



European Research Council
Scientific Council



PERSPECTIVES OF THE EUROPEAN RESEARCH AREA

NORBERT KROO

HUNGARIAN ACADEMY OF SCIENCES AND THE
EUROPEAN RESEARCH COUNCIL

VIENNA, 16.12.2006

GROWING SIGNIFICANCE OF KNOWLEDGE

KNOWLEDGE BASED SOCIETY (ECONOMY)

→ INNOVATION ORIENTED SOCIETY

RESOURCES (LABOUR, MATERIALS, ENERGY, CAPITAL,
KNOWLEDGE). SCIENTIFIC KNOWLEDGE!

(danger to treat knowledge as a tradable commodity)

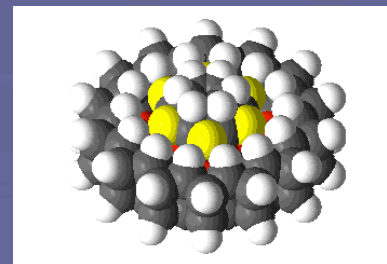
NEW PRACTICES IN RESEARCH (multidisciplinary, groups)

NEW PRIORITIES (sustainable devel., jobs, competitiveness)

DRIVING OUT TECHNOLOGIES

NEW POTENTIAL REVOLUTIONS (BIO-, NANO-, INFO-TECHNOLOGIES)

GLOBALIZATION. CRITICAL SIZE. INTERNATIONAL COOPERATION





R&D RECOGNIZED AS A KEY TO COMPETITIVENESS AND NEW (HIGH TECH.) JOBS

INCREASED RESEARCH POTENTIAL

HUMAN CAPITAL (700,000 NEW RESEARCH POSITIONS)

PROPER INFRASTRUCTURE. LARGE FACILITIES.

STRONG (BASIC) RESEARCH BASE (G.W. Bush)

ERC (excellence – competition on European level)

HIGHER R&D SPENDING

APPROPRIATE INSTITUTIONAL SYSTEM

IMPROVED ACADEMIA - INDUSTRY RELATIONS

BETTER SCIENCE - SOCIETY RELATIONS

EUROPEAN TRADITIONS

MANY (100 YEAR, 30 YEAR, 1. AND 2 WORLD) WARS

RENAISSANCE

ENLIGHTENMENT

GALILEI, KEPLER, NEWTON, MAXWELL,...

INDUSTRIAL AND AGRICULTURAL REVOLUTION

THE CRADLE OF MODERN SCIENCE

RESPONSIBILITY OF OUR GENERATION!

