



ICT21
Energy
Efficiency

Challenging user behaviour

**Reduce the computers energy
footprint by a life extension**



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Scope & Objective

How to **monitor** 'our' behaviour?

An analysis in **4 dimensions** (equipment, attitudes, knowledge, practices)

Influencing new behaviour patterns - a **proposal**

□ Scope

Computers accelerated obsolescence, the energy footprint, and the challenge for new attitudes and actions.

□ Objective

Create an understanding of the kind of information on the technology/ equipment, attitudes, knowledge and practices that may be relevant for effective action. (both supply/ demand sides)

❑ From a demand side

Individual consumers' responsibility for environmental side effects of their acts is increasingly being emphasized by policy-making. Subsequently many environmental requirements are expressed in terms of user/household-related activities. These include, for instance, recycling, purchasing of green-labeled products and activities that decrease household electricity use.

Relative to the environment, awareness leads to attitude, and attitude determines behaviour (Stern, 1992); Enhanced by previous environmental awareness, attitudes have more sway over actions **if those actions are easy and not costly**

❑ From a supply side

In addition, environmentally conscious manufacturing, equipment and materials disposition, recycling, and related topics have given rise to cooperation, and sometimes to conflict, between industry, government, trade organizations and agencies.

- ❑ Dimensions in two backgrounds - **psychologically** and sociologically (in brackets): **equipment** (material culture), **attitudes** (representations), **knowledge** (information), **practices** (behavior).
- ❑ Those **4 dimensions** are relatively independent of each other, in the sense that there is no systematic correlation between them.

An analysis in 4 dimensions

Do you know that :

- The **performance will be excessive** in relation to your needs
- You will be responsible of the waste of **a quantity of raw materials** equivalent to **100** times the weight of the PC.
- It will cost you a **lot of money** 600€ in average



It's an eco-responsible action

- ❑ You'll get a computer **powerful enough** for **90%** of the common usages
- ❑ You'll save **1MWh** and **1 ton of CO2**
- ❑ It will be **5 times less expensive**



