



Regional Network of Piedmont Schools

General Project Description

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A. ABSTRACT

It is below described the **Regional Network of Piedmont Schools** project, supporting the spread and use of ICT within schools of Piedmont territory with the general objective of overcoming digital divide in schools and in the educational field as a whole.

The project, started in year 2000 and still in progress, consists of a unitary network interconnecting all schools and didactic structures of Piedmont regional territory (including branches and separated seats), in order to enable students, teachers and all actors of the regional School System to effectively practice ICT in everyday didactic and administrative context.

The experience, originated by the strong will of local institutions and supported by the substantial contribution of a Bank Foundation, fully meets the objectives expressed in the e-Europe Action Plan and in the Italian Government Plan for the development of the Information Society, making Piedmont a model at a national and European level.

The initiative has practically involved all schools of the Region and has been based on several decentralized projects, a dedicated network infrastructure, and on the support of some specially organized *Service, Animation and Experimentation Centres* stationed around the regional territory.

B. 1. Background

I. 1.1 The Protocol of Understanding

From a conceptual and institutional point of view, the **Regional Network of Piedmont Schools** has been thought to support the development of schools autonomy¹.

In July 2000 the Protocol of Understanding was signed among Ministry of Education, Provincial Education Superintendencies², local public bodies, University of Turin, Polytechnic of Turin and the Regional Institute for educational research, experimentation and improvement (IRRSAE). It aimed to support the development and experimentation of a unitary regional network interconnecting all schools and didactic structures, in consideration of "*favourable conditions existing in Piedmont that, if properly managed and supported, could prefigure a wide and systematic development of ICT-based information and communication, both with didactic and administrative purposes.*".

All subscribers were in fact persuaded that the main protagonists of schools autonomy had to be schools themselves, but they recognized the need of strengthening the communication system, in order to execute the schools autonomy and extend the possibility of co-operative work, document storage, information and experience sharing, and ICT-based didactic experimentation.

The operational and technological management of the project has been committed to *CSI Piemonte*³, assisted by CSP⁴. They have been asked to ensure the best usage of available technological resources and the acquisition of the needed infrastructures, with the aim of optimising the use of Regional Government Administrative Network (RUPAR)⁵ and start up new e-services for schools.

¹ Autonomy of schools will occur within the overall context of the Educational Offer Program POF (a plan in which the entire educational process in each school is laid out). The POF is geared towards, firstly, allowing educational and organizational flexibility, secondly, increasing the responsibility of those who live and work in the school environment, and finally, assuring compatibility and integration between all didactic choices and initiatives.

The Educational Offer Program allows autonomy to schools, which in turn, consists of building the judicial, organizational, professional and administrative/management tools to permit educational flexibility and improve efficiency. Individual schools will focus on the quality of training and learning for all students, both those facing and seeking to overcome difficulties as well as those looking to achieve full potential and excellence. This requires precise learning methodology and a strong involvement and responsibility on the part of all members of the school.

² In year 2001 those bodies have been aggregated in the Regional General Direction of the Ministry of Education.

³ CSI is a Consortium of public Bodies for the Information System, that provides informatic and telematic support for regional and public administration to implement e-government services.

⁴ CSP is an ICT applied research Laboratory recognized by the Italian Ministry of Research. It supports local government to develop strategies and ICT projects facing the global competition.

⁵ The Regional Government Administrative Network is the infrastructure to access all services implemented within the regional public administration. Set up in 1998, it represents the intranet of the Regional PA, interconnecting all public bodies and structures of the region and to the national Government network,

(a) Web references for further information

Ministry of Education – Regional General Direction of Piedmont	http://direzione.scuole.piemonte.it/
the Protocol of Understanding (It)	http://www.scuole.piemonte.it/dwd/protocollo.pdf
CSI Piemonte website	http://www.csi.it
CSP website	http://www.csp.it

II. 1.2. The Action Plan of the Italian Bank Foundation Fondazione Cassa di Risparmio di Torino (CRT)

In the described background, the Action Plan of the Italian Bank Foundation *Fondazione Cassa di Risparmio di Torino* has also been defined. In order to support the spread and use of ICT within schools of Piedmont territory, the initiative has allocated 21.691.189 euro for the period July 2000- June 2003.