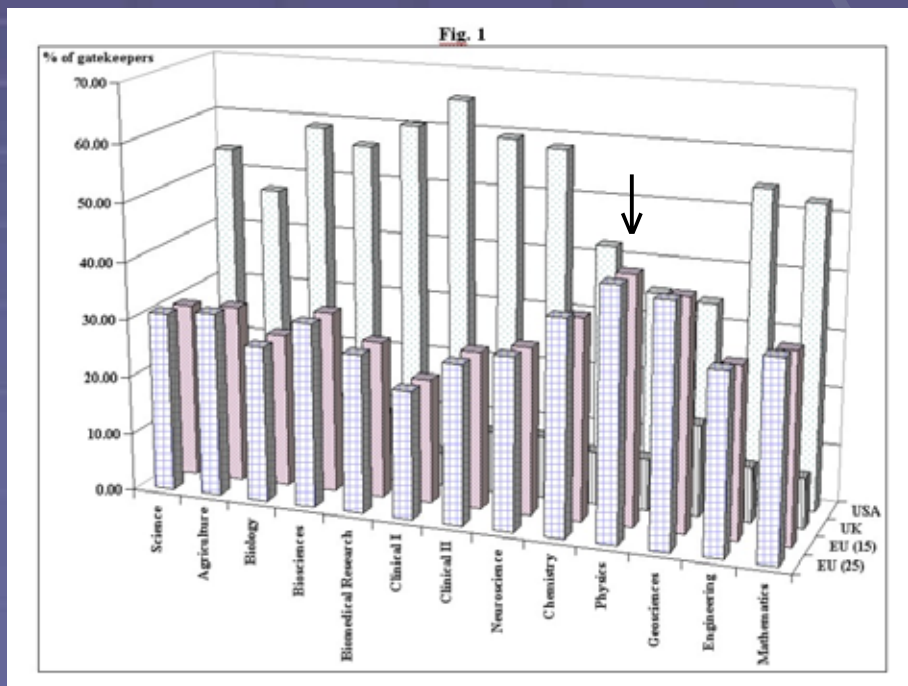
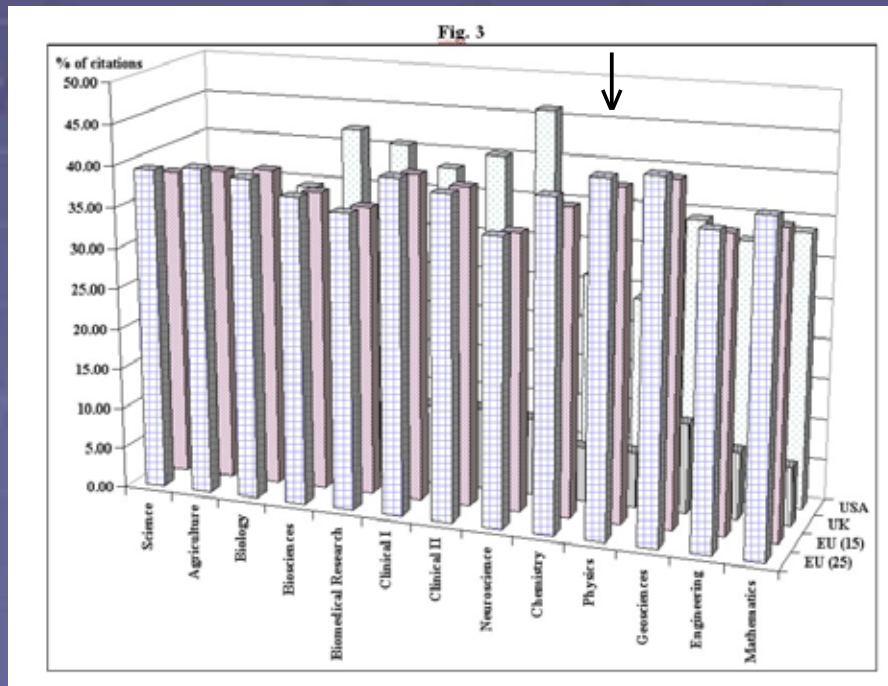
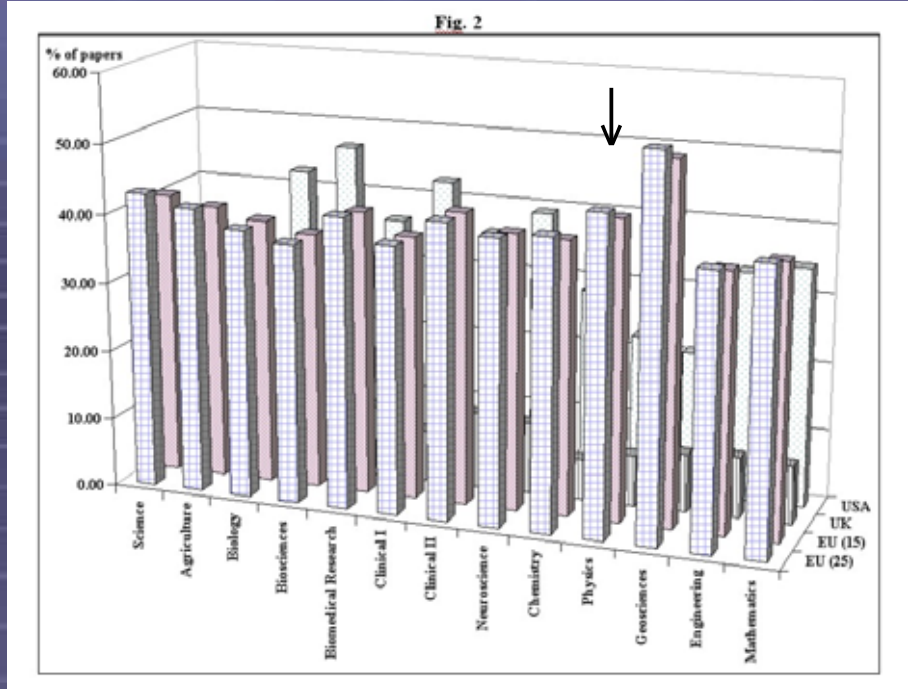
SKILLS IN INTERNATIONAL COOPERATION!

