GREEK SCHOOL NETWORK

The Network in the Service of Education

April 2018

1. Introduction

Greek School Network (GSN) (http://www.sch.gr/en) is the national network of the Ministry of Education, Research and Religious Affairs (MoE) (http://www.minedu.gov.gr). GSN safely interconnects:

- all schools of Primary and Secondary education, including educational units located abroad,

- all services and entities supervised by the MoE at central and regional level,

- all service providers of lifelong learning,

- all pupils and teaching staff,

- all other educators and institutions of MoE.

GSN enables MoE to provide the educational community with qualified e-learning, communication and collaboration services, e-gov, as well as user support and assistance services in all schools in the Greek territory.

Through GSN, the MoE provides the educational community with e-learning, communication and collaboration services, e-government services as well as helpdesk and user technical support services. Therefore, GSN provides electronic services to more than **284.000 users** (>22.517 accounts for schools and administrative units, >112.000 teachers, >115.000 pupils).

The GSN is the largest public network in Greece in terms of users that it serves. In particular, interconnects a community of **1.350.000 pupils** and **160.000 teachers**. This is performed through free broadband connections that are provided in all public schools and administration offices across Greece. The connection technologies used are VDSL & ADSL and optical fibers. The GSN applies state of the art web technologies and is one of the first five school networks in the world that adopted IPv6 protocol.

Annex 1 provides the main statistical data describing the large scale of the GSN, while Annex 2 summarizes the main services offered by the GSN to the school community.

GSN fully certifies all members of the school community (i.e., schools, administrative units, teachers, pupils and administrative staff), thus allowing MoE and its supervised entities (i.e. IEP, CTI, etc.) to provide various e-Learning and e-Gov services (see Annex 5).

GSN has received various citations as is depicted in Annex 6.

2. Administration

In accordance with Law 3966/2011 (article 32), the administration and management of GSN is performed by Computer Technology Institute and Press "Diophantus" (http://www.cti.gr). For this purpose, CTI established the Greek School Network and Networking Technologies Directorate (http://nts.cti.gr), which collaborates with Universities and Technical Institutes with technical expert networking teams. These entities both support school/administrative units of their region and some of them develop and support dedicated web and online services.

GSN as a public network collaborates with other two major national networks, that is GRNET (www.grnet.gr) and SYZEFXIS (http://www.syzefxis.gov.gr). GSN's technical teams have contributed to the design of the Public Administration Network (SYZEFXIS I) and the Public Sector Network (SYZEFXIS II).

3. Services

In addition to broadband internet access, GSN provides to its members (i.e., schools, teachers, pupils, administrators and staff) a wide range of electronic and web services including certification, secure access, communication, collaboration, multimedia, e-learning and e-gov.

GSN utilizes various IT systems and internal procedures in order to efficiently monitor and supervise the aforementioned e-services, thus establishing a secure operational environment.

A brief list of the services provided, is shown below. A detailed description as also statistical indicators regarding the use of GSN's services are depicted in Annex 1 and 2.

1. GSN Network Connectivity

1.1 Broadband unit access

2. GSN User Management System

2.1 GSN Registration service

2.2 GSN Account recovery

3. User Support Service

3.1 GSN Portal

3.2 Help-Desk

4. Communication Services

4.1 Email

4.2 Emailing lists

4.3 Collaboration and communication services

5. Web-domain hosting

5.1 Web Hosting

5.2 Domain name hosting

5.3 Web analytics

6. e-Publications and Collaboration

6.1 Educational Communities and Blogs

6.2 Electronic school press

6.3 +grafis - Collaborative Documents and Calendars Service

6.4 File sharing service

7. E-learning services

7.1 Teleconference service

7.2 e-class: Electronic classroom service

7.3 Tele-education

7.4 Learning Activity Management Service

7.5 Teacher e-training service

8. Multimedia Services

8.1 Video services

8.2 Multimedia Presentations services

8.3 Live broadcasts

9. Creative and Secure Internet Access

9.1 Secure Web Access

9.2 Internet safety portal

9.3 Computer Emergency Response Team

9.4 Initiatives for Safe and Creative Internet

10. ICT support services

10.1   Central user authorization service

10.2   Digital Certificates

10.3   School's ICT inventory service

10.4   Central School's registration service

10.5   Helper: School's Remote Support Service

10.6   Authorization – Authentication – Accounting (radius)

4. Infrastructure

4.1 Network equipment

GSN is the largest public network in Greece, in terms of users it serves. Specifically, more than **15,700 schools and administrative units** as also a community of **1,350,000 pupils** and **160,000 teachers** and other staff are connected to each other and have access on the Internet. GSN utilizes state-of-the-art network technologies and is one of the top five school networks worldwide that adopted IPv6.

