

THE EFFICIENCY REVOLUTION

Ideas and proposals for business sustainability

KYIV April 4th 2003

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Galgano & Associati S.r.l.

Kiev-EDC-C3D-1

AGENDA

- INTRODUCTION
- SUSTAINABLE DEVELOPMENT: a new way of thinking about business
- THE PATH TOWARDS SUSTAINABILITY
- SOME APPROACHES TO SUSTAINABILITY
- A NEW APPROACH: LEAN PRODUCTION
- SOME EXAMPLES
- CONCLUSIONS

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OUR COMMON FUTURE



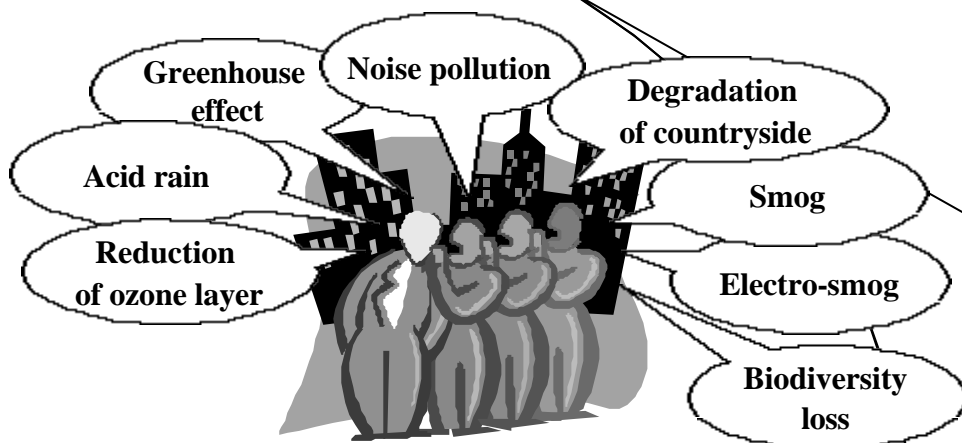
"the world was not handed down to us by our fathers but rather given to us in trust by our children"



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SOME PROBLEMS



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SOME CHANGES

The 20th century featured technological growth unprecedented in human history

	1900	2000	M. u.
Demographical growth rate	16.000.000	80.000.000	Increase per year
Petrol consumption	5	72.000.000	Barrels/day
Use of metals	20.000.000	1.200.000.000	Tons/day
Paper consumption	4.000.000	160.000.000	Kg/day
Cities with over 1 Million inhabitants	16	326	Number
Number of cars and motorbikes	3.000	520.000.000	Number

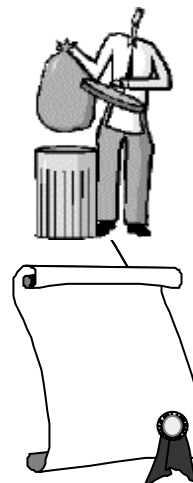
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SOME DATA

- It is estimated that a total of 1.300 million tons of waste are produced in Europe daily

(SOURCE: P. Hawken et al., 1999)



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SOME DATA

- **15% of all merchandise transport involve waste products**
- **5% of total energy consumption of transport sector**

(SOURCE: Ripert,1997)



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OTHER PROBLEMS

The world's biggest dumping ground (Staten Island, New York) receives **12.000** tons of waste daily and occupies **10** sq.km. and is **30** m. in height, for a volume of **82.000.000** cub.feet, and contains only **0,018%** of U.S. daily waste.



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INDUSTRIAL ECO-EFFICIENCY

Create more value with less impact

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A NEW WAY OF THINKING ABOUT BUSINESS

- **CULTURAL EVOLUTION**
 - social environmental conscience
 - growth of ecological product and service markets
 - hostility towards polluting industrial sites (or held to be such)
- **COST OF ENVIRONMENTAL RESOURCE**
 - more severe standards
 - greater cost of basic resources
- **NEW NORMATIVE STRATEGIES AND MANAGEMENT STANDARDS**
 - Integrated Pollution Prevention & Control (IPPC)
 - EMAS (EC regulation 1836/93), EMAS II e ISO 14000



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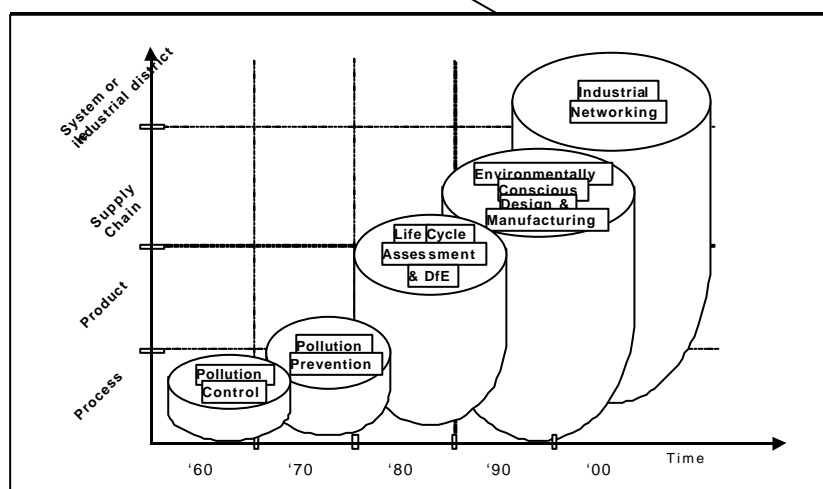
PATHWAY TOWARDS SUSTAINABILITY

