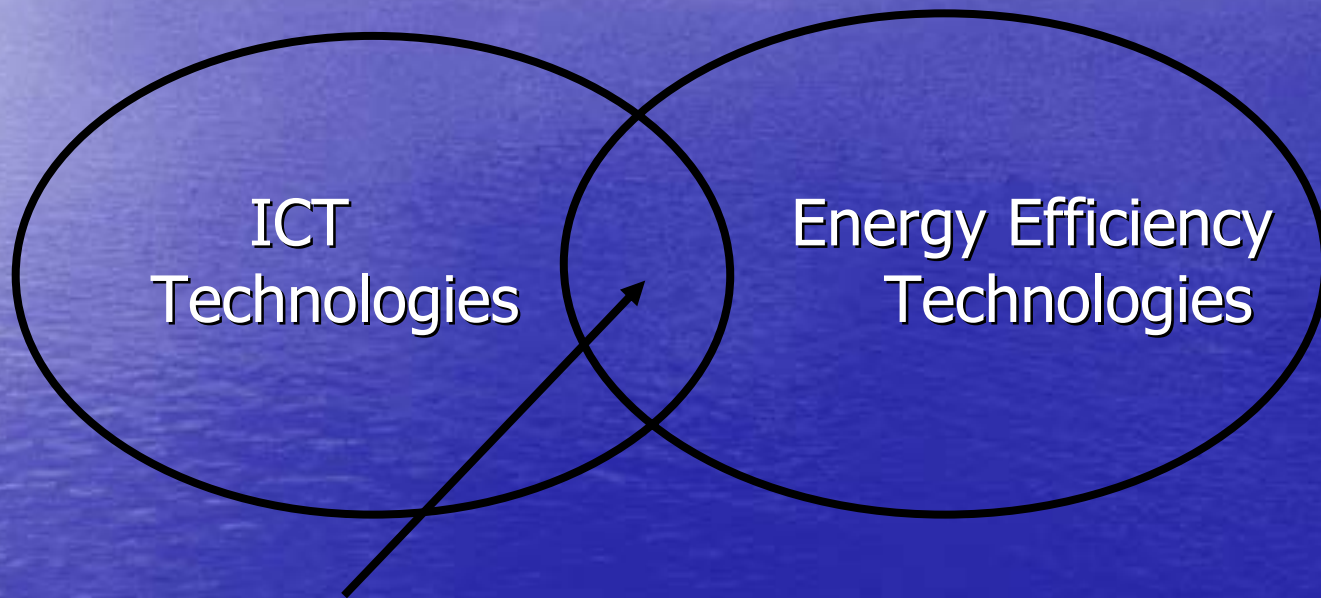




Working Group 2: ICT for Energy Efficiency in Transports

Alberto Moro - ENEA

ICT for Energy Efficiency



ICT for EE Technologies

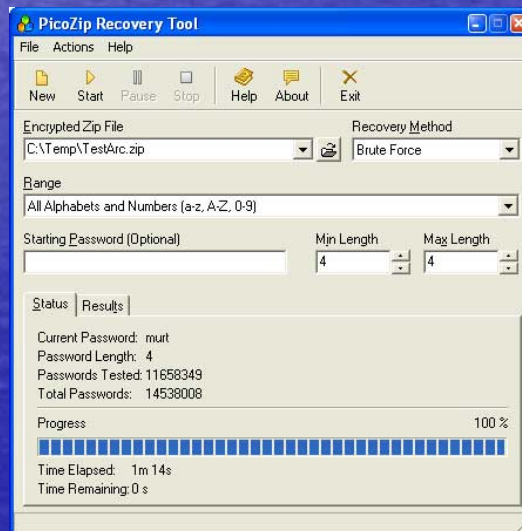
ICT

ICT refers to micro- and nano-electronics components and systems

Hardware



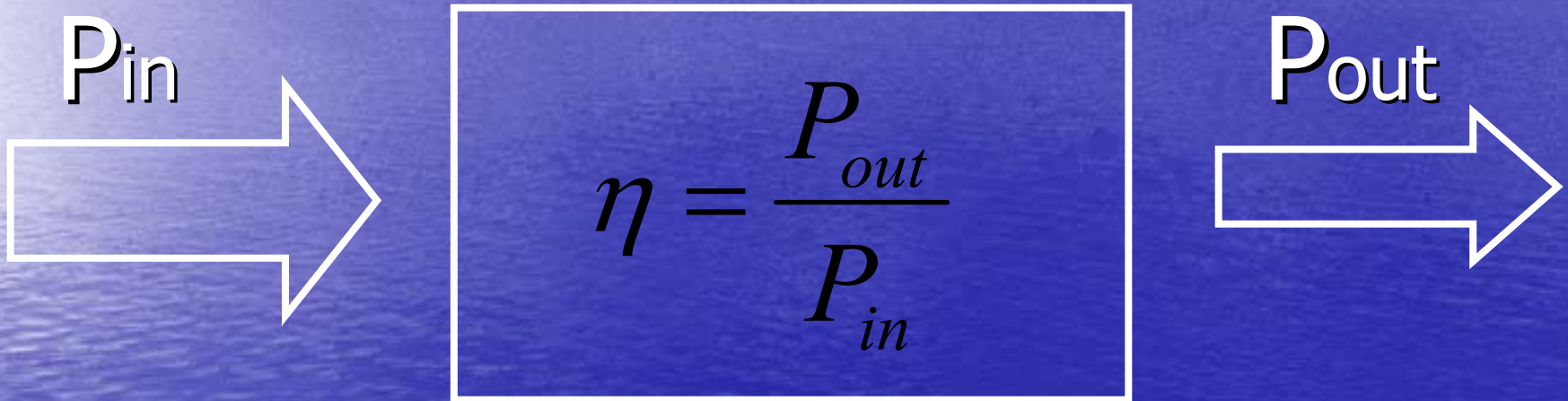
Software



Systems

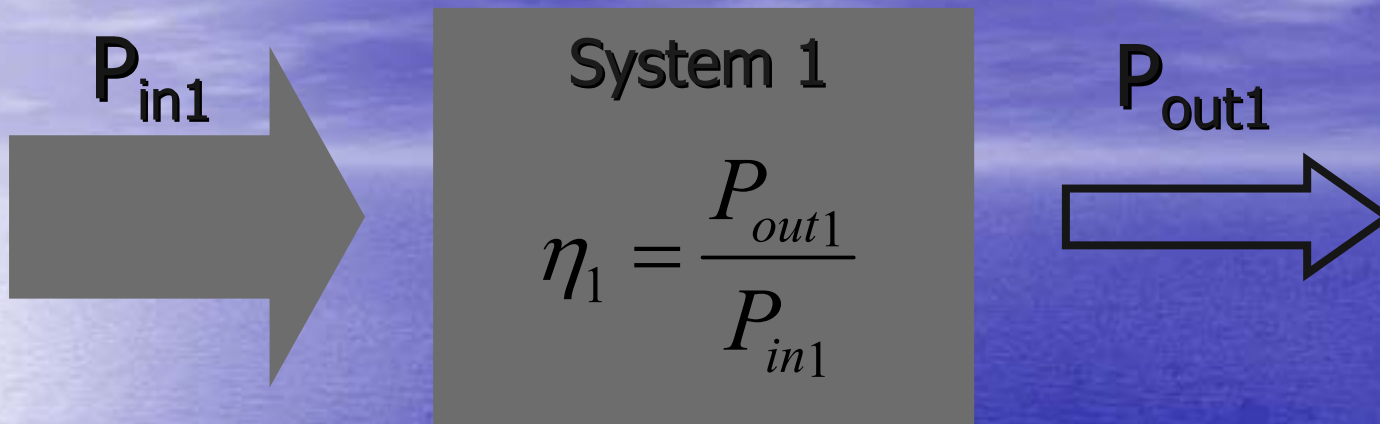


Energy Efficiency



Power = Energy/Time

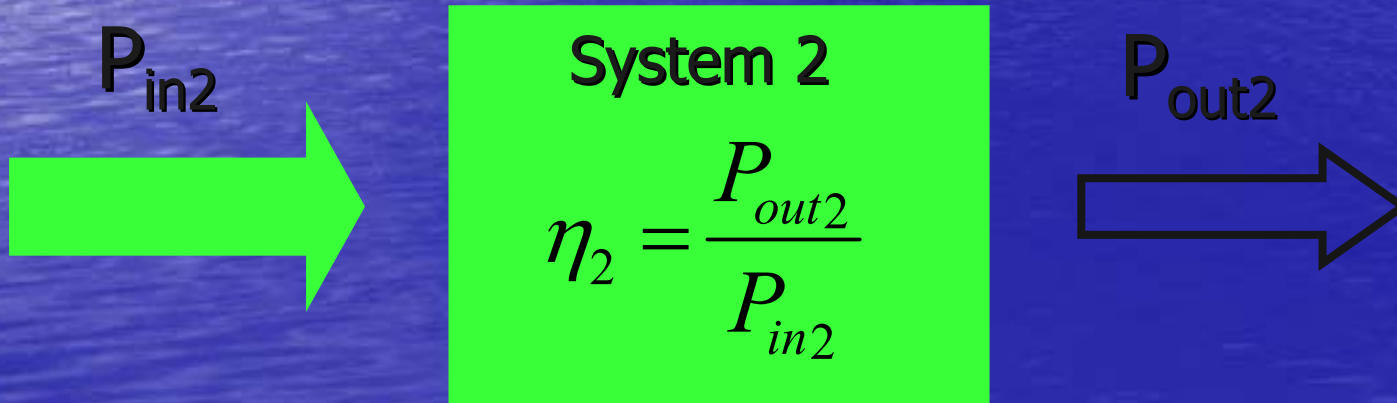
