



TRANSFORMING MANUFACTURING

A PATH TOWARDS A SMART, SUSTAINABLE AND
INCLUSIVE GROWTH

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INTRODUCTION



THE FRAMEWORK



- THE EUROPEAN INNOVATION PLATFORM
- “TRANSFORMING MANUFACTURING”
REPORT, THE ROLE OF MANUFACTURING IN
EUROPE’S FUTURE ECONOMY
- MANUFACTURING CAPABILITY=
INNOVATION



A WORLD IN EVOLUTION

CHANGE AND UNCERTINTY



CHANGE AND UNCERTAINTY

- IMPACT OF TECHNOLOGY REVOLUTION
- GLOBALIZATION
- DIFFUSION OF POWER
- REGIONAL INSTABILITY
- SHIFT OF ECONOMIC AND TECHNOLOGICAL POWER TO THE EAST AND SOUTH
- CHANGE IN THE ENERGY MODEL
- FINANCIAL CRISIS
- DEMOGRAPHIC PATTERNS
- GLOBAL WARMING

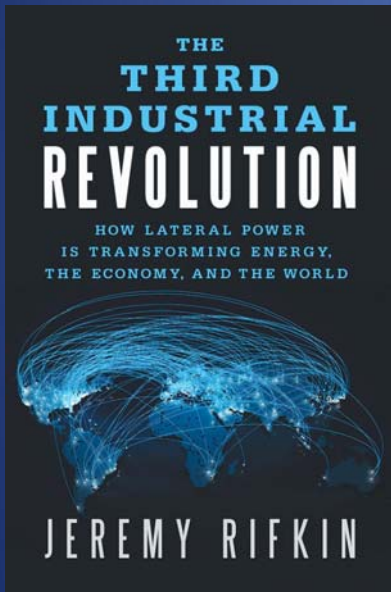




A NEW EMERGING ECONOMY



THE ECONOMY OF THE CYBER- PHYSICAL INDUSTRIAL REVOLUTION



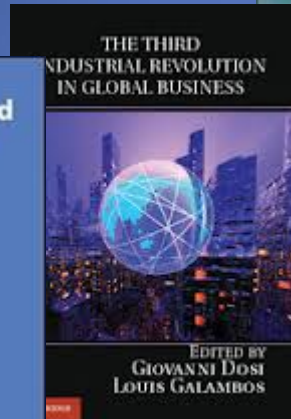
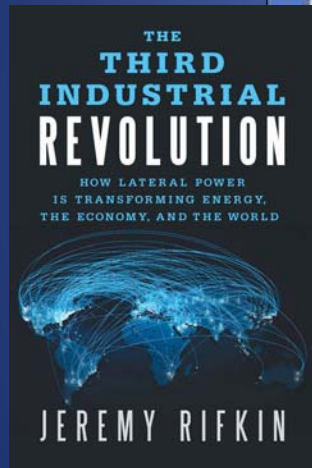
- AN ECONOMY BASED IN DEEP KNOWLEDGE, AND THE USE OF TECHNOLOGY AND INNOVATION TO THE CREATION OF PRODUCTS, ASSOCIATED SERVICES, PRODUCTION PROCESSES AND NEW BUSINESS
- BOOSTED BY THE DIGITAL REVOLUTION AND THE USE OF INFORMATION TECHNOLOGIES
- ORIENTED TO HIGH VALUE AND COMPLEX “PRODUCTS” AND SERVICES
- NETWORK AND DATA CENTRIC
- SMART INTEGRATION OF THE CYBER SPACE AND THE PHYSICAL WORLD
- GREEN AND SUSTAINABLE
- GLOBALISED AND HIGHLY COMPETITIVE



A NEW INDUSTRIAL REVOLUTION



**UBIQUITOUS COMPUTING, CONECTIVITY,
DATA GATERING, NEW MATERIALS AND
ADVANCED MANUFACTURIG TECHNOLOGY
WILL PROFOUNDLY TRANSFORM THE
WHOLE ECONOMY**



DOES MANUFACTURING MATTER IN NEW ECONOMY?



