Asia-Pacific
Economic Cooperation

APEC MSME INNOVATION MANAGEMENT SEMINAR

Wednesday August 27th, 2008

San Martin de Porres University – Chiclayo, Peru

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Economic Cooperation

PERÚ Ministerio de la Producción

APEC2008

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APEC Project SME02/2008
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Purpose of the APEC MSME Innovation Management Seminar

Innovation management is an important aspect for the development of Micro, Small and Medium Enterprises. Innovation is referred to the capacity to analyze emergent necessities in order to transform them into new opportunities for business growth and profitability; it creates new markets and businesses. Enterprises are interested in creating innovative products and services. For this reason, they require the development of an adequate approach for designing, developing and commercializing new products or services. Therefore, Micro, Small and Medium Enterprises must change their strategies to maintain competitive positions, not only to adapt changes, but they can be capable to propose the changes.

What are the strategies applied by APEC member economies for promoting innovation in order to achieve enterprises' competitiveness, mainly with start-ups? Especially in small scale enterprises where the entrepreneur is the manager, production manager, accountant, etc., it is crucial to consider innovative schemes for management.

The purpose of this seminar was to discuss and exchange best practices in promotion and innovation matters in the APEC region. The seminar consisted of two sessions:
"Innovation Management and Technology for Entrepreneurs" and "Innovation Management Principles, Policies, and Best Practices".

Schedule

Panel I: Innovation, Development and Small Business		
TIME	**ACTIVITY**	**PRESENTER**
9.00 AM – 10.00 AM	Moderator	Mr Charles Skuba, Chief of Staff to the Assistant Secretary for Market Access and Compliance, U.S. Department of Commerce
	Presentation from CompTIA on "Innovation and the Entrepreneur, Catalyst for Development"	Robert Kramer, VP, Public Policy, CompTIA
	Presentation from US Court of Appeals for the Federal Circuit on "Innovation and Small Business: IP and Economic Development"	The Hon. Randall R. Rader Circuit Judge, US Court of Appeals for the Federal Circuit
	Presentation from Microsoft Latin America on "Open Innovation -- the New Paradigm: Implications for Government and Small Business"	Luis Daniel Soto Maldonado Senior Director of Technical Development, Microsoft Latin America
	Presentation from APESOFT – Peruvian SW Association on "Small IT Business Experiences in Peru."	Juvenal Luna Gonzales President of APESOFT – Peruvian SW Association
10.00 AM – 10.10 AM	Q&A	

Panel II: Challenges to Innovation		
TIME	**ACTIVITY**	**PRESENTER**
10:10 AM – 10:55 AM	Moderator	Chris Katopis Director Global Intellectual Property Policy, CompTIA
	Presentation from Hong Kong University Faculty of Law on "Developing an Interoperability Ecosytem"	Stacy Baird Visiting Fellow, Hong Kong University Faculty of Law.
	Presentation from Comptia on "The Skills Gap: IT Workforce Trends 2008 to 2013 in 6 APEC Economies"	Michael Mudd Director, Asia Pacific Public Policy, CompTIA
	Presentation from EDS Hong Kong on "The IT Services Sector in East Asia, Challenges and Opportunities for Growth"	Stephen Lau Chairman, EDS Hong Kong
	Presentation from U.S. Department of Commerce on "The Innovation Challenge – The U.S. Experience"	Paul J. Corson U.S. Department of Commerce
10.55 AM – 11.05 AM	Q&A	
11.05AM – 11.25AM	Morning Tea	

Panel III: Solutions, What Governments can do to Promote Innovative Entrepreneurship		
TIME	**ACTIVITY**	**PRESENTER**
11.25AM – 12.25PM	Moderator	Gilberto Galan Director, Latin America Policy, CompTIA.
	Presentation from Intel on “Promoting Innovation: R&D, Venture Capital and IP”	Fabio DePaula Intel
	Presentation from Harvard University on "ICT Interoperability and e-Innovation: Policy Conclusions from a Transatlantic Study"	Urs Gasser Faculty Fellow at the Berkman Center for Internet & Society, Harvard University
	Presentation from U.S. Small Business Administration on “U.S. Government Programs Promoting Small Business Innovation”	Harvey Bronstein, U.S. Small Business Administration
	Presentation from CompTIA on “Case Studies in Government Initiatives for Re-Skilling and Certification”	Bart Boaden, VP, Global Sales, CompTIA
12.25 PM – 12.35 PM	Q&A	

PANEL I: MODERATOR Mr Carlos Ferraro Vice Minister of Industry Ministry of Production Peru		
TIME	**ACTIVITY**	**PRESENTER**
13.30PM – 14.00 PM	Presentation from Alpamayo Entertainment on Case Study 1	Jaime Carbajal Director Manager Alpamayo Entertainment
14.00 PM – 14.10 PM	Q&A	
14.00 PM – 14.10 PM	Presentation from UNIDO on Innovation Management for Entrepreneurs	Vladimir Kozharnovich Programme Manager, Technology Promotion Unit, Investment and Technology Promotion Branch, Programme Development and Technical Cooperation Division The United Nations Industrial Development Organization (UNIDO).
14.00 PM – 14.10 PM	Q&A	
14.50 PM – 15.20 PM	Presentation from WIPO on Intellectual Properties and Innovation Management	Mr José Luis Herce – Vigil Deputy Director and Manager of the Information Division (Intellectual Property Standards and Classification) World Intellectual Property Organization - WIPO
15.20 PM – 15.30 PM	Q&A	
15.30PM – 16.00 PM	Tea Break	

PANEL 2: MODERATOR **Ambassador Juan Carlos Capuñay Executive Director APEC Secretariat**		
	ACTIVITY	**PRESENTER**
16.00PM – 16.30PM	Presentation from Rinex Technology on Case Study 2	Rob Kiernan Business Manager Rinex Technology
16.30 PM – 16.40 PM	Q&A	
14.00 PM – 14.10 PM	Presentation from APEC SME Innovation Center / TIPA on Innovation Management Policies and Best Practices in APEC	Joo - Yong Kim Director APEC SME Innovation Center / TIPA Republic of Korea
17.10 PM – 17.20 PM	Q&A	
17.20 PM – 17.50 PM	Presentation from ECLAC on Innovation Management Policies and Best Practices in Latin America	Annalisa Primi Expert of the Division of Production, Productivity and Management The United Nations Economic Commission for Latin America and the Caribbean - ECLAC
17.50 PM – 18.00 PM	Q&A	
18.00 PM – 18.10 PM	Closing Remarks	

PRESENTATIONS

Mr Charles Skuba

Chief of Staff to the Assistant Secretary for Market Access and Compliance, U.S. Department of Commerce

Mr Charles Skuba is Chief of Staff to the Assistant Secretary for Market Access and Compliance at the International Trade Administration (ITA) in the U.S. Department of Commerce. Previously, Skuba was appointed by the Bush Administration as Director of Public Affairs in the Office of the Under Secretary of Commerce for International Trade in December 2005.

Prior to joining the ITA, Skuba served as Director of Strategic Planning for the Caribbean Central American Action (CCAA), a private, independent corporation that promotes private-sector-led economic development and facilitates trade and investment in the Caribbean Basin.
At the CCAA, Skuba was dedicated to the successful implementation of the U.S. Free Trade Agreement with Central America and the Dominican Republic.

Previously, Skuba was an international marketing consultant with broad experience with major U.S. businesses across multiple business sectors including: apparel, financial services, telecom, high technology, consumer packaged goods, travel & tourism, and issues/policy advocacy.

From 1978 to 1995, he worked in the advertising business as a senior executive with Saatchi & Saatchi Advertising and Dancer Fitzgerald Sample in New York and San Francisco.

Skuba has written articles on international marketing and strategic communication subjects. He is an Adjunct Professor of International Business at Georgetown University's McDonough School of Business. Previously, he served as a member of the faculty of The Robert H. Smith School of Business at The University of Maryland where he was an Adjunct Professor of International Marketing and Faculty Advisor to student consulting teams in the school's MBA program. He has won numerous advertising and marketing awards including the Gold CLIO, Gold ECHO and Silver ECHO.

Skuba earned an MBA in International Business from The George Washington University and a B.Sc.F.S. in International Affairs from Georgetown University's School of Foreign Service. He also served as an infantry officer in the U.S. Army Reserves and the Virginia National Guard.

Economists calculate that approximately half of the US annual economic growth is attributed in increases to innovation, which drives productivity and a nation's productivity directly impacts its economic growth and its overall standards of living.
America is a place where creativity, initiative and entrepreneurship are encouraged and rewarded. Employment and fulfilling careers for thousands result when entrepreneurs create and execute innovative technologies that respond to consumer needs, wants, desires and frustrations about their absence.
We have seen many examples of small enterprises in the United States that began in a garage or a home, growing into global businesses. Also, half of new jobs in the United States are generated by companies less than 5 years old.

Innovation prospers in societies which value and nurture it. There must be a combination of important societal factors including a strong education system that rewards independent thought and not just memorization; a culture that supports risk-taking; a market place that fosters openness: open competition and market-based technology standards,
as opposed to artificial government imposed standards; and a government that provides good protection to intellectual property rights and that sees businesses as long-term assets and not just opportunities for tax revenue.

There are three factors that are affecting innovation:

-Openness: *It provides a market with access to international and affordable prices, maintains competitive companies and creates more markets for exports. Receptivity to foreign ideas, students and scientists, makes America a global hub for innovation.*

If the market is allowed to determine the use of research and development resources and customers are permitted to buy whatever products they want, like that resources and innovative products flow more quickly and efficiently.

-Bureaucracy: It is relatively easy to start and run a business in the United States with regards to the central government, but local government bureaucratic procedures are too much time-consuming and prevents entrepreneurs from creating and executing new ideas. Innovation and bureaucracy are most likely mutually exclusive concepts. There is however, some progress across our countries, across our economies and I am seeing good results.

-Intellectual Property Rights: It is one area where the government can play a very active role in fostering innovation: providing a systematic way for IP to be recognized, registered and protected. Strong IP rights protection and enforcement attract ideas. The United States leads the world in invention patent applications filed. Protecting the rights of inventors creates a strong economic incentive for further innovation. Without government protection to IP rights, genius is not rewarded, it is robbed. Counterfeiting does not just erode consumer's confidence, it can put consumers in danger. Ideas and brands must be protected and thus inventors, innovators and consumers are protected.
In conclusion, our goal is very simple: we work together, we want to work together to seek to create environments that give new birth to new ideas and new opportunities for many.

