



Shaping the
Future!

2009 GLOBAL FORUM

ICT FOR A GREEN ICT:

Fighting Against Global
CO₂ Emissions, Including
the Contribution of ICT

THE BASIC AXIOM (I) - FOR: “ICT - 4 - A GREEN EU SUSTAINABLE GROWTH”

- ❑ **ICT** CANNOT SIGNIFICANTLY CONTRIBUTE IN A SUSTAINABLE MODE TO GREEN THE EU SD PROCESS WITHOUT AN **ACTIVE DEVELOPMENT OF NEW REVOLUTIONARY TECHNOLOGIES** SUPPLYING STATE-OF-THE-ART UNIVERSAL TOOLS TO ALL OTHER ECONOMIC SECTORS.
- ❑ **CONTEMPORARY ICT TECHNOLOGICAL REVOLUTION:**
 - ❖ **CHIP MULTIPROCESSOR (CMP) TECHNOLOGY**
 - ❖ **HEAVILY MULTITHREADED MICROPROCESSOR EXECUTING:**
 - **(1) UP TO 32 INSTRUCTION / SEQUENCES**
 - **(2) 8 PROCESSING CORES / CHIP**

THE BASIC AXIOM (II) - FOR:

“ICT - 4 - A GREEN EU SUSTAINABLE GROWTH”

- ❑ A PERMANENT SELF-IMPROVEMENT OF IT CURRENT CORE APPLICATIONS: INTERNET, BROADBAND, WIRELESS COVERAGE, MULTIPLEXING, NETWORKING
- ❑ NEUTRALIZING THE ACTUAL NEGATIVE EFFECTS OF USING ICT HARDWARE - MAINLY REDUCING ACTUAL ENERGY CONSUMPTION NOT LESS THAN 50% UNTIL 2012.



FOR **EU CITIZENS**, THIS MEANS EASY-TO-APPLY, AFFORDABLE APPLICATIONS:

- ❑ **NETWORKED, MOBILE, SEAMLESS AND SCALABLE**, OFFERING THE CAPABILITY TO BE ALWAYS BEST CONNECTED AT ANY TIME, ANYWHERE AND TO ANYTHING
- ❑ **EMBEDDED INTO THE THINGS OF EVERYDAY LIFE** IN A WAY THAT IS EITHER INVISIBLE TO THE USER OR BRINGS NEW FORM-FITTING SOLUTIONS
- ❑ **INTELLIGENT AND PERSONALISED**, AND THEREFORE MORE CENTRED ON THE USER AND THEIR NEEDS
- ❑ **RICH IN CONTENT** AND EXPERIENCES AND IN VISUAL AND MULTIMODAL INTERACTION.



ICT FOR GREEN ICT:

SELF-DEVELOPING ITS OWN HIGH PERFORMANCE & LOW-ENERGY CONSUMPTION HARDWARE (I)

❑ RAPID GROWTH OF WEB-BASED SERVICES -

DRIVING UP POWER DEMAND AND CO² EMISSION:

- ❖ FIRST 5 MAJOR SEARCH ENGINES = 2 MILLION SERVERS = ABOUT 5 GW = AN URBAN AREA OF 10 MILLION INHABITANTS, DURING A SUMMER DAY
- ❖ IF PERFORMANCE / WATT OF TODAY'S COMPUTERS DOES NOT IMPROVE, ELECTRICAL RUNNING COSTS COULD END UP FAR GREATER THAN THE INITIAL HARDWARE PRICE



ICT FOR GREEN ICT:

SELF-DEVELOPING ITS OWN HIGH PERFORMANCE & LOW-ENERGY CONSUMPTION HARDWARE (II)

- ❑ IF COMPUTER EQUIPMENT POWER CONSUMPTION CONTINUES TO SPIRAL OUT OF CONTROL = SERIOUS CONSEQUENCES FOR OVERALL COMPUTERS' AFFORDABILITY
- ❑ 40% OF ALL ELECTRICITY POWER (HOME ELECTRONICS AND DOMESTIC IT SYSTEMS) - CONSUMED WHILE THE PRODUCTS ARE ON STANDBY
- ❑ CRUCIAL PRECONDITION FOR CONTROLLING & GROWING THE SECTOR:

" TO BRIDGE THE GAP BETWEEN ICT EXPERTS AND DECISION MAKERS ON A POLITICAL & ECONOMIC STANDPOINT "

NEUTRALIZING THE NEGATIVE EFFECTS OF USING ICT HARDWARE

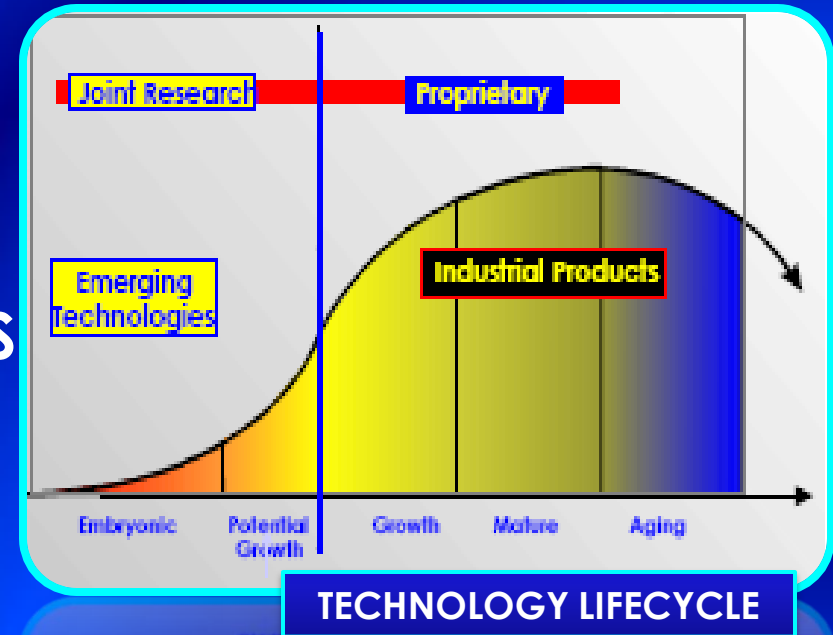
❖ SETTING UP A NEW EU PROGRAM WITH THE FOLLOWING TARGETS:

- PERMANENTLY MEASURE AND MONITOR HARDWARE POWER CONSUMPTION
- CONSUME FEWER SERVERS AND DEVICES BY INCREASING UTILIZATION OF VIRTUAL SERVERS
- STOP OVER-PROVISIONING AND IMPROVE CAPACITY PLANNING
- IMPROVE THE COOLING EFFICIENCY
- TURN POWER MANAGEMENT ON, USE A LOW POWER STATE OR TURN EQUIPMENT OFF WHEN NOT IN USE
- EXTEND LIFESPAN OF ASSETS BY REUSING THEM WITHIN ENTERPRISE OR EXTERNALLY
- ANALYZE AND EVALUATE ALL WASTE

HOW?

RECOMMENDATIONS FOR ICT LEADERS:

1. USE ICT TO REDUCE THE ENTERPRISE'S OVERALL ENVIRONMENTAL PRESENCE
2. REQUIRE HARDWARE MANUFACTURERS A BETTER UNDERSTANDING OF PRODUCTS' LIFECYCLE
3. REDUCE CO² EMISSIONS – REDUCE THE SIGNIFICANCE, ENERGY CONSUMPTION, AND USE OF HAZARDOUS SUBSTANCES THROUGHOUT THE TECHNOLOGY LIFECYCLE
4. INCREASE THE EFFICIENCY AND EFFECTIVENESS OF RECYCLING, AND THE USE OF RECYCLED MATERIALS





THE NEW ROLE OF NANOTECHNOLOGIES

- ❑ A PROPER TOOL FOR THE DEVELOPMENT OF NEXT GENERATION “GREEN” ICT HARDWARE AND HOME APPLIANCES
- ❑ ALLOW THE FORTHCOMING PROSPECT OF A “DOUBLE GREEN DREAM”
- ❑ OPPORTUNITY TO MAKE PRODUCTS AND PROCESSES ENTIRELY “GREEN”.
- ❑ NT - REDUCING GREENHOUSE GAS EMISSIONS BY UP TO 2% PER YEAR IN AUTUMN 2007, AND UP TO 20% BY 2050 WITH SIMILAR REDUCTIONS IN AIR POLLUTION.