- Waste elimination
- Non-hazardous emissions
- Use of renewable energy
- “Closure of circle” (cycle of materials)
- Efficient transport of resources
- Public awareness
- A new way of doing business

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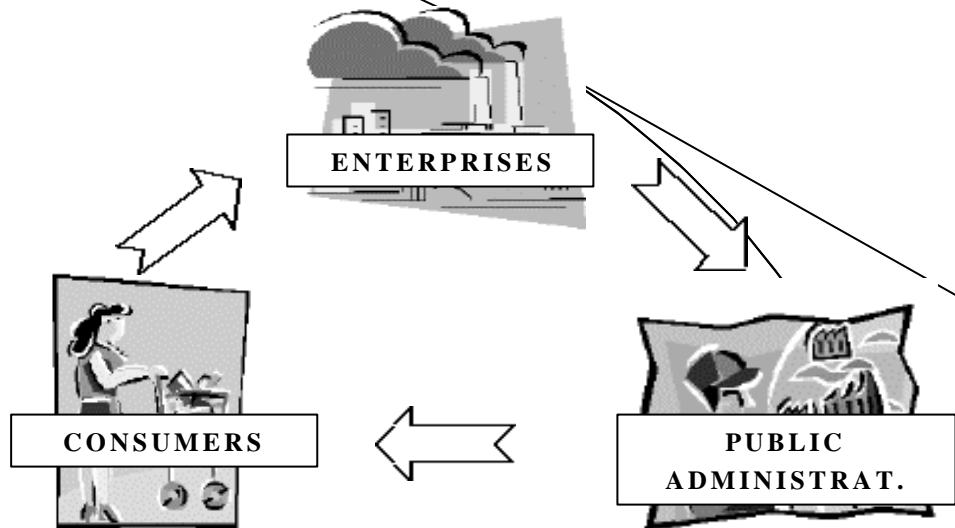
APPROACHES TO ECO-EFFICIENCY



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WHO IS INVOLVED?



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QUESTION

WHAT IS THE GOAL
OF A BUSINESS
ENTERPRISE?



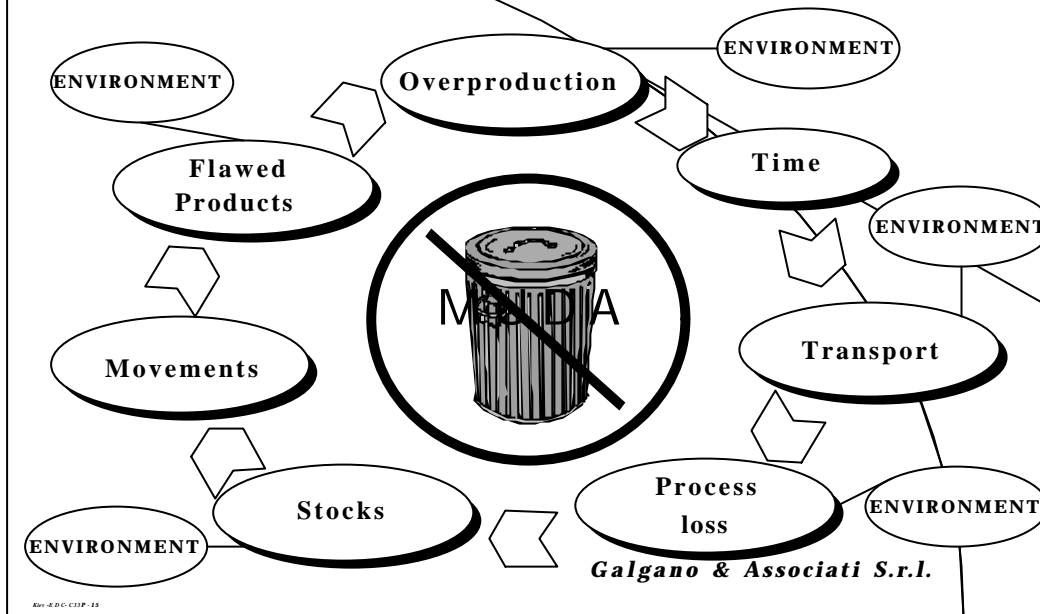
TO PRODUCE ADDED
VALUE FOR THE
CUSTOMER



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COMBAT THE REAL ENEMY



CHANGE VIEWPOINT

- THE ENVIRONMENT IS A TERRIBLE WASTE BECAUSE IT PRODUCES OTHER WASTE
- THE ENVIRONMENT IS A GREAT RESOURCE FOR IMPROVING BUSINESS