TRADITIONAL UNIVERSITY SYSTEM

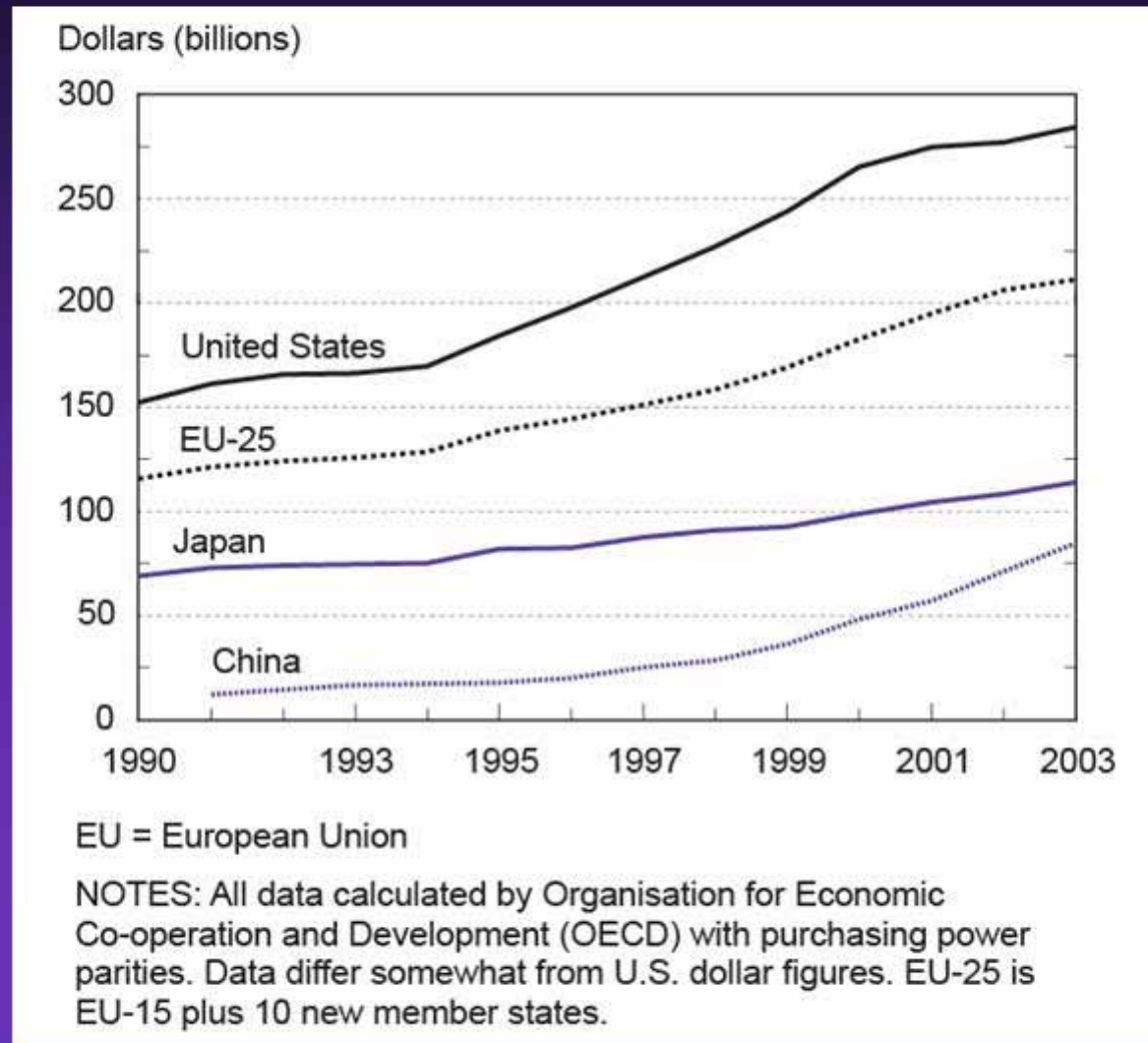
BOLOGNA (drives universities to be more managable)



EUROPEAN PRESENCE ON THE PUBLICATION „MARKET”



R&D expenditures of selected region and countries: 1990–2003



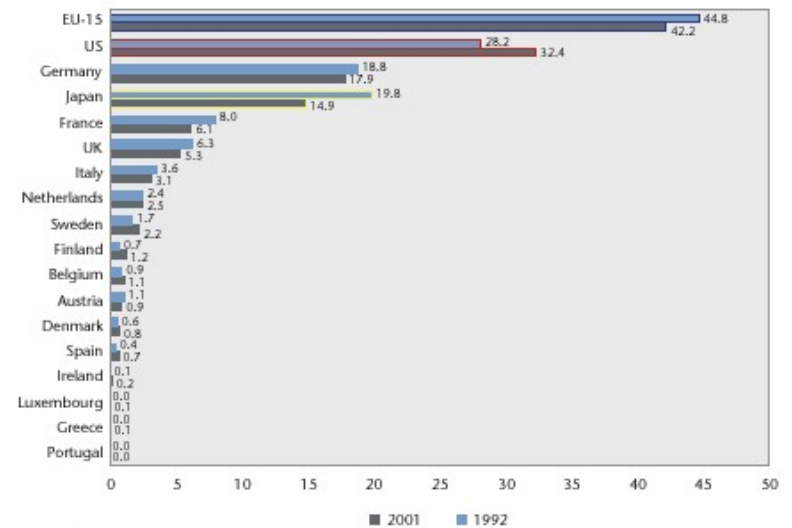
SOURCE: National Science Board, *Science and Engineering Indicators 2006*





