



MIF Retrospectives

Measuring Up with the Innovation Challenge The ICT4BUS Program

1

By Antonio Ca'Zorzi

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MIF Retrospectives is a series of monographs penned by MIF staff that covers various thematic activities undertaken by MIF in recent years.

The first contribution, **Measuring Up with the Innovation Challenge: The ICT4BUS Program** by Antonio Ca'Zorzi, provides an overview of the role of information and communications technology for small businesses in Latin America and the Caribbean and the development of the ICT4BUS program.

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“We’re really grateful for this initiative: competing in the ICT4BUS Program has been a highly educational experience.”

Director of an NGO whose proposal was not among those selected

“The most telling moments in the execution of our project have been when we actually sat down with the farmers, who had never touched a computer, and talked about those little devices that were going to change their work.”

Mauricio Moresco, Director of the project
“New Technologies for the Development of Argentine SMEs that Export Quality Meat” - Traz.ar

Measuring Up with the Innovation Challenge The ICT4BUS Program

By Antonio Ca’ Zorzi

In the late 1990s the Internet arrived across the developing world. While this initially took many countries and members of the development community by surprise, private investors began to view emerging markets as the next frontier of the Internet revolution. At the time, many observers and donors were convinced of the great promise of this technology for the future of the developing countries.

An urgent sense of opportunity spawned several global investment funds worth hundreds of millions of dollars, and a range of technology firms, from household names to complete unknowns, sold their services in developing countries in support of online commerce. E-commerce web sites flowered across Latin America and the Caribbean. In a meeting organized in Washington, D.C. in 2000 by a consulting firm, participants argued that the region should immediately shift to online commerce and e-government services – or fall behind forever as the “New Economy” wiped out every firm that lagged in mastering the opportunities of the Internet.

How short-lived were these relatively recent predictions. The pendulum swung, and the promised land became a wasteland. Web sites for SMEs largely disappeared, venture capital fled the technology sector, and across the developing world citizens and small businesses started to distrust everything associated with the Internet.

ICT in a knowledge economy

Investment in Information and Communications Technology (ICT) is a crucial part of what has become known as the knowledge-based economy. Knowledge and its

transmission have always characterized human activity. Changes in technology wrought by the evolution of the economic and social structure have led to the development of increasingly sophisticated tools to process, storage, use, and transmit information. Complex economic organizations and ever-faster product and service cycles run on computing and communications systems that preserve accumulated information and knowledge.

Furthermore, network externalities, for which the utility of technologies and/or standards increases with the number of users, play a central role in information and communication technologies. Networks have always been at the core of human organization and economic behavior. A web of human networks subject to common rules allowed the spread of banking services throughout Europe, and standardized physical networks were key to the sustained power of the Roman Empire. Digital and Internet technologies, in particular, have elevated network externalities to new levels of economic and social significance. Deployment and adoption of such services and solutions by users (or customers) have allowed the emergence of de facto standards, such as *VHS vs. Betamax*, Microsoft *Outlook vs. Eudora* and many others, and facilitated transformation of existing markets (eBay, Amazon, now Skype and Craigslist) and the emerging of new services or products (Yahoo!, Google).¹

Investment in ICT stimulates growth by improving productivity and reducing operating costs. After declining from 1948 to 1995, labor productivity in the U.S. began to climb in the second half of the 1990s. Over half of this labor productivity growth is due to ICT related factors.² This increase is largely caused by capital deepening, or higher levels of capital per worker, as a result of ICT investment and improved multifactor productivity through automation, production and management techniques, as well as improved value chain integration.

On the other hand, the ICT sector itself and its - ever more global - value chain can become a source of growth. In the U.S. the ICT sector contribution to GDP growth also increased dramatically in the late 1990s: according to a study by Van Ark, ICT industries and users contributed between 28 and 57 percent of economic growth between 1990 and 1998 in a number of advanced economies.³ In the U.S. by 1999, 22% of capital investments by firms were ICT related.⁴ Also ICT goods and services are becoming an increasingly important sector in international trade and represented 11% of global trade in 1999.

