DEXTERA
C O N S U L T I N G

CISCO

Seminar
„Operačné programy 2007 - 2013 a informatizácia v slovenskom školstve"

Informatizácia v gréckom školstve v programovacom období 2000-2006

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Presentation Overview

- Greek OPIS 2000-2006
  - A long story short…
  - ICT in Research and Education funded from OP Information Society

- Key projects of Greek OPIS
  - Greek National Research Network –GR NET
  - Greek School Network - EDUnet
  - Greek University Network - GUnet
  - Next steps

- Beyond ICT Policy: Lessons Learned

A long story short…
…Greek "experience" before NSRF 2007-2013

NATIONAL DEVELOPMENT PLANS OF GREECE FUNDED FROM EU 1986-2006 BASED ON THE INITIAL APPROVALS

	(MIP). (1986-1989) In thousands ECU** Base line prices 1986	1st C.S.F. (1989-1993) In thousands ECU** Base line prices 1989	2nd C.S.F. (1994-1999) In thousands ECU** Base line prices 1994	3rd C.S.F. (2000-2006) in thousands Euros Base line prices 2000
Total Budget	**2.101.933**	**14.342.054**	**29.721.300**	**44.363.540**
National Public Participation	695.740	5.802.196	7.069.900	11.126.075
EU Contribution	2.576.000	7.193.241	13.980.000	22.707.000
Private Participation	210.193	1.346.617	8.671.400	10.730.465

* MIP (Mediterranean Integrated Programmes) after 1989 was incorporated to the 1st C.S.F.
** 1 ECU = 1 Euro (exchange rate on 1/1/1999)
Source: Greek Ministry of Economy and Finance

OPIS Action Lines

- **Action line 1 – Education and Culture**

  The aim is to adapt the educational system to the needs of the digital age and to achieve increased use of new technologies in education, including the networking of schools, universities and the academic community (including administrative services); training teachers and pupils; and developing digital educational content.

- **Action line 2 – Citizens and Quality of Life**

  Using ICTs for improved services to the public in critical sectors of the public administration, and improving of the quality of life through the introduction of new technologies in the areas of health and welfare, the environment and transport as well as to develop Land Registry applications and infrastructure.

- **Action line 3 - The Digital Economy and Employment**

  Creating conditions for conversion to the "new economy", through the promotion of e-business and research and its relationship to production, skills upgrading, employment and tele-work and the exploitation of Information and Communication Technologies (ICT) by the SMEs.

- **Action line 4 – Communications**

  Supporting the market liberalisation process and **developing telecommunications infrastructure in remote areas for the provision of advanced services at low cost and points of access to the IS for the public** and the utilization of ICTs by the Public Media.

- **Action line 5 - Technical Assistance.**

OPIS
Priority Axe 1 – Education and Culture

	Allocated Budget in M €	EU Funds	Projects
Measure 1.1: Equipping and networking schools and universities	**119,0** **(30%)**	**ERDF**	▪ **Equipping all schools with the necessary IT, network and audio-visual equipment, creation/upgrading of IT labs in universities and technical colleges.** ▪ **Completion and upgrading of the Greek School Network, thus establishing access to the Internet and multimedia resources by all Greek schools by end 2001 and a complete Intranet for the education system by 2006.**
Measure 1.2: New technologies in education	**166,67** **(43%)**	**ESF**	▪ **Fast Internet for researchers and students, through the upgrading of the academic Greek network.** ▪ **Creation of public Internet access points to ensure the access of youth to internet in less favoured geographical areas.** ▪ **Infrastructure development for tele-education for teachers and students throughout the country.** ▪ **Support of the development and dissemination of tutorial multimedia material and promotion of the certification of scholarly software applications.** ▪ **Training of all teachers in the use of Internet and multimedia resources as an educational tool.**
Measure 1.3: Documentation, management, promotion of Greek cultural heritage	**106,07** **(27%)**	**ERDF**	▪Administrative documentation and management of Greek cultural heritage and modern cultural creation, development of digital content in the culture field. ▪ Development of Internet resources and of electronic publications with Greek cultural content ▪ Support of new forms of cultural expression that use IT-based media.
Total allocated Budget for Priority Axe 1:	**391,73**		**17% of the total OP Information Society**

