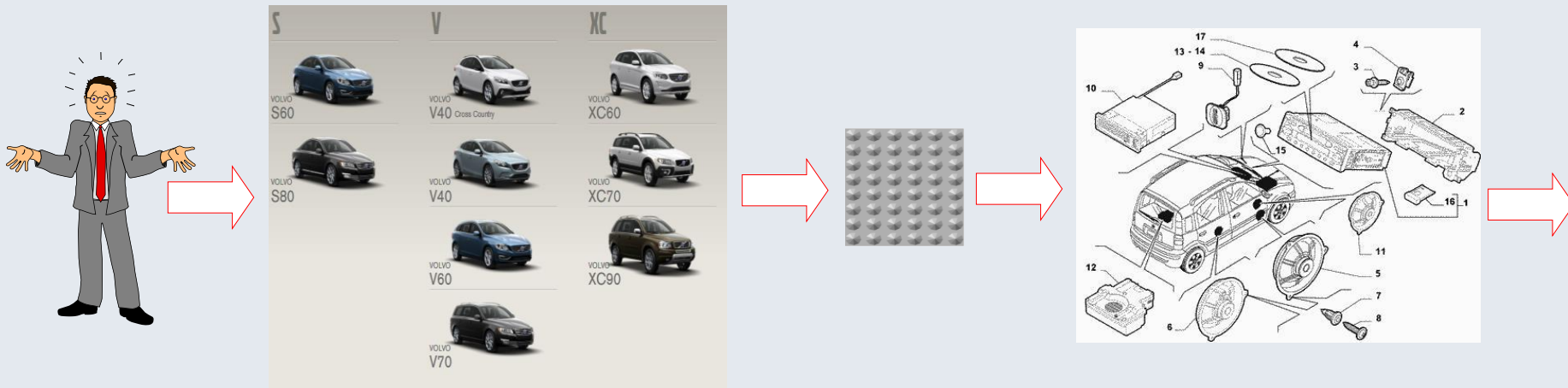
Requirements   Design   Raw Materials   Parts Manufacturing

Cos'è una VSM …

A Value Stream **includes all elements** (both value added and non-value added) that occur to a given product **from its inception** through delivery **to the customer**.

Assembly Plants   Distribution   Customer

Analysis «Value Stream Mapping»

Four steps:

- **Define and Pick the Product or Product Family:**
- **Create the "Current State" Value Stream Mapping (CSVSM)**
- **Create the "Future State" Value Stream Mapping (FSVSM)**
- **Develop an Action Plan to make the FSVSM the CSVSM**

Analysis «Value Stream Mapping» - 1

Define and Pick the Product or Product Family:

- **Individuate a Single Product**

- **Define Product Family:**

  - **Products sharing common processes;**

  - **From order to shipment;**

  - **Search for commonality, main processes, optional processes;**

Description	Product	Product Family	Process				
			L101 Coils Bending		L101 Unit Brazing	L101 Unit Ass'y	L101 Unit Packing
			Machine	Labor	Labor	Labor	Labor
TWK 530 NBL	22227777-000	1			X	X	X
TWK 530 NBL-OC	22227777-CDT	1			X	X	X
TWK 536 NBL	33338888-000	2	X	X	X	X	X
TWK 536 NBL-OC	33338888-CDT	3		X	X	X	X
TWK 048 NBL	44447777-000	2	X	X	X	X	X
TWK 048 NBL-OC	44447777-CDT	2	X	X	X	X	X

Analysis «Value Stream Mapping» - 2

Create the "Current State" Value Stream Mapping (CSVSM)

- **Review CSVSM;**
- **Data collection;**
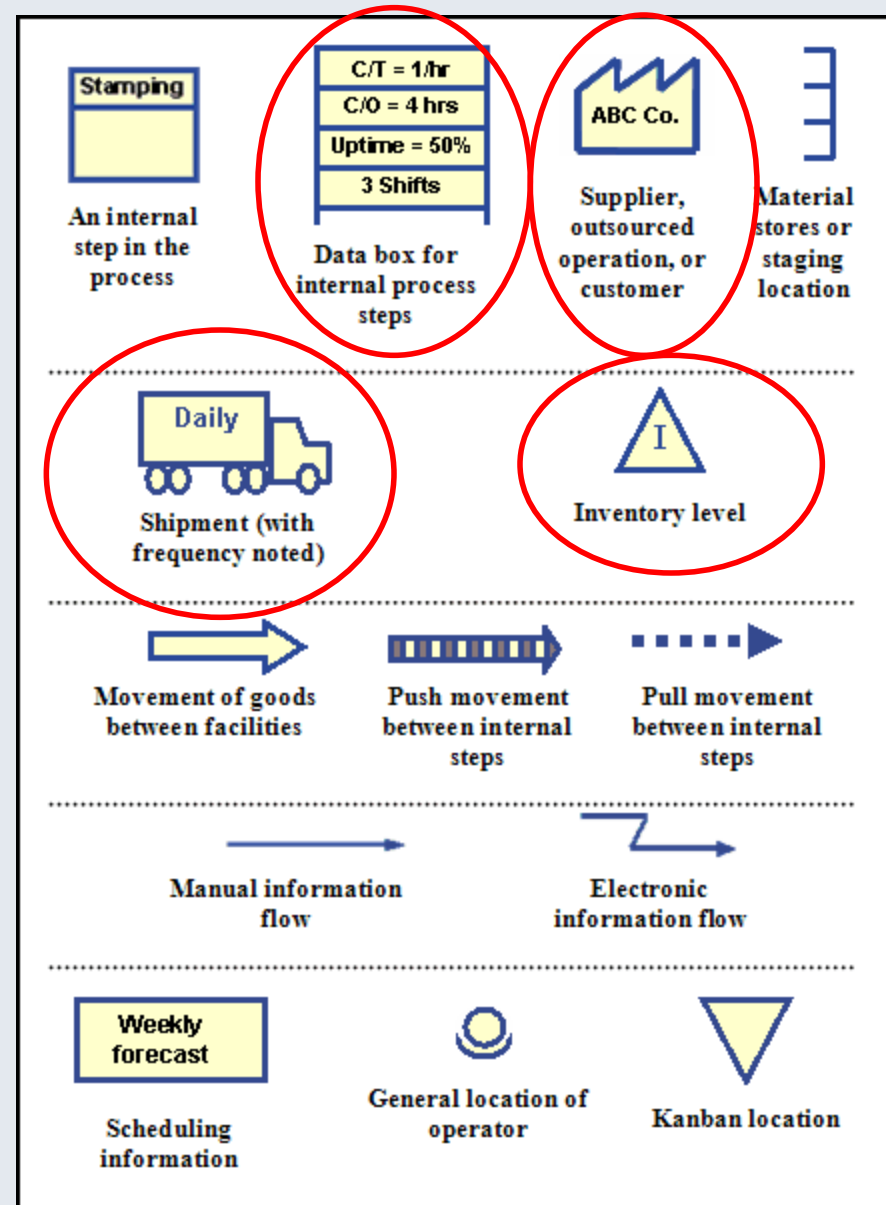- **Identify Opportunities for Improvement;**

