

INTEGRATION OF ERA, ERIA AND EHEA

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***Summary:** Positive changes in creation of knowledge society can be achieved only by development of own methodology and through permanent and constant processes of education, which are adjusted to our country or even local environment, having in sight our cultural, psychological and natural characteristics. Modern knowledge society is a society of knowledge specialists – experts. It must function in teams (assembly of colleagues - collaborators), on bases of equal.*

***Keywords:** Knowledge Society (KS), European Research Area (ERA),*

1. INTRODUCTION

Changes in knowledge dynamics over time brings to faster changes and development of different concepts of scientific-technological process. In today's development of society, that is, scientific-technical progress, application of knowledge on different areas of human work has led to revolutionary changes, so four different concepts are differed in society development [8-10]:

- **I concept of society development – agricultural society** (knowledge applied on means for enhancing physical strength of men),
- **II concept of society development – industry society** (knowledge applied on manufacturing processes and products),
- **III concept of society development – information society** (knowledge applied on knowledge, that is, on means for multiplication of power of human mind) and
- **IV concept of society development – knowledge society** (knowledge in function of creativity).

Phase development of society observed according to concrete data in time dimension of space, in last 300 year, now goes to a new wave **Knowledge Society (KS)** or **Knowledge-Based Society (KBS)**.

Foundation of knowledge society will be development of technologies on base of renewable sources of energy and way on which a man will better use knowledge – fortune that is most important and widely spread. In that society man will be able to return to himself, to science, culture and spiritual growth more then ever. Science-technological progress directed to **Knowledge Society** puts personality in center of activities and its knowledge with application of information technologies, especially Informatics-Expert Systems (*IES*), computer networks an Internet. Knowledge society has new approaches from various aspects: knowledge, products, quality, technology, informatics-expert systems, time, space etc.

Positive changes in creation of knowledge society can be achieved only by development of own methodology and through permanent and constant processes of education, which are adjusted to our country or even local environment, having in sight our cultural, psychological and natural characteristics.

The one that is the basic of scientific-technological progress is sight of global developing aspects of new technologies. This fact confirms Draker, 1996, where in his book: "Innovations and management" says that new technologies are not only new materials, processes or technologies but that they are new knowledge of manufacturing processes and new company management. On figure 1 is shown the transformation of society in every period of human life.

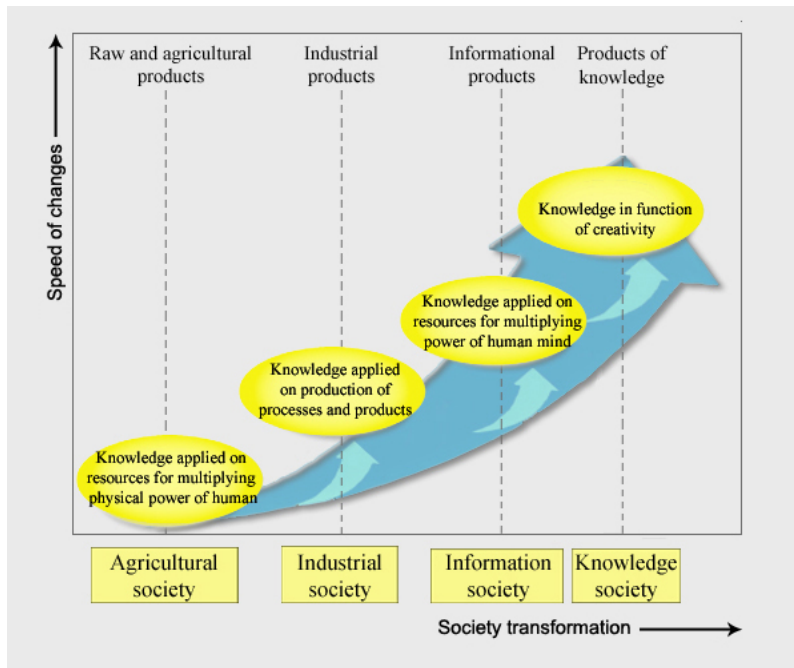


Figure 1: Development of society in every period of human life [10]

In order for a country to have success and to manufacture in the future in new knowledge society it must have to [10]:

- Transform production of activity based on work power in activity which is based on knowledge, and by that on Knowledge-Based Systems (KBS) and
- To have a base of experts and a base of knowledge.

Modern knowledge society is a society of knowledge specialists – experts. It must function in teams (assembly of colleagues - collaborators), on bases of equal. Position of every expert in team who possesses knowledge is determined by contribution that he gives to common work, rather than to any other internal overpowers or subjection. Knowledge society is not so called "bosses" and "subjected", it must be organized as a team of experts collaborators.

European Union (EU) aims to create European Information Society and knowledge society through various research-development programmes which are based on two columns:

- European Research Area (ERA),
- European Research & Innovation Area (ERIA) and
- European Higher Education Area (EHEA).