Energy Efficiency



$$P_{in1} \geq P_{in2}$$

$$P_{out1} = P_{out2}$$

$$\eta_2 \geq \eta_1$$



Energy Efficiency

Electric
Power in 1



Light



$$\eta = 17 \text{ lm/W}$$

Electric
Power in 2



Light



$$\eta = 70 \text{ lm/W}$$

Energy Efficiency

Fuel in 1



Km



$$\eta = 12 \text{ km/l}$$

Fuel in 2



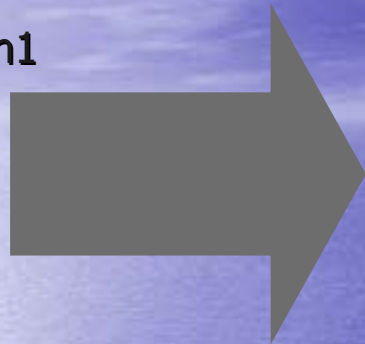
Km



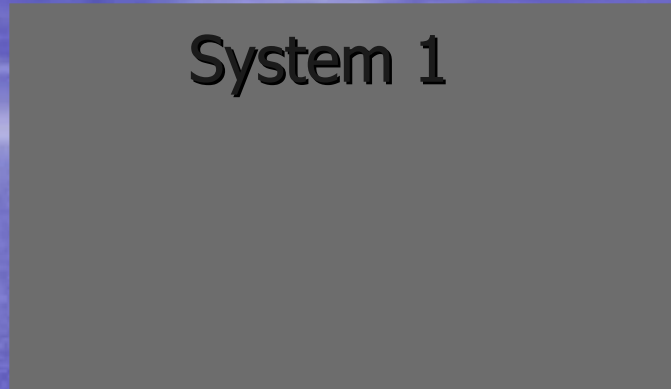
$$\eta = 20 \text{ km/l}$$

ICT for Energy Efficiency