The Action Plan was perfectly integrated with the Protocol of Understanding and the overall initiative has involved 2.828 educational structure and seats (among which 2.500 are public), about 50.000 teachers and 430.000 students, and more than 850 schools, both public and officially recognized.

The initiative has focused on the educational field to generate cultural attention and aware knowledge of the opportunities offered by the spread of ICT within local communities. It has therefore involved teachers, students and families as key actors of in the innovation process caused by the development of the Information Society.

At the very beginning, the context where the project originated was quite diversified: only some schools had already introduced ICT and were skilled, whereas there was an evident lack of organized initiatives and diffused investments in ICTs to generally support the School System progress. Thus, the **Regional Network of Piedmont Schools** has been aimed to transform some isolated school's features and best practices into a widespread collaborative system and to organize a valuable co-operation between schools, students and families.

To reach those objectives, the following four lines of financial support of *Fondazione CRT* have been defined:

- Provide basic services to all schools in the Region, interconnecting them to the Regional Government Administrative Network (RUPAR) through the so-called "Universal Service";
- Promote innovative experimentations run by schools;
- Create some reference points around the regional territory (the so-called *Service, Animation and Experimentation Centres*) to support schools with technical and didactical issues and to locally promote a gradual reorganization and innovation of the School System;
- Extend access to e-government services, promote new services based on information, cooperation and interactivity within the Regional School System, and implement tools in order to optimise data transmission among schools and public institutions (such as the "unified questionnaire" implemented within the project).

and aimed at supporting applicative cooperation and new e-services among institutions and to citizens.

The organizational and operational management of *Fondazione CRT* plan has been committed to *CSI Piemonte*.

(a) **Web references for further information**

<i>Fondazione CRT</i> website	http://www.fondazionecrt.it/
<i>Fondazione CRT</i> Action Plan	http://www.scuole.piemonte.it/intro.htm
e-Europe Action Plan	http://www.scuole.piemonte.it/dwd/actionplan_it.pdf
Italian Government Plan for the Information Society	http://www.etx.it/news/gov/nerapint.htm

III. **1.3. The Negotiated Programming Agreement**

The way defined by the Protocol of Understanding is nowadays concluded. A new agreement, in line with the previous one, has been signed in April 2002 among the Regional General Direction of the Ministry of Education, some regional public institutions, and the bank Foundation *Fondazione CRT*: the "*Negotiated Programming Agreement on the spread and use of ICT within the Regional School System of Piedmont*".

Subscribers are determined, among the seven priority action lines of the two-year program, on promoting and developing an "Information System for education, schooling and training" coordinated and integrated with the School System.

Particularly, they intend to develop an applicative cooperation system among all existing databases, in order to create a unified Piedmont schools register that, also connecting to local registers, enables to outline the whole educational "iter" of Piedmont citizens. The implementation of such a system could in fact produce new tools for monitoring and evaluation of the regional education system, in order to progressively improve it.

(a) **Web references for further information**

The <i>Negotiated Programming Agreement</i> (It)	http://www.scuole.piemonte.it/dwd/Accordo%20di%20programma.pdf
Piedmont website - education	http://www.regione.piemonte.it/istruz/

C. **2. Implementation and results**

I. **2.1. Training of school managers**

In the starting phase of the project, all school managers of the Region were precisely informed on the initiatives through official meetings and trainings.

Those meetings were particularly important to explain the model of the "Universal Service" that was going to be developed, to present the consequent training initiatives that would have been addressed to all school managers, and to focus on the financing opportunities offered to schools ICT equipments.

II. 2.2 The "Universal Service"

Since April 2001 the *Universal Service* and the access to Regional Government Administrative Network (RUPAR) are available to all schools of Piedmont.