PATENT INDICATORS

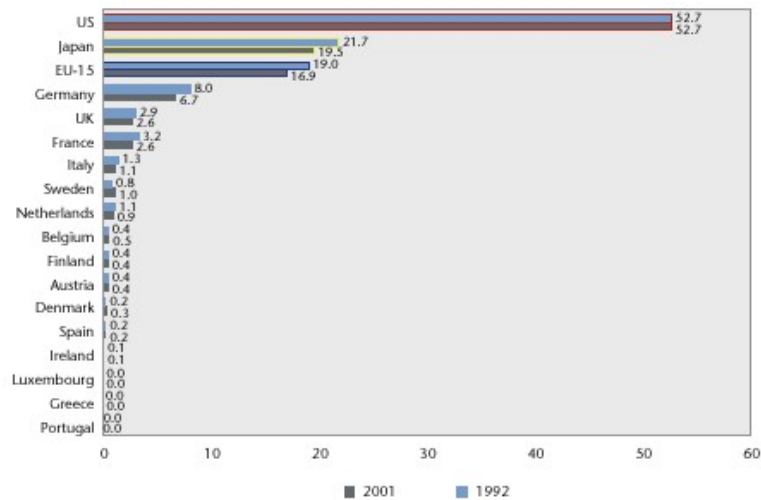
Figure 6.1.1 Share of European patents (%)



Source: DG Research
Data: EPO; data processed by OST

Third European Report on S&T Indicators, 2003

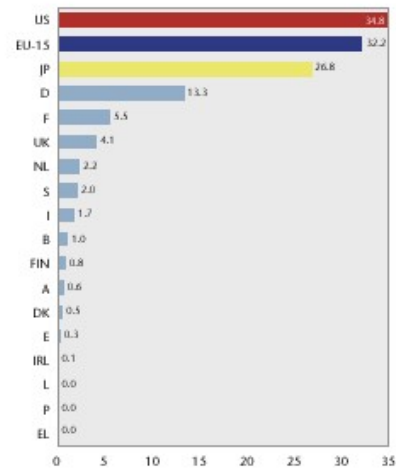
Figure 6.1.3 Share of US patents (%)



Source: DG Research
Data: USPTO; data processed by Fraunhofer-ISI

Third European Report on S&T Indicators, 2003

Figure 6.1.5 Share of Triad patents % (1995)



Source: DG Research
Data: OECD from EPO, USPTO and JPO
Note: Data for 1995 priority year.
Third European Report on S&T Indicators, 2003



WIDENING OF THE EUREAN KNOWLEDGE BASE (EUROPEAN RESEARCH AREA)

- HARMONIZATION OF NATIONAL RESEARCH PROGRAMMES
- RECOGNITION OF EXCELLENCE IN (BASIC) RESEARCH
(at present no financing on European level; ERC)
- RECRUITMENT, TRAINING AND CAREER PATH OF SCIENTISTS
(700 000 scientist-engineer positions until 2010)
- INFRASTRUCTURE
(attractive research conditions)
- BETTER USE AND DEVELOPMENT OF THE RESEARCH POTENTIAL OF
LESS DEVELOPED REGIONS
- MOBILITY

ERA

- HARMONIZATION OF SCIENCE POLICIES

BIG VS. SMALL COUNTRIES

COUNTRIES FROM EAST AND WEST, NORTH

AND SOUTH

REGIONAL SPECIFICITIES

NATURAL VS. SOCIAL SCIENCES AND

HUMANITIES

ERA

- BALANCED RESEARCH INFRASTRUCTURE

THE WEAKEST POINT IN CE

PRACTICALLY NO LARGE FACILITIES

STRUCTURAL FUNDS!

-MOBILITY. HUMAN RESOURCES

MARIE CURIE SCHEME (BALANCED USE)