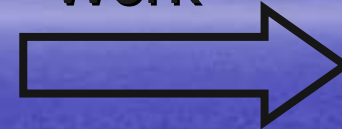
P_{in1}



System 1



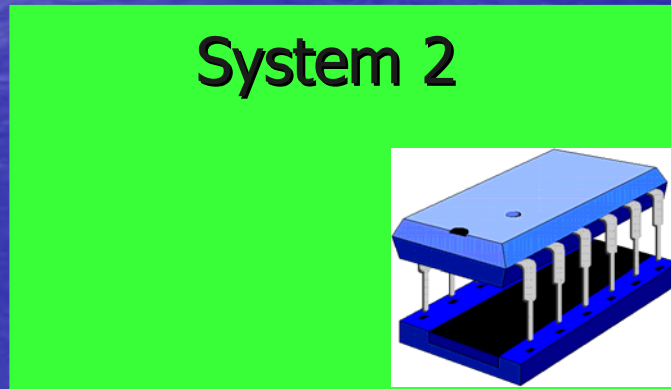
Work



P_{in2}



System 2



Work



$$\eta_2 \geq \eta_1$$

Need QUANTITATIVE evaluation!



$$Q \times \frac{n}{(100)^n} \times \frac{(1+R)-1}{100} \times (1+R) = \frac{1000 \times \frac{5}{(100)^5} \times \frac{(1+15)-1}{100} \times (1+5)}{(1+R) \times R} = \frac{1000 \times 1.01136 \times 1.15}{2.01136 \times 0.15} = \frac{1163.064}{0.3017} = 3855.03$$