Through the "Universal Service" schools can freely access:

- An authenticated and secure communication system, protecting from intrusions and enabling the selection of suitable websites;
- An online navigation filtering system, excluding any non-educational contents or inappropriate materials (Smart Filter Technology⁶);
- Mailboxes for each school⁷ (some of which including digital certificate⁸) based on the following fixed and univocal web and email address syntax:

[Function.]type_of_school.[denomination.]placement@scuole.piemonte.it

or

name.surname@scuole.piemonte.it

- information systems and hosting for school websites up to 50MB (free of charge for maintenance and connectivity), also based on the following fixed and univocal web address syntax:

http://www.scuole.piemonte.it/[municipality]/[school_name]/[school_type]

For a better visibility it is also possible to use the following alias:

http://CHOSENNAME.scuole.piemonte.it

⁶ The navigation is run through a proxy server containing a web filtering system (Smart Filter) that stops connections to websites classified as unsuitable. Secure Computing SmartFilter is an automatic system responding to the need of controlling internet accesses. The tool enable a constant updating of "control lists and categories" through the search of new unknown websites and web pages. Any new-found URL is then specifically checked by experts, in order to decide whether to filter it or not.

⁷ When a school subscribes, the system automatically generates 4 mailboxes, with digital certificate, entitled to the school manager, the administrative manager, the administrative assistant, and one representative of the technical staff. Afterwards, the school can ask the generation of more mailboxes for all teachers or groups of users (i.e. classrooms, laboratories, etc ...).

⁸ In order to protect web-based communications, it is possible to use Personal Identity Certificates certifying the declared identity of users. A protection certificate associates a public key with a private one. Only the owner knows the corresponding private key and this enables him to decode or enclose a digital signature. Sending one's personal certificate to other users, the user is sending his public key that enables others to transmit cryptographic information that can be decoded and read only through the proper private key. A Digital Signature on the Certificate represents the digital identity card of a user: it indicates to the receiver that the received information were really sent by the user the have not been altered or falsified.

- community resources for internal communication among different sites and branches of the same school or for information sharing among different schools;
- long-distance support and training activities through web-based interaction and a proper phone number.

Into the Regional Government Administrative Network (RUPAR) also the General Regional Direction of the Ministry of Education is connected (dirreg@scuole.piemonte.it and <http://direzione.scuole.piemonte.it>). It uses the RUPAR to transmit departmental memorandums and official documents, as further demonstration of the value of guaranteed and authenticated digital signatures.

Please note: To access statistics and graphics on the *Universal Service* use and impact within the Regional School System communication processes, please refer to "Enclosure n.2 - Statistics on the Universal Service".

(a) Web references for further information

The "Universal Service"	http://www.scuole.piemonte.it/servuniv/index.htm
Controlled and filtered navigation in the RUPAR	http://www.osservatoriotecnologico.net/INTERNET/internet%20sicuro/navig_sicur2.htm http://www.scuole.piemonte.it/servuniv/smartfilter.htm
FAQs on the "Universal Service"	http://www.scuole.piemonte.it/faq/servuniv.htm

III. 2.3 The Calls for Proposals on ICT projects co-financing

Since year 2000, three Calls for Proposals based on ICT projects co-financing have been published: schools have been asked to present project proposals providing at least for the 50% of the overall financial resources required, through partnerships with local bodies.

An important requirement for the evaluation of the project was in fact the opening of schools towards local territory, bodies and communities.

Evaluations and selections were lead by *CSI Piemonte*.

The following table reports the overall significance of the initiative.

	Call 2000	Call 2001	Call 2002	Total
Presented Projects	335	53	365	753
Financed projects	131	14	225	370
Schools involved	700	68	590	768 ⁹ (90,35%)

⁹ The total number of financed schools considers that some schools were financed more than once, through different calls.