Create the "Future State" Value Stream Mapping (FSVSM)
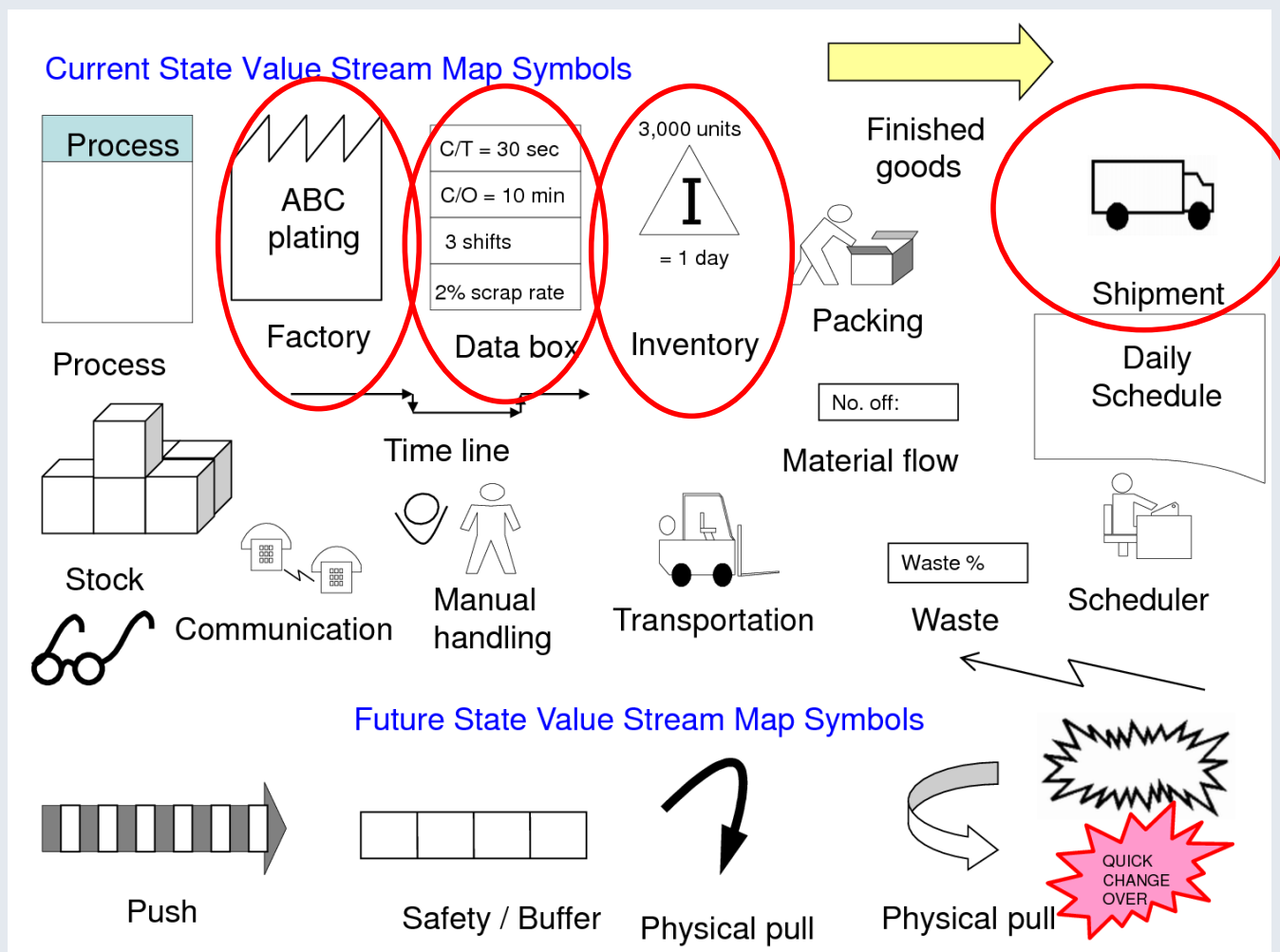
Develop an Action Plan to make the FSVSM the CSVSM