Measure

Calculation

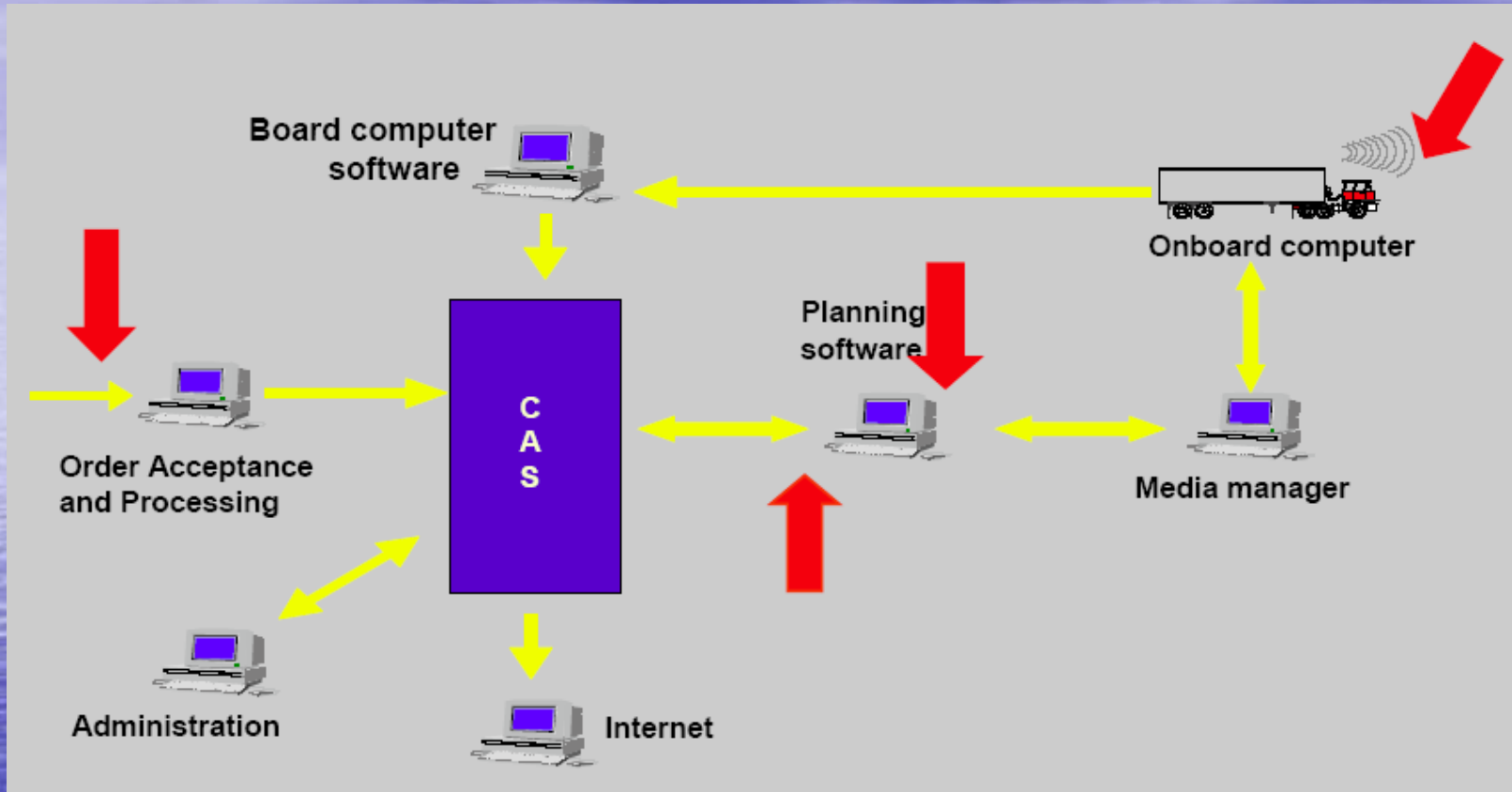


Numerical DATA !

How ICT can help us to save Energy in TRANSPORTS?



ICT for Logistics



Improvement of truck capacity utilisation

Energy Efficiency up to + 5%

ICT for Public transports



Public transports more attractive and comfortable for users