TWO WAY STREET

YOUNG SCIENTIST GRANTS

-3% ISSUE

FP6

MAIN INSTRUMENT OF ERA

**CONCENTRATING AND INTEGRATING EUROPEAN
RESEARCH**

STRUCTURING ERA

STRENGTHENING ITS FOUNDATIONS

FP7

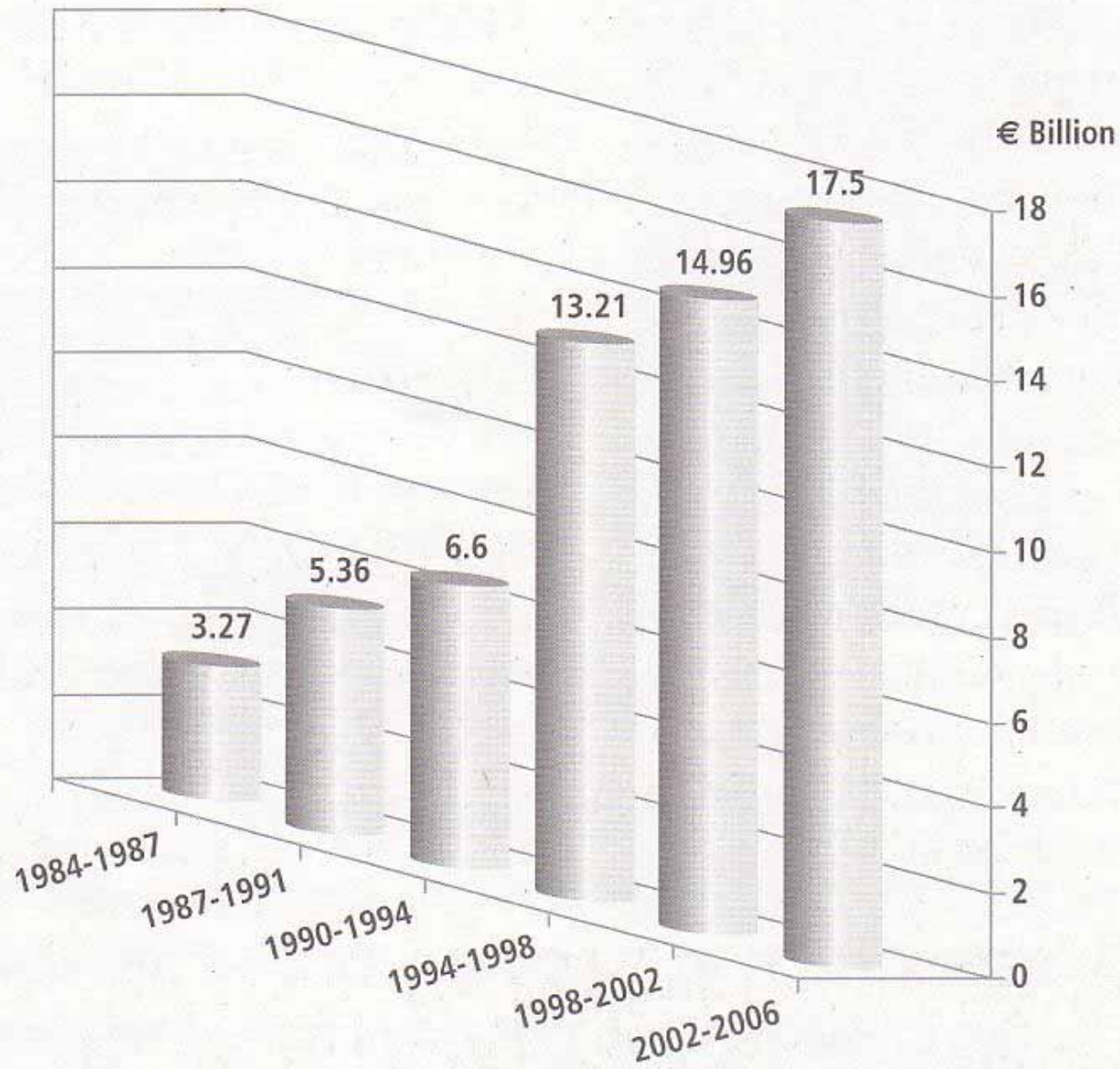
NEW SITUATION

NOT TOO MUCH DONE AS PLANNED

THE FOUR SPECIFIC PROGRAMMES!