A GENERAL CONSENSUS

EUROPE NEEDS TO REVERSE THE DECLINING ROLE OF INDUSTRY FOR THE 21 ST CENTURY



- COUNTRIES WITH STRONG INDUSTRIAL BASES HAVE BETTER ENDURED THE CRISIS

- MANUFACTURING IS CENTRAL TO THE 21ST ECONOMY

- THERE IS A STRONG CORRELATION BETWEEN PRODUCTION CAPACITY, INNOVATION AND ECONOMIC WEALTH

- LOOSING MANUFACTURING CAPABILITIES MEANS LOOSING THE INNOVATION EDGE

- THE FUTURE ECONOMY WILL REQUIRE TO FOCUS ON HIGH COMPLEX HIGH VALUE MANUFACTURING AND ASSOCIATED SERVICES





THE PRESENT

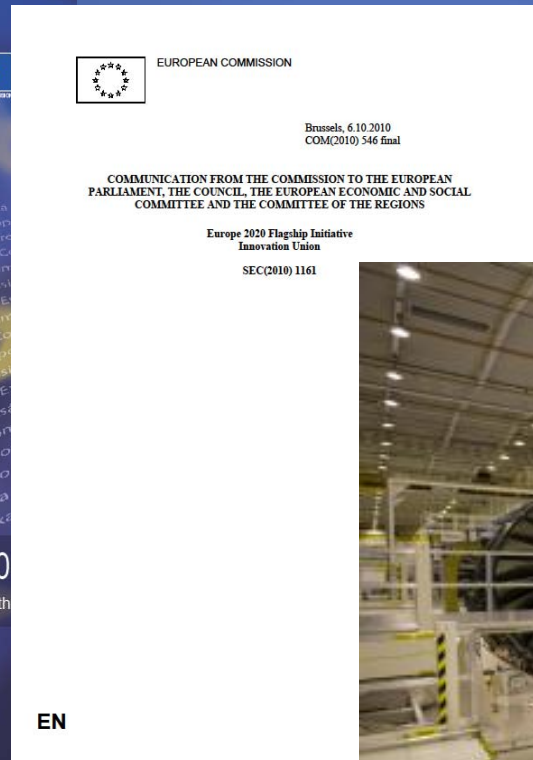


- **THE IMPACT OF THE CRISIS**, two decades overboard
- **THE IMPACT OF THE ENERGY**, 2005-2012 price increase of 27%
- **GLOBALISATION**, China 20% of all world exports
- **STRUCTURAL WEAKENESS**, loss of competitiveness, lack of entrepreneurship, lack of interest for science, ageing population, fall behind the digital revolution, .etc
- **UNEVEN MANUFACTURING CAPABILITIES DISTRIBUTION**



TRANSFORMING MANUFACTURING EUROPE 2002

EU COMMUNICATION COM(2012) 582



FROM THE 16% TO THE 20% GDP
HIGH VALUE MANUFACTURING



QUO VADIS MANUFACTURING?



TOWARDS A NEW INDUSTRIAL BASE BITS, ATOMS AND NEURONES



- HIGH VALUE, ADVANCED MANUFACTURING AND ASSOCIATED SERVICES ARE CENTRAL TO THE RECOVERY AND BUILDING THE FUTURE ECONOMY
 - EXPAND THE MEANING OF “MANUFACTURING”
 - INTEGRATED SPACE OF PRODUCTION AND VALUE CREATION
 - ALLOCATION OF TASKS BETWEEN THE VIRTUAL AND THE PHYSICAL WORLD = BEING DIGITAL
- A NEW PARADIGM: FROM THE COMPUTER (CYBERSPACE) TO THE MARKET (PHYSICAL WORLD)