European commission (EC) in December 1999 for needs of European research area (ERA) has launched an initiative under the name "*e-Europe: An Information Society for All*", available on Web address: http://ec.europa.eu/information_society/europe/, which suggests a goal to bring a benefit to information society (IS) inside the space of all Europeans. Initiative focuses on ten priority areas, from education to transport and health to invalidity. She has launched also an initiative for upcoming period called i2010 (*European Information Society in 2010*), available on Web address: http://ec.europa.eu/information_society/europe/2010/index_en.html. While Knowledge Society (KS) in European community represents newest European initiative, which rules European commission (EC) available on Web address: http://ec.europa.eu/employment_social/knowledge_society/index_en.html.

2. EUROPEAN RESEARCH AREA (ERA)

Concept that includes research area of European Union (EU), was established in March 2000 year (within the framework of FP5), with the aim of better organization and coordination of research and development programs and projects of the EU. This is actually the vision for future research in Europe and the internal market for

science and technology. The basic motto of ERA space is to merge personnel, material and financial resources and to eliminate barriers to scientific cooperation among European countries, in order not to come to the duplication of research among research institutions and teams, and with intent to firms (especially SMEs) to help to simpler, faster and cheaper use innovation and research results for the solution of their problems. European Union (EU) through a large number of research-development and educational projects and programs tends to create of a European information society and knowledge society is based on the ERA and the EHEA space. For basis of ERA space is established a database on current research and development projects of the EU, under the name of CORDIS. Additional information is available on Web address: <http://cordis.europa.eu/era/> and http://ec.europa.eu/research/era/index_en.html, for whose basics is established database about actual research and developing projects of EU under the name **Community Research and Development Information (CORDIS)**, available on Web address: <http://cordis.europa.eu/int/>.

European **Research and Technological Development (RTD)** mission (<http://cordis.europa.eu/era/> and <http://ec.europa.eu/research/era/>) is being realized by:

- **Framework Programme (FP)**, which are being realized in time period of 5 years and
- global programmes and projects (BRITE-EURAM, COST, ESPRIT, EURATOM, EUREKA, GRID, GEANT, IST, NMP, TEN etc.), which are being realized on longer time period.

For accurate and in time information about European programmes and projects, an information center is established who contains a database of actual research and development projects of EU under the name of **Community Research and Development Information Service (CORDIS)**, available on Web address: <http://cordis.europa.eu/int/>. It serves as an base for publication of express weekly briefings, that is, short instructions, about what is new in European research and innovations and about significant modern research and developing projects (RTD) of EU. Office of CORDIS information service is in Luxemburg.

Frame programmes and global projects are main instrument for creating so called **European Research Area (ERA)**, available on Web address: <http://cordis.europa.eu/era/> and http://ec.europa.eu/research/era/index_en.html. **European Research Area (ERA)** was established in March 2000 in course of realization of 5th frame programme (FP5).

Goal of **European Research Area (ERA)** was to provide working, material and financial resources and to break barriers for scientific cooperation among countries of Europe, in order not to come to duplication between research institutions and teams. Intention of ERA was to help to simplify, speed up and lower the cost of innovation usage and research results for solving their own problems. FP6 programme was a main instrument of EU for realization of ERA.

While the main goal of **European Research Area (ERA)** was to give countries of European Union (EU) a construction of **Knowledge Society (KS)** as a new scientific-technological progress. There for, the **European Commission (EC)**, in 1997, has defined a concept of **Information Society (IS)** construction in Europe [3], and in 2002 concept of construction of knowledge society in Europe [4]. With new programme of eEurope 2005 [13] action were established for "reengineering of skills for knowledge society in society economy".

For accomplishing this cause or joining to **Knowledge Society (KS)** **European Union (EU)** has planned to increase budget for science and research. According to official data of EU at the moment this budget is over 1,9 % (figure 1) of **Gross Domestic Product (GDP)** for science and research, and it is planned to increase by the end of 2010 to 3% [20]. From figure2 it can be seen that the percentage of budget for science is a lot smaller then in USA and Japan (they have the largest percentage for science research in the world), but significantly or multiple times larger then most of the countries in development or transition. According to some authors our country has less then 0,3% of GDP in last few years, and that percentage is in trend of lowering.

2.1. European Framework Programme (FP)

Framework Programme (FP) is the main tools of EU for research funds in Europe. FP is suggested from the part of European commission (EC) and is accepted by Europe Council and European Parliament following procedure of co-decision. FP contains a time period of 5 years in which the last year of one FP is same as first year of next FP. FP started to implement in 1984 and since then six FP have been realized from which actual are FP4, FP5 and last FP6, which is currently being realized, while FP7 is in planning of realization.