NT SIGNIFICANT POTENTIAL IN REDUCING CO₂ EMISSIONS – BY:

- FUEL ADDITIVES
- SOLAR CELLS:
- HYDROGEN ECONOMY
- BATTERIES AND SUPER-CAPACITORS
- INSULATION:
- MICROELECTRONICS

ICT LEADING THE EU INNOVATION - BASED SUSTAINABLE GROWTH (I)

“INTEL²I@ENERGY.EU” :

BETTER LIVING CONDITIONS
FOR EU CITIZENS BY
IMPLEMENTING THE ICT-BASED
“INTELLIGENT ENERGY”
INITIATIVE

“INTEL²I@ENERGY.EU” :

**ICT-BASED “INTELLIGENT ENERGY”
INITIATIVE : A NEW ACTION PLAN –
STRUCTURED ALONG THE NEWEST
TECHNICAL AND TECHNOLOGICAL
R & D POTENTIAL DIRECTIONS IN THE
AREA OF ENERGY SUPPORTED BY ICT,
TO FACE AND SOLVE CURRENT
CHALLENGES – WITH SPECIAL
REFERENCE TO:**

“INTEL²I@ENERGY.EU” MEANS (I):

1. **MORE EFFICIENT ENERGY AND ELECTRICITY SERVICES TO ALL HOUSEHOLDS, INCLUDING THE CONNECTION FOR THOSE LACKING ACCESS;**
2. **INCREASING ELECTRICITY PENETRATION AND CONSUMPTION = MORE GENERATION & SUPPLY;**
3. **ENVIRONMENTALLY FRIENDLY RENEWABLES FUELS;**
4. **REDUCING ENERGY LOSSES (TECHNICAL & THEFT)**
5. **ALTERNATIVE TECHNOLOGIES (BOTH SUPPLY AND CONSUMPTION) THAT CAN ENABLE OPTIONS SUCH AS DSM (DEMAND SIDE MANAGEMENT) & ENERGY STORAGE.**

“INTEL²I@ENERGY.EU” MEANS (II):

6. REDUCING THE **IMPACT OF ENERGY USAGE ON THE ENVIRONMENT** - FROM LOCAL TO GLOBAL;
7. PROVIDE **BETTER ENERGY SECURITY FOR USERS & COUNTRIES**, I.E. PRICE STABILITY/ PREDICTABILITY;
8. PROVIDE HIGH – LEVEL **SECURITY & ENVIRONMENTAL SAFEGUARDS** WHEN USING NUCLEAR MATERIALS;
9. DEVELOPING APPROPRIATE ADAPTATION **STRATEGIES FOR CLIMATE CHANGE AND SEA – LEVEL RISE**, WHICH MAY IMPACT DEVELOPING COUNTRIES DISPROPORTIONATELY.



ICT LEADING THE EU INNOVATION - BASED SUSTAINABLE GROWTH (I)

“INTEL²I@BUILDING.EU” :

BETTER LIVING CONDITIONS
FOR EU CITIZENS BY
IMPLEMENTING THE ICT-BASED
“INTELLIGENT BUILDING”
INITIATIVE

ICT LEADING THE EU INNOVATION - BASED SUSTAINABLE GROWTH (I)

“INTEL²I@TRANSPORT.EU”:

BETTER TRANSPORT CONDITIONS
FOR EU CITIZENS BY
IMPLEMENTING THE ICT - BASED
“INTELLIGENT TRANSPORT”
INITIATIVE

THANK YOU
FOR
YOUR KIND ATTENTION!



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