¹ For a discussion of network externalities in online markets: Bonaccorsi, Andrea, Cristina Rossi. 2002. *The Adoption of Business-to-Business e-Commerce: Heterogeneity and Network Externalities*, Pisa.

² OECD. 2003. *Seizing the Benefits of ICT in a Digital Economy*. Paris.

³ Van Ark, Bart. 2001. *The Renewal of the Old Economy: Europe in an International Comparative Perspective*. Groningen. Quoted from IMF. 2001. *The Information Technology Revolution*. Washington, DC.

⁴ Dedrick, Jason, Kenneth L. Kramer, Vijay Gurbaxani. 2002. *Information Technology and Economic Performance: Firm and Country Evidence*. University of California, Irvine.

There are two main elements in the ICT sector: the first involves the “wired” or “wireless” infrastructure for communications and the computing hardware, and the second refers to applications, including the Internet and other systems, that use infrastructure for e-business applications, media and any other ICT-based content or services. These protocols and services are being increasingly digitalized and distributed through a single technological platform, namely, the Internet, a trend dubbed “media convergence”. A new ICT infrastructure will evolve with more complex systems in which communications, knowledge management and automated processes coalesce seamlessly.

E-business applications have undergone rapid changes with great implications for the private sector. E-business has evolved from just e-commerce, a common use of the Internet for buying and selling between businesses and customers (B2C) or between businesses (B2B), to comprehend other ICT applications in business automation processes, core support functions and other processes in the value chain. These applications have a profound impact on the structure of businesses and their local and international competitiveness. The following box reviews the main e-business applications:

E-Business Processes	
<i>Customer acquisition and retention</i>	Customer relationship management; marketing campaign management, planning and execution; database marketing, direct marketing, telemarketing; electronic catalogue; Web activity analysis, Web advertising; call centers; arranging repair and maintenance; handling customer complaints
<i>E-commerce</i>	Sale or purchase/procurement of goods or services (includes getting estimates, negotiating, ordering, arranging contracts); EDI; mobile commerce; integration of ordering system with that of customer/supplier, integrated invoicing and payment of customers; full integration with back-end system; use of extranet; secure transactions; automated payment of suppliers
<i>Order fulfillment and order tracking</i>	Order control. Product control, order tracking; data processing that relates to order fulfillment; sales force automation
<i>Logistics (inbound & outbound) and inventory control</i>	Supply chain management (SCM); production and inventory control (including of raw materials, parts, finished goods), distribution control, management of inventory, management of customers’ inventory, transportation and shipping, automated warehouse; arranging and managing transport, dispatch of goods, tracking, provision of services
<i>Finance, budget and account management</i>	Enterprise resource planning (ERP); managing, planning and evaluating finance; invoicing and payment systems; software systems (e.g. SAP)
<i>Human resource management</i>	External and internal recruitment, online job applications; automating of administrative tasks such as time reporting, payment of salaries and pension schemes, travel reimbursement, tracking working hours and production time; training; teleworking
<i>Product service and support</i>	Website support, frequently asked questions (FAQ), downloadable manuals, online queries; after-sales support

<i>Research and development</i>	Research, development and design of products, services or processes; computer-aided design (CAD), computer-aided manufacturing (CAM) and collaborative design
<i>Knowledge management</i>	Systematically aggregating and disseminating information and knowledge within the company; content management system; e-learning
<i>Source: E-commerce and Development Report – 2004, UNCTAD, Geneva, 2004</i>	

There is growing evidence about the impact of ICT on business performance. A study from the Organization for Economic Co-operation and Development (OECD) found that ICT had a positive impact on productivity at the firm level in 13 countries, with somewhat better results in the services sector.⁵ The study concludes that ICT can improve business performance when complemented with other investments, such as in worker skills, and with new strategies, business practices and processes, and organizational structures. However, ICT alone is not a substitute for competent management, good skills, and the drive to innovate.