This APEC Technology Seminar is a great opportunity for us to bring together our diverse cultures, and government industries, its a great opportunity, to learn from each other.

Mr Robert Kramer

VP Public Policy, CompTIA

Innovation and Small Business: IP and Economic Development

Robert Kramer joined the Computing Technology Industry Association (CompTIA) in May of 2001 as Vice President for Global Public Policy. He is responsible for driving the association's worldwide public policy, legislative and regulatory efforts and initiatives for CompTIA's members.
This includes overseeing CompTIA's public policy offices in Washington, D.C.; Brussels, Belgium; Hong Kong, China; and Sao Paulo, Brazil. Mr Kramer is a member of the USTR-Commerce Department sponsored Industry Trade Advisory Committee for Services.

Prior to CompTIA, Mr Kramer managed International Government Relations at Bank of America, representing the bank on a variety of international, banking, trade and technology issues for eight years. He has also served as chairman of the Coalition of Service Industries' Electronic Commerce Working Group; on the Department of Commerce's Electronic Commerce Trade Advisory Committee; and as a U.S. representative on the e-Commerce Working Group for the Free Trade Agreement of the Americas.

Mr Kramer received a bachelor's degree and a master's degree in Foreign Service from Georgetown University, as well as a master's degree in medieval history from The Catholic University of America.

His most recent publications include:
"Protocols for Government Procurement of Software Assets" Presentation at the International Conference in e-Procurement in the Asia Development Bank Institute Lecture Series, DVD, 2006.
"Software for Development, Is Free Open Source Software the Answer"

Panel Discussion at the World Summit on the Information Society, Asia-Pacific Development Information Programme, UNDP, DVD, November 2005.

This presentation addressed three main aspects:
1. How important is innovation for economic development?
2. The role of Small and Medium Sized Enterprises (SMEs) and in particular the critical role small businesses play in creating innovation and, especially, in disseminating innovation throughout the society.
3. Changes in innovation that have happened over the last ten years, and a fundamental shift in the way innovation is done. This shift can be characterized as an open innovation model.
One of the fundamental characterizations of how information technology affects society is the way that it is fundamentally important in raising productivity . In an international study commissioned by NASCOM, research done in 2005 found that in economies with significant IT Capital (10% of Total capital), a 10% increase in IT Capital investments increases GDP by 3.6% and a 10% increase in labor hours can increase GDP by up to 4%. So, in a sense, IT Capital is a stimulus that creates a multiplier effect that enhances other investments.
By contrast, in economies with less IT Capital, the yield is only a 1.6% increase in GDP, which is less than half. And a 10% increase in labor hours has no statistically significant impact on GDP in economies with low investment in IT Capital. So, the more a country invests in IT, the more overall economic and productivity benefits will be gained.
Also, IT contributions to GDP growth can be measured per hour worked. it has been found that the key groups affected by the introduction of IT and IT investment in terms of productivity, are not the IT sector itself, but rather, are service providers in non-IT sectors (banking, finance, insurance, transportation, tourism). These are the biggest beneficiaries in terms of productivity increases from IT.
The adoption of new ICT technologies is the key to increases in productivity and there can be potential competitors at both macro and micro levels.

However, there is always a lag between the introduction and adoption of new technologies. The lag is greatest in first adopters of IT technologies where the risks are still unclear and trial and error of initial implementation is greater. Therefore, dissemination throughout these economies is generally slower.
The Government plays an increasingly important role in this area and its primarily role is to facilitate the dissemination and diffusion of technology.
There is a correlation between the amount of R&D that gets done in an economy and the extent to which business is the principal focus in terms of both: performance of R&D as well as the principal funding source (public or private).
One conclusion of the survey was that entrepreneurs are an extremely important part of any economy (specially in developing economies). Entrepreneurs are an excellent conduit for the transmission of innovation throughout the economy. Entrepreneurs in developing countries are deeply interested in using the best and newest technologies.
Innovation goes together with Intellectual Property Protection in order to be able to do business. Especially small and medium size businesses, which are increasingly taking out patents.
A study undertaken for the Europoean Commission found that the main reasons small companies used IPR were:
a) "to exploit new products, services or processes either through selling them or in the company's production" (69%)"
b) "innovative technologies for fostering collaborations" (47%)
c) "to attract investors" (34%)
d) "to block competitors from using their products" (32%)
e) "to generate financial returns from licenses" (31%)
f) "or to cross-license patents" (10%)

Open innovation is the collaboration between companies to optimize the use of each companies R&D . The most important thing to foster this kind of collaborative R&D is to have strong intellectual property protections.

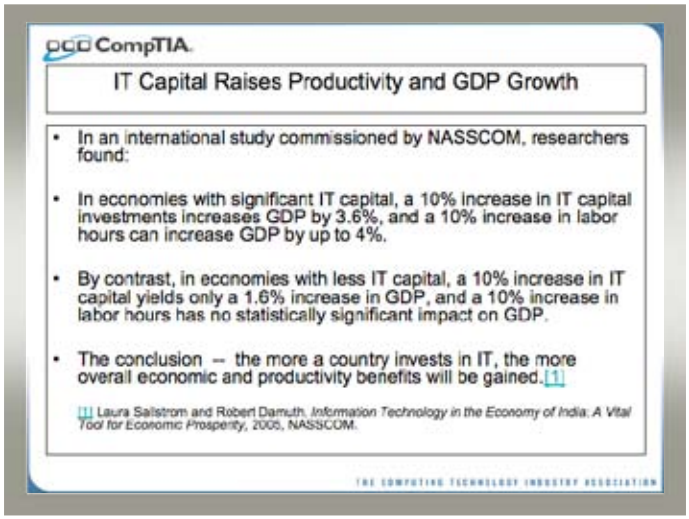
Factors that led to the development of the open innovation model included:
increased mobility among engineers and scientists,
a greater involvement of universities in practical research development.

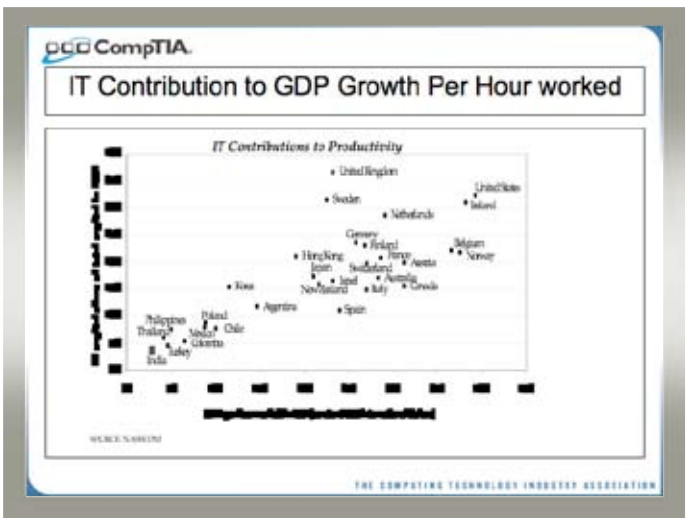
more venture-capital funding, the creation of outside R&D options, i.e. small technology spin-offs, and the proliferation of small market-driven technology companies.
In addition, there was increased competition and required expertise in the supply chain, which superseded the “in-house syndrome”.

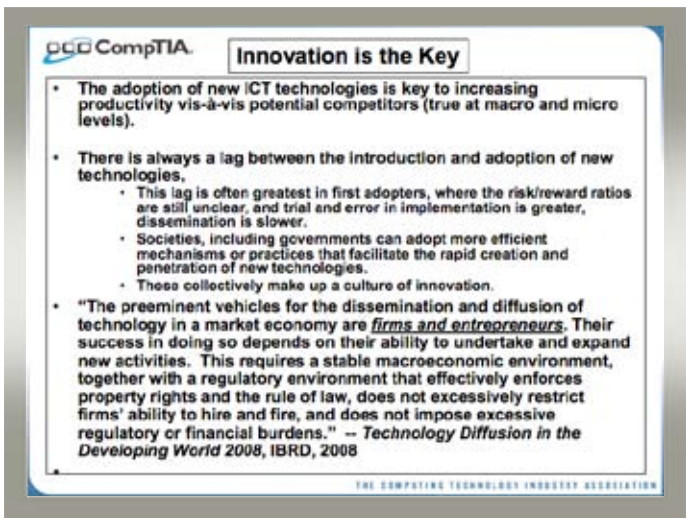
On the supply side, the proliferation of new market-driven sources of innovation allowed the development of faster product life cycles Leading to more competitive markets, more opportunities for diversion technologies.

On the demand side, with greater product choice and faster innovation cycles, led to an increase in the demand for interoperability-they want to plug and play-whether it is the consumer or the businessman, they do not want to reconfigure their entire system in order to accommodate the introduction of new technologies.

Structural impediments to adopt the open innovation model
a) Lack of investment capital for technological development
b) Lack of protection for IP
c) Industrial policies that prematurely or wrongly picked winners and losers; regulations or mandate standards for government agencies and private sector companies to chose one technology over another.
d) The capacity of businesses or individuals to use new technology, depends critically on the basic technological literacy of workers and consumers.