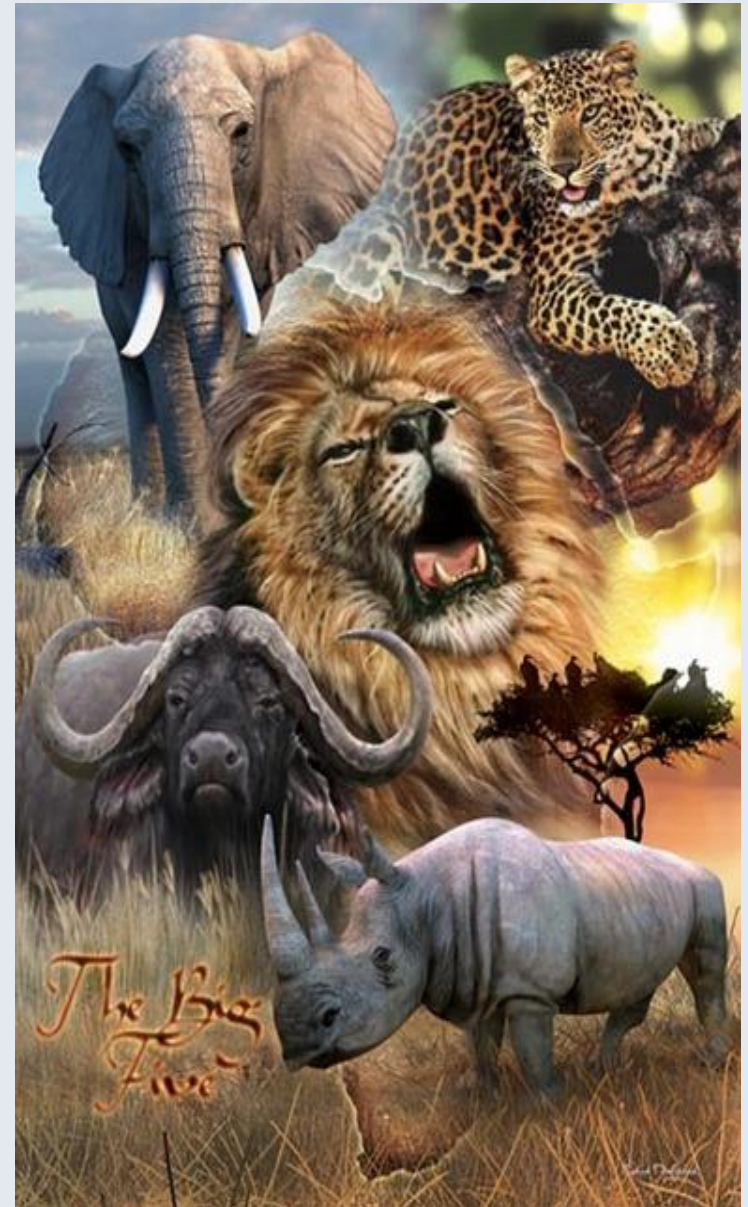
Simboli Utilizzati - 1
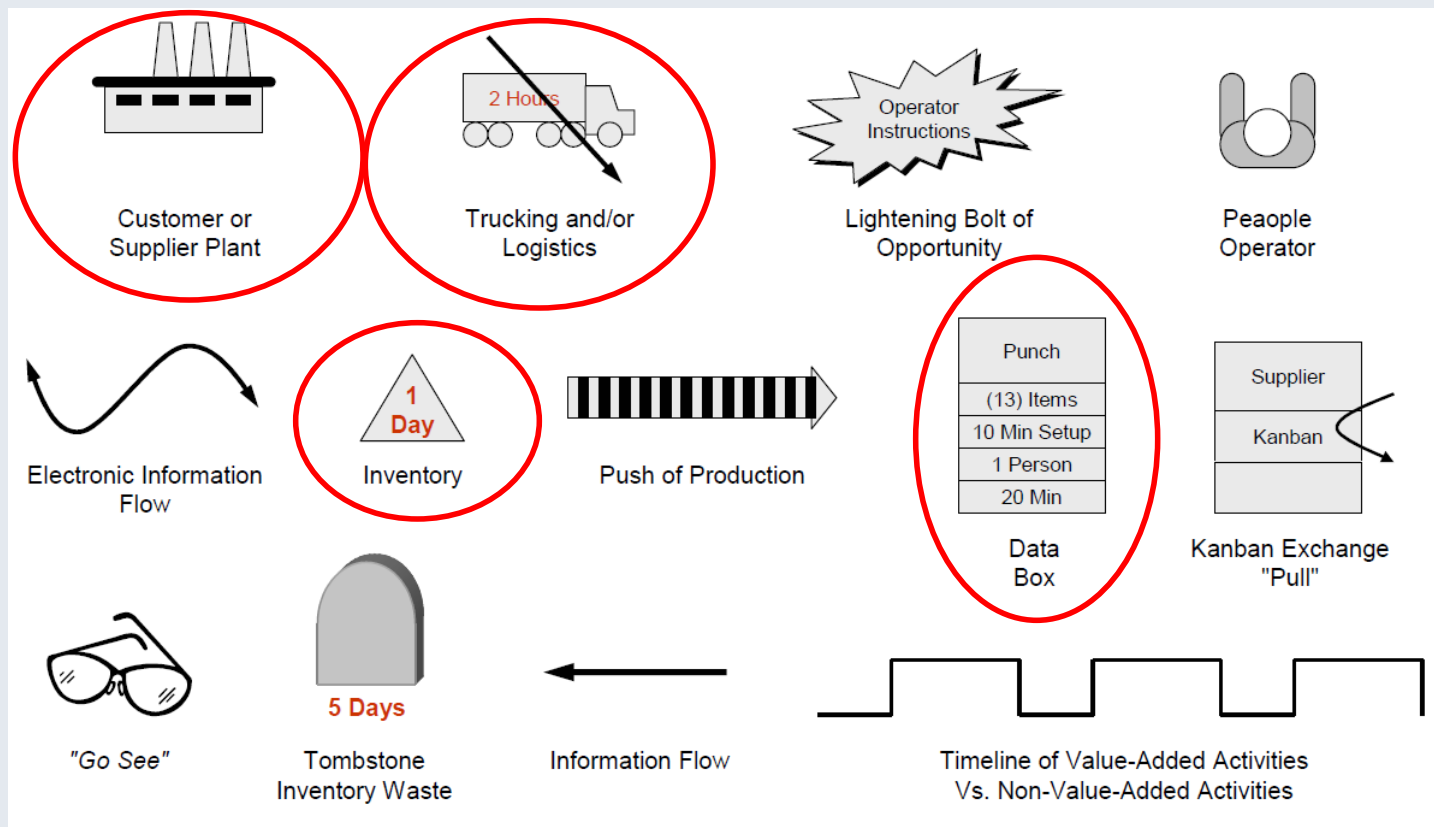
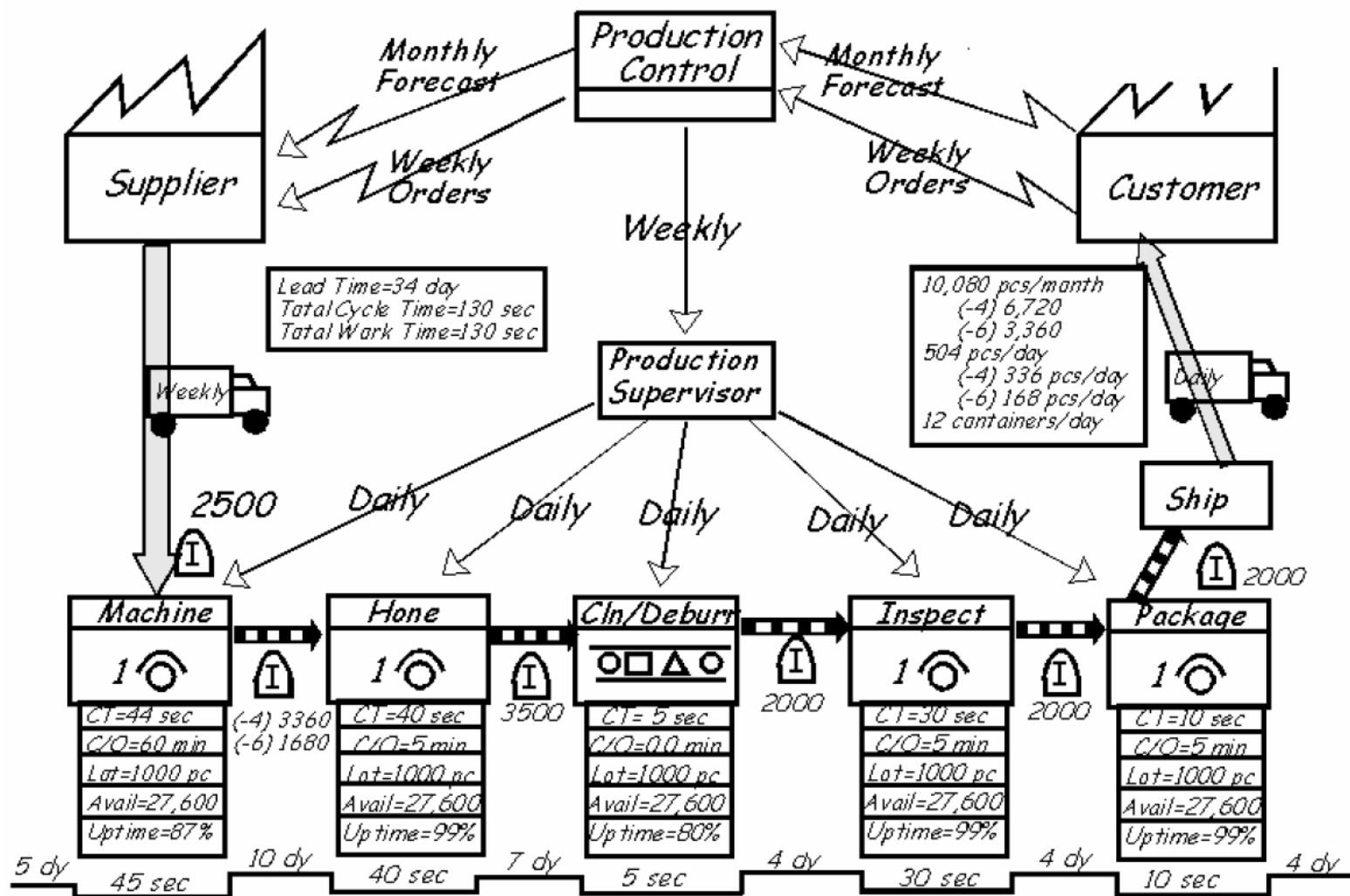# Simboli Utilizzati – 2