Over time, common patterns of ICT adoption in business have emerged. As revealed in the graph below, businesses typically begin with the use of basic communication and information storage/processing applications, such as e-mail and office productivity suites products. These are followed by some degree of online presence (i.e. websites) for information purposes. Then companies move on to implementing applications for specific functions, using e-commerce, value chain integration and Enterprise Resource Planning, en route to fully integrated and adaptive business processes.⁶



Source: UNCTAD (2004)

⁵ OECD. 2003. *The Economic Impact of ICT*. Paris.
⁶ A similar pattern has been observed in Latin American firms. Cfr. Momentum Research Group. 2005. *Net Impact Latin America: From Connectivity to Productivity*. Austin, TX.

Why ICT matters for SMEs

SMEs are using the Internet to access critical information related to trade, business best practices, competitors and potential customers. A hands-on management style, which allows quick decision making in the wake of important technology changes, counts as a positive characteristic in ICT adoption patterns. However, the majority of SMEs take a more cautious approach, investing in e-business only when management perceives a clear link with increased profit.

Evaluating the impact of ICT on SMEs is difficult given a shortage of data. However, evidence from the European Statistical Office (Eurostat) and a study from the Canadian e-Business Initiative led to the following initial assessments: (i) SMEs have been slower to adopt ICT than larger enterprises, but have concentrated their efforts in areas such as marketing intelligence and banking; (ii) fewer SMEs pursue e-commerce, but those that do are more intensive users than larger firms; (iii) while most SMEs lag in the adoption of the Internet uptake, they have the most to gain in terms of productivity through e-business.⁷ The Canadian survey found that SMEs, which adopted Internet Based Solutions (including e-commerce and productivity tools) were able, on average, to increase revenues by 8 per cent, and to cut the costs of goods sold by 1.8 per cent, and sales and administration costs by 2.6 per cent.

Despite the potential gains, numerous technical constraints hinder the ability of SMEs to absorb new technologies, in addition to a shortage of finance, skills and know-how, and access to international markets. Lacking legal departments, most SMEs face escalating costs because of a fast evolving legal environment regarding online transactions and e-commerce. Reliable logistical services that enable the prompt delivery of products do not exist in many developing countries, and are yet another barrier to the adoption of ICT.

The ICT4BUS Program

In 2000 an ad-hoc IDB working group issued a working paper on e-commerce, which identified priorities and activities in which the Bank could be involved.⁸ Given the existing heavy private sector investment in infrastructure, software and Internet-based services, this paper recommended that the Bank should support the establishment of a favorable environment for ICT, including improving the legal and regulatory frameworks, supporting capital markets, and raising awareness in small businesses on ICT. According to the paper, with the favorable investment climate and the amount of

⁷ Eurostat data as quoted in European Commission. 2003. *Adapting e-business policies in a changing environment: The lessons of the Go Digital initiative and the challenges ahead*. Brussels. Canadian e-Business Initiative. 2005. *Net Impact Canada, Strategies for Increasing SMEs Engagement in the e-Economy*. Ottawa.

⁸ Ca' Zorzi, Antonio. 2000. *Electronic Commerce and Development. Implication for IDB Action*. Washington, DC.

private capital available in the region, the private sector would be motivated to invest in start-ups spurring the development of ICT and related services.

However, the Internet bust brought dramatic reversals: private capital dried up and fled Latin America and the Caribbean, IT firms departed from the SME market in the Region, leaving a large number of smaller firms on the technology sidelines. This fundamental change in the ICT market in the region led MIF and the IDB to launch a region-wide program, the Information and Communication Technology Innovation for E-Business and SME Development (ICT4BUS), to support ICT demonstration projects to help smaller businesses improve their efficiency and market penetration

The ICT4BUS Program addressed a real demand: several private sector organizations in the region had already been submitting proposals for ICT platforms targeting SMEs, and a 2002 IDB survey of chambers of commerce and nonprofit organizations working with SMEs found that over 50% wanted to do projects in e-business. Choosing projects would represent a challenge: should the Program follow a *first-come first served* approach, or use a competitive process? The latter path was chosen because the new program would fund demonstration projects adapting existing technology to new communities of users. Demonstration projects are closer to market than R&D, and where successful, demonstration effects can be taken to scale through the development of commercially viable services.

