Dominik Petko

ICTs and Education –
Public-Private Partnership (PPPs) to connect Schools to the Net – A National Model in Switzerland

Summary of the Final Report

The following summary report in English has been mandated by the Swiss Agency for Development and Cooperation (SDC) to Professor Dominik Petko. The purpose of this English translation is to make the lessons learned from this innovative case study in Switzerland more widely available.

It is based on the original publication by Beat Hotz-Hart (2007), hep verlag: *"ICT und Bildung: Hype oder Umbruch? Beurteilung der Initiative Public Private Partnership – Schule im Netz" / "TIC et formation: Effet de mode ou change-ment en profondeur? Evaluation de l'initiative Partenariat public-privé – L'école sur le net".*

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The Swiss Agency for Development and Cooperation (SDC) is Switzerland's international cooperation agency within the Federal Department of Foreign Affairs (FDFA). In operating with other federal offices concerned, SDC is responsible for the overall coordination of development activities and coope-ration with Eastern Europe, as well as for the humanitarian aid delivered by the Swiss Confederation. For more information visit www.sdc.admin.ch

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Schule im Netz
L'école sur le net
Scuola in rete
Scola en la rait

www.ppp-sin.ch

Executive Summary

In July of 2007 the five-year initiative *Public-Private Partnership – Schools on the Net (PPP-SiN)* ended in Switzerland. The aim of this national program was to improve computing facilities and the availability of Internet connections in Swiss schools and to promote the use of new information and communication technologies (ICT) in the classroom. This coordinated effort by the federal government, cantons (provinces), and the private sector can be considered a case study and model for the development of free Internet access and the promotion of meaningful computer integration in schools. The program had three interconnected goals: (1) the improvement of IT infrastructure; (2) the further education of teachers; and (3) the development of educational resources. The cost of the program amounted to over one billion Swiss francs. The private-sector contribution totaled at approximately 200 million francs.

Between 2002 and 2007 practically every one of the over 5000 Swiss schools – from primary schools to upper secondary schools – was provided with a free broadband Internet connection. Many schools also received computer hardware and software at discounted prices. Over 1700 teachers at all grade levels were trained to be experts and "knowledge multipliers" who would then pass on their newly acquired skills to colleagues. Around 8000 additional teachers attended training courses for the promotion of ICT in the classroom. Thus, approximately 10% of all Swiss teachers received ICT-related further education under the program. Several thousand educational scenarios and a range of e-learning materials were also created within the context of the program's various projects.

The initiative achieved measurable progress in all areas and is described by nearly all participants in the educational system as a success. The cooperation between the federal government, cantons and private sector was made possible by the creation of *win-win situations*, in which all sides stood to benefit. The federal government provided a national impulse that successfully developed its own momentum. The cantons were able to boost their existing initiatives with resources from the federal government and the private sector. Companies profited from new partnerships and an increase in demand for their products. All of the involved partners could present themselves as responsible supporters of an information society in Switzerland. The most important aspects of the program are described here briefly. Factors for success and the primary challenges faced are also identified.

Project Background

The transition to a knowledge- and information-based society is of great importance to Switzerland, a prosperous country with few natural resources. Switzerland currently has one of the highest international levels of per capita spending on information and communication technologies in the OECD.[1] In rankings of preparedness for an information-based society, Switzerland regularly occupies a top position.[2] However, the PISA studies from 2000 and 2003 showed that Switzerland suffered from one of the largest worldwide deficits between the use of computers at home and in schools.[3] Some 63% of the surveyed 15-year-olds in 2000 used computers and the Internet regularly at home (at least once a week). At school this figure was only 21%, well below the OECD average. National studies in 1999 and 2001 showed that these findings are in some cases more extreme in other grade levels. There were also large discrepancies in ICT integration between regions, giving rise to the concern that rich and urban municipalities were successfully integrating computers and the Internet in schools while students from poorer and more rural regions were falling behind. Thus, a general deficiency in ICT literacy in Switzerland was not only feared, but also a "digital divide" along existing lines of inequality.

[1]　www.oecd.org/sti/ICTindicators

[2]　Dutta, S., & Mia, I. (2007). *The Global Information Technology Report 2006-2007. Connecting the Networked Economy.* New York / Houndmills: Palgrave Macmillan.