The GSN owns **114 nodes** in all country capitals and in the largest Greek cities. The sixty-five (65) nodes are members of Metropolitan Optical Fiber Networks of the Municipalities of Greece. The technical team of GNS is responsible for the proper operation of the backbone network and it manages more than 200 network devices. Therefore, the average network traffic of GSN to the Internet is more than **10 GBytes** in a daily basis.

In 2013, GSN upgraded the network infrastructure of the Gravas' complex (the largest in Greece with 19 schools), using state-of-the-art optical and wireless technologies to serve more than **3,500 users**.
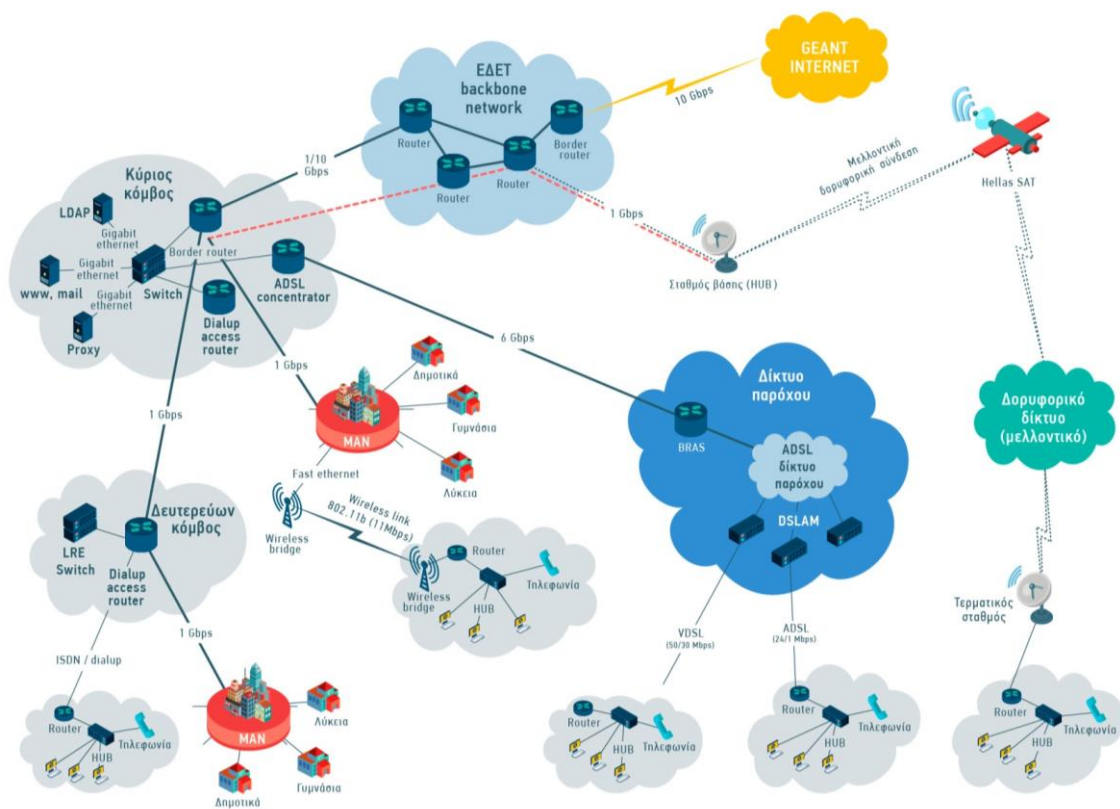
GSN's network architecture

5. Infrastructures

5.1   Main Data-Center

GSN, exploiting the available computational infrastructure, provides efficiently its services to more than **284,000 members** (i.e., schools, administrative units, teachers, pupils, etc.). The main data-center is located in Athens and three smaller capacity data-centers are located in Thessaloniki (one) and in Patras (two). GSN's technical team is responsible for the operation of the data-centers mentioned above and manages efficiently more than 110 servers and network devices and 10 storage systems daily. Annex 3 provides the main IT components of GSN's infrastructure.