However, given the Bank's procurement policies, private firms could not directly participate in the Calls for Proposals, instead private sector associations, NGOs, and other non-profits concerned with SME competitiveness and ICT could apply. The Program set up an External Advisory Committee comprised of leading experts in the region's SME and ICT sector to select the proposals to be funded by the program.

The ICT4BUS Program was approved by MIF Donors in 2002 with a budget of US\$5m. The program was renewed in 2006 with a budget of US\$10m.

The first Call for Proposals

The first Call for Proposals got off to a shaky start. Despite a high level of interest expressed in the Program, by Friday October 12 2002, 30 organizations had been declared eligible, and fewer than 15 had submitted complete proposals. This was well below the 50 proposals that MIF had projected. On the 15th, the deadline, a frantic burst of applications raised the total number of organizations declared eligible to 121, coming from 20 different countries, with a total of 101 projects submitted. At the end of the day one of the Program team members shrugged and declared with a smile, "somos latinos".

This high level of interest imposed a further challenge: the timetable for approval of the proposals was about a month, with four evaluators who required feedback from several units of the Bank in Washington, D.C. and from the field. Fortunately enthusiasm and the functionality of the online platform made the process smooth and the team met all deadlines.

The Calls for Proposals

The promotion relies mostly on press releases, the program's web site as well as a mailing to over 1,200 non-profit organizations who had registered with a mailing list.

The Program selects projects through a two-step competitive process: eligible, non-profit organizations from the region present project profiles, which are reviewed by an internal IDB panel. This panel chooses up to 30 profiles and the selected applicants are invited to submit a full proposal, including documents such as a detailed budget, a logical framework, project plan, a return on investment (ROI) analysis, and a procurement plan. Proposals are then reviewed by an Advisory Committee, conformed by external experts from the region, and IDB headquarters and Country Office staff. The process, from the reception of the initial profiles to the approval of selected projects by the MIF Donors takes approximately seven months. The three Calls for Proposals launched thus far have yielded nearly 370 proposals, of which 22 were approved for funding.

The Program has also received funding from the *Institute for the Connectivity in the Americas* (ICA), an organization sponsored by the Canadian Government that promotes innovative application of ICT for development in Latin America and the Caribbean. In 2004, ICA and MIF signed an agreement to jointly finance projects selected within the ICT4BUS Program. The agreement was renewed in 2006 bringing the total contribution by ICA to US\$ 660,000.

ICT4BUS – Calls for Proposals Statistics				
	2002-2003	2003-2004	2006-2007	Total
Registered eligible organizations	121	158	213	492
# of countries participating	20	19	22	23
Project profiles submitted	101	118	149	370
# of countries submitting	18	17	20	22
Selected finalists	30	25	29	84
# of countries represented	14	14	13	17
Full proposals accepted	26	21	22	69
Projects approved	6	7	10	22
# of countries represented	6	5	8	11
Total MIF funding*	2,235,700	2,249,079	3,034,500	7,519,279
Total cost of projects	3,678,150	4,161,667	5,455,355	13,295,172
Average MIF contribution	370,000	370,000	300,000	345,000
Average project cost	635,000	720,000	540,000	630,000

Notes: * **includes US\$ 660,000 parallel funding by ICA

The projects

The three Calls for Proposals reveal a strong demand for ICT-related projects by non-profit organizations across the Region. Most proposals have focused on the need to

strengthen SME competitiveness in both local and international markets. As one of the applicants put it: “Developing ICT services and applications that bear fruit in terms of business efficiency and ability to compete is, at this stage, an indispensable route for small businesses, albeit not one exempt from perils.”