They maintain an economic model opposed to sustainable computing

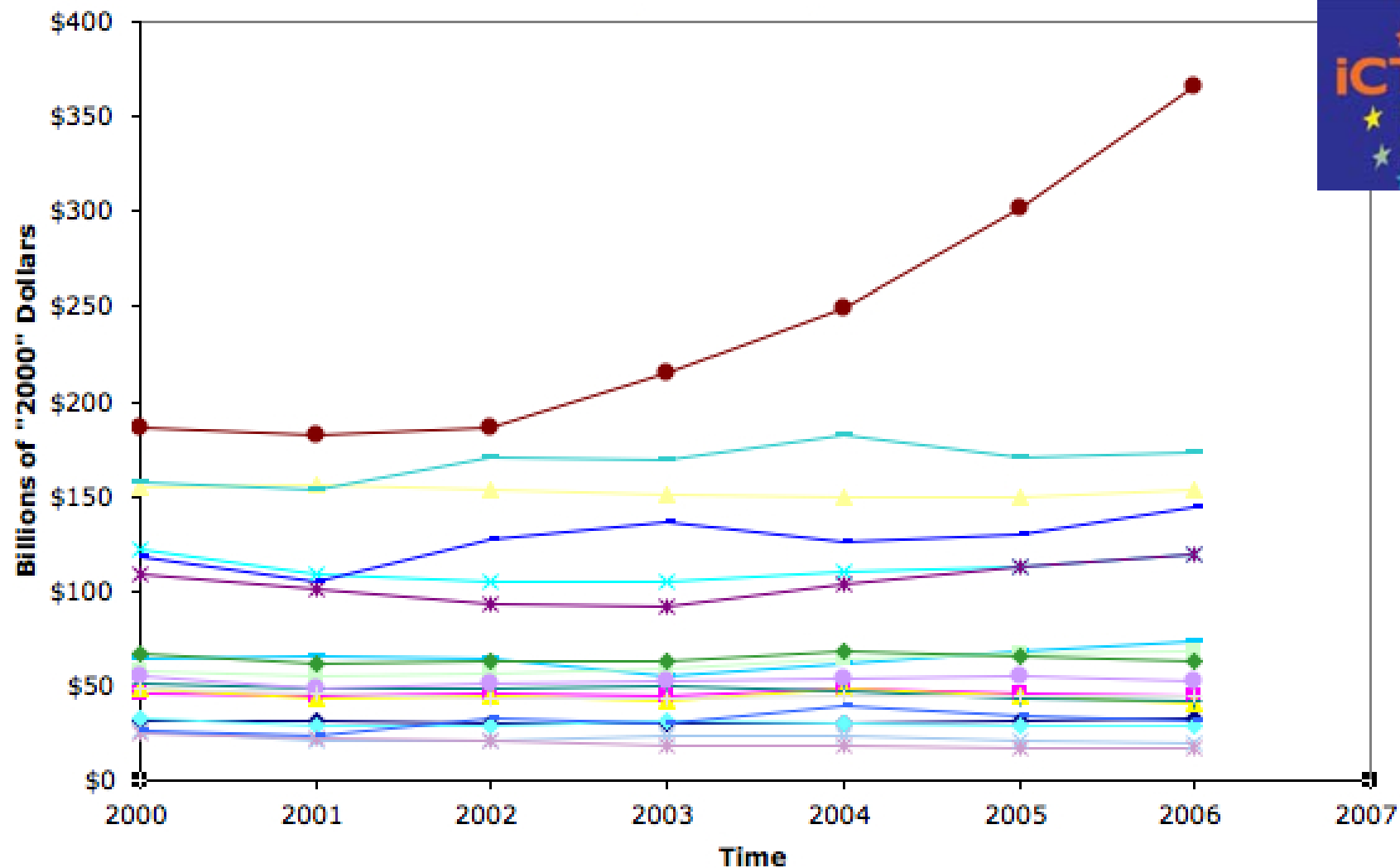
- ❑ They maintain equipments **obsolescence**(software)
- ❑ They give priority to **recycling** rather than refurbishing.
- ❑ The **warranty** duration is two short. (4 years on average)



Users get carried away by consumption logics.

- ❑ **Frenzy of purchases** of electronic products ever more ephemeral and seductive
- ❑ **Businesses** subscribe to short duration contracts for the renewal of their equipment (**2 to 5 years**)
- ❑ The **unawareness** of the environmental impact is total.