Explanation of RTD terms and last four FP programmes is available on Web address: <http://europa.eu.int/comm/research/why.htm>.

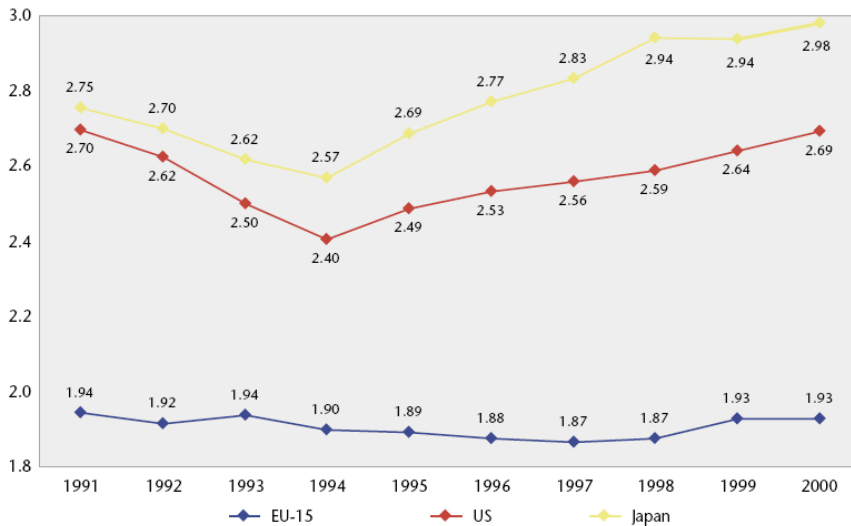


Figure 2: Graphical preview of percentage for RTD in EU-15, USA and Japan for period from 1991-2000. year [20]

FP has begun to implement in 1984 and since then five FP have been realized, sixth is in progress and seventh is planned [7,19,21]:

- FP1 (*1st Framework Programme*), realized in period from 1984-1987;
- FP2 (*2nd Framework Programme*), realized in period from 1988-1991;
- FP3 (*3rd Framework Programme*), realized in period from 1991-1994;
- FP4 (*4th Framework Programme*), realized in period from 1994-1998 is available on Web address: <http://cordis.europa.eu/guidance/fp4.htm> or <http://ec.europa.eu/research/specpr.html>;
- FP5 (*5th Framework Programme*), realized in period from 1998-2002 and available on Web address: <http://cordis.europa.eu/fp5/> or <http://ec.europa.eu.int/research/fp5.html>;
- FP6 (*6th Framework Programme*), realized in period from 2002-2006 is available on Web address: <http://cordis.europa.eu/fp6/> or <http://ec.europa.eu.int/research/nfp.html>;
- FP7 (*7th Framework Programme*), will be realized in period from 2007-2013 is available on Web address: <http://cordis.europa.eu/fp7/> or http://ec.europa.eu.int/research/future/index_en.cfm.

Evolution and budget (in billions of Euro) by now realized FP programmes is graphically shown on figure 3 [7,21], by which, for the next period is planned a large increase of that budget.

Evolution of priorities in FP programmes for different RTD areas is graphically shown on figure 4 [21].

Rules and basic principles of participation in FP programmes are (available on Web address: <http://cordis.europa.eu/fp6/participationrules/>):

- There are no "national quota" that is, number of applications for one country is not limited;
- Projects must have more participants from multiple countries, that is, projects must be international;
- Calls for application are published multiple times in one FP cycle;
- Projects must satisfy criteria shown in "call for application", without considering from which country the project was proposed, institutions or researches;
- Quality and technological relevancy of project estimate independent outer experts, that is, in average 5 experts monitors every project;
- Application of project can be realized on-line over Electronic Proposal Submission System (*EPSS*), is available on Web address: <http://www.epss-fp6.org/> 1
- During application of projects there are different sorts of project instruments, which is available on Web address: <http://cordis.europa.eu/fp6/instruments.htm>.

Phases of processes for participation application in FP programmes are:

- It is published "call for application" multiple times in process of one FP cycle in "Official herald EU" and on Web address CORDIS database about actual research and developing projects of EU, available on Web address: <http://cordis.europa.eu/fp6/calls.cfm>;
- An application is submitted in frame of special information package which for every "call for application" contains documents, explanations and forms necessary for application preparation;

- It is also offered special electronic project system submission (*EPSS*);
- Applications are being checked by independent outer experts (in average 5 experts evaluate every project) and
- For approved applications a contract is signed between European Commission (EC) and participants in project.