The response to the ICT4BUS Program also reflects the broad challenge posed by the expanding knowledge-based economy to the Region. In the more advanced countries of LAC, the critical challenge is not so much access to infrastructure, but a lack of web content and services, beyond communications and games, that add value for users in business and civil society. A number of governments in the region are working on “digital agendas” to apply the Internet in areas such as education, health, administrative services and government purchases, while opening markets to competition.

The private sector, and smaller firms in particular, continue to confront a lack of financial resources sufficient to the complexity of the task. The ICT4BUS Program supported by MIF can be considered a small but necessary response to the ICT challenges facing SMEs.

Sectors. The ICT4BUS Program has supported projects from a variety of sectors, from agriculture to textile, retail, auto part, and tourism. Projects in agro-industry have developed services to improve the value chain and to help small farmers find market niches where they can command higher prices in international markets.⁹ While projects in agro-industry are mostly aimed at international markets, projects in the retail sector support efforts to improve the competitiveness of small shops vis-à-vis larger retail chains.¹⁰

Technology. The Program caps its project contribution at a maximum of \$500,000, with an additional local counterpart funding requirement of 30 to 50% of the total project. This has led applicants to focus on cost-effective but flexible technologies that meet quality and security requirements, while allowing users to adapt their systems and programs to continuously improve services. One consequence of the relatively small size of these projects is that many now utilize platforms and software developed under the Open Source license model¹¹, and adopt this same model for their own products, thereby creating an alternate route to the development and delivery of software.

Projects in the Program have also experimented with “**Web services**”, a set of systems that allow separate databases over the Internet to interact. Web services are among the

⁹ Asociación Cultural para el Desarrollo Integral, Argentina, ACIDI, Laboratorio Nacional de Informática Avanzada, Mexico, 2003; Asociación de Exportadores de Productos no-Tradicionales, Guatemala, 2004; SNA, LATU, CATIE, Asociación Citrícola de Concordia, Argentina, 2007.

¹⁰ (FUNDES, Venezuela, FUNDECOMERCIO, Colombia, 2003; Sindicato da Industria de Reparação de Veículos e Acessórios do Estado de São Paulo, Brazil, FECOMERCIO, 2007)

¹¹ Open Source is a license which makes software available with few or no restrictions to the use of intellectual property, thereby facilitating the development of software by many “authors” and the free use of the product by end users. The Open Source model provides also other advantages, such as the access to the source code of a software, which facilitates the development of applications and reduces security risks for end-users (not surprisingly Open Source software is used by the Pentagon).

building blocks of what is currently called Web 2.0¹². For instance, “Web services” allow the integration of separate information platforms of *ChileCompra*, the online procurement platform of the Chilean government (Cámara de Comercio de Santiago, Chile, 2003). In another case, the use of this technology will facilitate bookings in small hotels and tour operators in Cuzco *via* large online tourism operators, including *Orbitz*, *Expedia*, *Travelocity* (Asociación Civil Khipu, Peru, 2004).

Traceability is an important component of projects aiming to improve market penetration, particularly for food products that must meet stringent safety and quality requirements. One project tested transponders, devices that use a radio frequency-based technology (RFID) to connect ranchers in Argentina to a centralized web-based information repository for better traceability. This solution proved a success in Argentina and is now being implemented in Nicaragua, thereby permitting ranchers to better manage their cattle, increase productivity gains, and access to international markets by complying with traceability requirements. Similarly, another initiative will apply RFID systems to industrial SMEs in Mexico (CANIETI, 2007). Other MIF projects use Geographic Information Systems to keep track of crops in designated production areas (in Mexico and Argentina).

Facilitating SME market penetration (e.g. Centro Agronómico Tropical de Investigación y Enseñanza, in Central América, Sociedade Nacional de Agricultura in Brazil, Laboratorio Teconológico del Uruguay, and Federação do Comércio do Estado do Rio de Janeiro in Brazil) by investing in market intelligence platforms that offer strategic information on benchmarks, technology updates, and market trends, and user generated content, is yet another focus of ICT4BUS projects. These information systems are complemented by services, including logistics, marketing, and purchasing pools aimed at enhancing the overall the value of the platforms.