Financial Resources	5 milioni di €	413.165 €	4.250.000 €	9.813.165 €
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The most important aspects of that initiative are:

- material and documents produced by schools for the Calls for Proposals represent a cultural patrimony of great importance: an archive of various representations and intuitions on ICT usage in order to respond to the didactic and socio-cultural needs of different school contexts.
- The first Call (year 2000) was mainly addressed to overcome digital divide in Piedmont schools and to build a balanced system. Besides the standard evaluation criteria of the financing initiative, the selection was also focused on schools in a concrete condition of disadvantage within the system, because of effective lack of basic ICT and/or an unfavourable geographic location. Among the financed schools, 32 were located in rural area and had shown a significant need of financial support to reduce the digital divide.
- Subsequent Calls for Proposals have mainly been focused on rewarding the ability to implement feasible projects, useful for the overall system and repeatable;
- Calls for Proposals of years 2001 and 2002 remarkably assigned financial resources to the payment of technical staff involved in the implementation and experimentation of services and tools to be used over a long time (i.e. web portals, online environments storing didactic materials, official data and administrative documents, ...)

(a)

(b) Web references for further information

Call for Proposals – year 2000	http://www.scuole.piemonte.it/bando/index.htm
Call for Proposals – year 2001	http://www.scuole.piemonte.it/bandoAL/bando_al.htm
Call for Proposals – year 2002	http://www.scuole.piemonte.it/bando2002/

IV. 2.4 The Service, Animation and Experimentation Centres

As indicated in the Protocol of Understanding, some selected schools should have been dedicated to play a particularly active role in the project, acting as *Service, Animation and Experimentation Centres* and points of reference stationed around the regional territory.

Comprehensively, today 19 schools within the region act as *Service, Animation and Experimentation Centres*, whereas other 6 schools act as *Animation Centres*. The management of animation and experimentation activities lead by the *Centres* has been committed to CSP, in agreement with *CSI Piemonte*, and it is run through the so-called DSCHOLA project¹⁰.

Those 25¹¹ *Centres* are today real points of reference for all schools of the Region.

¹⁰ DSCHOLA is a fundamental component of the main Regional Network of Piedmont Schools project, and it is directed to increase flexible learning, distance working, cooperation and training between teachers.

¹¹ Originally the *Centres* were 23 (18+5): in year 2003 two more centres have been created.

▪ **Service, Animation and Experimentation Centres:**

- are secondary schools with proven experience in ICT;
- have been selected and provided with ICT equipment and advanced interaction tools based on broadband connection (secure communications, VoIP, audio-video Streaming and Videoconference systems);
- are playing the role of reference points around the regional territory to support local schools with technical issues;
- support local schools for the set up and experimentation of new ICT infrastructures;
- locally promote the gradual reorganization and innovation of the Regional Schools system;

Service, Animation and Experimentation Centres are asked to care about technical support and consulting, direct and indirect training, and experimentation of innovative ICT-based services, following a detailed action plan specifying their qualitative and quantitative objectives.

Their work and experimentation activities have produced some high quality ICT-based services, tools and solutions that could be reused by other schools in the Country.

▪ **Animation Centres:**

- Are schools with proven experience in ICT for didactics and educational methodologies;
- are playing the role of reference points around the regional territory to organize and foster workshops, seminaries and conferences;
- contribute to the development of innovative methods, systems and contents related to didactics and pedagogics;

Animation Centres are asked to disseminate their own competencies and excellence in didactic and pedagogic field. Their work has produced significant documents and materials that can be downloaded and used by other schools in the Country.

Building a "School community" is one of the main objectives of the Centres Network and it is pursued through the official DSCHOLA project Website. The website, in fact, is based on distributed content editing to all users of the community, and interaction tools (such as events agenda, forums, discussion boards, mailing lists, document sharing, ...) enabling distance participation.

The model of schools supporting schools adopted in the project has been appreciated in Europe and has been identified as "best practice". Moreover, it has received international acknowledgments such as the BEEP Award in Paris (September 2002), participating in the "Regional Development" category, and the Netedays award (Turin, 2001) within the E-Week Celebration.