Energy Efficiency?

Maybe (indirect effect)

ICT for Urban traffic management



Less congestions, more comfort

Energy Efficiency?

Maybe (No data!)

ICT for Motorway traffic management



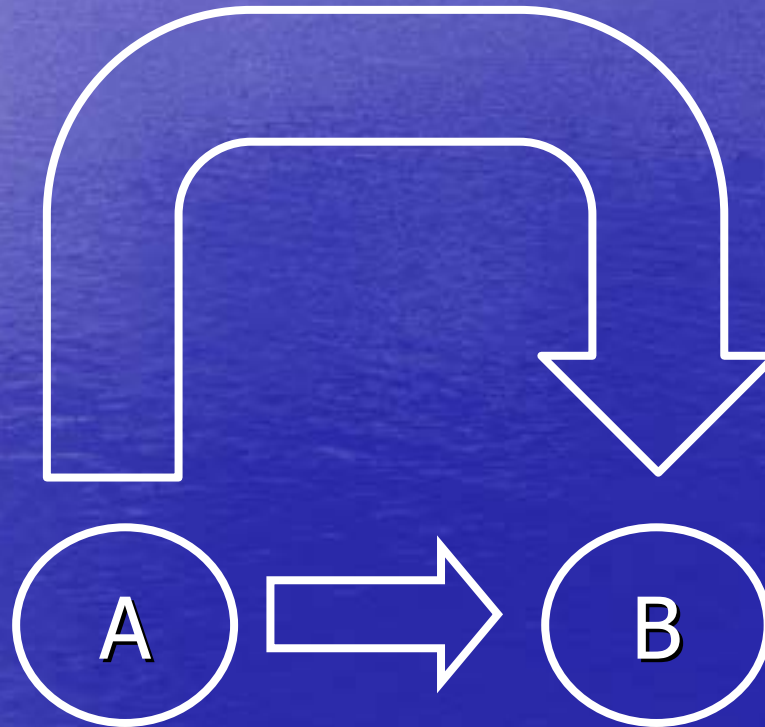
Avoid queues, more information, more safety

Energy Efficiency?