Simboli Utilizzati – 3

Current State Value Stream Map Symbols

Process		

Process

ABC plating

Factory

C/T = 30 sec
C/O = 10 min
3 shifts
2% scrap rate

Data box

3,000 units

I

= 1 day

Inventory

Finished goods

Packing

Shipment

Daily Schedule

Time line

Stock

Communication

Manual handling

No. off:

Material flow

Transportation

Waste %

Waste

Scheduler

Future State Value Stream Map Symbols

Push

Safety / Buffer

Physical pull

Physical pull

QUICK CHANGE OVER

DATA BOX – BIG FIVE

1. **Cycle time, CT** *(from 1 piece to the next)*;

2. **Changeover time, CO** *(set-up time);*

3. **Process Reliability, Uptime (%);**

4. **Scrap rate (%);**

5. **Quality** *(First Time Through: FTT as [units produced - defective units]/units produced);*

and more such as:

- *Number of operators;*
- *Production batch sizes;*
- *Working time (minus breaks);*
- *Batch or Lot size;*
- *Number of product variations;*
- *Average throughput (If it does not match CT)*

"Current State" (CSVSM)

"Current State" (CSVSM)

Machine		Hone		Cln/Deburr
1		1		○ □ △ ○
CT=44 sec	(-4) 3360	CT=40 sec	3500	CT= 5 sec
C/O=60 min	(-6) 1680	C/O=5 min		C/O=0.0 min
Lot=1000 pc		Lot=1000 pc		Lot=1000 pc
Avail=27,600		Avail=27,600		Avail=27,600
Uptime=87%		Uptime=99%		Uptime=80%