In the Negotiated Programming Agreement those Centres assume the role of "permanent structures, stationed around the regional territory, working at supporting and innovating the School System and representing a resource with great potential for communities, business companies and public institutions in local areas."

This perspective points out new opportunities of participation and inclusion for students, families and citizens, placing ICT equipments of schools at wide disposal of local communities.

1. 2.4.1 Results of first year activity (school years 2001-2002)

▪ **Service, Animation and Experimentation Centres:**

- Training activity involving at least one representative of all public and officially recognized schools of Piedmont (school managers and administrative assistants) on the main features of the Universal Service: comprehensively 136 editions, 1.632 hours of training, 1.437 people involved;
- Support to over 145 specific projects and experimentations run by local schools. Some of those experimentations produced high quality results;
- Support on technical issues to co-financed schools, for comprehensively 2.576 hours of assistance;
- 50 animation activities run in various Centres, comprehensively involving 1.736 participants;
- experimentation project within the following different areas: competencies certification, distance learning, inclusion of disables, distance cooperation, quality certification, local network, schools networks, web-based information systems, wireless connections and distance apprenticeship.

Among the experimented solutions, some produced high quality results and could be reused by other schools in the Country.

▪ **Animation Centres:**

They have organized over 30 workshops, seminars and conferences on ICT and didactics and have produced related significant documents and materials that are today downloadable and reusable by other schools in the Country. Workshops have mainly focused on:

- ICT for inclusion of disables
- Languages of ICT
- Microrobotics and microworlds
- Use of the web for professional training
- Hypermedia

The availability of technological infrastructures and technical support, stationed around the regional territory through the *Centres*, allowed a first important experience of distance training involving over 4.000 new entering teachers in Piedmont, as required by the Ministry of education. The 2MB broadband connectivity available at any *Centre*¹² also implied a significant cost reduction of online activities.

The following data report the range of *Centres'* work:

¹² Every *Centre* is equipped with Broadband connectivity (2Mb) and with IP-based distance collaboration infrastructures, such as Videoconference, VoIP and audio-video streaming.

Total number of teachers trained in the Region	2669
Total number of technical staff trained in the Region	135
Total number of courses	135
Total number of hours of training	2025
Total number of hours of online training activity	3375

(a) Web references for further information

D-schola: schools supporting schools (official website and online community of <i>Centres</i>)	http://www.d-schola.it/
Use of the web for professional training	http://www.pavonerisorse.to.it/centro_animazione/default.htm
Languages of ICT	http://www.valsesiascuole.it/linguaggi/lingua/progetto.htm
Microrobotics	http://www.bdp.it/~toee0014/progetti/dschola/microrobotica2.htm
Online documents on the use of digital environments to produce conceptual maps, freely downloadable and reusable.	http://www.pavonerisorse.to.it/cacrt/mappe/
DSCHOLA free release of "Hyperfilm" software: it enables to link information and videos into a digital format.	http://www.hyperfilm.it/
Feedback questionnaires results from trained peoples.	http://direzione.scuole.piemonte.it/files/doc/102002/fad/index.htm

V. 2.5. The regional training course

Between September 2001 and may 2002 *CSI Piemonte*, in collaboration with the Ministry of Education and the University of Turin, organized a training course on "ICT for didactics and culture" addressed to groups of teachers selected around the regional territory and representative of various areas.

The course has contributed to awaken teachers' attention to ICT and didactics themes and to identify their ideal position of promoter and mediator towards schools and students for the use of ICT in cultural and didactic contexts. It was thus put into evi-

dence the importance of present and distant collaboration among teachers, in order to build new and shared organizational tools, evaluation criteria and practices.

(a) Web references for further information

The web porta "Open training online"	http://www.far.unito.it/
Contents of the course	http://www.far.unito.it/scuola/

D. 3. Considerations and perspectives

Moving from a situation of concrete delay of Italy and Piedmont with respect to use of ICT in schools, the main result of the Regional Network of Piedmont Schools project has been the start up of a renovation process within the Regional School System, putting people in the position to effectively use and manage ICT in everyday didactic context.