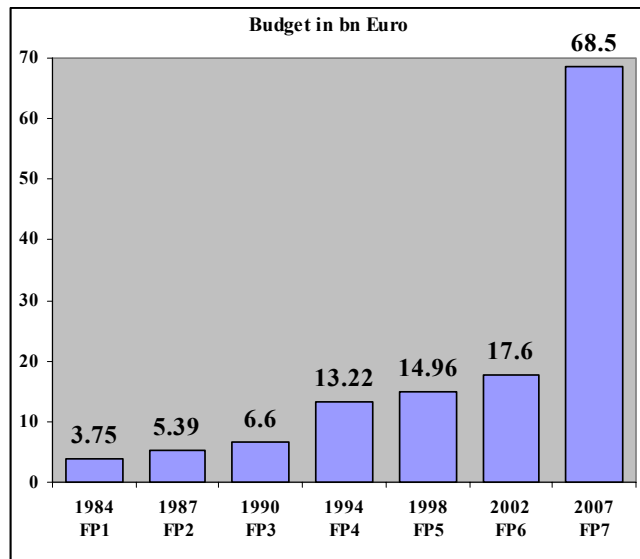
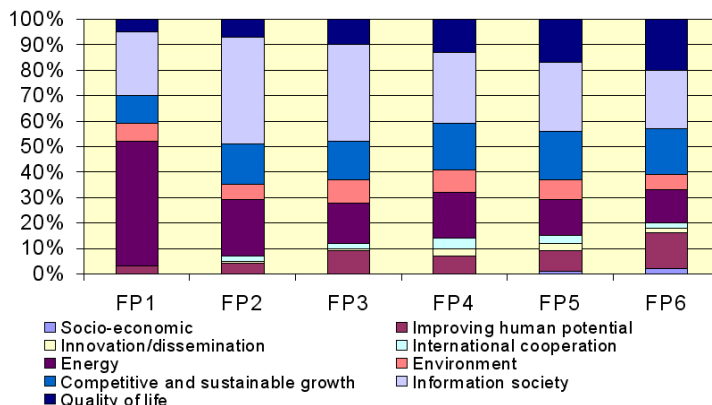


Figure 3: Graphical preview of evolution and budget by now realized FP programmes



Figures 4: Graphical preview of priority in FP programmes for different RTD areas

European Union (EU) has in frame of FP6 attached amount of (about 2% from total budget) for so called "associated measures" by which is organized training of professionals into so called National Contact Points (NCP), available on Web address: <http://cordis.europa.eu/fp6/ncp.htm>. With those means seminars are organized for training NCP's who will further help those who want to apply for FP6 programme in order to make a quality applications.

In frame of FP programme any legal or juridical subject can take part, who is directed towards national, international or EU laws, and those are mostly: research group on university or university institute, company that goes to innovations, Small and Medium-Sized Enterprise (SME), public administration, (which is practicing research politics or management of public research) and others (scholarships and scientific development). It can be persons from members of EU, country candidates, associated countries and countries of west Balkan, Russia, Ukraine, Mediterranean countries and countries in development. Participants have to be from multiple countries, not less then 3 members of EU or candidate countries.

2.2. FP7 programme

Seventh in turn EU programme which is defined for future period from 2007 to 2013, for defining and financing of programme and projects for solving actual problems. EC has published propositions for participation in FP7 in April 2005.

Proposed FP7 programme will be organized in four programmes of correspondence for four basic research themes and components of European research (available on web address: <http://cordis.europa.eu/fp7/themes.htm>), those are:

- *Cooperation* (available on web address: <http://cordis.europa.eu/fp7/cooperation.htm>), which imply realization of cooperate research projects which will be organized in compliance with defined theme areas continually with FP6 programme, which are industry led and organized in four sub-programmes: cooperate research or European excellence, *Joint Technology Initiatives (JTI)* and technological platforms, coordination between national research programmes an international cooperation;
- *Ideas* (available on Web address: <http://cordis.europa.eu/fp7/ideas.htm>), who will monitor *European Research Council (ERC)* stimulating creativity and excellence of basic and boundary research from part of competent organized and/or individual teams with goal to increase dynamics, creativity and excellence of European research as basic and boundary knowledge in all scientific and technological areas, including engineering, social-economic and humanitarian sciences;
- *People or Researchers* (available on Web address: <http://cordis.europa.eu/fp7/people.htm>), which will strengthen existing "Marie Curie actions" for quality and quantity strengthen of human resources in research and technology in Europe through support of individual researches for all research themes, focused on better key aspects of knowledge and increased development, higher mobility between university and industry and strengthen connections with national systems;
- *Capacities* (available on Web address: <http://cordis.europa.eu/fp7/capacities.htm>), which predicts activities for helping research infrastructure, research for SME's and research potentials of European regions (regions of knowledge) for creation of new infrastructure for preparation of strategic map for Europe in area of research infrastructure for upcoming 10 to 20 years, which will stimulate realization of complete research potentials (convergence regions) for increasing union and construction of efficient and democratic knowledge society.

In addition of these four components there will be specific programme for JRC (nonuclear activities) and Euratom (nuclear research and training activities).