[3]　OECD (Ed.). (2005). *Are students ready for a technology-rich world? What PISA studies tell us.* Paris: OECD.

Political Initiatives

A host of political initiatives were developed to address the problem. In 1998, the Swiss Federal Council formulated a strategy to promote Switzerland as an information society. The strategy demanded a broad-based educational campaign. In 1999 a manifesto by the teachers' associations in Switzerland called for concrete action to be taken. In June 2000, at the Swiss Conference of Cantonal Ministers of Education, a common declaration was issued regarding ICT in education. This declaration was made on the heels of independent initiatives in many cantons. An *ICT and Education Task Force*, with representatives from the federal government, cantons, and teachers' associations, was founded in order to plan concrete measures. In the summer of 2000 the idea for a *Public-Private Partnership* was developed during a discussion between the Department of Economic Affairs and the director of the largest Swiss telecom provider, *Swisscom AG*. In 2001, a joint action plan for teacher training was developed by the cantons. In December 2001, the national parliament passed the "Federal Act to Promote the Use of Information and Communication Technologies in Schools." The act, which was set to expire after five years, was passed with a large majority. With this act the federal government laid down a framework for the appropriation of 100 million Swiss francs (two years later this amount was reduced to 35 million francs, however). On August 1 2002, the act came into effect and funding for the *Public-Private Partnership – Schools on the Net* initiative began. The PPP-SiN initiative ran parallel in Switzerland to other national programs for the promotion of ICT in education, such as the Swiss Virtual Campus, in which e-learning at universities was promoted.
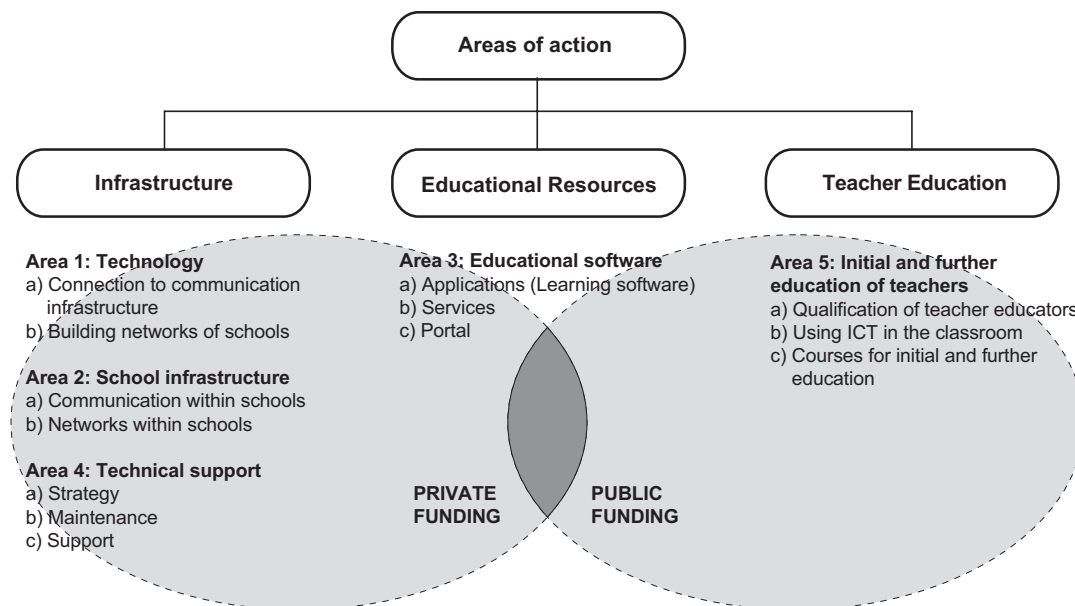
A Comprehensive Project

Figure 1: Areas of action in the original concept of the PPP-SiN programme, 2001[1]

PPP-SiN set itself apart from other programs in that it was not purely a technical initiative. The promotion of computing and Internet use in schools was understood as an integrated educational and school development project. The project was aimed at three interrelated levels: (1) infrastructure, (2) training, and (3) content. Additional goals included the networking of all participants, the development of regional and local ICT development concepts, as well as the creation of national and regional competence centers.