<u>Annexes</u>

1. GSN's Operational Statistical Data

2. GSN's Main services

3. GSN's Infrastructure

4. GSN's Initiatives for Safe and Creative Internet

5. Accredited platforms and e-services utilizing GSN's Central User Authentication scheme

6. Citations

ANNEX 1
GSN's Operational Statistical Data

User accounts	**284.259**
School unit accounts	Official school unit accounts: **15.199** • Primary Education School Units (Public): **10.077** • Primary Education School Units (Private): **654** • Secondary Education School Units (Public): **3.653** • Secondary Education School Units (Private): **217** • Administrative Units (Primary Education): **75** • Administrative Units (Secondary Education): **106** • Regional Directorates: **13** • Post-secondary: **153** • Educational Support Units: **251** Other school unit accounts *(i.e., school counselors etc):* **7.318**
Personal accounts	Personal accounts: **261.742** • Personnel **2.904** • Teachers **112.632** • Deputies (2017-18) **6.711** • Teachers (Private Schools) **1.169** • Retired teachers **23.171** • Pupils (active) **115.155**
Broadband Indicators	< 10 Mbps: **3.234** (24%) 10 - 100 Mbps: **8.535** (64%) 100 Mbps - 1 Gbps: **1.580** (12%)
GSN's portal visitors	**> 105.000** unique visitors (typical month in 2017)
Central user authorization service (http://sso.sch.gr**)**	**80** Accredited platforms and e-services
Active web-sites	Active teacher's web-sites **8.668** Active school units web-sites **9.029**
Teleconferences http://meeting.sch.gr	Members **14.207** (mainly schools) Teleconferences **1.793** (**2.495** hours)
e-Learning service http://e-learning.sch.gr	Members **20.893** (mainly teachers)

	Content creators	**1.420**
	Teachers	**2.168**
	Courses	**1.657**
Electronic classroom service http://eclass.sch.gr	Members	**14.602** teachers **28.100** pupils
	Courses (current school year)	**5.689** (1.120 schools)
	Courses	**53.280**
Educational Communities and Blogs http://blogs.sch.gr	Blogs	**47.622** - **367.717** articles
	Groups	**857** - **9.188** members
	Unique visitors	**>320.000** (March 2018)
School e-magazines http://schoolpress.sch.gr	Magazines	**2.028**
	Articles	**27.854**
	Unique visitors	**>16.000** (March 2018)
Collaborative documents http://grafis.sch.gr	Members	**7.361**
	Files	**782.422**
Video http://video.sch.gr	Uploaded Videos	**4.439** (1.246 users)
	Groups	**110**
	Channels	**130**
Live broadcasts http://video.sch.gr/live	> **100** over the last three years	
Multimedia Presentations Service http://mmpres.sch.gr	Users	**181**
	Available presentations:	**313**
	Presentations published on video.sch.gr:	**114**
	Videos on video.sch.gr:	**59**
	Videos on youtube:	**110**
User support service http://helpdesk.sch.gr	Year 2017	**154.724** tickets

ANNEX 2
GSN's Main Services

This section briefly presents the main services provided by the GSN to the school community.

Last update: 23/04/2018.