Budgets for EU Framework Programmes



Budget

>54Bn in
7 years

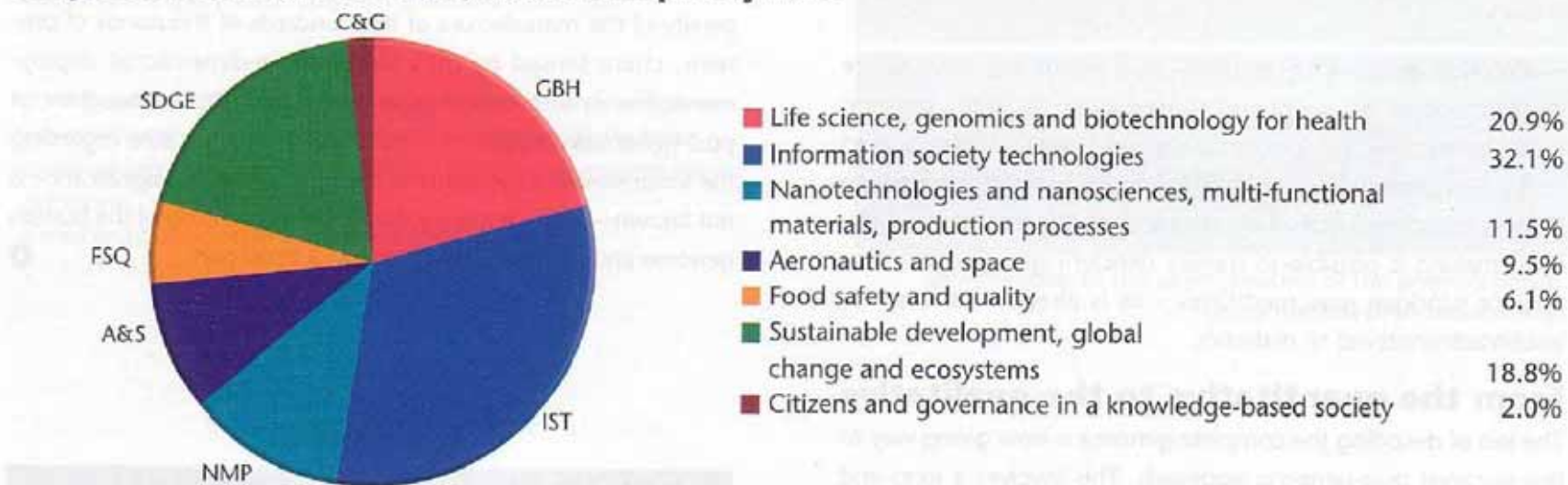
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FP7



FP6

PRIORITY FIELDS AND THEIR SHARE IN THE BUDGET

Budget breakdown (€11.3 billion) between the priority fields





WEAK POINTS OF EUROPEAN (BASIC) RESEARCH

- 1. WEAK COOPERATION ALONG STRATEGIC PRIORITIES**
- 2. FRAGMENTED RESEARCH**
- 3. LACK OF FINANCES FOR TRAINING, MOBILITY AND RESEARCH
INFRASTRUCTURE**
- 4. LACK OF SCIENTIFIC-TECHNOLOGICAL COHESION**
- 5. LOW VOLUME OF EXCELLENT RESEARCH AND SMALL NUMBER OF
EXCELLENT RESEARCH TEAMS**
- 6. NEGLECT OF EU LEVEL ATTENTION ON BASIC RESEARCH**



ACTIONS FOR IMPROVEMENT (1)

Ad 1. COOPERATION IN THEMATICALLY ORIENTED STRATEGIC RESEARCH PROGRAMMES

- integrated programmes,
- networks of Centres of Excellence,
- STREPS

Ad 2. THE COORDINATION OF NATIONAL RESEARCH PROGRAMMES (ERA—net, ERA-NET plusz, 169.§)

ARGUMENTS TO DECREASE FRAGMENTATION: limits

- the flexible career paths of young researchers,
- cross border cooperation,
- cross border financing,
- mutual learning,
- to reach the critical mass (small countries!)



ACTIONS FOR IMPROVEMENT (2)

- the integration of new members,
- the realization and evaluation of EU level best practices,
- the strengthening of Centres of Excellence, and increase their number.

Ad 3. INCREASING THE RESEARCH CAPACITY

(human capital, mobility, infrastructure)

- national 3% and a significant increase of the finances of FP7
- resolve the contradiction between national financing (~95%) and international research

Ad 4. EUROPEAN TECHNOLOGICAL PLATFORMS (with industry)

Ad 5. CURIOSITY DRIVEN BASIC RESEARCH PROGRAMMES (ERC)

BASED SOLELY ON EXCELLENCE



**Ad 6. COMPETITION ON EUROPEAN LEVEL IN BASIC
RESEARCH SHOULD LEAD TO HIGHER QUALITY
AND WILL BE THE BASIS ON LONG TERM OF
EUROPEAN COMPETITIVENESS**

**EUROPEAN RESEARCH COUNCIL
(FRONTIER RESEARCH; IDEAS)**



WHAT HAPPENED AFTER LISBON?

THE CONCEPT OF THE EUROPEAN RESEARCH AREA

BARCELONA (3%)

GÖTEBORG (SUSTAINABLE DEVELOPMENT)

THE CONCEPT OF TECHNOLOGY PLATFORMS

ERC ! [community efforts should not concentrate solely
on competitiveness, but on the foundations of it,
namely (basic) research]

EIT? (changing concept, fine-tuning process)

positive developments, but not the end yet.