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[1]   Figure translated from Hotz-Hart, B. & Nacht, Th. (2007). Der Bund als Impulsgeber und Katalysator. Medienkompetenz als Herausforderung für die Schulen. In B. Hotz-Hart (Ed.). *ICT und Bildung: Hype oder Umbruch? Beurteilung der Initiative Public Private Partnership – Schule im Netz* (pp. 135-162). Bern: hep verlag.

Improving Infrastructure and Support

A number of elements are required for appropriate IT infrastructure in schools, including a sufficient number of modern computers and peripheral technologies, a fast Internet connection, a local (LAN) network, and an integrated plan for procurement, maintenance, support, and replacement. Cooperation between the federal government, cantons, municipalities, and private companies was sought to make these requirements a reality in all Swiss schools. The federal government's role was limited to coordination, for which a national contact office was created (www.sfib.ch). In 2001 and 2002, the federal government and seven companies signed a cooperation agreement. The companies agreed to offer schools discounted prices for hardware, software, and services. Microsoft and Sun Microsystems discounted their software; IBM, Dell, Cisco and Apple did the same for their hardware. These discounts and services added up to a market value of approximately 50 million Swiss francs over the five-year program. The greatest initiative from a private company was taken by the largest Swiss telecom provider, *Swisscom AG*, a former state concern whose majority stakeholder is still the Swiss government. It provided over 5000 Swiss schools – essentially all of them – with a free broadband Internet connection. Swisscom bore the costs for the installation of the connection in school facilities, ongoing connection costs, and also provided numerous services, including web-content filtering, tech support, and assistance in the development of educational resources. There were, however, conditions attached to this free Internet connection for schools and cantons. Each province had to provide a central coordination office to support Swisscom's activities. Schools and municipalities were required to set up an internal network in school facilities and to provide sufficient computing infrastructure. The contributions made by *Swisscom AG* added up to approximately 150 million Swiss francs over the five-year project.

Win-Win Situations

Investment in the program also brought various advantages for the participating companies. In return for discounted products and services, the participating companies were provided with coordinated access to the school market. This was achieved through: (1) the project website (www.ppp-sin.ch); (2) an online shop on the Swiss educational server (www.educashop.ch); and (3) through direct contact between private companies and the cantons/municipalities. The demand for products was boosted by the discounts offered and the political priority of the initiative. For the participating companies, the profit-margin loss associated with the product discounts was offset at least in part by increased revenues. Another advantage for the companies was the positive publicity obtained with their participation. The participating companies were able to market themselves as socially responsible in a public forum. Concern for a positive public image was also relevant in the political arena, however, as policy makers had to make various decisions regarding the telecommunications sector over the course of the initiative. By supplying schools with equipment, the participating companies could expect to develop customer loyalty at an early stage, even if this benefit was somewhat mitigated by the involvement of several companies. The principal financial burden for upgrading school infrastructure was carried by the cantons and, in particular, the municipalities. The municipalities financed the internal networking of school facilities and the procurement of discounted computers and peripherals. The cantons also assisted in the creation of cantonal/regional competence centers and in the hosting of training events. It is estimated that the cantons and municipalities invested approximately 200 million francs per year.

Improving Teacher Training

The skills and attitudes of teachers are key to the use of new technologies in the classroom. Teacher training was therefore a central element of the initiative. A significant portion of the 35 million francs that the federal government contributed to the program was used for ICT-related teacher training. A special focus was put on courses that addressed pedagogical approaches in classroom lessons. In order to train as many teachers as possible, the first step was to ensure a sufficient number of qualified trainers. To this end, a tiered training system with the aim of achieving a snowball effect was employed. The system consisted of three levels: F3 (French: "for-