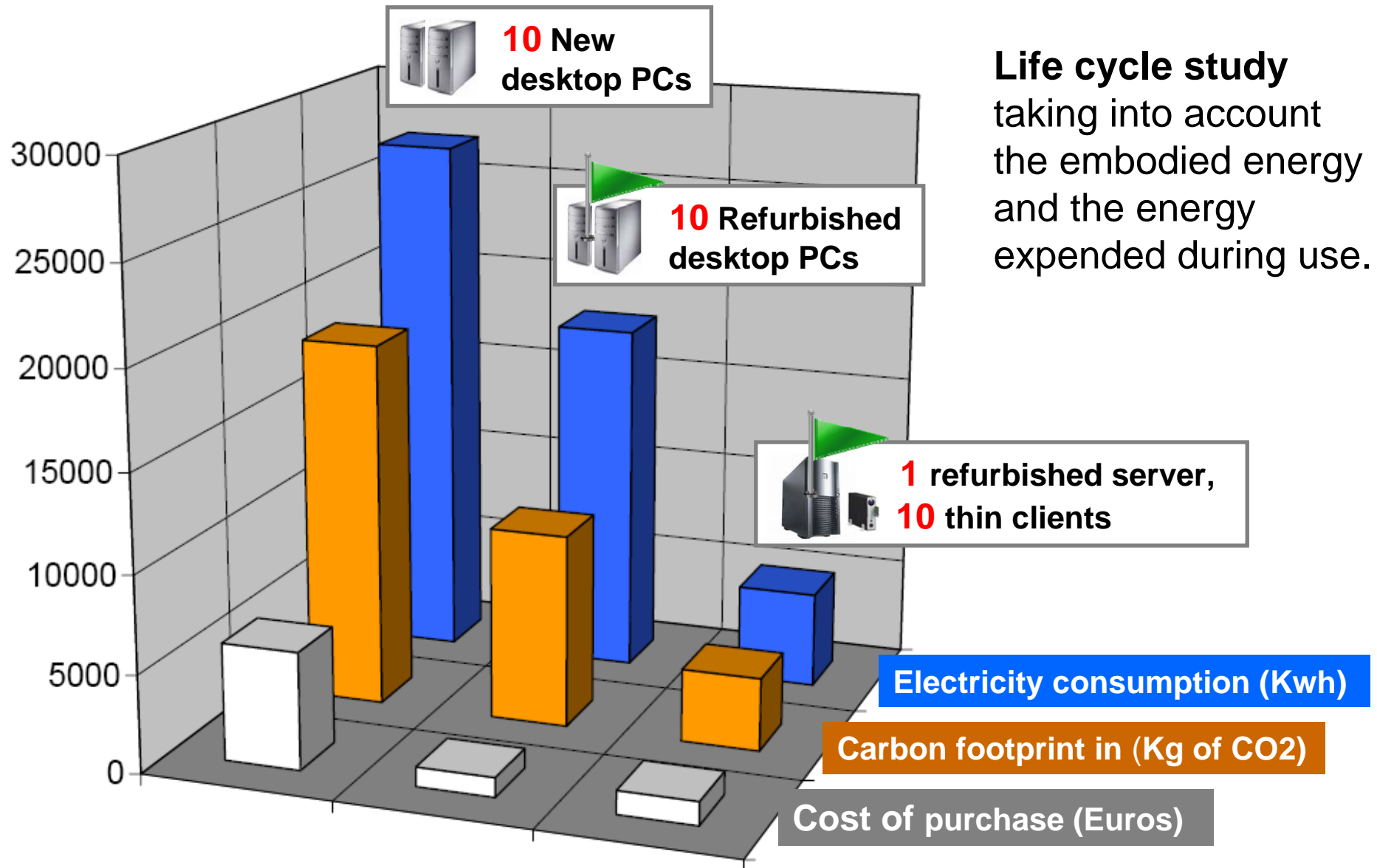




- ◆ Wood products
- ▲ Primary metals
- ✱ Machinery
- Electrical equipment, appliances, and components
- Other transportation equipment
- Miscellaneous manufacturing
- ✱ Textile mills and textile product mills
- Paper products
- Petroleum and coal products
- Plastics and rubber products
- Nonmetallic mineral products
- ✱ Fabricated metal products
- Computer and electronic products
- Motor vehicles, bodies and trailers, and parts
- Furniture and related products
- Electrical equipment, appliances, and components
- Food and beverage and tobacco products
- ✱ Apparel and leather and allied products
- Printing and related support activities
- Chemical products