1. Broadband Connectivity

In all public schools and administrative units of both Primary and Secondary education, free broadband access is provided. The connections fees of public educational units with GSN and the Internet are covered by the Central Government Budget. The connectivity technologies (allowing broadband services) are mainly: ADSL (basic), VDSL, Optical fiber and dedicated lines (rarely). Broadband connectivity is analyzed as follows:

	Bandwidth	Number of Schools (Percentage)	Comments
GSN's Broadband Connectivity Indicators (April 2018)	< 10 Mbps	**3.234** (24%)	ADSL 2 Mbps
	10 Mbps – 100 Mbps	**8.535** (64%)	ADSL 24 Mbps VDSL 50 Mbps
	100 Mbps – 1 Gbps	**1.580** (12%)	Fiber Optic >100 Mbps

As the needs of schools for high Internet speeds are increasing, GSN should be constantly at the cutting edge of the technological evolution of broadband connections offered in Greece. The main goal of GSN over the next three years is the overall upgrade of the low and medium speed connections, i.e. from 2Mbps - 24 Mbps to **50Mbps for small school** units and **100Mbps for the rest**, as well as the integration of internet connections with **fiber optic** networks, where available.

2. Portal

GSN portal (http://www.sch.gr) serves as the main information gateway for actions strongly related to Education and as a reference access point for various GSN services. The main features of the GSN portal are listed below:

- News / announcements and events related to the educational community
- GSN users' posts (after approval by the portal administrator)
- Instructions and user manuals for e-services provided by the GSN
- View educational websites or blogs created by GSN users
- GSN user's (personal) control panel
- Interfacing with other GSN services

Operational Statisics: **> 105.000** unique visitors in a monthly basis (typical month in 2017) *(Source: http://www.sch.gr/awstats/awstats.pl?config=www.sch.gr).*

3. Central user authorization service

The central user certification service (https://sso.sch.gr) provides access to a member of GSN from a single point (Single Sign On) in all integrated applications of GSN and in authorized services of MoE and other educational partners (see Annex 5).

4. Email

It is the most popular GSN service (http://webmail.sch.gr) and efficiently handles users' emails (i.e. schools, teachers, administration units, administrators and pupils). This service establishes secure communication and provides the following functionalities:

- Single inbound and outbound mail server name (mail server), mail.sch.gr
- Receive IMAP and POP3 mail.
- Access to mail via web, webmail.sch.gr
- Access to mail from mobile devices.
- SMTP authentication
- Securely send and receive encrypted mail (TLS / SSL)
- Alternative e-mail address
- Forward mail to another address

- **Total number of members** (April 2018)   **284.259**
- Daily average users   **42.000**

1. **Official school unit accounts**
- Primary Education School Units (Public)   **10.077**
- Primary Education School Units (Private)   **654**
- Secondary Education School Units (Public)   **3.653**
- Secondary Education School Units (Private)   **217**
- Administrative Units (Primary Education)   **75**
- Administrative Units (Secondary Education)   **106**
- Regional Directorates   **13**
- Post secondary   **153**
- Educational Support Units   **251**
   Total Unit Accounts   **15.199**

2. **OTHER SCHOOL UNIT ACCOUNTS**
   i.e. school libraries, etc   **7.318**

3. PERSONAL ACCOUNTS

- Personnel **2.904**
- Teachers **112.632**
- Deputies (2017-18) **6.711**
- Teachers (Private schools) **1.169**
- Retired teachers **23.171**
- Pupils (active) **115.155**

  Total personal accounts **261.742**

The mailing list service is designed to easily send messages and documents to a large number of end-users. It is widely used by the MoE and its supervised entities for the circulation of official administration documents and announcements to schools and teachers.

5. Web hosting

The Web hosting service enables schools, administration units and teachers to create and easily maintain their website.

- Active teacher's web-sites **8.668**
- Active school units web-sites **9.029**

  Total active web-sites **17.697**

6. Teleconference service

The teleconferencing service (http://meeting.sch.gr) supports audiovisual communication and allows presentation view, file and application sharing amongst participants (i.s., GSN users) and is in operational use, since September 2014.

- Users (Μαρ. 2017) **14.207** (mainly schools)
- Teleconferences **1.793**
- Total duration **2.495** hours

7. e-Learning service

The eLearning service (http://e-learning.sch.gr) provides a user-friendly web-interface that promotes participative and collaborative learning. Supports specific user roles and provides secure and personalized access exploiting the integration with the GSN's directory service. It has been certified according to the SCORM LMS-RTE standard and is integrated with the open-source web-conferencing system BigBlueButton.