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Business is Primary Innovation Driver
Private vs. Public Sector R&D

	R&D Spending % of GDP	Sector of Performance (Share of Total)			Source of Funding (%)	
		Business	Government	Higher Education	Business	Government
High Income Countries	2.45	63	13	27	49	34
Developing Countries						
East Asia & Pacific	1.44	62	22	14	54	35
Europe & Central Asia	0.94	43	29	20	38	54
Latin America	0.56	29	27	33	33	37

Source: *Technology Diffusion in the Developing World 2008*, IBRD, 2008

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Types of Firms Innovating

Firm Characteristics	Percentage Engaged in Technological Innovation	Percentage Doing R&D
Total Sample*	56.1%	48.0%
Majority Foreign-Owned	63.7%	55.4%
Minority Foreign-Owned	74.1%	57.3%
Domestic	54.0%	46.2%
Exporter	64.8%	57.2%
Importer	62.7%	57.3%
Micro Firms (1-10 workers)	41.4%	34.2%
Small Firms (11- 50)	49.1%	40.2%
Medium Firms (51-150)	63.0%	52.7%
Large Firms (> 150)	68.4%	63.0%

*Sample = 17,723 firms across 43 developing countries

From: "Openness and Technological Innovations in Developing Countries: Evidence from Firm-Level Surveys", Rita Almeida and Ana Margarica Fernandes, IBRD, August 2006

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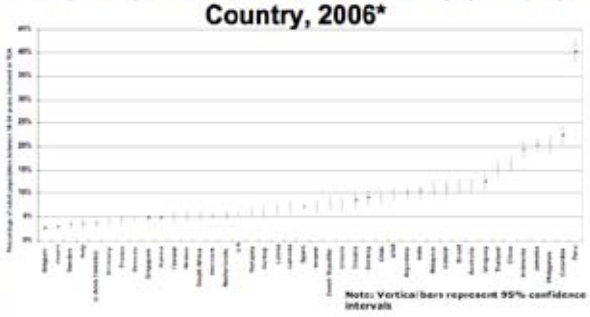
Early-stage Entrepreneurial Activity (TEA) by Country, 2006*



*Survey:156,575 observations in 42 countries

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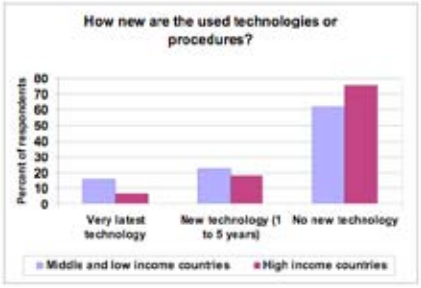
Early Stage Entrepreneurial Activity



Source: GLOBAL ENTREPRENEURSHIP MONITOR 2006 results by Niels Bosma and Rebecca Harding

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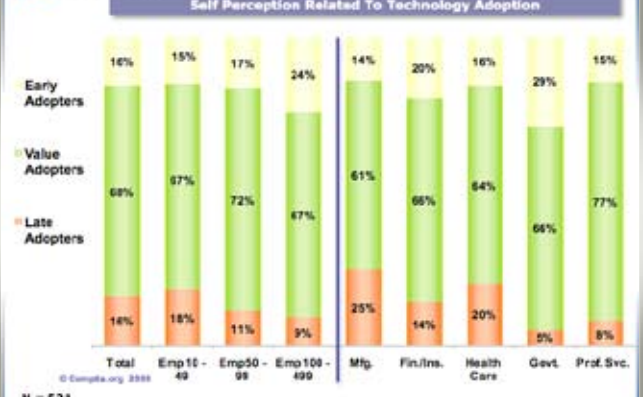
Self Perception Related To Technology Adoption



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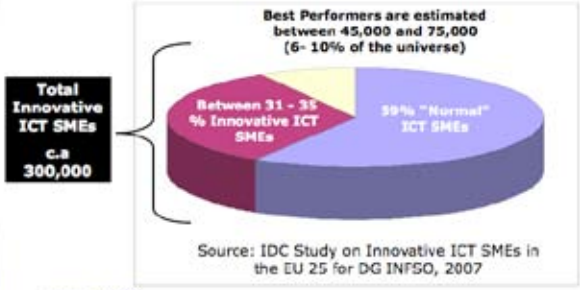
730,000 ICT SMEs* in the EU (41% are Innovative)



Source: IDC Study on Innovative ICT SMEs in the EU 25 for DG INFSO, 2007

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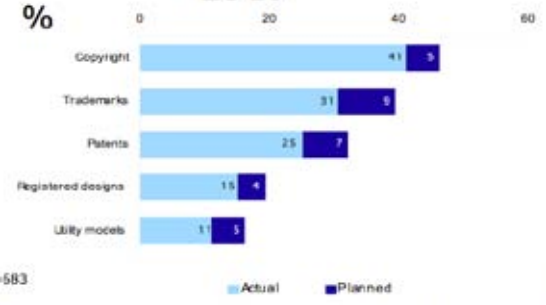
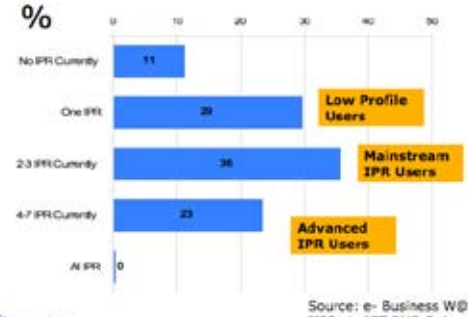
*Defined as less than 250 employees

Adoption of Formal IPR by SMEs in the EU 25



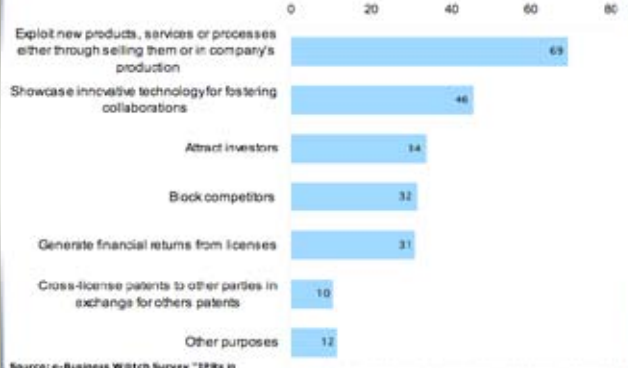
Source: e-Business W@tch Survey "IPRs in ICT SMEs", August September 2007.

Main Profiles of IPR Users



Source: e- Business W@tch Survey "IPRs in ICT SMEs", August September 2007

Main Goals of Patents Use



Source: e-Business W@tch Survey "IPRs in ICT SMEs", August September 2007

Factors Leading to Open Innovation*

- Increased employee availability/mobility (couldn't keep the engineers down in the lab)
- Greater involvement of Universities in practical R&D, motivated by Bayh-Dole
- More venture capital funding (in US $700 MM in 1980 to $80 Billion in 2000)
- Creation of outside options: spin-offs, the proliferation of small market-driven technology businesses, e.g. software developers, ASPs, white box manufacturers, VARs (in 1981 small businesses accounted for 4.4% of US R&D, in 1999 22.5%)
- Increased competition/expertise in the supply chain (supersedes in-house syndrome), leading to the modularization of products and related IP – manufacturing processes multi-sourced
- On supply side: the proliferation of new market-driven sources of innovation led to faster technology product development cycles and product life cycles, more competitive markets, more opportunities for divergent technologies,
- On the demand side, with greater product choice and faster innovation cycles, customers increasingly demanded product interoperability, "plug and play"

* From, Henry Chesbrough, "Open Innovation, the New Imperative for Creating Profit from Technology", Harvard Business School Press, 2006

The New Innovation Process

From: Henry Chesbrough, "Open Innovation, the New Imperative for Creating Profit from Technology", Harvard Business School Press, 2006

Closed Innovation	Open Innovation
The smart people in our field work for us	Not all the smart people work for us. We need to work with smart people inside and outside the company
To profit from R&D, we must discover it, develop it, and ship it ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value
If we discover it ourselves, we will get it to market first	We don't have to originate the research to profit from it
The company that gets an innovation to market first will win	Building a superior **business model** is better than getting to market first
If we create the most and best ideas in the industry, we will win	If we make the best use of internal and external ideas, we will win
We should control our IP, so that our competitors don't profit from our ideas	We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model

Structural Impediments to the Dissemination of New Technologies

- **The lack of investment capital for technological development (venture capital, SMB lending: needs collateral, credible means of risk evaluation);**
- **The lack of protections for intellectual property;**
- **Industrial policies that prematurely (often wrongly) pick winners and losers;**
- **Regulations or mandated standards that force government agencies and private sector companies always to choose one technology over others**
- **"The capacity of firms or individuals to use a new technology depends critically on the basic technological literacy of workers and consumers." *Technology Diffusion in the Developing World 2008 , IBRD, 2008, p. 153.***

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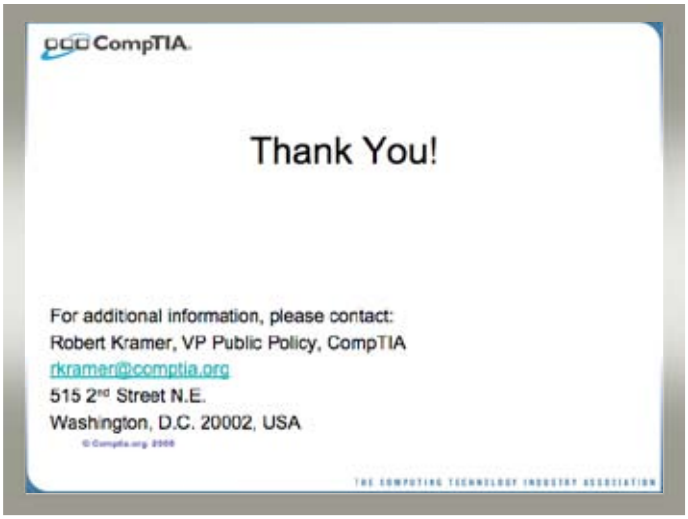
CompTIA.
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THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

Judge Randall R. Rader

Circuit Judge U.S. Court of Appeals

Innovation and Small Business: IP and Economic Development

RANDALL R. RADER was appointed to the United States Claims Court by President George H. W. Bush in 1989 and served on that court until his appointment to the Federal Circuit in 1990.

Prior to his appointment, Judge Rader served as Minority Chief Counsel, Staff Director, Senate Committee on the Judiciary, Subcommittee on Patents, Trademarks, and Copyrights from 1987 to 1988.

He also served as General Counsel and Chief of the Senate Committee on the Judiciary's Subcommittee on the Constitution from 1981 to 1986, and as Counsel in the House of Representatives from 1975 to 1980.

Judge Rader taught Patent Law at the University of Virginia School of Law and at the George Washington University National Law Center, and Comparative Patent Law at Georgetown University Law Center.
Judge Rader is the author of a casebook entitled Patent Law, published in 1998.

Currently, the importance of innovation is already understood. The real question is, how does Peru compete with China, the USA and Japan? To better explain it, Judge Rader told two stories:

The first story started about 6 years ago, when I was invited to Jordan. Jordan is a little country of 6 million people. Peru is ahead of Jordan. And yet, Jordan has just entered into a trade agreement with the US, and I was supposed to speak to them about patent law and innovation policy. I gave a speech for an hour and a half, and I conducted some funny veins with my audience, and then the King's brother stood up after me and Prince Abdullah said "we, in Jordan, are going to do this, we are going to comply with IP Law and policy and we are going to test and see if we can compete in the world market". And I was very worried, I have made this great speech, promising them success and now the King himself, speaking though his brother, was embracing that idea.