5 dy — 45 sec — 10 dy — 40 sec — 7 dy — 5 sec
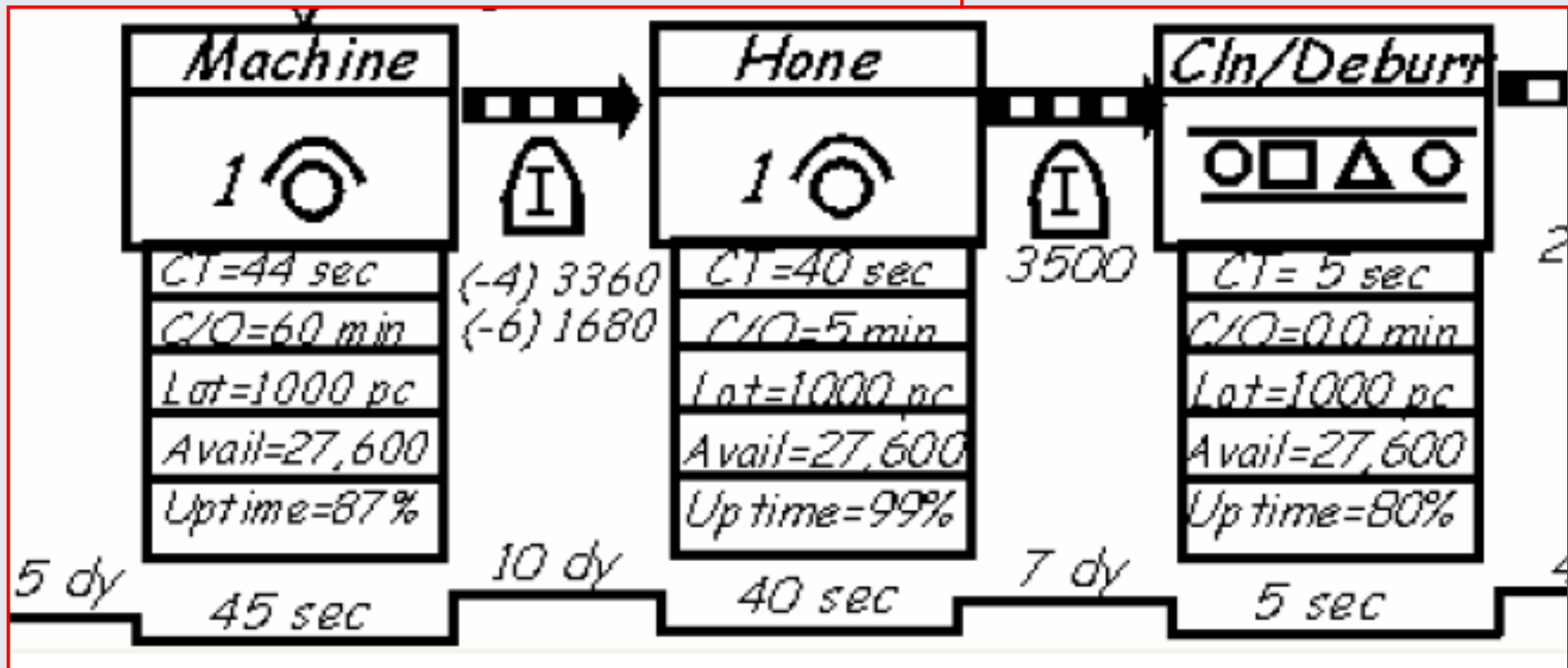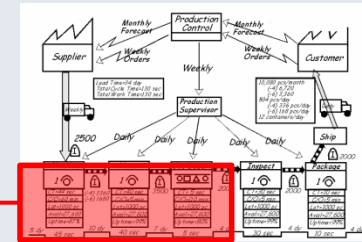
"Value Added Time"

Value added:

- An activity which the customer is willing to pay for and it changes form, fit or function of a product or service.

Non Value added:

- An activity which the customer is not willing to pay for and it does not change form, fit or function of a product or service. It absorbs valuable resources and increases costs.

Value added ratio:
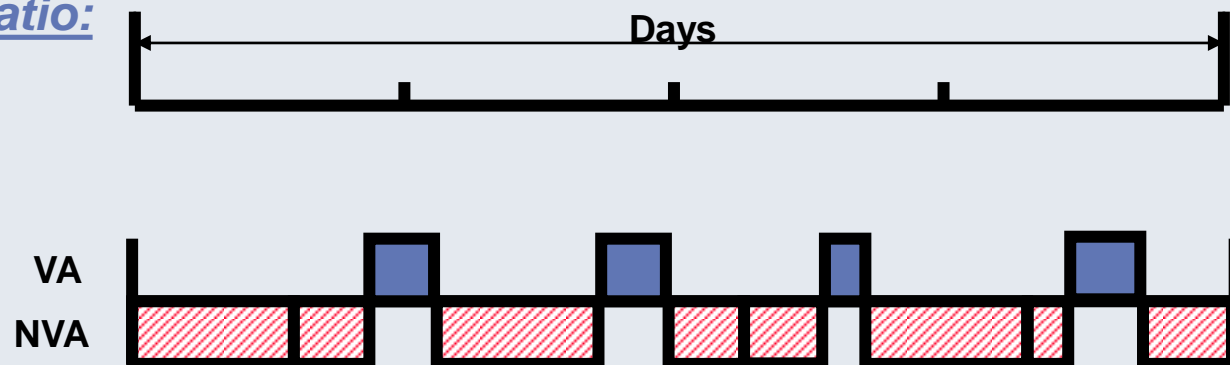
$$\text{Value added ratio} = \frac{\text{Value added time}}{\text{Total lead time}}$$

"Value Added Time" (CSVSM)