Through the Regional Network of Piedmont Schools project and the ICT Development Action Plan, Piedmont has registered some points of excellence within the national and European context. The reproducibility and transferability of the project is witnessed by the Government's Guidelines for the Development of the Information Society (Minister for Innovation and Technologies - Rome, June 2002). There, the initiatives that the Region of Piedmont has promoted to develop the use of ICT in schools are mentioned among "major projects that can provide pointers for the implementation of national-level strategies" (page 54).

As logical continuation of this work, it is now important to focus with the same strength and consistency on services offered by local public bodies to the actors of the School System (students, teachers and families).

The new action lines for the period 2003-2004 are now under definition. They are obviously inspired by the main 7 action lines fixed in the *Negotiated Programming Agreement* signed in year 2002 and aim at a further development and renovation of the Regional School system and at the improvement of services offered to teachers, students and families.

The 7 action lines fixed in the *Negotiated Programming Agreement* of year 2002 will be strengthen as follows:

1. Promotion and development of technical infrastructures

- Ensure ICT equipments and network infrastructures in order to reach the objectives indicated by the e-Europe Program;

- Ensure the availability of value-for-money infrastructure, machinery and services enabling the integration of voice and data communications (in line with the ICT market evolution).
- 2. Promotion and development of a unitary network interconnecting all schools**
 - Ensure basic services for all schools in Piedmont in order to support the use of certified and secure communication systems, online contents and services platforms, web-based cooperation tools, and security policies.
 - Support interconnection and interoperability among different public bodies, in order to optimise, improve and simplify procedures and processes involving citizens.
 - 3. Promotion and extension of schools project capability, in line with schools autonomy**
 - Support and promote the active participation of schools at projects for the daily use of ICT within didactic contexts.
 - Support schools' experimentation activity on ICT-based services applied to improve school management practices or addressed to the local territory.
 - 4. Promotion of actions and policies for the local development of services addressed to schools**
 - Strengthen the role of Centres as regional key resources able to elaborate and implement new services models and to effectively support local schools and communities innovation.
 - Promote, in the regional and national context, the value of the innovative operational model implemented in the project for the local spread and use of ICT. The model based on *Service, Animation and Experimentation Centres* and *Animation Centres* has reached important results in terms of new organizational and technological skills learning and has diffused ICT experimentation within the Regional School System.
 - 5. Promotion and development of an Information System for education, schooling and training, coordinated and integrated with the School System**
 - Organize and maintain, starting from piedmont municipalities registers, a system enabling to outline the whole educational "iter" of Piedmont citizens.
 - Develop a model for applicative cooperation among all existing databases and build a unique backbone for any running or future initiative, moving from a unified Piedmont schools register and extending it to cover local similar initiatives;
 - Support the effective exchange of data involved in knowledge, decision and evaluation processes, also through analysis and survey methodologies used in national and international contexts.
 - Monitor and evaluate the Regional Education System in order to progressively improve it, and promote initiatives of self-evaluation run by schools and institutions.
 - 6. Promotion and development of web-based contents and services on didactics and research, addressed to school autonomy**
 - Support and promote the availability of online cultural, didactical and scientific contents, exploiting the experience gained by some schools and involving Institutions working on popularisation of cultural and scientific contents.
 - Promote the development of documentation services accessible via web and multimedia libraries specifically connected to the national library system (SBN).
 - 7. Develop human resources**

- Promote trainings on ICT addressed to school managers, teachers, administrative and technical staff;
- Improve human resources competences in the field of technological research and implementation, also exploiting excellences, best practices and significant experiences locally gained;
- Support permanent training initiatives.

(a) Web references for further information

The Government's Guidelines for the Development of the Information Society	http://www.innovazione.gov.it/eng/documenti/linee_guida_eng.pdf
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