I visited Jordan 3 years later. Once again I was speaking with Prince Abdullah. I was supposed to speak first but he interrupted the program and said "I am going to speak first" and he stood up and said "three years ago, we said we would start adopting IP laws and become a nation that innovates, and I did not believe that we could do it. But today, I want to show the success of Jordan" and he put up a sum.

He showed that their pharmaceutical industry had increased by vast percentages of profitability. They had a new information technology industry that was supplying important components to the world market. How did this happen?

Jordan is, by the way, still a great story. I could give you details, but they supply much of the pharmaceuticals to Eastern Europe. How did they get that market?

Through the transfer of technology, they licensed much of their technology in pharmaceuticals from Europe and from the Americas and then that became a profitable way of producing that technology for Eastern Europe. They supply Rumania and Bulgaria with their pharmaceutical products and similar in other areas. IP can provide the same benefits of technology transfer for Peru.

The second story happened in Australia, about 3 years ago. I was speaking in a group like this and finally somebody in the back of the room stood up and said "Judge Rader, I have you speaking about patent law and innovation but the truth is that here in Australia there is no way we can keep up with China. China has billions of inventors and Japan has millions." It was a perfect morning for that question, because I immediately asked that gentleman in Sydney "Did you watched CNN this morning?" And he said that he had not watched CNN. And I said "you would have been proud of Australia this morning". The lead story in CNN that very morning was about a Professor at one of the universities in Australia who has just isolated the gene that controls fat. That invention would probably enable us to control our weight in future years, and who will profit from that? Australia. Genius is not the exclusive property of Japan or China, or even India, although India seems to have a lot of smart people.

There are geniuses here in Peru too, and they have much to contribute. I bet if we ask one of the Professors in this university he is probably working on some new technology to grow crops in a higher altitude. That will ultimately profit the whole world.

In conclusion, innovation can facilitate technology transfer, it can also bring you the necessary resources so that your inventors, here in Peru, can take advantage of the world market.

Mr Luis Daniel Soto Maldonado

Microsoft Latin America

Open Innovation -- the New Paradigm: Implications for Government and Small Business

Luis Daniel Soto oversees the fourth largest software developer area for Microsoft – Latin America.
He is responsible for the "Software plus Services" transformation, software industry alliances and technical readiness of over 1.5 million it professionals and software developers.

Mr Soto Maldonado joined Microsoft 15 years ago and his focus is the introduction of new technologies to the technical audiences market. His previous experience is on knowledge management, enterprise marketing and software development.

Entrepreneur and blogger for over ten years. Graduated as a systems engineer at the Fundación Arturo Rosenblueth, Mexico. He won the first prize on the second International exports software contest on 1989 (ANIPCO).

He is also the founder of many IT associations related to new technologies, competitive intelligence and knowledge management. He is the founding partner of many Internet companies in Mexico and Silicon Valley.

Mr Soto presented four innovation metrics that are part of the way the institution in which he works (Microsoft Latin America) measures the subarea and the subsidiaries.
Innovation requires a more formal approach. Open innovation has been already mentioned and this is really establishing a feedback loop within the customer, the partners, and is really bringing this information together.
The process of innovation is very relevant and so is the culture, the people, and ensuring that people keep the ideas inside the organization. Also, companies should have a culture that permits failures and recovery.
Collaborating technologies clearly have proven to be very important in terms of outsourcing capabilities and trying to bring this external innovation.
The four innovation metrics are given to everybody inside the organization to know that this is the standard way of doing business. Clearly, technology can facilitate and accelerate some of these processes.
The driving questions are:

- How can you help in the innovation process?
- How can you suggest new ways of making sure these ideas continue evolving into real products?; and
- How do you make innovation pragmatic?

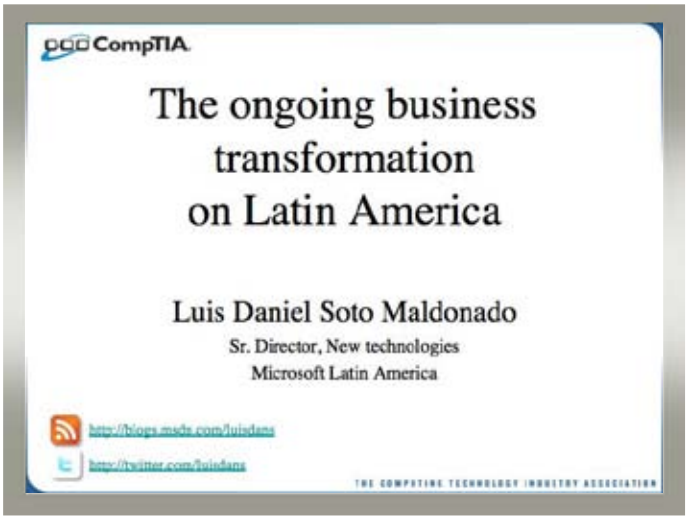
The first step is to define innovation, establishing the metric innovation, then creating the culture and following-up the way it is done.
It is important to have a clear concept of innovation. All the company should manage the same concept and then the organization can move into the second stage which is becoming innovative. But, there is no formal process on how to evaluate the idea, on how to assign the investment time and money to achieve these goals, there is no one defined way to determine all the customer's information to the different customer service channels web and the mechanisms to bring this information.

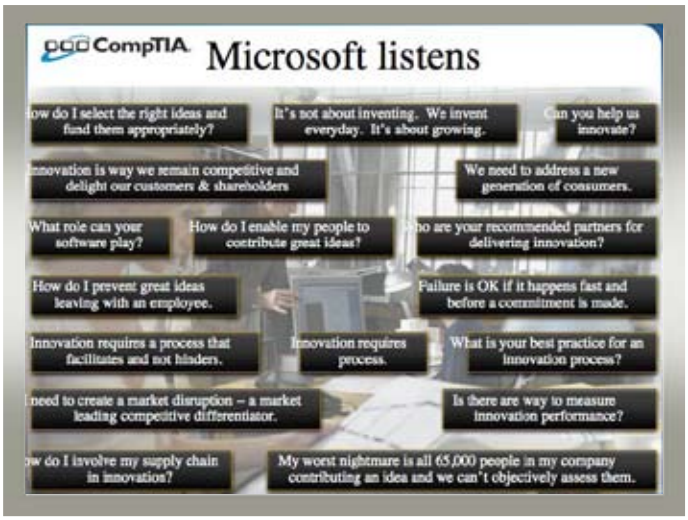
The last stage is the execution. The process is in a bad situation, just 40% of the organizations really have an innovation process in place, but that is not the main issue, there is no decision-making, there are no metrics that are part of the institution's score card.
There is not a common understanding on what these metrics mean. There are no incentive elements to support the motivation of the employees. There are no tools that can leverage the whole process and there is no portfolio management strategies incorporated into being able to include this innovation into products and markets. So, within all these different concepts, I would say there is a strong opportunity between all these elements.
Important things right now are taking place: one is cloud computing. This concept, we believe is a very important opportunity for Latin America, because you will be able, any software developer, an individual, will be able to create a solution that draws on a small portion, lets say 10%, it just uses 10% of one machine, or lets say one machine. But you would be able to send this to a data center where it can roll on 10 machines, a hundred or a thousand machines.
This means that an individual software developer would be able to bring the solution that can be sold to five hundred companies. As of today, this is not possible. Creating a solution that can be operated by a large government or institution is extremely complex.

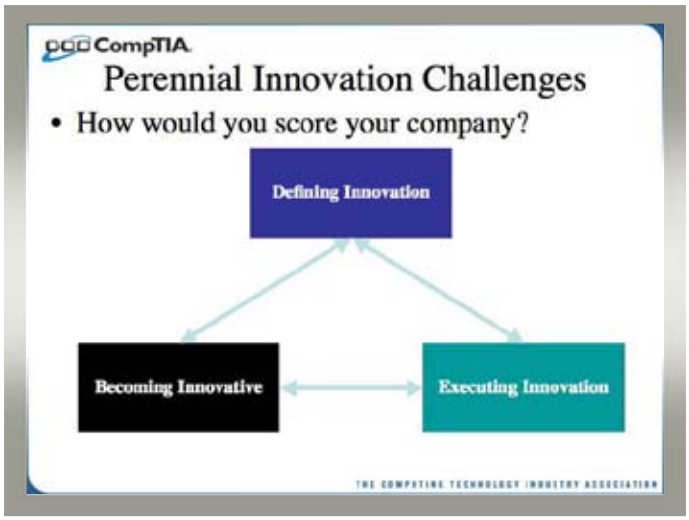
With these barriers coming down, we are going to see basically a whole new dynamic on the way software is delivered to enterprises.
This is also related to the fact that more organizations will be able to use the same technology that larger organizations use but they cannot afford, because they do not have the person that manages the technology, they cannot afford, even sometimes, the hardware to run this infrastructure. This is about to change.

The social media, the way we bring people on the outside to collaborate, is another important transformation that is taking place; so is the energy consumption, there is a lot about sustainable information technologies, and there is a lot to consider about the new generation work with technology. It is a completely different view of the current generation, I would say born between 1964 and 1984 and the latest generation.

How do you create an organization that has three different types of persons? Some of them: the ones that do not like to use it, the group that uses it for productivity and the new generations who view technology as something that simply “is”.
In fact, we have a good opportunity in Latin America to make a difference. The small countries, I think are really capable of bringing innovation and participating in a new world, a new ecosystem, hopefully we all will be part of that.