Maybe (No data!)

ICT for traffic management

Less congestions, more comfort, but...
Energy Efficiency?





An Energy Efficient solution for traffic jams

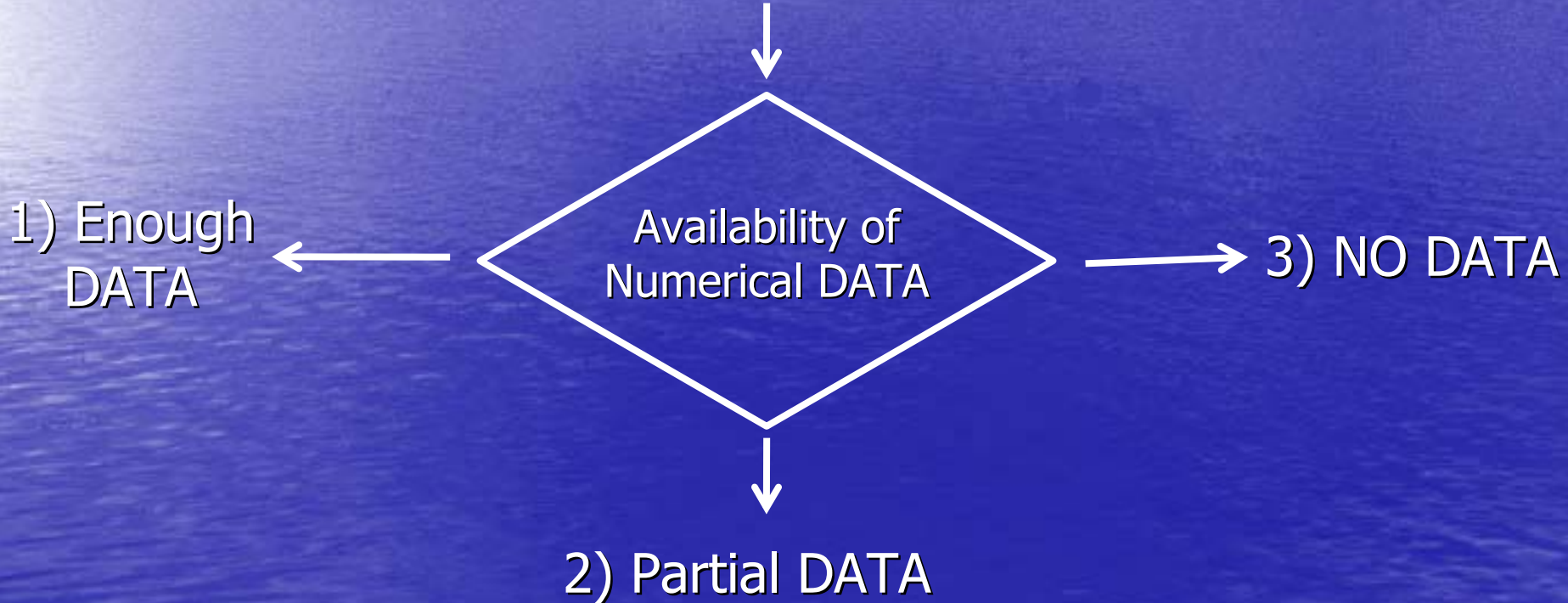
In order to evaluate and prioritize “case of success” (or “best practice”) of ICT for EE



Need reliable numeric data!




Proposed Methodology

Potential "Case of success"



Proposed Methodology

Potential "Case of success"

- 1) Enough DATA  Scientific approach
- 2) Partial DATA  Qualitative analysis by experts
- 3) NO DATA  No answer

The Project ICT 21 EE aims at:

- Identifying potential “Best practices”
- Finding quantitative DATA
- Qualitative evaluation by experts
- Identifying more suitable indicators
- Comparison of technologies

Thank You

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