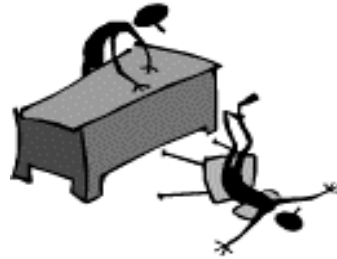
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AN INCREDIBLE STORY

- **PRODUCTIVITY: DOUBLED**
- **PRODUCTION TIMES AND STOCKS: CUT by 90%**
- **TIME TO MARKET: CUT by HALF**
- **WIDER PRODUCT RANGE WITH LOW ADDITIONAL COSTS**
- **ERRORS AND PROCESS WASTE: CUT by HALF**

J. Womack D. Jones "LEAN THINKING"



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NEW APPROACH

THREE IMPERATIVES FOR IMPROVEMENT:

- **ATTENTION TO PRIORITIES**
- **QUICK AND DIRTY**
- **JUST DO IT NOW**

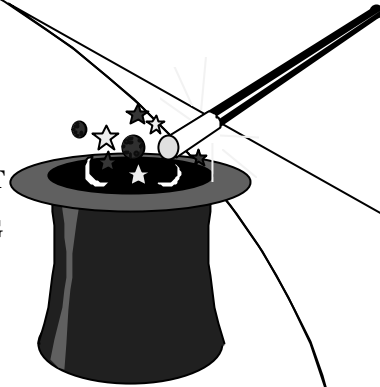


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NEW APPROACH

- IF YOU CAN'T GET SIGNIFICANT IMPROVEMENT IN 3 DAYS, THEN SOMETHING IS GOING WRONG



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THE FIRST REVOLUTION (1)

- A NEW IN-COMPANY PRIORITY:

“THE PRODUCT”.



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THE FIRST REVOLUTION (2)

REMODELLING THE
COMPANY WITH 3 FLOWS
IN MIND:

- **MATERIALS**
- **INFORMATION**
- **DESIGN**



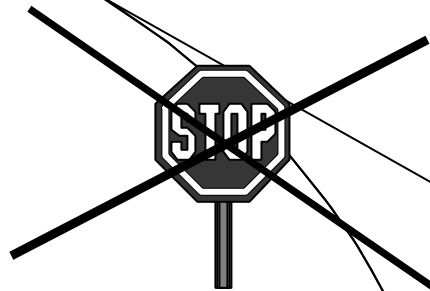
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THE FIRST REVOLUTION (3)

FOR 3 NON-STOP
FLOWS:

- **ZERO DEFECTS**
- **ZERO WASTE**



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THE SECOND REVOLUTION (1)

**“PULSATING PRODUCTION
SYSTEM” IN HARMONY WITH
THE “MARKET”.**



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THE SECOND REVOLUTION (2)

**PRODUCE ACCORDING TO JUST IN
TIME LOGIC: WHEN, AND HOW
MUCH, THE CUSTOMER WANTS.**

THE 3 J.I.T. ELEMENTS:

- **PULL SYSTEM**
- **ONE PIECE FLOW PRODUCTION**
- **TAKT TIME**

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THE SECOND REVOLUTION (3)

PRODUCTION SYSTEM

- FLEXIBLE
- LIGHT
- CONTINUOUS PULSATION
- LEVELED



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SOME EXAMPLES

- LANTECH
- ITALIAN
COMPANY



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LANTECH

FROM 1992 TO 1995:

- TIME TO MARKET: from **3-4** to **1 year**
- DELIVERY LEAD TIME: from 20 to 4 weeks
- MAN HOURS/ MACHINE: From **160** to **80**
- SPACE NEEDED/MACHINE PRODUCTION: from **100** to **55** sq. feet
- NUMBER OF UNDISCOVERED DEFECTS PER MACHINE: from **8** to **0,8**
- STOCKS: from **2,6 M\$** to **1,9 M\$** (sales doubled!)

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ITALIAN MANUFACTURING COMPANY

	START	TARGET	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	RESULTS
DISTANCE COVERED BY PIECES (m)	106	30	30	30	30	30	30	- 72%
LEAD TIME (h)	15	8	-	-	-	9	9	- 40%
CYCLE TIME (hours)	6,75	6,75	-	-	-	6	6	- 11%
PRODUCTION (pieces/day)	6,5	8	-	-	-	8	8	+ 23%
TEAM (n° of workers)	6,75	6,75	-	-	6	6	6	- 11%
WIP (pieces)	12	8	-	-	9	9	9	- 25%
PRODUCTIVITY (pieces/pers/d)	0,96	1,19	-	-	-	1,33	1,33	+ 39%

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SUSEQUENT STEPS

- PROPAGATE LEAN PRODUCTION
- START HUNTING DOWN WASTE
- FROM LEAN PRODUCTION TO LEAN CONSUMPTION
- CAR SHARING
- “BUY THE HOLE NOT THE DRILL”

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CONCLUSIONS

THE CHOICE OF
EFFICIENCY
MEANS
THE CHOICE OF
SUSTAINABILITY



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