mation de formateur de formateurs"), F2 (French: "formation de formateurs"), and F1 (French: "formation"). The federal government contributed financially to the project at the F3 and F2 levels (i.e. the training of course instructors and the further education of teachers, as well as the development of regional advisory centers). In Switzerland the cantons are responsible for the content and organization of the school system as well as for teacher training. As part of the initiative, the cantons could request subsidy for up to 80% of the costs of planned training from the federal government. The funding was tied to a number of conditions. Training courses had to be part of a canton-wide ICT development concept. Such development concepts encompassed the formulation of binding targets, the construction of infrastructure, the distribution of costs, a timeline with milestones, and information for quality assurance. Additionally, an acute need for training had to be demonstrated. The equal representation of the sexes also had to be assured. At least two cantons were required to work together on a single project. The complex project proposals which were submitted were evaluated by an expert panel established by the federal government. A total of 46 projects and nine follow-up projects were funded. For the coordination of the training events the federal government set up a central inter-cantonal co-ordination office. Over 1700 teachers signed up for the F3 training courses. This was, however, significantly fewer than expected. The original target was to train 2300 teachers as "program specialists" with the F3 training courses. It has not yet been possible to evaluate if the participating teachers have been able to fulfill their roles as knowledge multipliers. Nevertheless, it is estimated that approximately 8000 additional teachers attended subsequent courses funded in part under the PPP-SiN program. A number of these courses were organized by the program specialists. The private sector was not involved in this part of the project.

Improving Educational Resources
In addition to good hardware and training, teachers must have access to the right software, digital content, and sample lessons. The federal government and cantons both contributed to covering these needs. The activities funded in this area were diverse. In October 2001, the Swiss education server (www.educa.ch) was launched. The server provides essential information about the Swiss school system in three languages. Additionally, a free learning platform was set up specifically for the needs of schools (2002: www.educanet.ch; 2004: www.educanet2.ch). The education server and the learning platform offer a broad spectrum of educational content. In the training courses over 2000 written educational scenarios were developed to convey key concepts related to the intelligent use of computers and the Internet in the classroom. A similar number of scenarios were developed for teacher training. Both types of scenarios were collected in a database on the Swiss education server (www.szenarien.educa.ch). One element of the initiative was a funding program under which teachers could apply for resources for the development of digital learning content. More than 60 useable digital resources and tools were created with this funding (www.ppp-sin.ch: good pr@ctice). Additionally, a number of online guides were developed that answer questions concerning the use of ICT in schools (www.educaguides. ch). The private sector contributed in various projects to develop content (for example, www. swisscom.com/schule), and also provided discounted software licenses.

Costs and Financing

The costs of the program were shared by the federal government, private sector, cantons, and municipalities. At the beginning of the project, the federal government announced its readiness to provide 100 million Swiss francs for teacher training. Due to budget cuts, however, only 35 million francs were invested. The participating companies contributed goods and services over the five-year program with an estimated value of 200 million Swiss francs. They financed the connection and use of broadband Internet in schools, offered discounted prices for hardware and software, and provided consulting and support. The principal investments were made by the cantons and municipalities. The cantons invested predominately in teacher training, while the municipalities financed school infrastructure. Over the course of the project, together they

invested an estimated 1 billion francs for infrastructure and teacher training. The financial commitment of the federal government and the discounts from the private sector resulted in a cascade of investment at the cantonal and municipal levels. The PPP-SiN program contained significant incentives for cantons and municipalities to carry out the necessary investments within the time frame of the project. In particular, a clear message was emitted early by the federal government's initial commitment to provide 100 million francs, as well as by Swisscom's announcement that it would supply all Swiss schools with free Internet access. Numerous program participants reported that a "jolt" was sent through the Swiss educational system at the start of the program. When the promised investment from the federal government was reduced to 82 million by the end of the first year (2002) and then finally down to 35 million in 2003, the initial euphoria was significantly dampened. The private sector, however, held to its original agreements, and the ambitious targets established early on – particularly in the area of infrastructure – were reached nonetheless. Budget cuts did have an effect on the training and content development areas of the project, however.

Organization and Management

Under Switzerland's federal educational system, the cantons are responsible for supervising schools. The cantons autonomously coordinate their activities through the Swiss Conference of Cantonal Ministers of Education. The national government only has a limited ability to influence educational affairs. National educational initiatives are therefore a rarity in Switzerland, particularly those started on federal level. The project was a particular success in its involvement of partners at all relevant levels. From the very start, the federal government, cantons, private sector, and teachers' associations were involved in an intensive dialog in various working groups in which roles for all participants were productively allocated. The federal government did not make any specific demands regarding funding, but rather left enough latitude for individual implementation by the cantons. In this way, the cantons did not perceive the federal government's initiative as orders from above, but rather as support for the development of their own strategies and concepts. The teachers' associations also supported the project as they saw an opportunity to fulfill their own needs. The private sector supplied a range of attractive services in coordination with the cantons. From a managerial perspective, the key to the program's success was the allocation of responsibility for content development to regional and local actors. These actors were thus energized and supported in their existing efforts to promote the adoption of IT resources in schools.