EHS: Environment, Health, Security
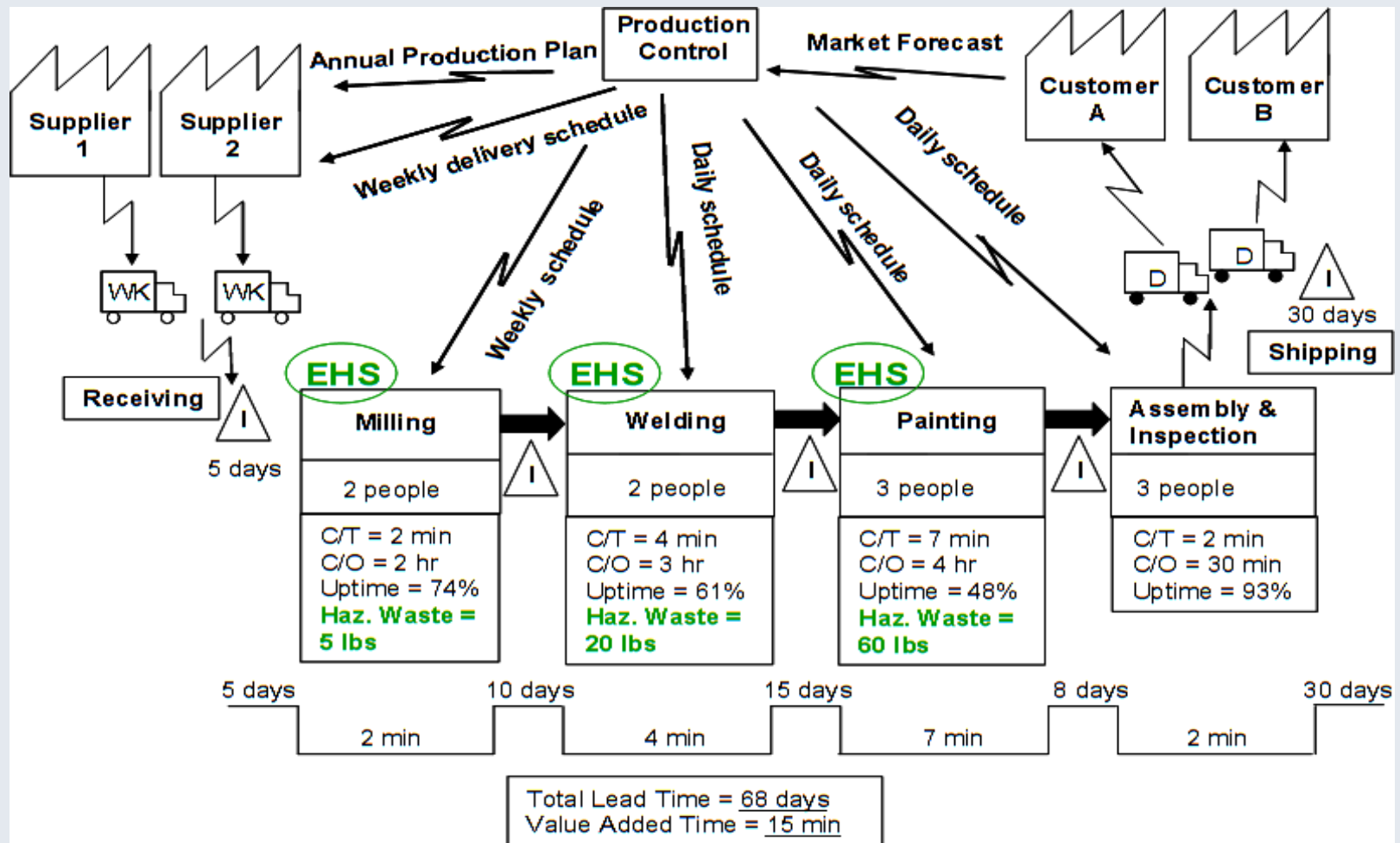
"Value Added Time" (CSVSM)
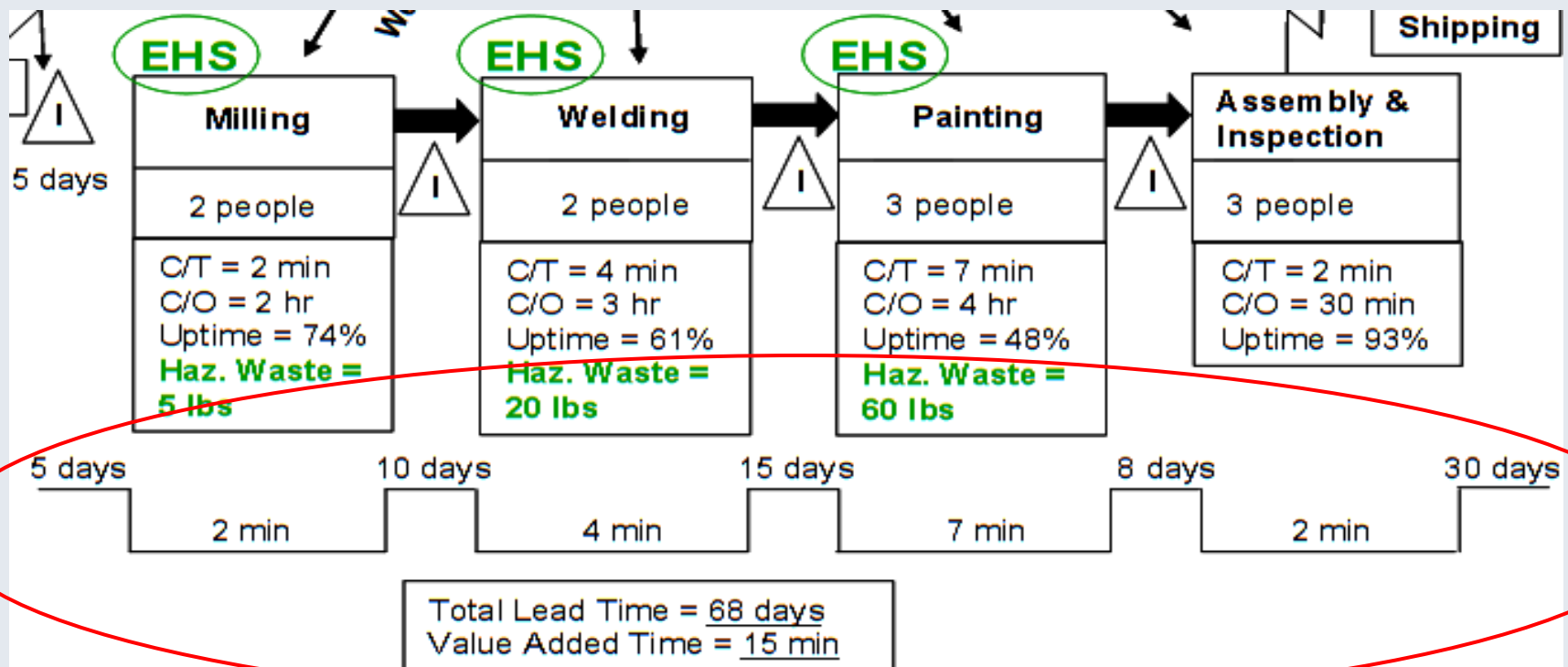
Milling: fresatura (o in altri contesti macinazione);