OPIS – Funding streams of research and education networks

OPERATIONAL PROGRAMME "INFORMATION SOCIETY": STRUCTURE AND FUNDING		IN MILLION EUROS *						
		Total Cost	PUBLIC EXPENDITURE					Private Funding
			Total Public Expenditure		European Funding			National Contr.	
					Total	ERDF	ESF		
1	**Education and culture**	421,0	391,7	17%	293,8	168,8	125,0	97,9	29,3
1.2	New technologies in education		166,7	43%					
2	**Citizens and quality of life**	879,4	850,0	37%	637,5	558,5	78,9	212,5	29,4
2.1	Government on line: Business plans, studies, pilot projects		11.9	35,0					
2.2	Government on line		362,0	43%					
3	**The Digital Economy and Employment**	901,7	537,6	24%	403,2	212,0	191,2	134,4	364,1
3.1	A ¨digital¨ environment for the new economy		68,0	13%					
3.3	Research and technological development for the IS		52,0	10%					
4	**Communications**	569,3	422,6	19%	316,9	311,2	5,7	105,6	146,7
4.3	Advanced telecommunications services for the citizen		70,0	17%					
5	**Technical Assistance**	67,7	67,7	3%	50,8	20,7	30,1	16,9	
5.1	Management and implementation		28,2	43%					
	TOTAL	2.839,1	2.269,6	100%	1.702,2	1.266,0	436,2	567,4	569,5

The Greek Network of Research, Academic and Education Community

Research Community: GRNET *(Backbone)*	www.grnet.gr	
Academic Community: GUnet *(Based on GRNET Backbone + local hubs and additional services)*	www.gunet.gr	
Education Community: EDUnet *(Based on GRNET Backbone + local hubs and additional services provided from Greek Universities)*	www.sch.gr	

Education Projects Breakdown

Project Name	Action Measure of OPIS	Description of the Project Componenet	Responsible Public Authority	Allocated Budget in M Euros
GRNET				
	2.1.	**Design and development of pilot infrastructure and advanced services for Hellas GRID**	MoDevelopment	1,78
	3.1.	**E-Business Forum**	MoDevelopment	3,22
	3.3.	**GRNET2 - Phase 1**	MoDevelopment	5,78
	3.3.	**GRNET2 - Phase 2**	MoDevelopment	15,01
	4.3.	**GRNET2 - Services**	MoDevelopment	9,98
	5.1.	**Evaluation of GRNET2 - Phase 2**	MoFinance	0,03
		TOTAL		**35,8**
EDUNET				
	1.2.	**12 Projects for the EDUnet Infrastructure**	MoEducation	13,21
	1.2.	**11 Projects for Advanced Services on EDUnet in different Greek Regions**	MoEducation & Universities	2,2
	1.2.	**Portal**	MoEducation	0,57
		TOTAL		**15,98**
GUNET				
	1.2.	**Backbone Infrastructure for Gunet**	MoEducation & Universities	6
	1.2.	**E-Learning platform**	MoEducation & Universities	0,2
		TOTAL		**6,2**
		GRAND TOTAL		**57,98**

GRNET/EΔET - 1/3

- The **Greek Research and Technology Network (GRNET)** supports the research and development of Information and Communication Technologies (ICT) within Greece and internationally, through:
    - –the provision of its high-capacity **networking** and **grid computing** infrastructure,
    - –the strengthening of **e-Learning** & **e-Business** practices, as well as
    - –the participation in **international research and education** efforts.

- GRNET operates under the auspices of the <u>Ministry of Development and is supervised by the General Secretariat for Research and Development</u>.

GRNET

Networking

GRNET develops and provides advanced services of national and international internet access to the Research, Academic and Education communities of Greece, with its gigabit **GRNET2** network and the **Virtual NOC** supportive scheme.

The network connects 27 Universities, 15 Technical Universities, 33 Research Institutions and 12,673 schools to the Pan-European Research and Education Network, **GEANT**.