- Users **20.893**
- Content creators **1.420**
- Teachers **2.168**
- Courses **1.657**

8. Electronic classroom service

The electronic classroom (http://eclass.sch.gr) enriches the course, that takes place daily in the classroom, with modern educational ICT tools. The teacher can easily create online courses and therefore interact with pupils. This service can also be used for training, collaboration etc., between teachers.

- Members (April 2018)   **14.602** teachers και **28.100** pupils
- Courses (current school year)   **5.689** (**1.120** schools)
- Total courses   **53.280**

(source http://eclass.sch.gr/info/about.php)

9. Educational Communities and Blogs

GSN provides the Educational Communities and Blogs service (http://blogs.sch.gr) exploiting the open source platforms WordPress and BuddyPress. A key feature is that it establishes equivalent functionality to other popular social networks (Facebook, twitter etc.), but in a completely secure environment.

- Blogs   **47.622**
- Members (schools, teacher, pupils)   **47.104**
- Articles (period 2010-2018)   **367.717**
- Groups   **857**
- GSN members participating in, at least, one group   **9.188**

Activity (last three months):

- **3.212** new blogs
- **22.784** new articles
- **581** comments

(source: http://blogs.sch.gr/statistics 23/4/2018)

Views: **>320.000** unique visitors (March 2018)
(source: http://blogs.sch.gr/awstats/awstats.pl)

10. School e-magazines

The school e-magazines service (http://schoolpress.sch.gr), is based on the open source platform WordPress, and enriches the classical teaching process with group collaboration tools, the digital publication of a group's activity etc. Pupils are encouraged to express themselves and potential advance their skills in writing.

- Magazines: **2.028**
- Articles: **27.854**

(source: http://schoolpress.sch.gr/stat/ 23/4/2018)

- Views**: > 16.000** unique visitors (March 2018)

(source: http://schoolpress.sch.gr/awstats/awstats.pl)

11. «+γραφίς» Collaborative documents

The key features of http://grafis.sch.gr are mainly oriented to the efficient management (i.e., create, save etc.) of files, images, shared calendars complemented with sharing and collaboration functionalities within a browser. The «+γραφις» service is also efficiently integrated with user's desktop, tablet or smartphone. The basic functionalities of the «+γραφις» service are summarized below:

- Create new documents and files

- Edit existing documents

- Edit a document in real time with other users

- Categorize, organize and store documents and files

- Importing documents and files from external sources

- Search for documents and files

- Add multimedia to documents (e.g. photos, videos, etc.)

- Organization and assignment of work using calendars

- Organizing personal contacts

- Users   **7.361**
- Total files   **782.422**

12. Video and Live broadcasts

The Video and Live broadcasts service (http://vod-new.sch.gr) provides the functionalities to search, post and play video data. It allows users to enhance digital material with metadata, thus offering a personalized service to all certified members of GSN. This service is offered to schools and teachers who can also create their own radio and TV channels and their own groups in which video material is distributed only amongst its members. A critical feature of the service is the live broadcasting functionality (http://vod.sch.gr/live), thus allowing the efficient organization and support of online events provided by Moe's supervised entities and schools. It has to be mentioned that more than **100** education-oriented events broadcasted live during the last three years.

- Available videos   **4.439** (3.807 in public view)
- Video Groups   **110**
- Video channels   **130**
- Users that have uploaded videos   **1.246**
- Users   **3.603**
- Visitors   **116.284** unique visitors (2016)

13. Multimedia presentations service

The Multimedia Presentations Service (http://mmpres.sch.gr) aspires to introduce multimedia content into both Primary and Secondary education, so that can be utilized in the learning

process and in various educational activities. The service provides a flexible framework that enables teachers and pupils to create new digital audiovisual content by combining different forms of enriched media such as videos, images and sounds.

- Users **181**
- Available presentations **313**
- Presentations published on vod.sch.gr **114**
- Videos on vod.sch..gr **59**
- Videos on youtube **110**

(source: http://mmpres.sch.gr/?page_id=67 23/4/2018)

14. Communication and Collaboration service

The Communication and Collaboration Service (https://www.uc.sch.gr) enables GSN users to communicate with voice, video and text messages. It also offers advanced collaboration services such as conferencing, file transfer and desktop sharing between two PCs as also fax receiving and forwarding subsystem in the user's email account, instant messaging and marking presence feature. For the operational needs of the User's Support (Help-Desk), this service is integrated with a sophisticated Call Center, interfacing with other GSN's information systems. Potential benefits of using this service are listed below:

- Communication and collaboration between GSN members is facilitated and financial resources are saved.