BUDGET (>70Mrd → >54Mrd EURO)



BASIC PHILOSOPHY OF FP7

THE BASIS OF THE LISBON PRINCIPLES: **KNOWLEDGE**

DEVELOPMENT OF THE KNOWLEDGE TRIANGLE:

- RESEARCH AND TECHNOLOGY
- EDUCATION AND TRAINING (IN RESEARCH TOO)
- INNOVATION

INCREASED EMPHASIS ON RESEARCH (FP7!)

ERA;3%; LESS BUREAUCRACY

BETTER USE OF EXISTING CAPACITIES

MORE EFFICIENT UTILIZATION OF SCIENTIFIC

RESULTS (IN PRODUCTS, PROCESSES, SERVICES)



ON THE CONTENT (1)

FOUR SPECIFIC PROGRAMMES:

- COOPERATION (COLLABORATIVE PROJECTS;
NETWORKS; COORDINATION; THIRD COUNTRIES)
- IDEAS (; ALL SCIENTIFIC AND TECHNOLOGICAL
FIELDS; INDIVIDUAL PERSONS OR GROUPS;

ERC AS THE RUNNING ORGANIZATION!

- PEOPLE: MARIE CURIE PROGRAMME
(CAREER DEVELOPMENT; CONNECTION WITH THE
NATIONAL SYSTEMS)



ON THE CONTENT (2)

- CAPACITIES (RESEARCH INFRASTRUCTURE;
RESEARCH FOR SME-S; REGIONAL RESEARCH;
SCIENCE AND SOCIETY)

PRIORITY COOPERATION THEMES (9):

HEALTH; FOOD; AGRICULTURE; BIOTECHNOLOGY; ICT;
NANOSCIENCE AND TECHNOLOGY; NEW MATERIALS
AND TECHNOLOGIES; ENERGY; ENVIRONMENT AND
CLIMATIC CHANGES); TRANSPORT AND AERONAUTICS;
SOCIAL SCIENCES AND HUMANITIES; SECURITY AND
SPACE RESEARCH.



ERC (1)

**ONE OF THE KEY INSTRUMENTS TO REALIZE THE ERA
CONCEPT (ONE OF THE FOUR SPECIFIC PROGRAMMES
OF FP7)**

EXPECTED BENEFITS

- **NEW KNOWLEDGE, IDEAS, DISCOVERIES**
- **HIGHER QUALITY BY EUROPEAN LEVEL COMPETITION**
- **STRONGER EUROPEAN RESEARCH EFFORTS**
- **DECREASING FRAGMENTATION**
- **MINIMAL DUPLICATION OF EFFORTS AND RESOURCES**
- **THE EUROPEAN COMMISSION MAY HAVE A BETTER
VIEW OF RESEARCH IN EUROPE**



ERC (2)

HOW?

TO PROMOTE EXCELLENCE IN ALL AREAS OF SCIENCE
COMPETITIVE FUNDING. SOLELY ON THE BASIS OF
EXCELLENCE

TO SUPPORT GROUP RESEARCH BUT INDIVIDUALS TOO
(young researchers, high risk, interdisciplinary)

MINIMAL BUREAUCRACY

EARLY STAGE INDEPENDENT INVESTIGATOR SCHEME

ESTABLISHED INVESTIGATOR GRANT SCHEME

SUPPORTING ACTIONS ALSO NEEDED, E.G.:

**SPECIAL EUROPEAN PROGRAMMES FOR TRAINING AND
MOBILITY (TO INCREASE THE QUALITY AND NUMBER OF
RESEARCHERS IN EUROPE), INFRASTRUCTURE, ETC.**



ERC (3)

OWNERSHIP AND FUNDING:

ERC CREATED BY THE UNION AND ITS HEADS OF STATES
ACCOUNTABLE TO THE EC THROUGH ITS GOVERNING BODY
AUTONOMOUS SCIENTIFIC DECISION MAKING BODY
FUNDING MAINLY FROM THE EU BUDGET (FP-S ARE THE
ONLY POSSIBLE EU SOURCES)

AGREEMENTS WITH OTHER ORGANIZATIONS SHOULD BE
POSSIBLE (E.G. TO OBTAIN FINANCES OR TO BUILD UP
OTHER FORMS OF CO-OPERATION)

~7.5 BILLION EURO IN FP7 (~LINEAR INCREASE 300M-
1.7BN; 2007- 2013)



ERC (4)

ORGANIZATION AND GOVERNANCE

SCIENTIFIC COUNCIL(22 members), SECRETARY GENERAL;
EXECUTIVE AGENCY: DIRECTOR

APPROPRIATE REPRESENTATION OF „THE OUTSIDE
WORLD“ (POLITICAL SYSTEM, INDUSTRY AND SOCIETY AT
LARGE)