A project in Brazil (Fundação de Desenvolvimento da Pesquisa, 2004) implemented a new computer operating system based on Linux, MetaSys, coupled with “thin clients” (small computers that rely on a central computing power for most applications and storage needs). Voice over Internet Protocol (VoIP) solutions¹³ also appear in conjunction with improved marketing and customer service by SMEs. In general, projects have used an increasing combination of different services or solutions to complete the offerings to SMEs.

Some projects also deal with public regulation, streamlining procedures related to trade (AGEXPRONT, 2004), public procurement (CCS, 2003) and international standards for certification (ACDI, LANIA, 2003; Cámara de la Pequeña Industria de Pichincha, Ecuador, Asociación Citricola Concordia, Argentina, SNA, 2007).

¹² Web 2.0 refers generally to a new generation of web based communities and services, in which collaboration and interaction among users or developers determine the generation of content. Typical examples of Web 2.0 services include: blogs, video distribution sites (like YouTube); Wikipedia; Skype and e-Bay.

¹³ VoIP systems allow user to make phone calls over the Internet.

Lessons learned

The most successful SME-related projects have identified specific processes to be improved through the use of ICT. Yet in contrast to larger firms, most smaller firms do not have the financial nor management resources to efficiently integrate ICT systems in their operations, and many consider them too expensive for their operations. Moreover, many smaller firms do not have access to broadband Internet and have little familiarity with computers. However, technology-savvy entrepreneurs recognize online market dynamics and how technology can be used to improve competitiveness.

Based on the experience of the ICT4BUS Program, successful projects: a) focus on specific issues at firm level or in the value chain that can be addressed using ICT; b) offer multiple channels for the delivery of the service, through regular computers, mobile systems or call centers; c) invest in training, awareness raising and “hand holding” to overcome initial resistance to change, d) give small entrepreneurs hard, verifiable, facts, that emphasize market expansion and/or productivity; e) adopt distribution models, like Application Service Provider, or ASP¹⁴, that facilitate software and data management thus reducing the cost for end users, and f) target large scale adoption of the technology or service by SMEs.

Not surprisingly, such strategies work better in homogeneous environments, such as a specific sector in which SMEs face similar competitive pressures and where the solution or service can be quickly adopted by a large number of firms. Establishing a strategy for a successful ICT service implies leveraging “entry points” to penetrate the market and capture a larger customer base that will ensure a steady flow of revenue.

Beyond profits

The impact of ICT projects often goes well beyond purely financial and productivity gains. For example, the technology adapted in the meat traceability project in Argentina has enabled a group of largely illiterate farmers to present their reports and data professionally. This has not only enhanced their sense of pride in their work, but has also helped reduce the discrimination they have often faced because of their poor writing skills. Women have also benefited from this new technology, playing a larger administrative role in the business by entering data and generating reports using the system, while their husbands concentrate on the farm work.

In Venezuela, ICT solutions have improved the efficiency and customer service of pharmacies located in marginalized urban and rural areas of the State of Lara, helping to ensure that people in these communities have access to medicine and other health products. Without the adoption of the ICT solution, the survival of many of these pharmacies would be at risk because of their inefficiencies and reduced margins. Thus people would have been forced to travel far distances to get the medicines they need.

It is evident that SME ICT adoption can be better achieved when firms participate in the development of the ICT services. Early adopters should be targeted to more actively

¹⁴ An ASP operates software at its data center, which customers access online under a service contract.

participate in the development of services or solutions. A sense of ownership by users will draw the attention of companies that had remained on the sidelines during initial implementation.

The commitment of the service or solution provider is an important factor in project success. In fact, most ICT firms in Latin America and the Caribbean have fairly low interest (and experience) in developing the SME market, believing that additional revenue streams from SMEs does not justify the costs of acquiring these customers. SMEs are also seen as a small market for consulting services and are thought to switch providers quickly.