GRNET is also promoting the use of **Broad-Band** technologies in Greece and administers the Athens Internet Exchange (**AIX**), through which the Greek Internet Service Providers interconnect.

GRNET Topology
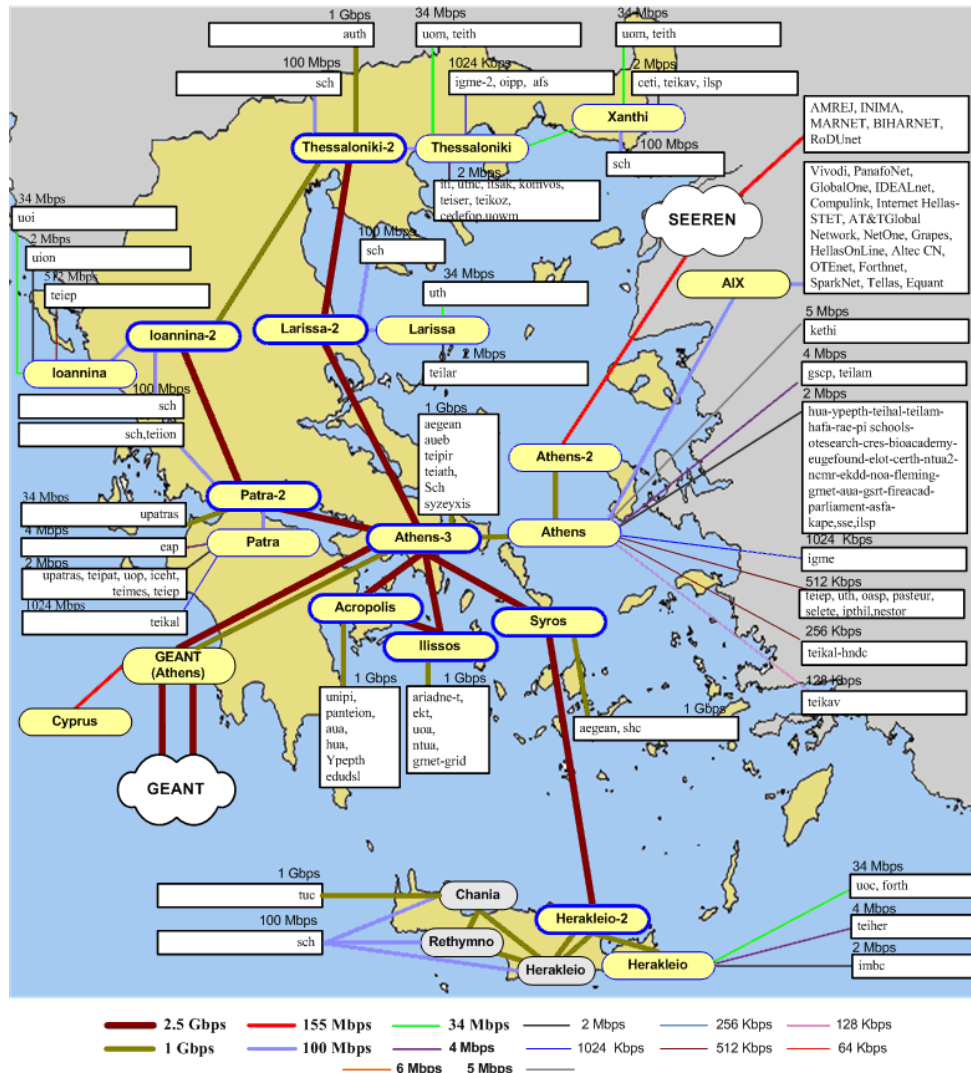
The GR-NET backbone consists of network nodes in 7 major greek cities, that is, Athens, Thessaloniki, Patras, Ioannina, Xanthi, Heraklion and Larisa. All 7 nodes are co-located in the Greek Public Network Operator's (OTE) central offices under a leasing aggreement.