For financing FP7 programme EU has planned a budget of 68 billion and 500 million Euro, from which largest portion will be for component cooperation, over 39 billion and 730 million Euro (Figure 5).

From figure 5 can be observed that the biggest percentage of planned budget of FP7 programme is in area of cooperative research projects (58 %), ideas (15 %) etc.

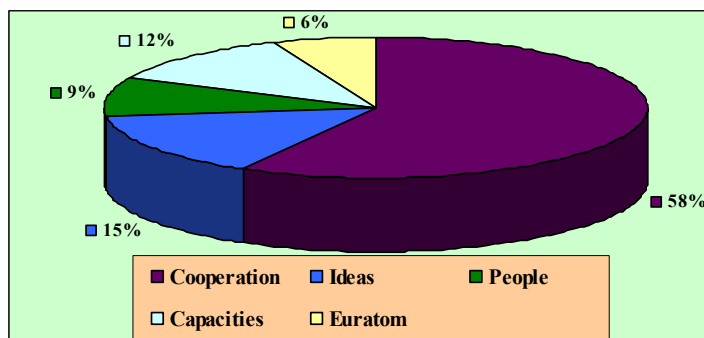


Figure 5: Analysis of budget proposition between basic FP7 programmes

2.3. European RTD Projects and Programmes in Area of New Technologies

Some of realized and actual RTD programmes and projects of EU in area of new technologies are [1,2,5,6,8,10-18,29,32]:

- *ACTS (Advanced Communications Technologies and Services)*, available on web address: <http://cordis.europa.eu/acts/>;

- BRITE-EURAM (*Basic Research in Industrial Technologies for Europe – European Research on Advanced Materials*) as IMT (*Industrial Materials Technologies*) initiative, available on web address: <http://cordis.europa.eu/brite-euram/>;
- COST (*European Co-operation in the Field of Scientific and Technical Research*), available on web address: <http://cost.esf.org/> and <http://cordis.europa.eu/cost/>;
- COST-TIST (*European Co-operation in the Field of Scientific and Technical Research – Telecommunications, Information Science and Technology*), available on web address: <http://cost.esf.org/> or <http://cordis.europa.eu/cost/>;
- DataGrid (*International Data Grid*), available on web address: <http://www.eu-datagrid.org/>;
- DEISA (*Distributed European Infrastructure for Supercomputing Applications*), available on web address: <http://www.deisa.org/>;
- eContent, available on web address: <http://cordis.europa.eu/econtent/>;
- EDG (*European Data Grid*), available on web address: <http://www.edg.org/>;
- EGEE (*Enabling Grid for E-Science*), available on web address: <http://www.eu-egee.org/>; <http://www.cern.ch/egee/> and <http://egee-intranet.Web.cern.ch/egee-intranet/gateway.html>;
- ESPRIT (*European Strategic Programme for Research & Development in Information Technology*), available on web address: <http://cordis.europa.eu/esprit/>;
- eTEN (*Electronic Trans-European Networks*), available on web address: http://ec.europa.eu/information_society/activities/eten/;
- EUMEDCONNECT (*Europe and Mediterranean Interconnect*), available on web address: <http://cordis.europa.eu/ist/rn/eumedconnect.htm> and <http://www.dante.net/eumedconnect/>;
- EURATOM (*European Atomic Energy Community*), available on web address: <http://cordis.europa.eu/fp6-euratom/>;
- EUREKA (*European Research Coordination Agency*), available on web address: <http://www.eureka.be/>;
- EuroGRID (*European Grid Computing*), available on web address: <http://www.eurogrid.org/>;
- GEANT (*Gigabit European Academic Network*), available on web address: <http://www.geant.net> and <http://www.dante.net/geant/>;
- GN2 (*GEANT Network 2*), available on web address: <http://www.geant2.net/>;
- GRID, available on web address: <http://www.cordis.lu/ist/rn/grids.htm>;
- IMS (*Intelligent Manufacturing Systems*), available on web address: <http://www.ims.org/> and <http://cordis.europa.eu/ims/>;
- IMT (*Innovation Management Techniques*), available on web address: <http://cordis.europa.eu/imt/>;
- InfoSec (*Information Security*), available on web address: <http://cordis.europa.eu/infosec/>;
- IST (*Information Society Technologies*), available on web address: <http://cordis.europa.eu/ist/>;
- NEST (*New and Emerging Science and Technology*), available on web address: <http://cordis.europa.eu/nest/>;
- NMP (*Nanotechnologies and Nano-sciences, Knowledge-Based Multifunctional Materials, New Production Processes and Devices*), available on web address: <http://cordis.europa.eu/nmp/>;
- SEE-GRID (*South-Eastern European Grid Enabled Infrastructure Development*), available on web address: <http://www.see-grid.org/>;
- SEE-I (*South-Eastern European Innovation*), available on web address: <http://www.edrustvoscg.org.yu/seeinno.htm>;
- SEEREN (*South-East European Research and Education Network*), available on web address: <http://www.seeren.org/> and <http://seeren.ebusiness.uoc.gr/>;
- SMT (*Standards, Measurements and Testing*), available on web address: <http://cordis.europa.eu/smt/>;
- SustDev (*Sustainable Development, Global Change and Ecosystems*), available on web address: <http://cordis.europa.eu/sustdev/>;
- TEN (*Trans-European Networks*), available on web address: <http://ec.europa.eu/ten/>;
- TEN-Telecom (*Trans-European Networks Telecom*), available on web address: <http://www.ten-telecom.org/>;
- TMR (*Training and Mobility of Researchers*), available on web address: <http://cordis.europa.eu/tmr/> etc.