On the other hand, the experience with the ICT4BUS projects shows that non-profit organizations that work directly with SMEs, such as chambers of commerce and trade associations, have a good understanding of the competitive environment but may lack a mastery of the mechanics of ICT and its business applications. Technical and ICT modeling expertise will be needed and can be acquired through partnerships with IT firms. Moreover, some private sector organizations see lobbying as their essential mission and consider technical services to members as non-strategic. These organizations will typically focus on highly visible services such as trade shows and seek funding to boost their image and to develop their infrastructure.

The track record of universities in the ICT4BUS Program has been mixed. Universities offer technical and conceptual vision, and through spin-offs and incubators can spawn firms at the forefront of technology. Yet universities often lack a systemic interaction with SMEs and have difficulty translating research into meaningful services. A key element of this Program was to bring together academic, sectoral research institutions and non-profit organizations specialized in providing services to SMEs Sector-specific research organizations.

The first ICT projects funded by the MIF required a relatively long start-up period. In particular, projects with a heavy focus on training take significant time to get underway, reflecting in part the learning curve faced by executing agencies when reviewing the ICT needs of SMEs. Another reason for the slow development of projects is the rapid evolution of ICT and its related business models, particularly in Internet sensitive industries, such as the tourism sector. However, as private sector organizations gain experience, and external expertise is made available (including from organizations having gone through the same process) the pace of implementation improves.

A major challenge for executing agencies is to fill a financing gap in order to maintain successful operations after the subsidy is over. Going from a pilot to a self-sustained operation may require one or two years for building the customer base, while also investing in service improvement. The financing required to attain sustainability often exceeds the resources of the non-profit executing agency, driving the need for a well-defined business or “sustainability” plan to help start-ups bridge the gap to profitability. Having these plans already defined in the initial proposals, as required by the 2006 Call, helps evaluate the long-term feasibility of a specific project.

Intellectual property is another area that will require a new focus in ICT projects. The approach of the IDB to date has been to apply the same rules on intellectual property generated from commissioned studies, namely, that all such created property and related rights belong to the Bank. However, there is a fundamental difference between studies and the creation of new ICT-related intellectual property: a study may help to prepare a project or country strategy, but an ICT solution and resulting services need to generate revenues in order to ensure continued services to small firms.

This issue was recognized from the beginning of the program, and special provisions were included in the agreements with the executing agencies. With the finalization of several projects the Bank needed to further define the outreach of these provisions and develop detailed licensing agreements that would ensure the widest dissemination and impact of the new services. A review of best practices and the definition of licensing models (including open source licenses) to be used for technology developed with ICT4BUS funding is currently under way. The goal of these new licensing models is a legal framework to ensure the sustainability of ICT solutions (whether proprietary or open source) for the ICT business model adopted by the executing agencies. The IDB would retain the rights over future use of such technology by executing agencies of other projects funded by the Bank.

Regarding the geographical distribution of projects, the ICT4BUS Program reflects different levels of economic and technical development across the Region. For instance, projects focused on innovation are more likely to succeed in more advanced business environments, while other initiatives that focus on capacity building and the development of services to speed the adoption of ICT at firm level, are more appropriate in less developed markets. While eleven countries in the region have derived benefit from this program despite promotional efforts by the MIF, there has been weak participation by organizations in the Caribbean and in some of the less developed countries in the region, including Nicaragua, Honduras, Paraguay and Bolivia. The ICT4BUS Program is now concentrating on developing local capacity in ICT in poorer countries, and on replicating successful ICT4BUS projects in less advanced countries. The first technology transfer project has been approved in May and will replicate in Nicaragua and adapt to local conditions the traceability system first developed in Argentina. To this end, the executing agency of the original project has teamed up with the local association of producers and exporters of non-traditional products (APEN) to set-up the system for the local cattle farmers.