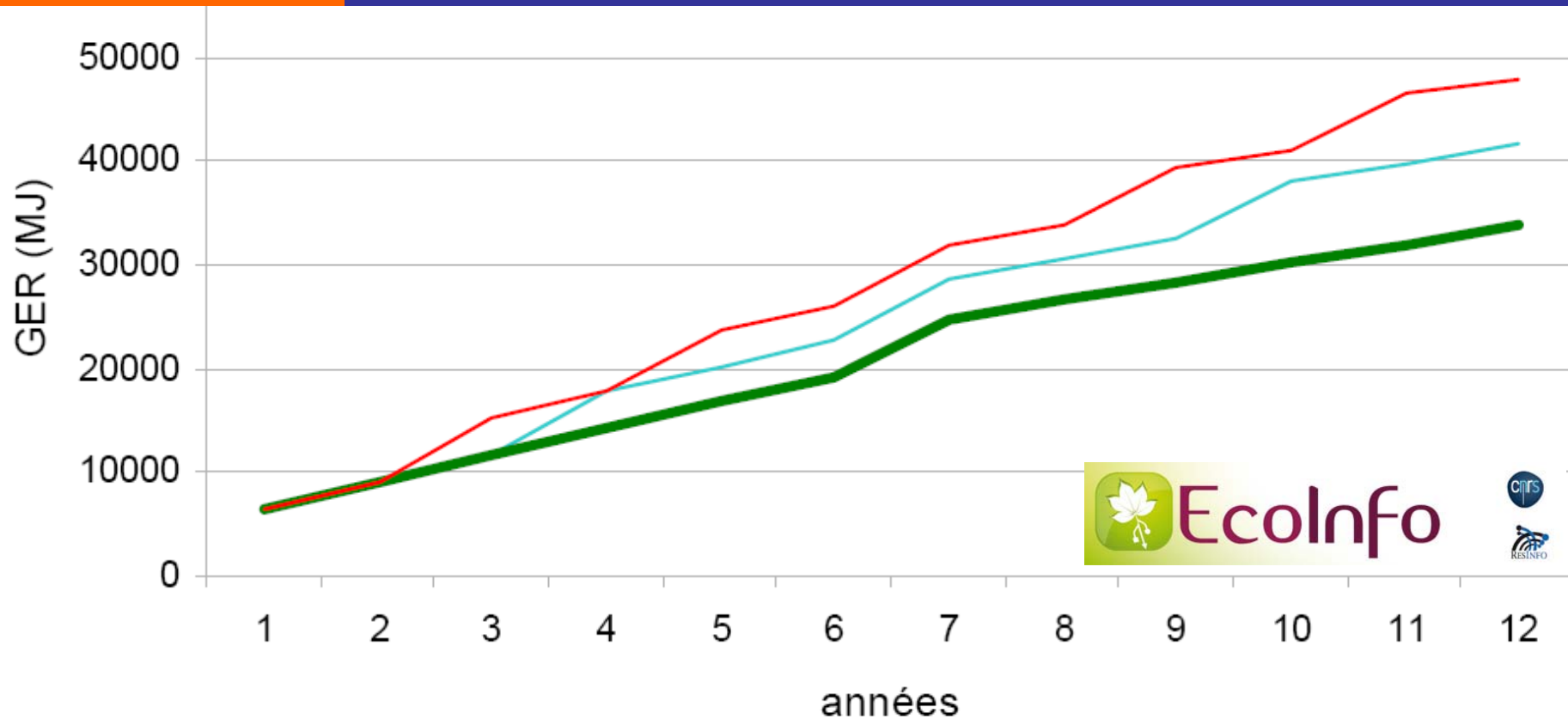
- ❑ Almost **1 MWh**, **1 ton of CO2**.
Equivalent to **8400 km by car**
- ❑ 1500 L water, 240 kg of fossil energy, 11kg of metal.
- ❑ **50% of the CO2** released during the lifecycle of a PC is released during its **production**.
- ❑ At the end of the lifecycle, computers are sent in developing countries and handled without protection against **toxic substances**.