GUnet
Objective & Description

- The project **"Academic Internet- GUnet: Access Network and Core Services for the Education"** was initially financed from the 2nd CSF (1994-1999) *(Operational Program Education and Initial Professional Training).*

- Implementation is based upon both the **experience of the institutions-members (all the Greek Universities) and of the civil non profit society GUnet** (Management Authority).

- **Advanced telematics services of horizontal character as well as digital content** has been implemented, aiming to cover the needs for information and use of advanced applications by the users of the Academic Community.

GUnet Services

- The development of **advanced telematics services <u>(catalogue services, security, voice-over-IP),</u>** for the academic community. These services will have a horizontal character, integrating complementary actions of the institutions- members.

- The development of **digital content** and especially **ICT related content**, aiming at the <u>dissemination of the learning content created within the Greek Academic Institutions.</u>

- The development of **synchronous and asynchronous e-learning services** and the implementation of projects for the acquisition of know-how in the new technologies of telematics and networks by the members of the Network Operations Centers (NOC).

GUnet Administration

- The non-profit civil company called **"ACADEMIC NETWORK" (GUnet)** was founded in September 12th 2000.

- GUnet has its central office in Athens and its **members are all the Higher Education and Academic Institutions (20 Universities and 16 Technical Universities).**

- The aim of the company is determined by:
    - – the broadband network needs and
    - –informatisation necessity of the Greek academic community in the framework of Information Society aiming at servicing research and education.

GUnet
The VoIP service

- The Voice Over IP service constitutes one of the main activities of the GUnet.

- **The objective of the service is the provision of voice communication without any charge among the end user of the academic institutions.**

- By this way:
  - the potential of the data network to transport voice packets is developed,
  - the collaboration and communication among the members of the academic community is strengthened, and simultaneously
  - the telecommunications costs of academic institutions are limited.

- The service implementation was based on **the international standard H.323 that determines a set of network component and protocols for the transmission and reception of voice, video and real time data.**

- **The service is provided by GUnet in collaboration with GRnet.**
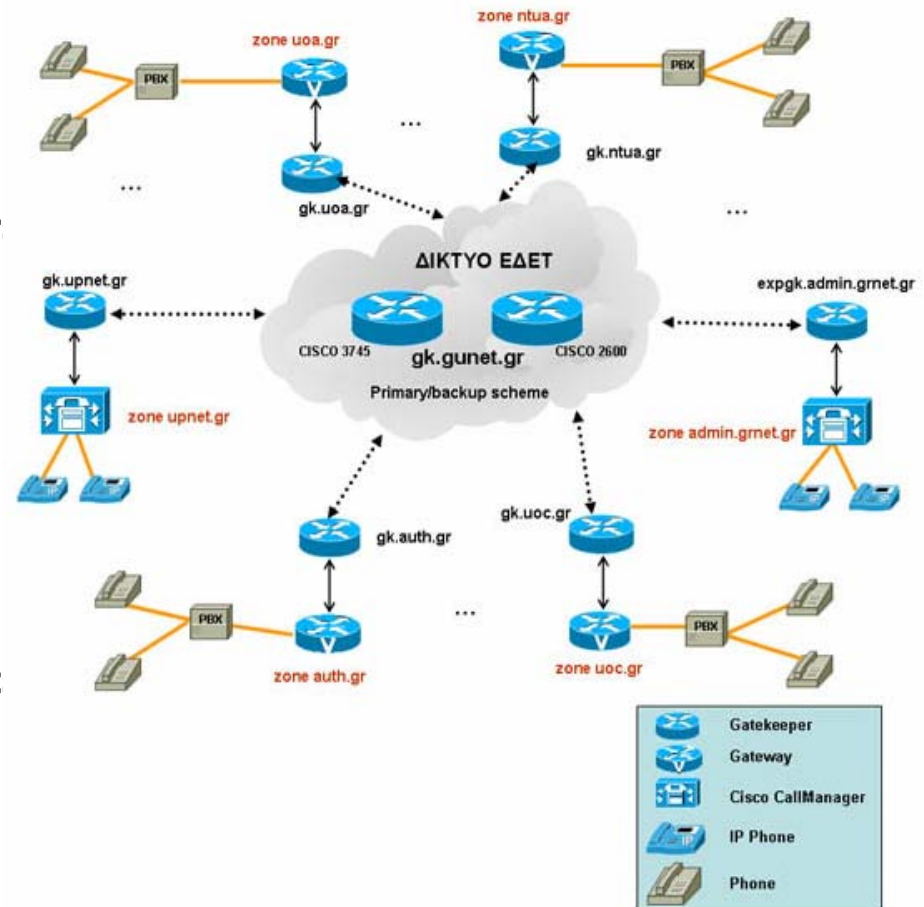
Greek School Network
Objective & Description