ESPRIT [8,10] (*European Strategic Programme for Research & Development in Information Technology*) is an integral and specific European RTD programme or an assembly of developing projects, started in 1984, for areas of science and technologies, with special look around to information technologies (*Information Technology* - IS) and its boundary areas, which includes several European companies, research laboratories and government agencies. By now 30.000 projects have been realized in frame of ESPRIT programmes.

ESPRIT programme available on web address: <http://cordis.europa.eu/esprit/>.

EUREKA [8,10] (*European Research Coordination Agency*) is a complex European programme or assembly of projects, started in 1985, for different areas of European programme for high technological research and development. Programme EUREKA has been designed with a purpose to, through exploitation of advanced technologies, enable orientation of market, global concurrency, strengthen concurrent position of European companies on World market and to improve quality of life. Network of EUREKA programme consists of

industries and research institutions from 27 European countries and countries of EU. EUREKA programme is being governed by **European Research Coordination Agency** with office in Brussels (Belgium), by which name some consider that this abbreviation appeared. By now it has been realized over 2.000 projects in frame of EUREKA programme.

EUREKA programme is available on web address: <http://www.eureka.be/>.

GRID [8,10] is a European project started in the beginning of the new millennium, with the goal to create hardware and software infrastructure and association of computer strength of scientific institutions from all over the world for solving most complicated problems in science. GRID project is being governed by CERN institution, while network infrastructure consists of computer centers in scientific institutions in Prague, Lion, Karlrue, Budapest, Bologna, Krakow, Moscow, Barcelona, and in Tokyo and in Taiwan, two centers in United Kingdom and several in USA. Using networks of high-speed and vast power of computers GRID shares data and computer recourses in frame of centers, and in near future it will be available to the public. Based on that it is predicted that GRID will be the new network technology instead of Internet. First phase of GRID project is called LCG-1 (*LHC Computing Grid - I*).

GRID project is available on web address: <http://www.cordis.lu/ist/rn/grids.htm>.

In frame of IMS programme was established and awarded one years prize for accomplishment from this area.

IST [8,10] (*Information Society Technologies*) is a programme and more important themes of research and technological development in frame of RTD frame programmes (FP) of EU, for area of Information technologies (IS). For needs of IST programme realization it is formed and **IST Advisory Group** (*ISTAG*) and **IST Committee** (*ISTC*). In frame of IST programme it is formed **European IST Prize** (*EISTP*). It is the most recognized European award for innovational products and services in area of Information Society Technologies (*IST*), which is firstly awarded in 1996, and since then it is given every year. Informations about this prize are available on web address: <http://www.ist-prize.org/> and http://europa.eu/information_society/istevent_/2004/eistp/index-en.htm/. By now a large number of projects have been realized in frame of IST programme.

IST programme is available on web address: <http://cordis.europa.eu/ist/>.

3. EUROPEAN RESEARCH & INNOVATION AREA (ERIA)

The creation of a European Research and Innovation Area (ERIA) is a key component of the strategy defined at the Lisbon European Council in March 2000, which aims to make the European Union by the year 2010, the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth, with more and better jobs and greater social cohesion. The European Commission has long been a proponent of using science and technology policy as a means of promoting economic development, quality of life and cohesion by upgrading the capacity of less-developed regions, allowing these regions to participate in top-class research on the basis of excellence rather than simply on the basis of geographic location.

