Case Study
Intel World Ahead Program

Innovative Program Transforms Education, Boosts Economy in Portugal

"By equipping our schools with locally manufactured, state-of-the-art computing technology and Internet connectivity, we are strengthening our economy and ensuring a better education for our students."

Paulo Campos
Secretary of State of Public Works and Communications

Introduction

Today's students will graduate into a world in which using PCs and the Internet to research, evaluate, and share information is an essential part of nearly every skilled job. To prepare students for this knowledge-based society, nations around the world are seeking to develop sustainable programs that integrate technology with education and provide students with the 21st-century knowledge and skills they need to succeed in the global economy.

In Portugal, one of the world's most comprehensive educational technology programs provides an example of how—through extensive planning, innovative funding, and ongoing collaboration—technology can be used to transform education while at the same time driving both immediate and long-term economic success.

Portugal's education program is unique, but the three key features that have enabled its success can be adapted by any nation that seeks an economically sustainable educational technology program.

1) **Invest in a comprehensive education program** that improves education through new technology, software and educational content, training and support.
2) **Create a local, sustainable economic model** that generates jobs and trade opportunities.
3) **Form partnerships** that lower costs and utilize the experience and resources of both the public and private sectors.

Intel World Ahead Program

The Intel World Ahead Program collaborates with local and global leaders to connect the next billion people to a world of opportunity. Through hands-on expertise and resources, the program helps countries like Portugal develop comprehensive, long-term programs that improve lives, economies, and societies.

Key elements of focus include:

- Access to highly capable PCs
- High-speed connectivity
- Effective teaching and learning
- Locally relevant content

Transforming Education Through Technology

The transformation of Portugal's educational system began with a national technology plan called *Plano Tecnológico*. The plan's overarching goal is to build a knowledge-based society, which government leaders recognized would require far more than simply providing students with PCs.

To ensure that technology would be adopted, integrated into the home and classroom, and supported for years to come, Portugal's government, in cooperation with Intel and other public and private partners, developed a comprehensive educational technology program. The program combines age-appropriate technology and content with the training, support, and Internet connectivity students need to develop 21st-century skills.

- **Customized PCs.** Rather than a one-size-fits-all approach, Portugal is offering students customized, age-specific PCs. Primary school students have access to the Magellan PC, a locally produced PC that uses the Intel-powered classmate PC reference design. Older students can purchase more powerful PCs based on Intel® Pentium® Dual Core or Intel® Core™2 Duo processors, and teachers can also purchase high-performance notebook PCs based on Core 2 Duo processors. In addition, school computer centers will be equipped with desktop computers powered by Intel® vPro™ technology, which enables remote IT management.
- **Mobile broadband connectivity.** As part of purchase plans, teachers and students can buy technology packages that include PCs and Internet access. Both wired and wireless LAN connections, as well as 3G connectivity, are available through participating telecommunication companies (telcos).
- **Teacher training.** In cooperation with the Ministry of Education, Intel has trained 850 elementary teachers from schools around the country. These Master Trainers learned computer and software skills that they will be able to share with their fellow teachers. Eventually, more than 30,000 teachers—along with parents, students, local OEMs, and IT administrators—will receive ICT training.

What Is Intel skoool?

Intel® skoool™ Learning and Teaching Technology is an interactive Web-based resource for learning math and science. Intel, with the support of Portugal's Ministry of Education and co-funding by the EU as part of its communitarian initiative, launched skoool.pt, a Portuguese-language site, in 2007.

Creating a Customized Hardware and Software Solution

Portugal's technology solution includes specialized hardware and software designed specifically for the students and teachers it serves. The technology includes:

Technology	e-Escola Program (ages 12–18)	Magellan Program (ages 6–11)
Hardware	Notebook PCs based on Intel® Pentium® Dual Core or Intel® Core™2 Duo processors	Magellan PCs based on Intel® Atom™ processors
Operating Systems	Microsoft Windows Vista Home Premium*	Dual-boot system: ▪ Microsoft Windows XP Pro* ▪ Linux*
Software	Microsoft Office 2007*	▪ Caixa Mágica* education stack for Linux* ▪ Magellan Learning Suite* from Microsoft
Connectivity	Typically includes wired and wireless LAN and 3G	Typically includes wired and wireless LAN and 3G
Content	Includes pre-installed content and customized material available at e-Escola.pt	Includes pre-installed content and skoool™ Portugal

- **Localized educational content.** The software applications, peripheral equipment, and educational content that supports Portugal's educational programs are locally produced. In addition, students can access interactive educational resources through skoool.pt, a Portuguese-language site specially created as part of Intel® skoool™.

The age-specific educational technology programs implemented in Portugal target students from primary through secondary school, as well as teachers and parents.

- **Primary School:** Through the Magellan Initiative (*Magalhaes* in Portuguese), 500,000 Magellan PCs are being made available to the country's primary-school students (ages 6–11). These locally

manufactured PCs are tailored to the students' needs, and are combined with teacher professional development, training for parents, mobile broadband connectivity, a host of software applications, and local educational content.