- The **Greek Schools' Network (GSN – www.sch.gr)** is the educational intranet of the Ministry of Education and Religious Affairs (www.ypepth.gr)

- It interlinks all schools and provides basic and advanced telematics' services.

- It contributes to the creation of a new generation of educational communities, which takes advantage of ITC in the educational procedure.

- The implementation of the Greek Schools' Network is funded by OPIS 2000-2006 in close cooperation between the Ministry of Education as well as 12 Research Centers and Highest Education Institutes, specialized in network and Internet technologies.

Greek School Network
Users Categories

In order to maintain the educational orientation of the network, **its users are certified individuals, educational or administrative entities of the National Education.** In particular, the users are divided in the following categories:

– **Schools :**
At least one user account have been provided to all secondary schools and 92% of primary schools.

– **Administrative units :**
At least one user account has been provided to more than 2.282 administrative units of National Education.

– **Educational & Administrative staff :**
The Greek Schools Network offers **fully personalized access to all educational staff,** with the dial-up service being broadly used under certain terms.

– **Students :**
Network access is provided to students through the school laboratories. In addition, pilot personalized access is offered to second grade students of Achaia and Corinthian Prefectures.

Greek School Network Architecture

- **The network is hierarchically structured into three layers:**

  - **Core Network:** The Greek Schools Network interconnects with the Greek Research and Technology Network (GRNET, www.grnet.gr), in seven main points (Athens, Thessaloniki, Patras, Heraclion, Larisa, Ioannin and Xanthi), using it as its core network.

  - **Distribution Network:** The Greek Schools Network installs in the capital of every prefecture network and computational equipment, thus ensuring optimal access of the prefecture's school to the network and its service:

  - **Access network:** It is used to directly and efficiently interconnect the schools to the prefecture's access point The telecommunication junctions used to interconnect each school are selected on the basis of financial and technical criteria from an array of available options:

    - Digital ISDN circuit (bandwidth: 64 - 128 kbps)

    - Analog leased line (0,128 - 2 Mbps)

    - Public Switched Telephone Network circuit (56 kbps)

    - Wireless link (10 Mbps)

    - VDSL circuit (10 - 15 Mbps)

    - ADSL circuit (384/128 Kbps, pilot implementation)
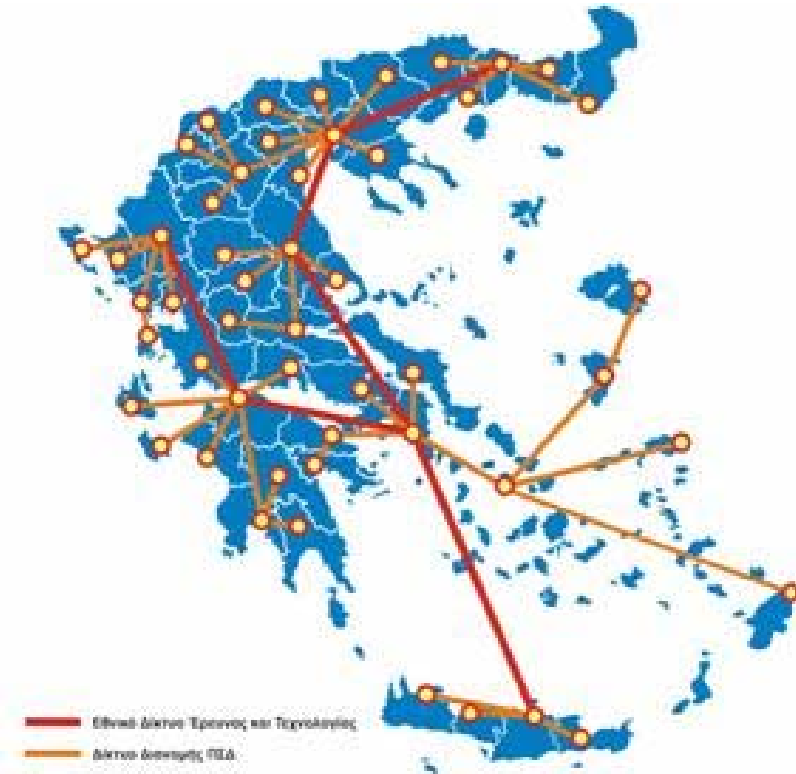
Greek School Network Available Services