Recent Survey for Microsoft

Q4 2007 www.prtm.com

1. Over 200 executive responses across multiple industries and geographies

2. In-depth interviews with innovation thought leaders and practitioners

3. Designed and conducted by PRTM for Microsoft as part of an effort to understand effective innovation practices and enablers

Innovation Vision, Mission, and Strategy Gap

Defining Innovation

- Innovation is clearly important to the CEO…
  - 77% said CEO understands importance of innovation and has a clear vision of how innovation helps the company
  - 74% said vision, purpose, and mission how critically important innovation is to the company
- But only 58% said there is an innovation STRATEGY that has been communicated and understood

Innovation Culture and Insight Gap

Becoming Innovative

- Innovation is encouraged and supported broadly…
  - 82% said employees feel comfortable suggesting new ideas
  - 64% said people across all levels and functions are encouraged to contribute to the innovation process
- But cultivating innovation insight and taking risk is not well addressed
  - 36% said there are support systems in place to help people turn ideas into meaningful proposals
  - Less than 46% said their company supports innovation risk taking and gives them time to innovate
  - 46% said there are well defined ways to mine customer needs and operational processes for innovation insights
  - Less than 20% are using idea and knowledge management tools to enable insight development

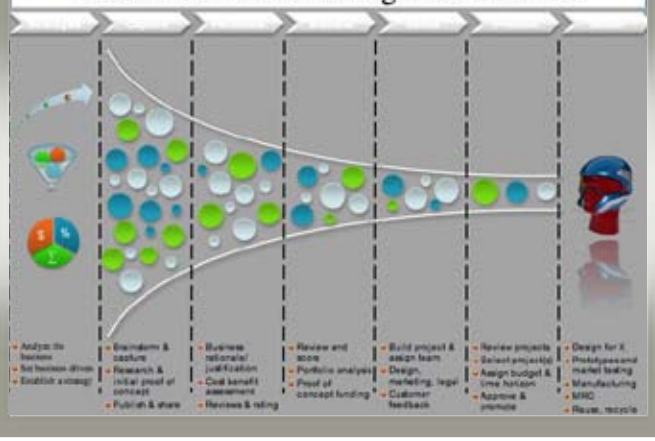
Innovation Execution Gap

Executing Innovation

Innovation execution practices seem to lag innovation intent

- 40% have a well defined innovation process
- 43% have timely, clear innovation decision making
- 36% have metrics to measure innovation success
- 39% have a common language for innovation
- 35% have incentives aligned to encourage innovation
- 35% have a clear process for deciding when to collaborate
- 22% report high usage of collaboration tools
- 17% report high usage of portfolio management tools

Innovation Process Management Solution



Actions for Latin America

- Embrace the *new way of doing business*
  - Software + Services and Cloud computing
  - Social Media
  - Sustainable IT
  - Millenials

Microsoft | Executive Leadership Series

http://www.wiley.com/WileyCDA/Section/id-321146.html

Mr Juvenal Luna Gonzáles

President of APESOFT

Small IT Business Experiences in Peru

Master in Computer Engineering, Karkov Polytechnic University – Ukraine. President of the Peruvian Association of Software Producers – APESOFT (www.apesoft.org).

General Manager of Software Business SAC (www.softwarebusiness.com.pe).

President of the Arbitration Center and Expertise in matters of Information Technology – CAPTI.

Member of the Managerial Council of the Program of Support to the Competitiveness of the Peruvian Software – PACIS (www.pacisperu.org).

APESOFT is a Peruvian Software association. It is a private non-profit association aimed to raise the competitiveness of Peruvian software companies and to reunite efforts for the IT industry in our country. Since its foundation, it has developed marketing reports, training works in general, provided support to Peruvian exporting companies, etc. Its main challenge has been the lack of governmental support to develop and that is why this association has to be innovative.

PACIS was the Competitiveness Support Project for the Software Industry in the country. It had a duration of two years and its main objective was to introduce a culture of quality in our companies. Through this project, 90 Peruvian companies received training regarding the international accreditation called CMMI.

Human resource (programmers and analysts) accreditation is needed in the software industry. This accreditation is done through an international certification process. CMMI is the only accreditation for applied software.

Seven Peruvian companies obtained the CMMI international certification through PACIS.

This Project included not only a cultural issue in its the development but a quality topic was also included through the CMMI model. It was necessary to organize our processes: to be more productive and innovate the organization of software development.

Likewise, the Lima Software Testing Laboratory was created. This was the first most important private laboratory in the country and provided software entrepreneurs with a venue to test their products under extreme conditions.

The laboratory had the necessary devices to do simulations. Currently, this laboratory is open to the public, the government and private companies. Member companies have, indeed, economic and other type of benefits.

At the same time, CITESoftware of APESOFT was created to be the branch to the public in general.

CITESoftware works under the APESOFT umbrella and has three types of tasks:

1. A testing laboratory. CITESoftware is in charge of this laboratory.
2. The second task is education. Courses and lectures are organized and so is digital alphabetization aimed for small and medium businesses.
3. Finally, CITESoftware is also in charge of accreditation processes.

In addition, APESOFT supports exporting companies. Currently, there are about 300 Software companies nationwide.

In 2003, there were no more tan 100 Software companies. APESOFT has about 300 affiliated companies and bills about US$160 million. It is on the export chart of the top 10 main exporting activities. Exports represent about US$16 million per year. Following the innovation model these figures may increase, without waiting for the government's help. Becoming an association is the key to achieve innovative ideas such as the PACIS project.

The exports strategy is defined through a work plan that we have with PROMPERU. Market research, commercial missions and fairs are organized; commercial offices are settled and we help our members to establish abroad only after agreements have been signed. We support new generation companies that wish to continue the software exports.

Our main markets are the United States, the Andean market and a 20% share of exports go to Europe.

The export products are basically for the health, bank, government and education sectors.

APESOFT seeks to reunite the Software and IT companies contributions to involve the main stakeholders of the industry, even the government. We believe and rely on innovation to be a synonym of productivity. Innovation is not granted by Law. Peruvian enterprises and entrepreneurs should work hard towards innovation and productivity and, eventually, governments will provide them with support.

Innovation and Development in the National Industry of the SOFTWARE

Ms Sc Juvenal Luna Gonzáles.
President APESOFT

APESOFT
ASOCIACIÓN PERUANA DE PRODUCTORES DE SOFTWARE

APESOFT

The Peruvian Asociation of Producers of Software, is a private Institution without intentions of to profit, that it group to Peruvian Companies; with the specialized in the design and development of computation programs of the country.

MISSION

"To promote of the development competitiveness of the National Industry of the Software."

Model of Group

APESOFT has represented the interests of the national industry of software from its creation in 2000, offering some lines of performance:

- ✓ Specializing training
- ✓ Information of market
- ✓ Projects of qualit certifications
- ✓ Consortium of exports

From 2004 by means of the Program PACIS it has taken the innovation in the sector across diverse projects.

Quality System CMMI

- ✓ APESOFT is a great booster CMMI (Capability Maturity Model Integration) of Peru, a model of quality specifically designed for the process improvement in the industry of the software.
- ✓ .They qualified to ninety small enterprises of software in the model and gave then technical assistance in the implementation
- ✓ Thanks to PACIS Peru is holder to seven companies certified in CMMI, and other fifteen are in process.

PERU IN THE WORLD OF CMMI

LABORATORY OF SOFTWARE'S TESTS

Is another of the innovative activities that APESOFT has realized in PACIS's frame. From this year, Peru has the First Laboratory of Software's Tests, this will allow it to do functional tests , Of load and stress in the computer programs that develop the companies and diverse entities, to significantly minor costs that the international market.

CREATION OF CITESOFTWARE

- ✓ In 2007 is created it the Innovation Center of the software, entrusted of seeing the topics of accreditation and normalization in the cycle of life of the software.
- ✓ Equally, we will show them the Program of digital Literacy of the small businessman,with the end to spread technological solutions for the increase of the productivity of the companies.

CITE SOFTWARE

Model of development based on exports of technology

APESOFT proposed a Program of Exports of software and computer services, which support on PROMPERU, comes executing with the following results:

- ✓ Exports 2007: $ 16 million.
- ✓ Number of exporting companies: 25
- ✓ GOAL 2010:
- ✓ Exports: $ 50 million.
- ✓ Number of exporting companies: 45

Strategic Plan of the Exports of Software

To convert the country in the Center of production and exportation of software.

Objective

- To boost the development of the exportable offer of the industry of the national software.
- Consortium of Sw 's exportation.
- To certify to companies in quality systems CMMI (program PACIS)

EXPORTABLE OFFER OF SOFTWARE

PRODUCTS

SOFTWARE FOR :

- ✓ Health Sector
- ✓ Banking Sector
- ✓ Building Industry Sector
- ✓ Government Sector
- ✓ Educational sector

Solutions ERPs
for PYMES
Antivirus
COMPUTER SERVICES

CURRENT MARKETS

- ✓ Colombia, Bolivia, Ecuador, Venezuela, Chile.
- ✓ México, Dominican Republic , El Salvador, Nicaragua
- ✓ USA
- ✓ Spain

EXPORTATION'S CASES

INTERNATIONALIZATION OF THE SOFTWARE
Companies with Offices of Commercial Representation abroad

	Company	Description of the product	Coun 1	Coun 2	Coun 3
1	VISUAL SOFT	PC Sistel - Control telephonic calls ACD Report - Optimization of Telephone central	Colombia		
2	NOVATRONIC	Integration and Security Banking Payments, prepayments and collection Channels of delivery of services	Venezuela		
3	SISCONT	Software accounting management	Chile		
4	DMS	Wireless systems Logistics Systems of Control of Routes and Sales Systems of Control of Production	Miami USA		
5	LOLIMSA	Software of med management	Colombia	Brazil	Mexico
6	INFHOTEL	Software for hotels	Venezuela		

THANKS ALOT

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Mr Michael Mudd

Director Asia Pacific Public Policy – Comp TIA

The Skills Gap: IT Workforce Trends 2008 to 2013 in 6 APEC Economies

Michael Mudd is CompTIA's Director of Public Policy for Asia Pacific with
responsibility for running Public Policy initiatives for a region encompassing
Japan to Australia and China and India, based in Hong Kong.

Prior to CompTIA, he was a Senior Manager at Standard Chartered Bank based in Hong Kong.

Working within management for the wholesale bank, he was a key member of the team that was responsible for innovative online banking technology product development for the bank, resulting in the award winning e-commerce suite for trade.

With extensive experience in multicultural management, including basing in China and Vietnam, he brings 30 years of regional experience in Asia in private and public industry.

He is a frequent presenter at regional events including OECD and APEC fora on IT policy and its economic impact and is also an appointed representative to the ISO for JTC-I in Geneva.

He also regularly acts as chairman, moderator and speaker at regional ICT events and a frequent contributor to the media.

Mike is also an active member of the IT, IP and Telecom committees at Amcham (Hong Kong, Beijing, Kuala Lumpur and Hanoi (Chair) Singapore, Manila),the Hong Kong Computer Society and Hong Kong IT Federation.