Knowledge

Increase your computers lifespan



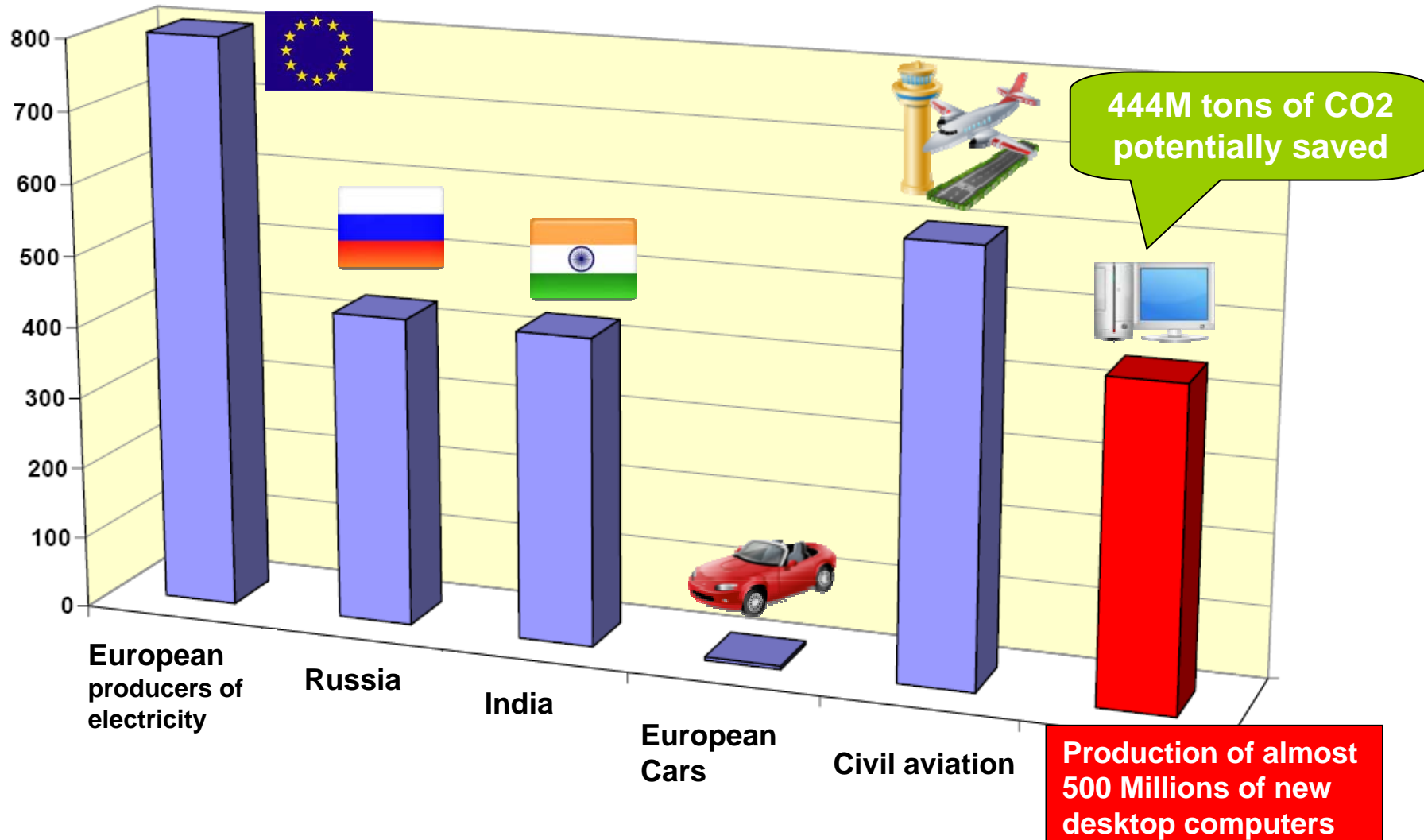
Every 2 years (new generation)	Every 3 years (end of standard warranty)	Every 6 years (maximize the cycle of lifetime)
+45% energy	+27% energy	Minimizes the total energy

Knowledge

Produce or reuse for digital solidarity ?