Organizational Problems

Nevertheless, certain organizational elements of the program proved to be highly complex. In the final evaluation, the lack of clarity regarding areas of responsibility and protocols for decision-making is a criticism that can be leveled against the program. At the strategic level, decision-making was dispersed. The federal government, cantons, and teachers' associations convened under the auspices of the *ICT and Education Task Force*. Meanwhile, the federal government, cantons, and private sector reached agreements via the *PPP-SiN Steering Committee*. The overall administrative leadership for the federal contribution to the project was delegated by the federal government to the *Federal Office for Professional Education and Technology*. Concurrently, many administrative tasks were assigned to the cantons, where diverse conditions and processes were prevalent. The task of providing information and coordinating the program was assigned to a national contact office. However, its decision-making powers were quite limited. The contact office coordinated four national working groups which were responsible for implementation and quality assurance for individual aspects of the program. In addition, numerous further cantonal and inter-cantonal working groups managed the regional/local planning and implementation of the project.

Results in Numbers

Before and after the PPP-SiN initiative (i.e. at the end of 2001 and beginning of 2007), representative surveys regarding the use of ICT in Swiss schools were carried out.[4] From the responses provided by the ICT coordinators and teachers, conclusions can be reached concerning the advancements that were achieved.

- In 2007, 99% of all schools had computer equipment available in the classroom (compared to 82% in 2001). On average, there is now one computer available for every 7.6 students (in 2001 the ratio was 1:12.8). 95% of schools are now connected to the Internet (in 2001 the figure was 66%). There is now one Internet work station for every 11.2 students (in 2001, the ratio was 1:24). In 2007, however, there were still large discrepancies in the number of Internet work stations across school grades and between schools. These new statistics place Switzerland just ahead of the European average, yet behind the Nordic countries, Great Britain, and the Benelux states.[5]
- Approximately half (50%) of the Swiss teachers interviewed in 2007 said that progress had been made in the integration of ICT in their classroom over the last 3 years. 89% of Swiss teachers use computers at least occasionally in the classroom (2001: 63%). 41% teach with ICT in the classroom more than once a week (2001: 20%). According to the teachers, however, their own ICT proficiency has barely improved. Particularly when evaluating their methodological skills when using ICT in the classroom, the same proportion, 26%, considered their level to be good or very good before and after the project. The large majority considered the use of ICT in schools to be important (67%). However, they viewed this importance primarily in terms of preparing students for the professional world and less in terms of ICT's specific value for classroom lessons.
- The IT coordinators who participated in the project considered technical infrastructure to be significantly improved over 2001. In 2007 the main obstacles toward greater integration of ICT in the classroom, as viewed by the IT coordinators, were: (1) inadequate teacher skills to integrate ICT in the classroom (70%); (2) an insufficient number of computers for students (64%); (3) insufficient time for preparation (59%); as well as (4) a lack of interest and motivation on the part of the teachers (58%).

As the above findings make clear, the presence of good ICT infrastructure is a necessary but not sufficient condition for the sensible integration of ICT in schools. The teachers' knowledge and skills for the exploitation of the opportunities presented by new technologies still need to be improved. One possible explanation for deficiencies in this area is that the multipliers trained under the program have not yet had the desired effect. As no control group was available during the national evaluation, there is no evidence to show how matters might have developed in the absence of the initiative.

Factors for Success

Various lessons can be learned from Switzerland's experience in the PPP-SiN initiative and possibly applied to similar projects in other countries. The success of the public-private educational initiative is most likely related to a combination of factors:

Start with Key Participants
The idea for a public-private partnership arose in a conversation between the head of the Department of Economic Affairs and the director of the largest Swiss telecom provider, *Swisscom AG*. These key participants at the highest levels of politics and business also made the largest financial contributions to the project.

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4   cf. Barras, J.-L., & Petko, D. (2007). Computer und Internet in Schweizer Schulen. Bestandsaufnahme und Entwicklung von 2001 bis 2007. In B. Hotz-Hart (Ed.), *ICT und Bildung: Hype oder Umbruch? Beurteilung der Initiative Public Private Partnership – Schule im Netz* (pp. 77-133). Bern: SFIB.