- Upgrades helpdesk telephone support.

- Can be exploited as a modern educational tool for collaboration between pupils and teachers (access is certified and permitted only to GSN users).

Users

- Official school unit accounts **346**
- Teachers / educators **1.246**

15. Schools ICT Inventory Service

The ICT Inventory Service enables both Primary and Secondary Education School units to efficiently record their ICT infrastructure, thus allowing to provide on-demand various technical information about their status.

16. Users support (Help-Desk)

The user support service is provided nationwide by the GSN in close collaboration with Universities and Technological Institutes and efficiently address a vast number of tickets regarding requests for technical support in school's ICT infrastructures as also requests for GSN electronic services. The overall support scheme (Help-Desk) is established via telephone (801 11 801 81), email or fax and is complemented with a management ticketing system (http://helpdesk.sch.gr), thus allowing the immediate resolution of any technical-oriented

problem / request (i.e., encountered in network connection, electronic services and their use, etc.) that is formally announced.

- **2017** - Tickets **154.724**

ANNEX 3
GSN's Infrastructure

1. Network Infrastructure

Backbone Network	
Nodes	**51**
Points of presence (MAN)	**63** (in the future 66)
MAN connections through GRNET	**27**
MAN connections through SYZEFXIS (http://www.syzefxis.gov.gr)	**36**
MAN connections through SYZEFXIS (in future)	**39**
Distribution Network Managed Devices	**> 200**
Connectivity GSN – GRNET (internet feed)	**10 Gbps**
Connectivity GSN – ΣΥΖΕΥΞΙΣ	**1 Gbps**
Average daily internet network traffic (IPv4)	**> 9 Gbps**
Average daily internet network traffic (IPv6)	**> 200 Mbps**
Access Network	
Supported access technologies	**xDSL, Ethernet, Wireless, Optical Fiber**
Access Network Speed	**2 Mbps – 1 Gbps**
Largest school campus in Greece	**Grava's school (Athens)**
Users @ Grava's school	**> 3.500 users**
Access Network Speed @ Grava's school	**1 Gbps**

2. IT and Storage infrastructure

2.1 GSN's Main and New Data Center (Athens)

A. Data storage facilities

- Storage capacity **34 TB**
- Main Storage capacity **81 TB**
- Three secondary Storages (2x1,5 TB - 6 TB).
- Backup To Disk System (64 TB)
- Tape Library 48 slots LTO6

B. Servers (total 110)

- Mail servers
- Web servers

- ASP and ASP.net web hosting servers

- Database Servers

- Virtual Machines

- Directory Server

- DNS Server

- Administration servers

- Proxy/Content Filtering servers

- Various services and web-sites

Γ. Network Infrastructure

- Πέντε (5) Μεταγωγείς Επιπέδου Εφαρμογής (content ή layer 4-7 switch)

- Ten (10) Ethernet Switches (layer 2-3 switch)

- Six (6) Ethernet Switches (layer 2 management switch)

- Eight (8) blade rack switches

- Two (2) Core Datacenter layer 2-3 Swithes with 64X10G ports each

Δ. Support Infrastructure

- 9 Racks (Main Data Center – Athens)

- Two (2) Console Switches for Servers and Network Devices administration

- Two (2) keyboard / display monitoring systems

2.2 Secondary data center (Thessaloniki and Patras)

GSN operates the following data centers, in order to enhance data security as also its operational status:

- **Data center - Thessaloniki**: is a secondary point for DNS (slave) services with 3 servers and 1 rack.