BUT AUTONOMY AND INDEPENDENCE (IN LINE WITH
SCIENTIFIC STANDARDS AND CONDUCT)

SELECTION PROCESS: 20 PANELS (NOT DISCIPLINARY)

%

A. SOCIAL SCIENCES AND HUMANITIES

INDIVIDUALS AND ORGANIZATIONS

INSTITUTIONS, BEHAVIOUR, VALUES AND BELIEFS

THE HUMAN MIND AND ITS COMPLEXITY

CULTURES AND STRUCTURAL DIVERSITY

THE STUDY OF THE PAST AND OF CULTURAL ARTEFACTS

B. LIFE SCIENCES

MOLECULAR, CELLULAR AND DEVELOPMENTAL BIOLOGY

GENETICS, GENOMICS, BIOINFORMATICS AND SYSTEM
BIOLOGY

NEUROSCIENCES

EVOLUTIONARY, POPULATION AND ENVIRONMENTAL
BIOLOGY

APPLIED MEDICAL AND HEALTH SCIENCES

APPLIED BIOLOGY, BIOTECHNOLOGY AND BIOENGINEERING

C. NATURAL SCIENCES

MATHEMATICAL FOUNDATIONS

FUNDAMENTAL CONSTITUENTS OF MATTER

STRUCTURES AND REACTIONS

MATERIAL SCIENCES AND METHODS

INFORMATION AND COMMUNICATIONS

ENGINEERING SCIENCES

UNIVERSE SCIENCE

EARTH SYSTEM SCIENCE



ERC(5)

MISSION OF THE SCIENTIFIC COUNCIL:

DECIDE ON SCIENTIFIC STRATEGY

MONITOR AND CONTROL QUALITY AND PERFORMANCE

**ESTABLISH A COMMUNICATION STRATEGY (INCL. TO THE
SCIENTIFIC COMMUNITY)**

A DEDICATED IMPLEMENTATION STRUCTURE (EXECUTIVE AGENCY):

OPERATES AND MANAGES THE ERC

IMPLEMENTS THE FUNDING PROCEDURE

EXPECTED BENEFITS FROM THE ERC FOR EUROPE

ENCOURAGING AND SUPPORTING THE BEST TALENTS

SUPPORT THE BEST IDEAS IN FRONTIER RESEARCH

STATUS AND VISIBILITY OF RESEARCH LEADERS

DYNAMIC STRUCTURAL EFFECTS ON THE EUROPEAN

RESEARCH SYSTEM

MAY NURTURE EUROPEAN SCIENCE BASED INDUSTRY

INVEST QUICKLY INTO THE KNOWLEDGE BASE

PARALLEL NEED TO INVEST INTO THE

RESEARCH INFRASTRUCTURE AND

COOPERATIVE ARRANGEMENTS (ERA-NET)



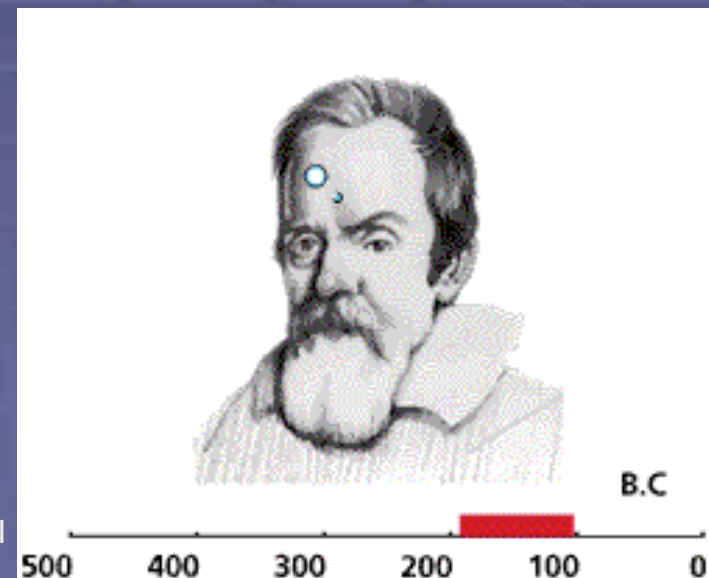
SUMMARY

**FP7 IS A SIGNIFICANT STEP INTO THE FUTURE
IT IS ROOTED IN THE ERA CONCEPT
IT SHOULD BE TAKEN SERIOUSLY**

„SCIENCE IS TO SEE WHAT
EVERYONE HAS SEEN BUT
THINK WHAT NO ONE HAS
THOUGHT”

ALBERT SZENT-GYÖRGYI

GALILEI





**THANK YOU FOR YOUR
ATTENTION**



**HUNGARIAN ACADEMY OF
SCIENCES**