A NEW PARADIGME FROM THE COMPUTER TO THE MARKET



**ROBOTIZATION
HUMAN INTERACTING
ROBOTS**



**NEW MATERIALS
NANOTECHNOLOGY**



**INTEGRATION
OF CYBER PHYSICAL
SYSTEMS, PRODUCTS
AND PROCESSES**



**3D PRINTING
ADDITIVE
MANUFACTURING**



**WIDE BAND
REAL TIME
CONECTIVITY,
INTERNET OF THINGS
AND THE SERVICES**



**DIGITAL
VIRTUAL
MANUFACTURING**





TRANSFORMING MANUFACTURING

A path to a Smart, Sustainable
and Inclusive growth in Europe

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10 March 2013

WHAT SHOULD BE DOING TO MAKE IT HAPPEN?



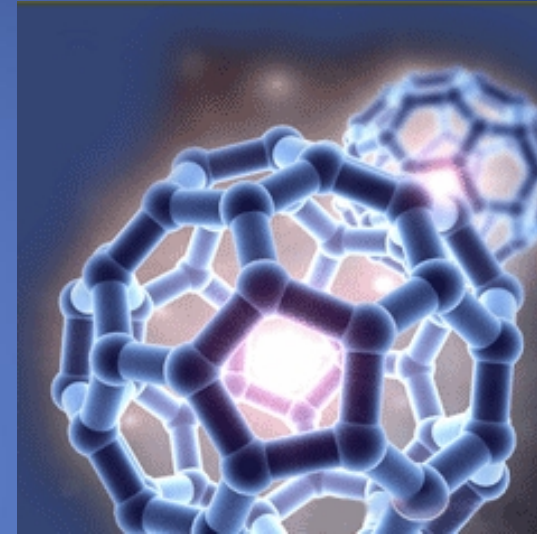
BEAT TO QUARTERS!



- **THE EU HAS THE SECOND BEST SCIENTIFIC AND TECHNOLOGY BASE OF THE WORLD**
- **EU IS LEADING SOME MANUFACTURING CAPABILITIES**
- **THERE IS NO SUCH POST INDUSTRIAL ECONOMY, MANUFACTURING MUST BE IN THE CENTER OF THE THIRD INDUSTRIAL REVOLUTION**
- **EXPANDING THE MEANING OF MANUFACTURING**
- **ATTRACT YOUNG PEOPLE TO SCIENCE AND TECHNOLOGY**
- **THE NEW ECONOMY REQUIRES NEW SKILLS; EDUCATION SYSTEM AND PROFESSIONAL TRAINING ORIENTED FOR THE MARKET NEEDS**
- **PUMP KNOWLEDGE FROM THE KNOWLEDGE PONDS TO THE INDUSTRIAL BASE**
- **PROVIDE MEANS TO THE SMEs TO ADAPT TO THE NEW ECONOMY**



CONCLUSIONS AND RECOMMENDATIONS



- SPONSOR THE DEVELOPMENT OF NEW MATERIALS (**MATERIAL GENOME INITIATIVE**)
- TO LAUNCH “**BIO FOUNDRIES**” INITIATIVE
- TO DEVELOP NEW PROCESSES FOR SYSTEM ENGINEERING (**INTEGRATED COMPUTATIONAL MATERIALS AND ENGINEERING**)
- KEEP THE LEADING EDGE IN “**3D IMPRESIÓN**” TECHNOLOGIES
- SPONSOR AND PROMOTE THE DEPLOYMENT OF THE NEXT GENERATION OF INDUSTRIAL ROBOTS.



THE CHALLENGE



THE SOCIAL STABILITY, SECURITY AND LIVING STANDARDS OF EUROPE WILL DEPEND ON THE ABILITY TO ADAPT TO THE NEW SCENARIO OF THE THIRD INDUSTRIAL REVOLUTION



A CONTRIBUTION TO FACING THE CHALLENGE



REAL ACADEMIA DE INGENIERIA



Euro-CASE



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