The ERIA is envisaged as a tool to overcome Europe's main weaknesses compared to its competitors (mainly the USA and Japan) namely:

- Insufficient funding - the average research effort in the EU is only 1.9% of GDP, compared with 2.8% in the USA and 3% in Japan;
- The European 'paradox' - while European research laboratories perform relatively highly in publications and citations, there is a lack of an environment that stimulates innovation and exploits results;
- Fragmented activities and dispersed resources. [20]

4. EUROPEAN HIGHER EDUCATION AREA (EHEA)

Concept which includes the area of higher education the European Union (EU), which was established in October 1999, and should be implemented to the 2010 year. EHEA (European Higher Education Area) area is known as "Bologna Process" which is the basis of the Bologna Declaration signed in October 1999 on the "Board Meeting 37" set in Cyprus. In the "Bologna process" many of the universities of Central, Eastern and Southeastern Europe should reach EU standards of the university, with the provision of quality of all university activities. For the purposes of EHEA space, there are two new concepts of transfer of credit points for students, they are: ECTS and ECTAS. European Union (EU) through a large number of research-development and educational projects and programs tends to creation of a European information society and knowledge society is based on the ERA and the EHEA space. For basis of EHEA space is established the Web portal on learning opportunities in all European named PLOTEUS.

One part is being realized in frame of "Bologna process" whose base id Bologna declaration signed in 1999, fro whose need a Web portal is established on **Learning Opportunities Throughout the European** (*PLOTEUS*), available on Web address: <http://europa.eu.int/ploteus/portal/home.jsp>.

<http://www.bologna-bergen2005.no/>

For the purposes of EHEA space, there are two new concepts of transfer of credit points for students, they are:

- ECTS (*European Credit Transfer System* - European system of points transfer -ESPB) i
- ECTAS (*European Credit Transfer and Accumulation System*)

ECTS (European Credit Transfer System) is a unique system for determining the guidelines and course for credit system of points transfer for students, implemented as part of the European ERASMUS program. ECTS system is based on the points that represent the difficulty of studying of students during a program of study (60 points for the academic year, 30 for the semester and 20 for trimester). It enables easy recognition and comparison of different educational programs at universities and other higher educational institutions in the countries of Europe. Application of ECTS system contributes to the mobility of students and building of a unique European Higher Education Area (EHEA), with the possibility of transfer and accumulation (for ECTAS system) points obtained in different institutions and, therefore, is the basis of high quality inter-university cooperation and student and teachers. Implemented through the so-called "Bologna process", which is the basis of "Bologna Declaration", signed in 1999.

It is available on the Web sites: http://europa.eu.int/comm/education/programs/Socrates/ECTS/index_en.html

ECTAS (European Credit Transfer and Accumulation System) is an extended ECTS transfer system and accumulation of points during the study. In contrast to the ECTS system, this system allows the transfer and the accumulation of points gained in different institutions and, therefore, is the basis of high quality inter-university cooperation and student and teachers. Application of ECTAS system contributes to the mobility of students and building a unique European Higher Education Area (EHEA).

The Bologna process started in 1988 to celebrate the 900th anniversary of the University of Bologna. It was adopted as a political instrument by some EU Nation States in 1998 when there was considerable concern over the economically unsustainable, grossly inefficient higher education systems in Europe. Historical actions in Bologna process is given on table 1. The Bologna process of three cycles of Higher Education has received widespread agreement across now 48 nation states (figure 6).

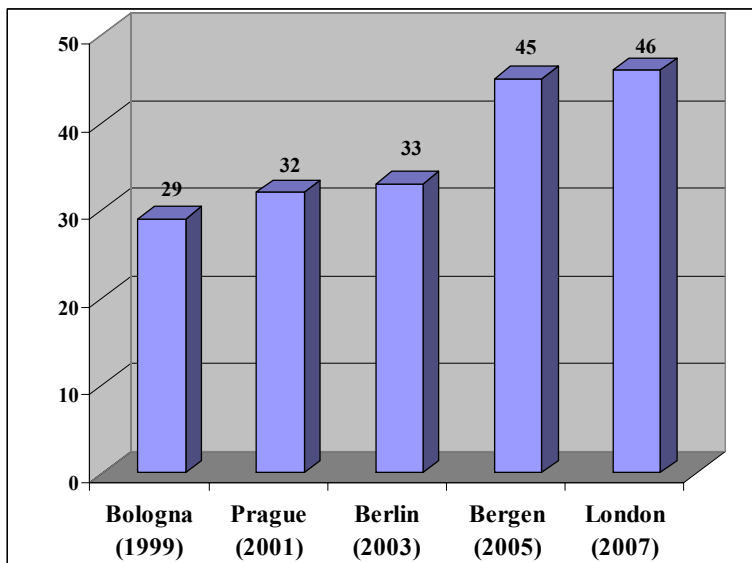


Figure 6: Number of countries in the Bologna Process

5. INTEGRATION OF ERA, ERIA AND EHEA

Integration of ERA, ERIA and EHEA educational area is shown on figure 7 [17] and it is intended to create in Europe a targeted environment encouraging and motivating higher education, research and innovation, and promoting a wide-range cooperation of higher education and research institutions and facilitating creation of quality assurance systems at both institutional and national levels, as well as in the region as a whole.

The integration of the stated three educational areas follows the principal objective of supporting the knowledge-based society on a European scale – the so-called "Europe of Knowledge".