- The Greek Schools Network offers a broad package of services to its units and users. The most important of these are:

  - **Automated registration** procedure for educational staff and students - Users Administration Service
  - **Remote network access (dialup)**
  - **E-mail,** accessible through the POP3 and IMAP protocols, as well as the world wide web (www.sch.gr/mail)
  - **E-mail lists** (www.sch.gr/lists)
  - **Web Portal** (www.sch.gr), offering news services and personalized access to telecommunication and informatics services
  - **Controlled access to the World Wide Web, prohibiting access to web sites with harmful content for underage**
  - **Web hosting** for static and dynamic pages
  - **Wizards for automatic webpage creation**
  - **Asynchronous distance learning**, for hosting and distributing digitized lessons (www.sch.gr/e-learning)

  - **Teleconference** (www.sch.gr/conf)
  - **Video On Demand** (www.sch.gr/vod), delivering streaming educational multimedia material
  - Live Internet transmission **(webcasting)** of various of various events (www.sch.gr/rts)
  - **News** (www.sch.gr/news) and Discussions (www.sch.gr/forums)
  - **Electronic Magazine** (www.sch.gr/magazine)
  - Personal Calendar, Personal Address Book, Notes and "To Do", accessible through the World Wide Web
  - **Directory Service**
  - **GIS**
  - **Voice over IP**
  - **Online statistics** (www.sch.gr/statistics)
  - **Help-Desk,** for immediate solution of technical problems. The Help-Desk is accessible through one-phone 801-11-801-81 and (www.sch.gr/helpdesk)

http://www.sch.gr

Greek School Network /Stats…

|	Schools	Students	Labs	Workstations	Students per workstation
Primary Schools	5.897	596.314	2.202	12.722	48,8
High Schools	1.837	341.975	2.284	21.740	73
Lyceums	1.237	230.871	987	17.203	13,4
Technical Lyceums	448	126.501	731	11.689	10,82
TOTAL	9.419	1.295.661	6.204	63.354	20,45

These rates are useless if these workstations are not connected !

Greek School Network /Stats…
… and conclusions

Average Data Transfer per day (1GB) - 2006

Μέσος όγκος δεδομένων ανά ημέρα [GB]