Concerning the monitoring process, since ICT4BUS projects are quite small, averaging US\$300,000 of MIF financing, executing and monitoring schemes need to be adopted to better reflect their size and scope, reducing the administrative burdens that cause to the executing agencies and IDB personnel. Attempts to introduce schemes where projects would be monitored by results were only partially successful, but they did receive strong backing from Bank officers in charge of project supervision. Also, one lesson drawn from the first Calls for Proposals was that involvement of local offices (Country Offices) of the Bank in the selection process and, crucially, in the administration and monitoring of the

projects. This involvement helped executing agencies to deal with the complex rules and procedures of the Bank. In this new approach also, specialized officers at Headquarters provide technical support to both the executing agencies and the Country Offices.

List of Projects

Title	Executing Agency
Integrated Quality Management and e-Commerce System for Veracruz Coffee (LANIA, 2003)	Laboratorio Nacional de Informática Avanzada (LANIA) – Mexico
New Technologies for the Development of Argentina SMEs that Export Quality Meat (ACDI, 2003)	Asociación Cultural para el Desarrollo Integral (ACDI) – Argentina
ICT Solutions for Strengthening the Business Model of SMEs in the Pharmacy Sector in Venezuela (FUNDES, 2003)	FUNDES - Venezuela
“e-Clusters” – Electronic Commerce in SME Clusters (FAT, 2003)	Fundación Andres Tosello – Brazil
Development and Implementation of a Virtual Supply and Logistics System (FUNDECOMERCIO, 2003)	FUNDECOMERCIO, Colombia
Web Services and Technological Innovation for Better Management (CCS, 2003)	Chamber of Commerce of Santiago, Chile
Terra Inka: Access to the Tourist Market (TI-AMT) (KHIPU, 2004)	Asociación Civil Khipu, Peru
ICT Platform to Support SME Competitiveness in the Digital Economy (CEPRI, 2004)	CEPRI, Chile
PYME CREATIVA (Development of Information Technology for Industrial Networks with Value Added (ITESM, 2004)	Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico
Support and Development of Foreign Trade in Guatemala (AGEXPRONT, 2004)	AGEXPRONT, Guatemala
SME Metasys (FUNDEP, 2004)	Fundação de Desenvolvimento da Pesquisa (FUNDEP), Brazil
Productive e-Chain (UDEG, 2004)	Universidad de Guadalajara (UDEG), Mexico
Strengthening the Handicraft Production Chain of the Puno Region (Entorno 2007)	Asociación para el Desarrollo del Entorno, Peru
RFID/CB Applications to Improve On-Time Delivery (Fill Rate) of SMEs in Mexico and Latin America (CANIETI, 2007)	Cámara Nacional de la Industria Electrónica, de Telecomunicaciones e Informática, Mexico
New Technologies Applied to the Environmental Management of Argentinean Fruit Producers (FRUTIC, 2007)	Asociación Citrícola de Concordia, Argentina
Networked Community for Organic Producers' Market Access (SNA, 2007)	Sociedade Nacional de Agricultura, Brazil

Title	Executing Agency
ICT Innovations for the Development of Agricultural and Forest Eco-enterprises in Central America (CATIE, 2007)	Centro Agronómico Tropical de Investigación y Enseñanza CATIE, Costa Rica
Virtual CITE – Centers of Virtual Technology Innovation to Improve SMEs in Peru and Uruguay (LATU, 2007)	Laboratorio Tecnológico del Uruguay – LATU, Uruguay
System of Competitive Intelligence for the Development of the Business Model of SMEs (FECOMERCIO, 2007)	Federação do Comércio do Estado do Rio de Janeiro, Brazil
MecanicaWeb (SINDIREPA, 2007)	Sindirepa - Sindicato da Industria de Reparação de Veículos e Acessórios do Estado de São Paulo, Brazil
Pilot Project for the Digital Invoice for Small Businesses of the Pichincha Region (CAPEIPI, 2007)	Cámara de la Pequeña Industria de Pichincha, Ecuador
Comercio social a través de tienda electrónica dirigida a MYPES de zonas vulnerables de Medellín (ANTIOQUIA 2007)	Corporación Incubadora de Empresas de Base Tecnológica de Antioquia, Colombia