Table 1: Historical actions in Bologna process

Year	Title	Description
1987	Erasmus Programme	Established education programme from European Community
1988	Magna Charta Universitatum	which originated at the University of Bologna to celebrate the 900th anniversary of that university, the oldest in Europe [30]. The charter simply called for an open, transparent, European HE system.
1995	Socrates Programme	Established education programme from European Community
1998	Sorbonne Declaration	This covered the harmonisation of European Higher Education, and was signed by France, Italy, Germany and the UK [24].
1999	Bologna Declaration	Most people think this was the start of the process because at that time the Declaration was signed by 29 nation states [26,27]. Declaration on the European space for higher education.
2001	Prague Summit	This reaffirmed Bologna, and the Commission ‘appreciated’ role of the European Universities Association, which is the association of Rectors of European Universities (in the UK the equivalent body is Universities UK, known as UUK) [31]. Towards the European Higher Education Area.
2003	Berlin Summit	This included the role of quality assurance in the Bologna process. It officially adopted the two-cycle degree process, and included the recognition of degrees and periods of study as defined by the European Credit Transfer System (ECTS) [23]. Realising the European Higher Education Area”.
2005	Bergen Summit	This reaffirmed Berlin, and added a third cycle of degrees which are exclusively PhDs. It did not embrace EngD’s etc, known as the ‘professional doctorates’. In Europe there are no equivalents of the UK’s ‘professional doctorates’, and their place in the Bologna process is still undecided. Bergen also included the notion of the ‘Integration of the European Higher Education Area and the European Research Area’, and posited the Bologna Process as the ‘instrument to achieve the integration of the EHEA and the ERA’ [23,27]. The European Higher Education Area – Achieving the Goals.
2005	Glasgow Declaration	This was largely concerned with ‘refocusing the Bologna process midway to 2010’. Its banner headline was ‘Strong universities for a stronger Europe’, based on ‘the knowledge society through higher education and research’. The manipulation of the Bologna process was thus to enhance research and innovation within Europe [28].
2007	London Summit	The UK held the presidency, Communiqué contained the statement by Bill Rammell (Minister for Higher Education) : engage with Bologna follow Imperial’s lead” [25]. Towards the European Higher Education Area: responding to challenges in a globalised world.
2009	Final Bologna conference	The “final” Bologna conference will be hosted by the BENELUX states [22].
2009	Leuven	Conference of European Ministers Responsible for Higher Education.

6. CONCLUSION

According to official data the largest percentage of investment for RTD have Japan and USA. While 15 countries of EU have something more than 1,9 % from BNP, but the plan is to increase the percentage to 3% by the end of 2010 from BNP.

RTD trends in new millennium for production provides new possibilities for developing new manufacturing technologies on bases of informational technologies as (micro and nanotechnology, laser finishing, vibro-finishing etc) and new manufacturing and technological systems (FMS, IMS, RMS, AMS etc.), e-production and virtual companies.

Frame Programmes (FP) and global programmes and projects (BRITE-EURAM, COST, ESPRIT, EURATOM, EUREKA, GRID, GEANT, IST, NMP, TEN etc.) are the main instrument for creating so called European Research Society, which is established in March 2000 year in process of realization 5th frame programme (FP5). Main goal of European Research Society (ERA) is to give countries of EU construction of knowledge society, as a new scientific-technological progress.

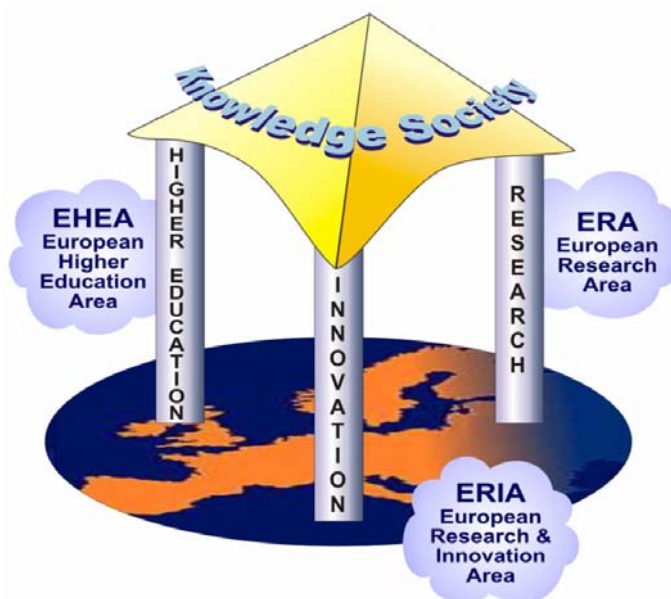


Figure 7: Integration of ERA, ERIA and EHEA educational areas [17]

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