The main subject of my presentation is how to attract and retain the correct staff and to equip them with the right skills demanded by industry which enables enterprises to take advantage of the tools which the IT industries are developing.

CompTIA is a global trade association for the IT industry with members in over 100 countries that tries to look at the skills gap and tries to solve it. Over the past 5 years the association has carried out a survey in many countries including APEC economies.

The objective has been to find the IT skills levels in these economies and to develop solutions as to where skills gaps exist and form the conclusions make recommendations to close it.
The survey was focused on fourteen economies and defined companies as Global SME (less than 300 employees).

There are some important trends nowadays such as Convergence and "RFID" using in mobile wireless technology. This is an increasingly important area and it is also a tremendous opportunity for small to medium sized companies that can work and specialize in this field.
Other identified skills gaps were in the areas of firewall technology, security, etc.

Advanced APEC and developing APEC economies showed that there are different challenges: a common one however is security, but there is also a gap in the 'soft skills', that is the non-hard technical skills such as project management.

In general terms, small sized companies need to improve their skilling levels of staff working in security, general networking, mobile area and non-specific security web-based applications.

We are just not looking at IT companies as IT is now everywhere: healthcare, government, education, etc. Growth has been positive in the industry and whilst it may slow, we expect some growth.

As larger industries downsize, there will be more people moving into this small to medium sized enterprises. Within these enterprises the survey shows their own IT staff will increase.

The outsourcing of IT has been seen mainly from the larger companies to lower cost r and often these are the emerging economies.

Regarding recruiting, it is still a challenge for SME's to identifying a qualified candidate. According to the survey, previous job experience is not as important as in the past, it's the combination of their technical skills that are validated and how are they supported.

Some factors that are driving change are: increasing globalization, sector competition, global sourcing, and significantly: an aging workforce.
New IT skill are now required, for example radio and mobile wireless technology. SMEs may excel in the development and innovation of products to satisfy the market and this is a business with high employment growth.

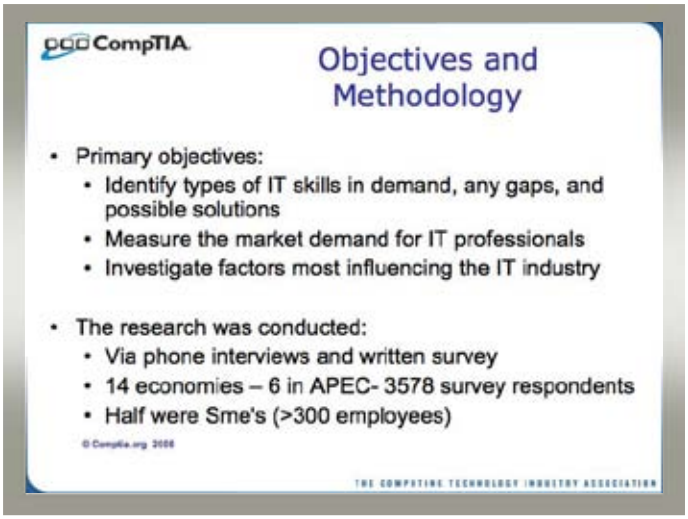
One function of Industry Associations do is to become bridges between the industry and the academia.

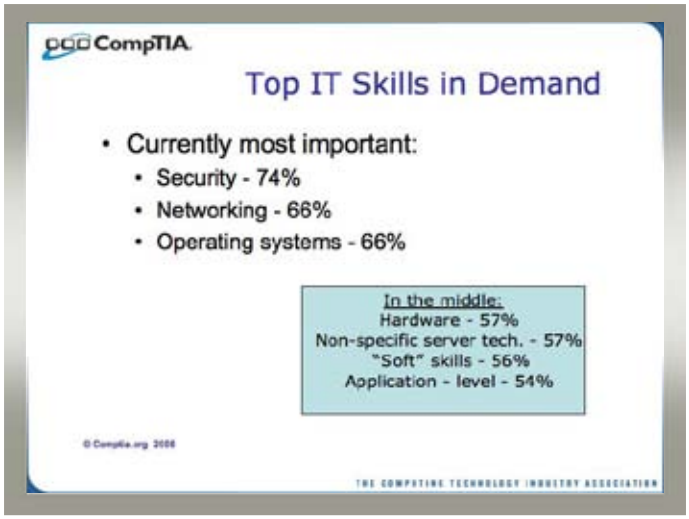
In summary, future factors driving this change are: an aging workforce, the fast pace of IT, globalization, and the shift to IT jobs and the convergence of various technologies. Addressing this will lead towards better paid jobs that will make a greater contribution to all APEC economies.

Recommendations:

1. Emerging APEC economies should adopt global industry standards for IT certification, especially in security and wireless skills.

2. Advanced economies should try to foster soft skills development, as well as to foster high-level technical skills.
3. All economies should be aligned towards working for a national IT education curriculum that leads to skilling based on industry standards so students are ready for employment.





IT Skills Trends Over Time

Overall: IT Skills in Respondent's Organization	Rank in Current Importance	Important in One Year (n=3578)	Important in Five Years (n=3578)	Trend in Importance
Security/firewalls/data privacy	1	68%	54%	-14
General networking, network infrastructure	2	63%	48%	-15
Operating Systems (Linux, Windows, XP, Vista, etc.)	2	62%	45%	-17
Soft skills (customer service, sales, project management, communication, etc.)	4	60%	51%	-9
Hardware skills/knowledge (including printers, PCs, etc.)	3	59%	40%	-19
Application-level (architecture, design, development, programming, integration, etc.)	5	57%	52%	-5
Non-specific server technology (including DB, storage, maintenance, administration, etc.)	3	56%	49%	-7
Web-based technologies (Web2.0, SOA, SaaS, RIAs, Ajax, etc.)	6	47%	53%	6
Specific programming languages (non-MSFT, Java, etc.)	6	44%	46%	2
RF mobile/wireless technology	7	39%	55%	16

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Skills Gaps

Overall: IT Skills in Respondent's Organization	% Important (n=3578)	% Proficient (n=3578)	Gap
Security/firewalls/data privacy	74%	57%	17
General networking, network infrastructure	66%	59%	7
Operating Systems (Linux, Windows, XP, Vista, etc.)	66%	65%	1
Hardware skills/knowledge (including printers, PCs, etc.)	57%	60%	-3
Non-specific server technology (including DB, storage, maintenance, administration, etc.)	57%	49%	8
"Soft" skills (customer service, sales, project management, communication, etc.)	56%	45%	11
Application-level (architecture, design, development, programming, integration, etc.)	54%	47%	7
Specific programming languages (non-MSFT, Java, etc.)	40%	40%	0
Web-based technologies (Web2.0, SOA, SaaS, RIAs, Ajax, etc.)	40%	34%	6
RF mobile/wireless technology	27%	26%	1

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Top Skills Gaps by Economy

- Advanced APEC –
  - U.S., Japan, France, Australia, and Canada -
    - Security
    - "Soft" skills
- Developing APEC –
  - Russia, China -
    - Security
    - Soft Skills
    - Server technology
    - Networking
    - Application-level
    - Web-based technologies

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SME Skills Gaps

- Small-size companies are less proficient in:
  - Security issues
  - General networking/network infrastructure
  - RF Mobile/Wireless technology
  - Operating Systems
  - Non-specific server technology
  - Web-based applications and services

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Skills Gaps by Industry

- Healthcare providers less proficient in:
  - Application-level
  - Programming
- Governments less proficient in:
  - Application-level
  - "Soft" skills
  - RF mobile/wireless
  - Web-based
- Educators less proficient in:
  - "Soft" skills
- IT Services providers less proficient in:
  - Hardware
  - Security

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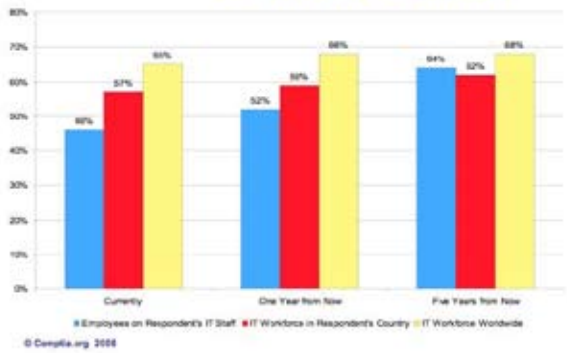
IT Workforce Growth



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IT Workforce Growth by Company Size

- SME's more likely than mid-sized and large companies to say their own IT staff is increasing
  - Average of 20 total IT positions per organization
  - 25% of IT positions are unfilled
- Ease of Recruiting
  - Currently easy - 9%
  - Easy one year from now - 10%
  - Easy five years from now - 12%

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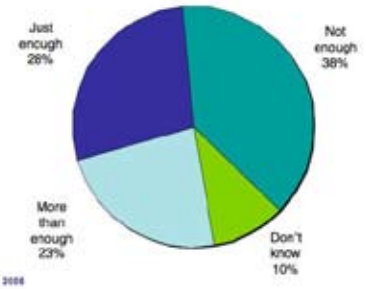
Availability of Qualified Candidates



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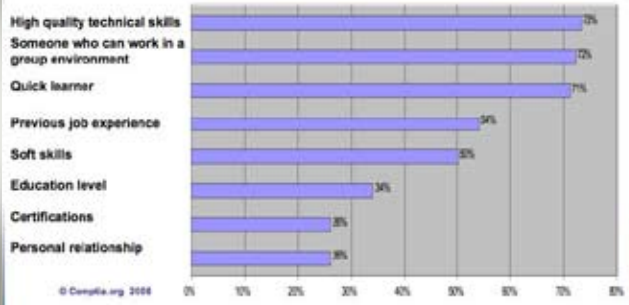
Top Hiring Criteria



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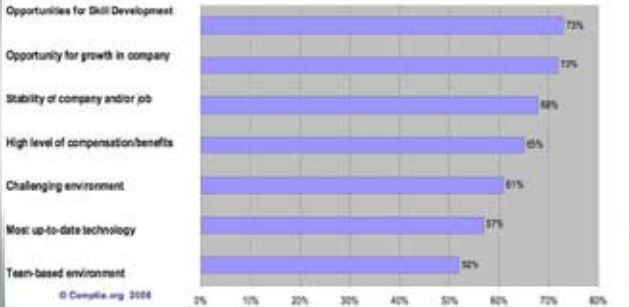
Recommendations for Recruiting