Welding: saldatura

EHS: Environment, Health, Security

"Opportunity"
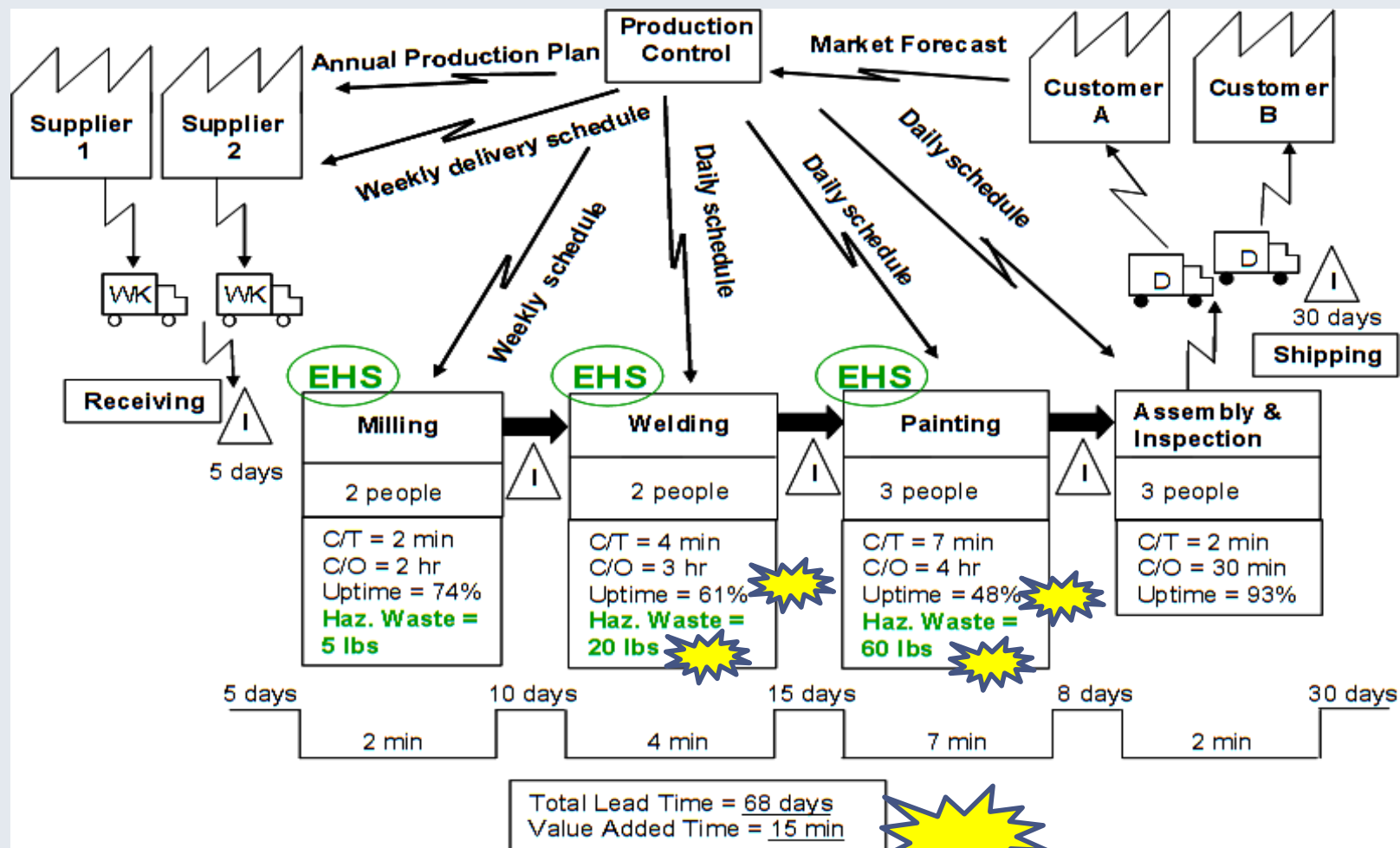
EHS: Environment, Health, Security

Current State *vs* Future State - 1

Current State Map – 20 Days Lead-Time

Current State *vs* Future State - 2

Current State Map – 20 Days Lead-Time
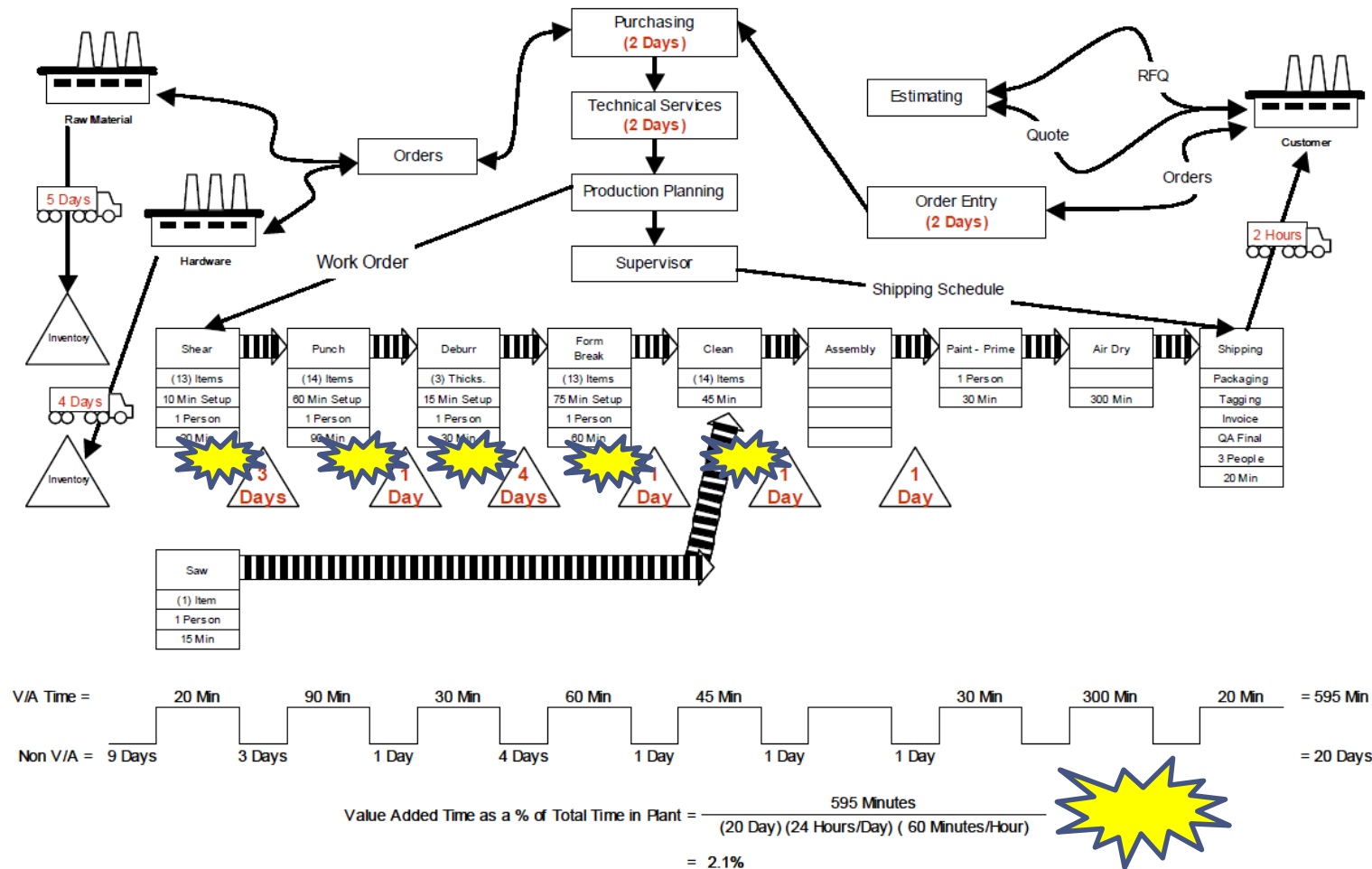
Current State *vs* Future State - 3