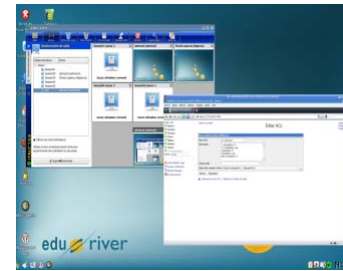
CO2 emissions potentially saved by using refurbished computers instead of new pc for DCs. *With an objective of 20 units for 100 inhabitants in Africa, Asia and Latin America.*

Million tons of CO2 per year.



❑ Following the client server computing model, **Dotriver** pushes the limits of computer reuse. Even very old pc, without hard drive can be reused.

dot  river



❑ **MetalIT** develops a new concept of ecological computer **ALT®** requires 10 times fewer parts than conventional computers. Its components are low power.



Major companies

- ❑ **Redemtech leader** in the USA.
- ❑ **Dataserv** a European reference.

REDEMTECH.

dataserv®group

Charity organisations

- ❑ **Digital Pipeline**, help technologically disadvantaged schools and communities in **Africa**.
- ❑ **Computer aid international** refurbish computers for reuse in developing countries.



Influencing new behaviour patterns

a proposal

So what to do ?

Re-design the equipment

- Progress in **Ecodesign**
- Build very high **durability** computers only (> 10 years)
- Produce computers that can be **easily refurbished**
- Develop the model of **thin client**



So what to do ?

Trying to change behavior

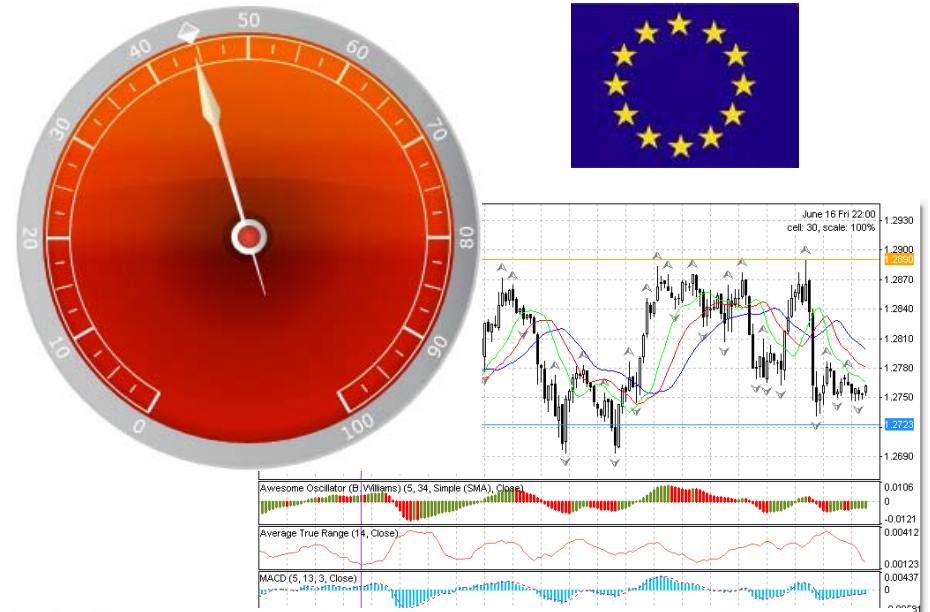
- ❑ **Responsibilise** the public and the companies in their electronic purchases.
- ❑ **Enhancing the image** of refurbished equipment.
- ❑ **Encourage retailers** to sell refurbished computers.
- ❑ Encourage manufacturers to **increase the warranty duration**.



So what to do ?

Increase knowledge throughout a EU Study

- ❑ To **Measure and certify** energy gains of computers re-use
- ❑ To determine the **economic model** of a large refurbished computers market.
- ❑ To produce **strong recommendations** to producers, sellers and consumers.



So what to do ?

Sustain the best practices

❑ Create a **European call for projects** to identify and replicate the best initiatives.



❑ Create a **carbon fund** to support the best initiatives of sustainable computing.



Thank you for your attention

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