	Overall (n=3578)
Improve salaries and/or benefits	59%
More funding/promotion of skills development	44%
Be more flexible about working hours, locations, conditions	42%
Ensure company has a good reputation	40%
Partner with education institutes to identify promising candidates	33%
Partner with education institutes to improve IT education	32%
Emphasize employees' job security	31%
Streamline/improve internal recruiting process	31%
Have individuals pass a pre-test or screening before interviewing	30%
More marketing/advertising of job openings	26%
Work more closely with recruiters	26%
Recruit in more areas, geographically speaking	20%
Require certification	14%
Work [illegible] trade orgs	11%
Nothing more needs to be done right now	6%

IT Recruitment - What Candidates Want



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Factors Driving Change

Factors: Overall	Currently	One Year from Now	Five Years from Now	Trend
The fast pace of technological change	52%	51%	43%	-9
Budget constraints/costs	51%	40%	30%	-21
Security and compliance	48%	43%	39%	-16
Consumer needs/demand for goods/services	47%	42%	33%	-14
Outsourcing	37%	39%	32%	-5
The convergence of various technologies	34%	42%	37%	3
Increasing globalization	33%	39%	41%	8
The global shift of IT jobs between countries and across the world	32%	36%	41%	9
An increasingly mobile workforce	31%	38%	35%	4
Open Source Software	30%	35%	34%	4
Government policies/leadership of country	27%	32%	31%	4
An aging workforce	21%	22%	45%	24
None of the above	5%	4%	6%	1

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Summary/1

- Security, Networking, and Operating Systems skills are most important, but expected to decline
- Most 'growth of importance' with RF mobile/Wireless technology
- Largest skills gaps in Security, "Soft" skills, and Server technology
- Increases in IT staff expected well into next five years
- Shortage of qualified IT candidates
- Recruiting is not easy
- Employees seek skills development and growth opportunities
- IT managers want organizations to offer more external training to enhance IT skills

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Summary/2

- Majority of managers not confident in filling open positions
- Top current factors driving change: Budget constraints, Fast pace of technological change, Security and compliance, and Consumer needs
- Top changes in factors driving change:
  - Increase: Aging workforce, Global shift of IT jobs, Increasing globalization
  - Decrease: Budget constraints/costs, Security and compliance, Consumer needs
- Top future factors driving change: Aging workforce, Fast pace of technological change, Increasing globalization, Global shift of IT jobs, Convergence of various technologies

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Recommendations

- Emerging APEC Economies: Train and validate via certification to global industry standards in particularly in security and other top skills gap areas, including wireless skills
- Advanced APEC Economies "Soft" skills, working in group environments as well as high-quality technical skills
- All Economies: Align national IT education skilling curricular with industry led standards

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Mr Stephen Lau

Chairman, EDS Hong Kong

In September 2004 Mr Lau was elected as a Director of the Hong Kong Internet Registration Corporation (HKIRC), an organization initiated by the Hong Kong Government to provide market-oriented Internet domain name registration services.

In September 2006, He was elected Chairman of the provisional Board of Governance for the HK IT Professional Certification Scheme, which is being established to advance the professional standards and recognition of IT professionals in selected specialties.

In 1984, Mr Lau was awarded the Member of the British Empire (MBE) for his outstanding service to the Hong Kong Government and the community in the area of information technology.

In 1986, he was made a Distinguished Fellow of the Hong Kong Computer Society. In June 2001, he was made a Justice of the Peace.

With an Adjunct Professorship at the City University of Hong Kong, Mr Lau has a bachelor's degree from the University of Manchester, a master's in computer science from London University, and has completed a senior executive program at the Harvard Business School.

The IT Services Sector in East Asia, Challenges and Opportunities for Growth

Stephen K.M. Lau, Chairman of EDS Hong Kong, was the first Privacy Commissioner for Personal Data for Hong Kong (1996-2001) with responsibility to promote and enforce compliance with The Personal Data (Privacy) Ordinance, which was enacted to provide adequate protection for the use of an individual's personal data in both the public and private sectors.

He is a recognized expert in the impact of technology on personal data privacy, including identity management, electronic commerce and government join-up operations.

Prior to that from 1993 to 1996, Mr Lau was the Managing Director for EDS Hong Kong and Macau, and from 2001-2002 President, Greater China for EDS. Under his leadership, EDS Hong Kong has implemented numerous consultancy and system integration assignments for the Hong Kong Government, including the Immigration Control System and Automatic Passengers Clearance System (e-Channel).

Mr Lau has 30+ years' experience in the information technology and banking industries in both the government and private sectors. He has a long and distinguished career, having held a variety of management positions with International Computer Limited, Citicorp and the Hong Kong Government where he was Head of the Government Data Processing Agency,

Mr Lau is active in professional and community affairs. He holds chairmanships/ memberships of a number of advisory committees of the Government and universities, including the chairmanship of the Department of Information Systems of the City University of HK. In 1997, Mr Lau was appointed to serve as a board member of the Hospital Authority and a Founding Member of the Greater China Project Management Advancement Committee (GPAC).

Mr Lau has been involved particularly in the ICT and data privacy workgroups and APEC is a place where diversity intersects, where creativity and innovation are stimulated. It is also an excellent platform in terms of providing information and exchanging communication among different economies, different places in Asia, from the historical, sociological, and political, to the technological perspective.

His topic is about SMEs in the ICT Industry and Asia's experience.
There is a huge IT service market. The current key is the service, but the service in the sense of foreign assets, the worldwide markets for services meaning: consulting, developing systems, maintenance systems, enhancing systems, managing data centers, system integration, call centers, etc. That totaled US$517 billion in 2008. And in the US, the largest one generated US$162 billion, but this includes all three Americas. In Western and Central Europe there are big figures as well, US$148 billion in IT Services, including the Middle East and Africa. But, the service market in the Asia Pacific is also big and it is growing.
Regarding the demand side: the Asia-Pacific has done very good off-shoring just like people do outsourcing. There are many countries in Asia where people will go specifically for off-shoring, they use human services from an overseas country, for reasons of productivity, costs and calendars.
Australia, New Zealand and Singapore, which are the more developed nations, have a lot of black areas in the chart that was shown, except for "cost", they tend to be more expensive in terms of talents.
China and India also have a lot of black spots in terms of security and privacy. Regarding off-shoring services, India is the undisputed leader, China is the leader's challenger.

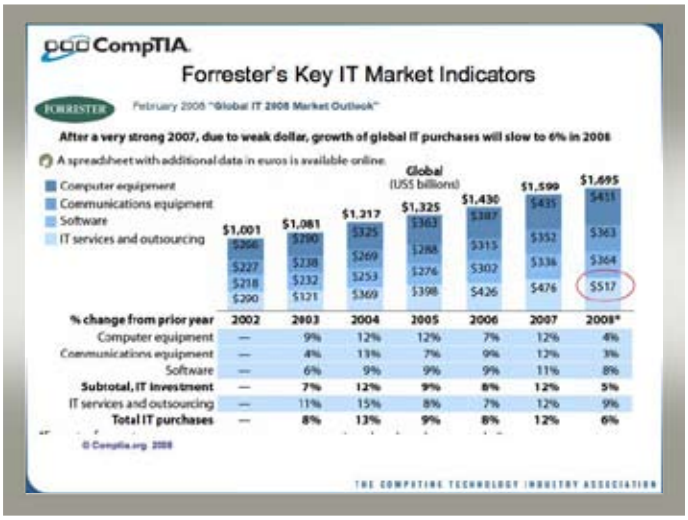
The top four off-shore locations are found in Asia: India, China, Malaysia, and the Philippines. So in all Asian countries, due to the demand in supplies and the size of the market, we have the development of an ICT industry as a teaching tool. SMEs are the backbone of this particular industry in most countries.
The challenges in the Asian countries are the different stages of ICT users. There is a lot of bureaucracy in terms of opening new companies, or in terms of getting investment funds.
The ideal framework for a national support program and for allowing ICT SMEs grow should have three components: infrastructure of the environment, the role of government and the role of industry. Ideally, you should have a good information and telecommunication infrastructure like the one in China. In India, Australia, and Singapore, you have a legal and regulating infrastructure, e-commerce, digital signatures, contact rules, IP, data privacy, outsourcing, there is numerous data flow, a financial data of customers, metric data, that without that protection the trust will not exist. How do you foster entrepreneurial spirit, and how do you minimize piracy and in some cases corruption?

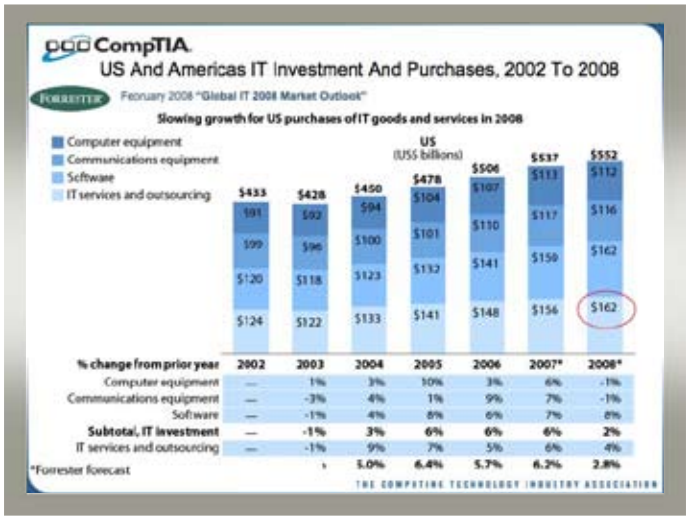
Vision and a national Plan: Qualification is needed, together with free trade agreements, funding incentives and participation of SMEs in government ITC projects.
Also, marketing, promotion, communication, export market intelligence, national and abroad recognition to promote cultural information such as APEC and the OECD.

Education and training: This is regarding the way entrepreneurial business is managed. The role of the industry is similar to that of the government, but they have more flexibility and attract different kinds of dollars for promotion because there are less restrictions in terms of industry, particularly trade associations, and professional bodies.

APICTA: It is the Asia Pacific Information and Communications Technology Awards, a brilliant annual awards systems of the fifteen member economies competing for the best in fifteen categories from students in high school, to universities, to R&D, e-government, e-logistics, security, industry, and start-ups. They recognize the best start-up in Asia among these fifteen nations, which always attract good investment dollars.
Here's an example of a simple interesting policy support program: It's important to have SMEs involved in large contracts.