Incoming   Outgoing
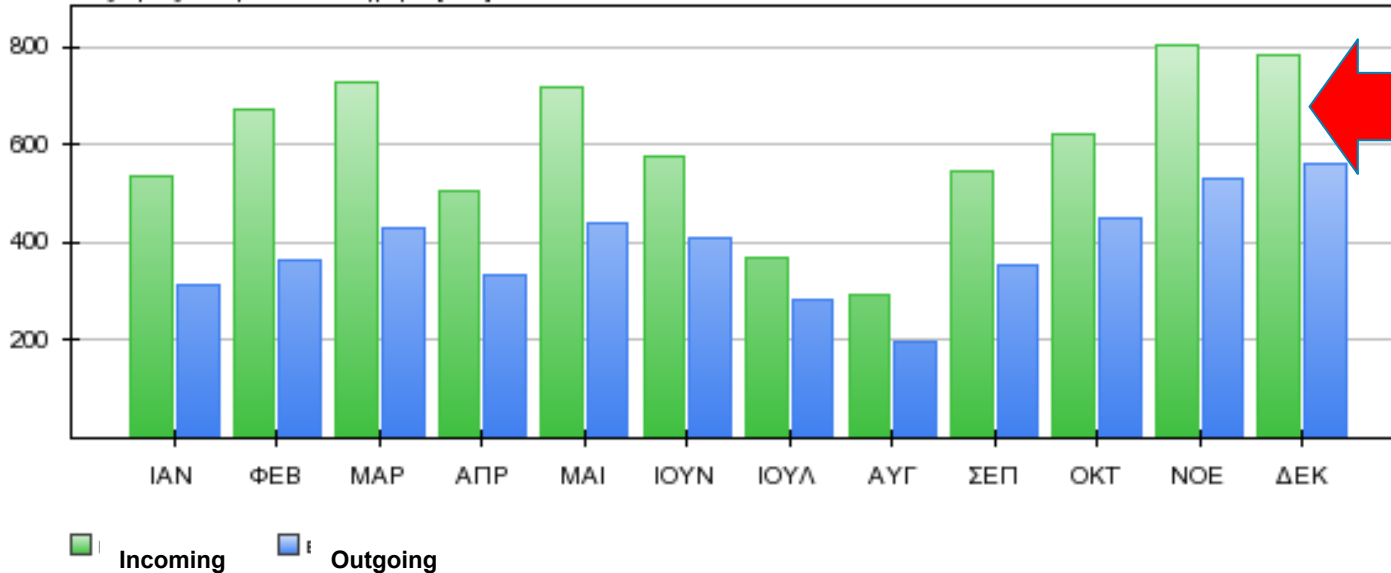
This is the real added value for the education community !

Next steps…
NSRF 2007-2013

- Broadband as the 4th utility for all schools, academic institutions, research centers.

- Broadband infrastructure is embedded in all construction works for new school or academic buildings.

- From broadband ready labs to broadband ready classrooms (all the classrooms must have advanced access to the internet)

- New content delivery systems

- Upgrade of GRNET, GUnet and EDUnet – interconnection with Optical MANs and Wireless MANs in the 200 largest Greek cities, increasing dramatically the interconnection speed.

- Content creation and New Blended Learning Curricula for all the education grades.

- LLL throw the traditional learning mechanisms

Beyond ICT Policy:

Lessons Learned

Policy implementation elements observed
…the problems we faced from design to execution

DESIGN

- **Complexity in the Legal and Regulatory Framework**

- **Technophobia** – cultural aversion to the use of ICTs by lower and middle level public officials.

- **Low Political and Managerial Priority** and commitment in promoting ICT usage and integration in the public sector

- **Lack of Expertise** and understanding of the specificities of ICT technologies by public officials

- **Diverging Priorities** set among different government departments and ministries,

- **"Bad Looser" behavior** exhibited by a number of bidders led to significant delays in the implementation time-plan

- **Overlapping** in the division of responsibilities among different public administration entities involved in the implementation phase,

EXECUTION

Conclusions and some thumb advises

- Do not re-invent the wheel. Other countries experience is very useful. Cultivate the culture of bench-learning.

- From the culture of the "very big and complex IT systems" to the Internet culture. Dolphins not whales approach.

- Some simple thumb advise for the implementation process:

    - *Think the BIG picture. Design for the FUTURE!*

    - *Adopt MODULAR approach and STEP-by- STEP implementation.*

    - *Start NOW. Start SMALL. Move FAST.*

    - *MAXIMIZE efficiency (in terms of project cost, quality and implementation time) and effectiveness in terms of USER REQUIREMENTS.*
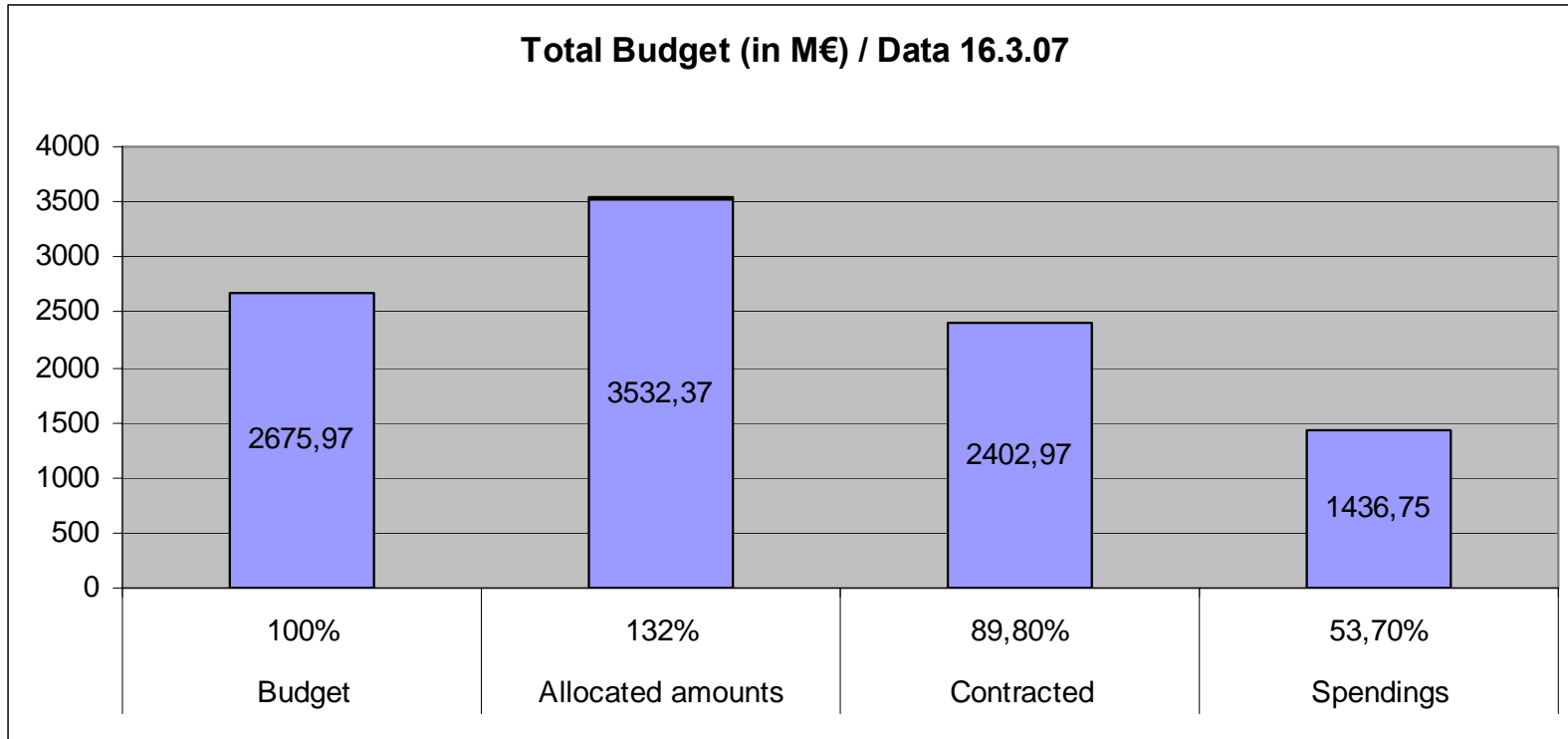
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Thank you for your attention.

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Current status of OPIS implementation
Budget/Allocations/Contracts/Spending

Total Budget (in M€) / Data 16.3.07

	Budget	Allocated amounts	Contracted	Spendings
Value	2675,97	3532,37	2402,97	1436,75
Percent	100%	132%	89,80%	53,70%

Current status of OPIS implementation
Budget/Allocations/Contracts/Spending

Toatl Budget Brakedown per priority Axe

Data as per 16.3.2007

Legend:
- Budget
- Allocated amounts
- Contracted
- Spendings

Categories (x-axis):
- Axis 1: Education & culture (14,8%)
- Axis 2: Citizens & quality of life (31,0%)
- Axis 3: The digital economy and employment (31,8%)
- Axis 4: Communications (20%)
- Axis 5: Technical Assistance (2,4%)