Future State Map – "Green Cell Team" – 5 Days or Less Lead-Time
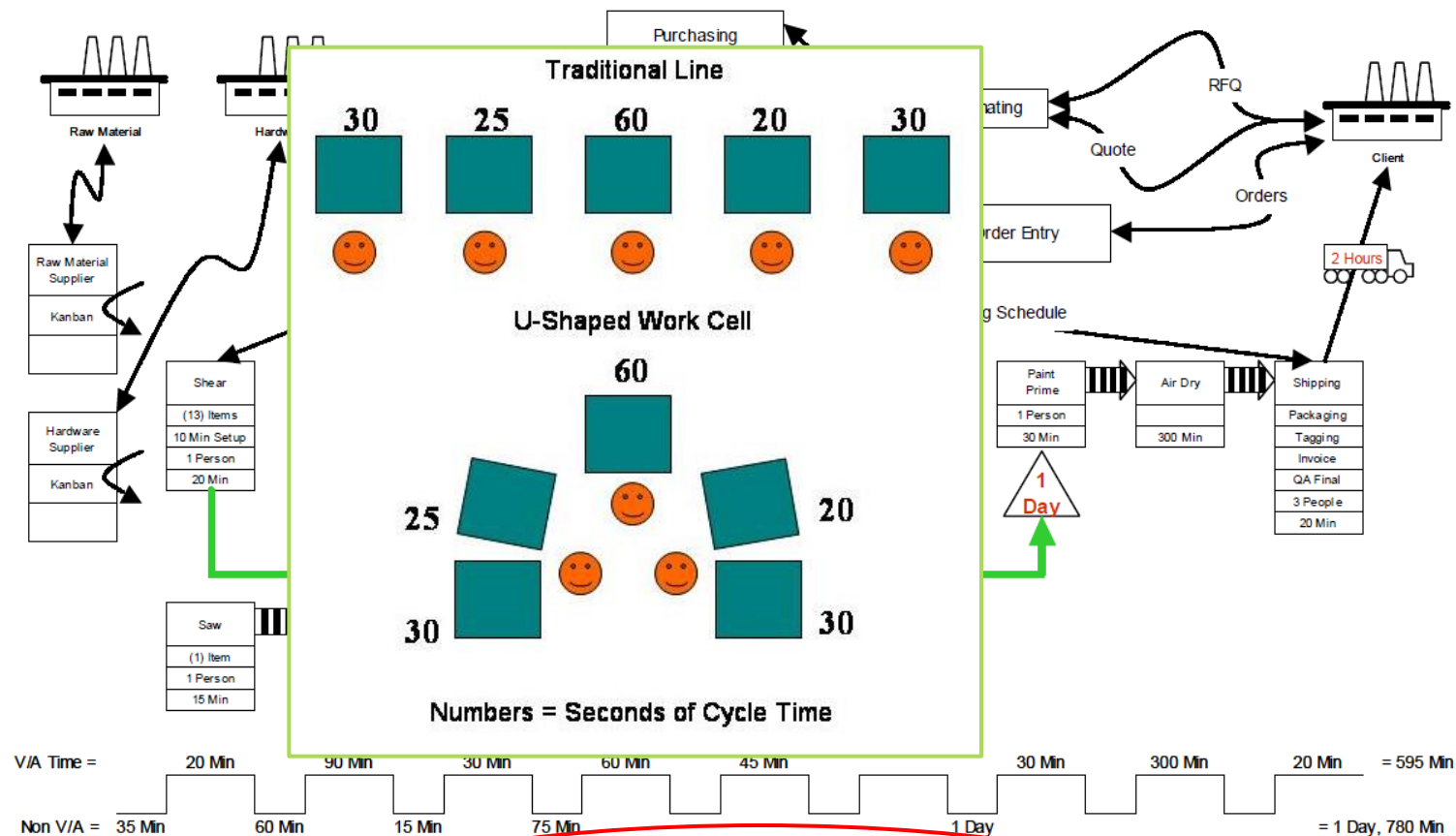
Action Plan (*achieving the future state*)

1. **Breaking Implementation Into Steps;**

2. **Make the "Value Stream Plan":**

   - *With detailed process-level maps;*

   - *With Layouts maps;*

   - *Individuate measurable goals;*

   - *Checkpoints with real deadlines and named reviewer(s);*

1. **Periodic Plan Review.**