> The Magellan Initiative is "the most adventurous project in junior-school education in Europe in the past 20 years."
>
> — *The Informed Executive*, November 2008

- **Middle School and High School:** More than a quarter-million PCs have already been delivered to middle- and high-school students in grades 7–12 through a government initiative called e-Escolas. Begun in 2007, the program's goal is to equip 850,000 students and teachers with customized notebook PCs and broadband Internet connections by 2010.
- **School Computer Centers:** Along with providing computers for individual students to use at home and at school, every school's computer center will feature high-powered desktop computers based on Intel vPro technology. Already, the Ministry of Education has purchased 111,000 of the PCs to be distributed to schools across the country.

Creating a Local, Sustainable Economic Model

Portugal's educational technology program is one of the most innovative in the world because of the sustainable economic model on which it is built—a model that not only funded the country's education initiatives but also generated local jobs and created ongoing opportunities for international trade.

Innovative funding model

The initial financing for the educational programs came from Portugal's telecom service providers, particularly mobile phone companies. In 2001 and 2002, several companies purchased 3G mobile licenses from Portugal's government through a spectrum auction that raised EUR 460 million.

With the long-term goals of *Plano Tecnológico* in mind, Portugal's government set aside the auction proceeds to fund the nation's information society programs, including the educational technology programs. The funds have been used to support many aspects of the programs, including subsidizing technology purchase programs for students and teachers. Continued government and industry cooperation with the telco companies has also enabled a wider and more efficient deployment than is typical of most PC purchase programs.

Local industry development

From the beginning, local industries have been involved in the educational programs, and they are critical to their success. Local telcos, software developers, and content providers work together to create product packages that are age-appropriate, available in the local language, and specific to regional needs.

In addition, Portugal is one of the first countries in the European Union to manufacture its own computers. JP Sá Couto, S.A., a local original equipment manufacturer (OEM), manufactures and supports customized computers, including the 500,000 Magellan PCs now being produced for the country's primary-school students.

> "We intend to [help] Portugal become a technologically advanced country, where training and learning represent important development pillars."
>
> — João Paulo Sá Couto

For Portugal's government, the advantages of involving local businesses are clear, from generating local jobs to strengthening the country's ICT industry. For local businesses, Portugal's educational programs have provided opportunities to increase profits and acquire valuable experience that is likely to lead to even more business

growth as the country begins to export its technologies and expertise to other countries.

International opportunities

Within just a few years, Portugal has developed, in effect, a highly marketable, locally developed "product" that can now be exported to the country's many trading partners. This product includes both knowledge of best practices and actual ICT goods and services that are in high demand around the world.

Already, Venezuela has ordered 1 million customized Magellan PCs and Libya has agreed to purchase 500,000 PCs, most of which will be manufactured by JP Sá Couto, S.A. In addition, Portugal Telecom is now conducting an initial service deployment in Namibia, and Portugal's government is continuing trade negotiations with many other trade partners around the world.

Partnerships Ensure Early, Long-term Success

Enacting and supporting *Plano Tecnológico*, the government's national technology plan, required formal partnerships and long-term collaboration among numerous public and private interests.

Intel worked closely with Portugal's government to bring together key stakeholders for the educational programs. Drawing on a half-decade of experience in Portugal, as well as involvement in more than 200 policy-driven digital inclusion programs in 60 countries, Intel was able to identify and align Portugal's government, industry, and education interests.

Two government agencies—the Ministry of Education and the Ministry of Public Works, Transportation, and Communications—led the planning and execution of the education initiatives. With Intel's help, the agencies were able to form successful partnerships with other global and local companies including Caixa Mágica, Cisco, City Desk Computer Systems, Ericcson, JP Sá Couto, Microsoft, Optimus, Prológica, TMN, Vodafone, and ZON.

By bringing together a wide range of stakeholders, Portugal has created a sustainable, comprehensive educational technology program—one that continues to benefit public and private interests, as well as students across the country.

The Benefits of Long-term Collaboration

Intel has worked closely with Portugal's government since 2003, offering hands-on assistance, guidance, and resources that have helped the country transform its educational system. Intel has:

- Led ICT teacher training in collaboration with the Ministry of Education
- Provided ongoing business, strategic, and technical support
- Assisted in the development of localized digital content through collaboration with Intel skoool

Summary

Portugal's government leaders are steadily moving toward their goal of building a knowledge-based society. The country's groundbreaking educational technology program is playing a significant role in achieving that goal by giving students access to modern technology, as well as the training and support they need to acquire 21st-century skills. At the same time, a sustainable business model has been developed that is generating jobs at home and creating valuable trade opportunities abroad.

For countries seeking to emulate Portugal's groundbreaking educational technology program, following these three best practices is essential:

1) Embrace comprehensive approaches to education that emphasize hardware, software, teacher training, curriculum development, and digital content
2) Create a sustainable economic model that generates local jobs and builds ongoing trade opportunities
3) Form partnerships that combine the experiences and resources of the public and private sectors, including committed organizations such as Intel World Ahead

Achieve Your Vision

What is your vision of the world ahead? Contact your local Intel representative to discuss how you can implement a sustainable, technology-based education program in your country. Visit us on the Web at: www.intel.com/worldahead

Portugal Technology Plan www.planotecnologico.pt

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