- **Data center - Patras**: the main point for DNS (master) services, hosting also some GSN's services. Includes:

    o Eight (8) servers

    o Two (2) Racks.

    o Two (2) Ethernet switches (layer 2-3 switch)

- **CTI's Network Management / Operation Center - Patras**: Enables various GSN's services hosting, IT management and monitoring, application testing and deployment, operation of secondary mail exchangers, and operates GSN's secondary point of Directory and Active Directory. Includes the following IT equipment:

    o Seven (7) servers

    o Storage **18 TB**

- Back-up storage system (12 TB disks).
- Tape library 287 Slots, 2XLTO 6 Tape Drives, 80XLTO6 Cardridges
- Two (2) Racks
- One (1) keyboard / display monitoring system
- Four (4) Ethernet Switches (layer 2 switch)
- One Application switch (content or layer 4-7 switch)

ANNEX 4
GSN's Initiatives for Creative and Safer Internet

Pupils' creative and safe access to the Internet as also their protection against inappropriate digital content, are fundamental priorities for GSN. In Greece, GSN was the first organization that highlighted the concept of Safer Internet. Since its inception (1998), GSN has (co-)organized or participated in a variety of events, workshops, conferences, trainings, etc. for creative and secure internet and closely collaborates with authorities / agencies, in order to efficiently address online security incidents in school community.

GSN has consistently supported initiatives by the MoE, such as in 2014, that informed the school community through online workshops co-organized with the Greek Cyber Crime Division. In this case, GSN offered - at no cost - teleconferencing and live broadcast services for the implementation of online workshops involving more than 10,000 schools. It has to be mentioned, that similar actions of the MoE, can be efficiently implemented regardless of the educational content.

In addition, GSN has undertaken the following initiatives in order to inform and potentially raise awareness in school community about the concept of creative and safer internet. Specifically:

1. Since 1999, operates a Web Content Control Service, thus implementing a secure content policy, in line with international practice and legal requirements. Moreover, GSN continuously maintains the service and upgrades it at regular intervals.

2. Since 2009, successfully operates the Internet Safety Portal (http://internet-safety.sch.gr), thus providing updated information and educational material for teachers, pupils and parents. On the Internet Safety Portal, which is certified by the Institute of Educational Policy (IEP, http://www.iep.edu.gr), useful material about the policy and actions of the MoE regarding digital security, can be found.

3. From 2011 and through the eTwinning (www.etwinning.gr) "Digital Security" section, GSN provides webinars promoting good practices and guidelines on such issues and supporting schools that potential wish to implement eTwinning collaborative projects regarding safe and efficient use of Internet. Specifically, since 2017:

   - Conducts online courses formally entitled "*Pedagogical exploitation of ICT and Web 2.0 tools for collaborative eTwinning projects and their integration in teaching lessons*" (http://www.etwinning.gr/news/moodle/762-online-e-web-2-0-etwinning), which include the online lesson "*5: Creative and Secure Internet - Assessing and Developing Critical Thinking about Digital Content*". Currently, more than 3,000 teachers have been involved in this educational action.

   - Co-organized with the European School Network (EUN, www.eun.org), a thematic conference formally entitled *Learning to Think in a Digital Society* (http://www.etwinning.gr/tc2017/), attended by more than 250 teachers from EU countries.

4. Since 2013, GSN participates on a voluntary basis as the National Coordinator of the European School Network for the European eSafety Label (www.esafetylabel.eu) action. With the digital security label, a specific certification is provided to schools to establish a safer online environment for both teachers and pupils. It has to be mentioned that the eSafety Label quantitative indicators place our country to a remarkable position across Europe. A total of 1,495 accredited schools in 35 countries have been labeled, thus 20

gold, 67 silver and 1,408 bronze labels. Specifically, 9 gold, 20 silver and 296 bronze labels are related to Greek schools, i.e. a total of 325 accredited Greek schools.

5. Since 2014 (Safer Internet Day), GSN participates in the *Web We Want* initiative (http://webwewant.eu), having undertaken the translation, editing and graphic formulation of the Greek version of the book formally entitled *Web We Want ("The Internet We Want ")*. The educational material for high school pupils primary seeks to investigate rights and obligations as also to encourage reflection on their own behavior and their peers. Also, the book "*The Web We Want - Teachers on the Internet*" (46 / 24-11-2016 act of the IEP Board) is a continuation of the textbook for teens "The Internet We Want" (9959 / 29-9-2014 suggestion of IEP), and somehow complements the educational material with lesson plans that can be utilized by teachers. Just as *The Web We Want* was developed by young people for young people, the lesson plans in the *Web We Want Teacher's Manual* were designed by teachers for teachers across Europe. The lesson plans provide ideas and activities to encourage young people to develop creative and critical thinking skills, in order to address increasingly complex realities in the digital age.