5   Korte, W. B., & Hüsing, T. (2006). Benchmarking Access and Use of ICT in European Schools 2006. Bonn: empirica. Retrieved on 10 March 2007 from http://www.empirica.com

Involve all Relevant Actors from the Start

The idea undergirded existing aspirations by cantons and teachers to boost the use of ICT in schools. Working groups for the project were formed early on in which the federal government, private sector, and teachers' associations planned the concrete implementation of the initiative. The autonomy of the cantons in educational decisions was not questioned but rather accepted and supported. Teachers, as well, weren't given "marching orders," but rather actively involved and taken seriously.

Highlight the Prospects for Exceptional Resources

The initial announcement from the federal government that it would provide 100 million Swiss francs to the cantons for teacher training sent out a signal that was loud and clear. In turn, the commitment from the private sector to provide all Swiss schools with free Internet access had a similar effect. The magnitude of these commitments underscored the importance of the issue and motivated other participants to make similar substantial contributions.

Combine Commitments with Freedom of Action

The funding from the federal government was contingent on various factors. Cantons could only apply for funding by submitting a comprehensive cantonal or regional ICT development concept. Additional conditions included the cooperation of at least two cantons, the demonstration of a need for teacher training, and due consideration to gender equality in project planning and implementation. The free Internet access provided to schools was also contingent on special conditions, including sufficient LAN-network capabilities in school facilities and an adequate number of computers. Considerable latitude was granted concerning the concrete implementation of these conditions. The required preparatory efforts to obtain funding served to stimulate internal activity and avoid a passive "free ride" mentality. In this way, the disbursement of significant funding must be linked to strict benchmarks and quality control audits.

Make Regional Cooperation a Requirement

In Switzerland there are large discrepancies in the size and financial means of the various cantons. In order to achieve a level of balance, the cooperation of at least two cantons was required for the disbursement of federal funding. Interpersonal relationships and networks of potentially long-term value were also established through the encouragement of cooperation between neighboring cantons.

Interlink the Expansion of Infrastructure, Training, Educational Resources, and School Structures

The development of well-functioning infrastructure is a necessary but not sufficient condition for the greater use of ICT in schools. The pedagogical skills and motivation of teachers are also key factors. Consequently, teacher training must be assigned a particularly high priority. The possibilities presented by ICT and its unique value for classroom lessons must be communicated. Teachers also require digital content and tools that they can use in the classroom. International case studies have made clear that the disposition of a school's administration and the school's "culture" are also important factors. ICT is primarily used in schools where new media are embedded in a process of pedagogical innovation. Insufficient consideration was perhaps paid to this factor during the PPP-SiN initiative.

Make Private-Sector Participation Attractive

Although schools constitute a large potential market for companies, this market is often extremely difficult to access. Under the initiative, participating companies profited from a strategic partnership with the federal government and cantons. This partnership provided them with coordinated access to the school market. This aspect of the initiative was particularly successful at the level of the cantons, which coordinated a productive dialog between companies and their end customers, i.e. the schools and municipalities, by distributing information and hosting events. In this way, the participating companies were provided with an insight into the

needs of schools and could modify their product portfolios accordingly. Thanks to this method of cooperation, greater demand for the participating companies' products was realized. For the companies, the margin loss associated with offering discounted products was thus offset at least in part by increased demand. In terms of prices, however, the products were not always discounted under the lowest market price. In order to take advantage of market competition, it was important to involve multiple firms in the initiative.

Invest in Initiatives that Build Trust
Initially many teachers and municipalities viewed the participation of private companies with a certain degree of skepticism. It was presumed, for example, that fees would later be applicable for the "free" Internet connections. Many also suggested that future "hidden" costs would be associated with the discounted computer hardware. Confidence was built, however, with Swisscom's agreement to provide notice at least three years in advance of any withdrawal to its commitment. Schools, for their part, are entitled to cancel the free Internet connections at one month's notice.

Obtain Publicity for the Initiative
All of the participants were provided with the opportunity to present themselves as socially responsible in the public eye. With an engagement on behalf of the educational system, participants could make an active contribution to the future of the country in a globalized information society. The positive publicity obtained by all actors was a core element of the initiative's "win-win" strategy. Several media events were held to promote public awareness of the initiative.