6. Since 2016, participates in the EduWeb project (http://eduweb-project.eu/), which is being implemented under Erasmus Plus programme, and aims to strengthen cooperation between schools and educational institutions to efficiently combat digital exclusion of adults, regarding the use of Internet. The aim is pupils to potential act as educators of digitally illiterate adult family members in the concept of safe and creative use of Internet.

EduWeb has created an educational portal to host and distribute educational material for beginners and advanced Internet users. Additionally, the portal provides an e-learning environment that is used for on-line teacher education (complemented with educational material), which in turn will educate pupils on the safe and creative use of the Internet. From this perspective, pupils from simple Internet users will be potential instructors of adult (and in particular elderly) members of their families, thus helping to combat the digital exclusion of European citizens through more effective and innovative teaching and pedagogical methodologies.

Completed Actions

1. Between 2012 and 2015, GSN trained more than 2,500 IT educators in the concept of safe and creative Internet, through the action *STIRIZO* [co-funded by National Funds and by the European Social Fund (ESF), under the Hellenic National Strategic Reference Framework (NSRF) 2007-2013] (http://training.sch.gr).

2. During 2014-2015, GSN in close collaboration with the MoE, implemented the Action "*Network for the Prevention and Confrontation of School Violence and Intimidation*" (http://stop-bullying.sch.gr/) and trained approximately 16,000 teachers to efficiently address school violence and bullying, including also cyber bullying.

3. During the school year 2015-2016, GSN in close collaboration with Safer Internet Initiative, implemented the action "Connect with Caution" (http://synmesyn.sch.gr), which includes the distance learning of 38,319 pupils from 567 schools as also face to face training of 318 teachers in the concept of appropriate and creative use of the internet.

4. In 2015, GSN implemented the Pilot Action formally entitled "*Call an Expert on Safe Internet*" (http://internet-safety.sch.gr/call-an-expert), which enable schools to invite experts / specialists on safe internet, in order to organize related workshops for the school community.

ANNEX 5
Accredited platforms and e-services utilizing
GSN's Central User Authentication Scheme

Platform / e-service	URL
1. Institute of Educational Policy	http://www.iep.edu.gr/
2. Photodentro – Greek National Aggregator of Educational Content	http://photodentro.edu.gr/
3. i-participate (digital educational content)	http://i-participate.gr/
4. KEPLINET (Herakleion – Crete)	http://www.plinet.gr/sepehy/
5. Myschool – Digital support of school and administrative units in the Greek territory	http://myschool.sch.gr/
6. Prometheus – Online platform that facilitates the overall scheduling and administration of school procurements	http://prometheus.cti.gr/
7. School books publication	http://publications.cti.gr/
8. Pupil's ICT certification project	http://com2cert.cti.gr/
9. Self-assessment portal	http://diktyo-aee.iep.edu.gr/
10. Prevention and treatment of bullying and school violence phenomena network	http://stop-bullying.sch.gr/
11. School's IT Laboratories	http://mylab.sch.gr/
12. Evaluation of educational procedures	http://aee.iep.edu.gr/
13. School's social activities (Regional Directorate of Education – Southern Aegean)	http://dide.dod.sch.gr/koinonikosxoleio/
14. Administrative School support	http://app.myschool.sch.gr/
15. Technical Support (ts.sch.gr	http://ts.sch.gr/

ANNEX 6
Citations

GSN has received the following citations:

- Greek school network increasingly turning to open source (2014)
  https://joinup.ec.europa.eu/news/greek-school-network-increasingly-turning-open-source

- Greek school network adopts IPv6 (2007)
  http://cordis.europa.eu/result/brief/rcn/3467_en.html

- Networking pupils and teachers in Greece (2004)
  http://ec.europa.eu/employment_social/esf/docs/el2_1_en.pdf