Challenges and Risks

Although the PPP-SiN initiative can be evaluated as a success, specific challenges did arise in its execution. Greater efforts to address these challenges should be made with the implementation of similar initiatives in the future.

Organizational Complexity
With the participation of a high number of partners, the complexity of organizing a project rises. When decision-making processes are rendered intransparent, the potential for participants to become frustrated increases. Early agreements to demarcate clear areas of responsibility and protocols for decision-making are extremely important. The most important partners should be represented in a project steering committee.

Budget Cuts
In the wake of the federal government's initial commitment to provide 100 million Swiss francs in funding, the subsequent reduction of support to 35 million francs due to federal budget cutbacks was a major disappointment. As it became apparent that funding would be curtailed, a flurry of uncoordinated proposals and requests from all sides ensued, and it was easy to lose sight of the big picture. The cantons and private-sector partners kept their promises, however, and the initiative was successfully implemented in many areas. An additional danger was connected to the reduction in services that was experienced at the end of the project. This caused ICT development activities to abruptly cease in some cantons, and services that had been established disappeared. Other cantons replaced federal monies with their own funding to preserve aspects of the program. Most of the initiative's private-sector partners, however, have continued to honor their commitments beyond the official five-year time frame.

Preservation of Infrastructure Investments
With the end of the PPP-SiN initiative, the belief that all of the necessary work is complete is an illusionary one. The PPP-SiN project must be understood as a long-term undertaking. The technical infrastructure that has been developed (i.e. hardware, software, networks, and periph-

erals) requires regular investment in order to ensure that tech support, maintenance, and up-dating can be provided. Due to the speed of technological innovation, for example, computers installed at the beginning of the program were overdue for replacement five years later.

The Rapid Transformation of Media

ICT have changed considerably since the beginning of the project. The term now encompasses much more than just computers and the Internet. Computers are becoming smaller, faster, and more ubiquitous. New generations of cell phones and media players have permitted learning to become much more mobile. WLAN / WAN networks enable Internet access from remote locations. Traditional media and the Internet are converging. New "Web 2.0" sites and services enable digital content and knowledge to be exchanged with greater ease. Video and computer games are expanding and complementing the conventional spectrum of entertainment media to a degree that is not fully appreciated at present. New types of jobs and social practices are steadily emerging in virtual spaces. This is not only a challenge for the IT infrastructure in schools, but also for the training and further education of teachers.

The Ongoing Training of Teachers

The goal was to train a core group of teachers as program specialists and "knowledge multipli-ers". These teachers would then go on to provide pedagogical training to their colleagues. In order for the desired "snowball" effect to be achieved, however, these cadres require a clear mission and the appropriate institutional conditions to hold their own training courses. If these teachers are not expressly given explicit tasks and compensation by the cantons and municipal-ities, it is uncertain that training sessions will be held. The ratio of 1700 trained experts to 8000 trained teachers by the project's end was certainly less than optimal. Some further education courses were integrated into the regular course schedules at universities for teacher education and in the cantons' further education programs for teachers. However, the representative study conducted with the conclusion of the PPP-SiN initiative underscored that a need for action was still particularly necessary in this area.

Changed Priorities

New educational priorities were set in Switzerland following the end of the PPP-SiN project, including earlier school enrollment, an earlier introduction to foreign languages for pupils, and the better coordination of the educational system on a national basis. In this connection, huge efforts to develop organizational structures and educate teachers have been required. School administrators and teachers have often lacked the time to devote themselves to other projects. The integration of ICT in the classroom can stagnate due to other imperatives.

The Road Ahead

It is a challenge to pass from a project with a limited time frame and return to day-to-day activi-ties while also preserving a project's concrete achievements. In 2004, the Cantonal Educational Directors' Conference issued a forward-looking directive for ICT training in teacher educa-tion. In 2006 and 2007, the federal government and cantons passed new strategic measures for the promotion of an information society, whereby responsibility for further engagement in the educational system was clearly delegated to the cantons. A number of cantons have made ICT a high-profile element of their educational systems by incorporating it into their curricu-lums. The private-sector contributions to the initiative – including free Internet access and discounted products – are still in place.