In Australia, for example, "for large government ICT contracts, a certain percentage of these contracts should be attributed to SMEs."
Japan is interested in having knowledgeable retirees advice on business strategies for start-ups, because they tend not to be taken as family business.
Singapore has dedicated offices overseas and so has Korea. There is also a branding program in Singapore, and Malaysia, has a very good plan that matches them with investment capital.





US And Americas IT Investment And Purchases, 2002 To 2008 (Cont.)

February 2008 "Global IT 2008 Market Outlook"

Strong 2004 to 2007

A spreadsheet with additional data is available online.

% change from prior year	2002	2003	2004	2005	2006	2007*	2008*
Computer equipment	—	0%	17%	18%	11%	13%	4%
Communications equipment	—	3%	18%	18%	18%	14%	10%
Software	—	8%	16%	9%	13%	11%	8%
Subtotal, IT investment	—	**3%**	**17%**	**16%**	**14%**	**13%**	**8%**
IT services and outsourcing	—	21%	15%	17%	16%	14%	7%
Total IT purchases	—	**9%**	**17%**	**16%**	**15%**	**13%**	**8%**

*Forrester forecast

(numbers have been rounded)

THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

IT Investment And Purchases, 2002 To 2008

February 2008 "Global IT 2008 Market Outlook"

Dollar/euro currency effects boost 2007 Western European IT purchases in US dollars

A spreadsheet with additional data in euros is available online.

% change from prior year	2002	2003	2004	2005	2006	2007	2008*
Computer equipment	—	7%	11%	7%	6%	15%	2%
Communications equipment	—	4%	18%	4%	9%	16%	4%
Software	—	16%	14%	6%	10%	12%	8%
Subtotal, IT investment	—	**9%**	**14%**	**6%**	**8%**	**10%**	**5%**
IT services and outsourcing	—	20%	19%	6%	6%	13%	7%
Total IT purchases	—	**12%**	**16%**	**6%**	**7%**	**15%**	**5%**

*Forrester forecast

THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

IT Investment And Purchases, 2002 To 2008

Feoruary 2008 "Global IT 2008 Market Outlook"

Double-digit US dollar growth in IT purchases continues in Eastern Europe, the Middle East, and Africa

A spreadsheet with additional data in euros is available online.

% change from prior year	2002	2003	2004	2005	2006	2007	2008*
Computer equipment	—	19%	22%	22%	17%	16%	15%
Communications equipment	—	13%	39%	29%	16%	14%	13%
Software	—	33%	29%	22%	19%	15%	12%
Subtotal, IT investment	—	**19%**	**30%**	**25%**	**17%**	**15%**	**13%**
IT services and outsourcing	—	26%	27%	18%	16%	15%	15%
Total IT purchases	—	**21%**	**29%**	**22%**	**17%**	**15%**	**14%**

*Forrester forecast

(numbers have been rounded)

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THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

IT Services Market in AP Big and Growing

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THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

Asia Pacific IT Investment And Purchases, 02 - 08

February 2008 "Global IT 2008 Market Outlook"

A spreadsheet with additional data is available online.

% change from prior year	2002	2003	2004	2005	2006	2007	2008*
Computer equipment	—	22%	20%	15%	9%	15%	7%
Communications equipment	—	18%	19%	12%	6%	13%	4%
Software	—	15%	15%	16%	14%	15%	9%
Subtotal, IT investment	—	**19%**	**19%**	**14%**	**9%**	**14%**	**7%**
IT services and outsourcing	—	19%	18%	7%	8%	18%	16%
Total IT purchases	—	**19%**	**19%**	**12%**	**9%**	**15%**	**9%**

*Forrester forecast

(numbers have been rounded)

THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

Outsourcing Trends in the Asia-Pacific Region

Worldwide Offshore IT Services Spending by Importing Region, 2005–2010 ($M)

	2005	2006	2007	2008	2009	2010	2005–2010 CAGR (%)
United States	10,334	12,214	14,482	17,210	20,298	23,869	17.00
Growth (%)	NA	17.5	18.8	18.8	17.9	17.6	
Canada	146	155	165	175	185	195	6.0
Growth (%)	NA	5.9	6.4	6.2	5.7	5.5	
EMEA	2,275	2,726	3,212	3,756	4,269	4,889	15.6
Growth (%)	NA	19.8	17.8	17.0	13.7	11.0	
Asia/Pacific	290	338	439	554	699	862	25.0
Growth (%)	NA	16.3	29.9	26.2	23.9	23.3	
Total	13,045	15,433	18,296	21,707	25,362	29,464	17.6
Growth (%)	NA	18.3	18.6	18.6	16.8	16.2	

Notes

Total spending includes the six IDC IT services foundation markets measured in this report: application management, custom application development, IT consulting, software as a service, IS outsourcing network and desktop outsourcing and systems integration.

Source: IDC 2006

THE COMPUTING TECHNOLOGY INDUSTRY ASSOCIATION

AP IT Services Market Size – Economies Specific (US$M)

Region	Geography	Country_Cluster	Country	2005	2006	2007	2008	2009	2010	2011	Grand Total
Asia Pacific	ANZ	ANZ	Australia	12,321	12,845	13,919	14,430	14,964	15,523	16,106	100,108
			New Zealand	1,266	1,372	1,518	1,574	1,633	1,694	1,759	10,816
		ANZ Total		13,587	14,217	15,437	16,004	16,596	17,217	17,864	111,023
	ANZ Total			13,587	14,217	15,437	16,004	16,596	17,217	17,864	111,023
	Asia	Greater China	China	4,489	5,133	5,963	6,903	8,024	9,330	10,845	50,693
			Hong Kong	1,317	1,398	1,493	1,600	1,719	1,852	1,998	11,377
			Taiwan	1,683	1,720	1,780	1,850	1,925	2,006	2,093	13,058
		Greater China Total		7,489	8,251	9,219	10,354	11,668	13,188	14,961	75,129
		India	India	2,967	3,773	4,642	5,669	6,854	8,273	9,919	42,096
		India Total		2,967	3,773	4,642	5,669	6,854	8,273	9,919	42,096
		Japan	Japan	82,765	83,265	87,588	92,162	96,382	100,580	104,825	647,567
		Japan Total		82,765	83,265	87,588	92,162	96,382	100,580	104,825	647,567
		SE Asia	Malaysia	974	1,037	1,101	1,179	1,269	1,368	1,480	8,407
			Other Asia Pacific	730	761	811	863	920	981	1,047	6,113
			Philippines	159	165	176	188	200	213	226	1,329
			Singapore	2,104	2,202	2,330	2,783	3,059	3,368	3,704	19,851
			Thailand	698	788	851	1,004	1,134	1,294	1,478	7,198
		SE Asia Total		4,665	5,054	5,529	6,015	6,581	7,225	7,937	42,987
		South Korea	South Korea	9,400	10,845	11,918	12,753	13,636	14,515	15,408	88,477
		South Korea Total		9,400	10,845	11,918	12,753	13,636	14,515	15,408	88,477
	Asia Total			107,286	111,147	118,876	126,953	135,121	143,783	153,050	866,716
Asia Pacific Total				120,873	125,405	134,313	142,958	151,717	160,999	170,915	1,007,280

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Source: EDS GMI Corporate Database, 2007 (Gartner)

Worldwide IT Services Market User Spending by Region, 2002-2011 (Millions of Dollars)

	2002	2006	2011	CAGR (%) 2002-2006	CAGR (%) 2006-2011
North America	238,468	290,910	415,166	5.1	7.4
Western Europe	152,889	216,732	306,159	9.1	7.2
Japan	66,551	83,637	99,971	5.9	3.6
Asia/Pacific	28,238	42,789	69,843	10.9	10.3
Latin America	17,011	25,267	50,332	10.4	14.8
Eastern Europe	4,035	5,497	8,266	8	8.5
Middle East and Africa	6,543	9,272	14,651	9.1	9.6
Total	513,734	674,104	964,389	7	7.4

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Source: Gartner (September 2007)

AP offers good offshoring locations

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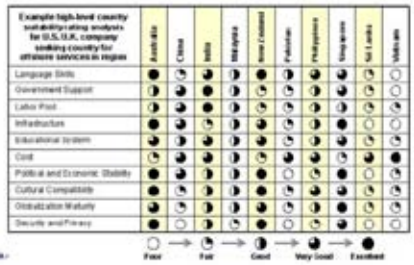
Gartner's 10 Leading Locations for Offshore Services in Asia Pacific



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Gartners 10 Leading…

- **Key Findings**
- While India is the undisputed leader for offshore services and China the leading challenger, there are a number of emerging countries with attractive cost structures, such as Malaysia, the Philippines and Viet Nam
- Mature countries, such as Australia, New Zealand and Singapore, rate highly on non-cost and labor market factors and are good candidates for niche services requiring a depth of experienced staff.

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The A.T. Kearney Global Services Location Index

- The A.T. Kearney Global Services Location Index analyzes the top 50 services locations worldwide against 41 measurements in three major categories: cost, people skills and availability, and business environment.

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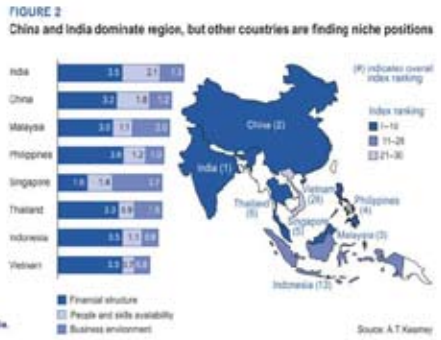
East Asia are good offshoring locations



ICT Industry in East Asia

- All countries have identified the development of ICT industry as a strategic tool for economic growth
- SMEs are the majority and backbone of the national economy, and the ICT industry is mainly SMEs.

ICT Industry contribution to GDP

- Malaysia 5.7% (2006)
- Australia 8% (2004)
- Singapore 6% (2006)
- Viet Nam 3% (2004)
- Japan 2.89% (2006) (only IT Services)
- India 5.5% (2008)

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National Program to Grow ICT SMEs in East Asia

- All countries have related programs.
- Referencing Australia, Hong Kong China, India, Indonesia, Japan, Malaysia, Thailand,
  Viet Nam, Singapore.

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Challenges for East Asian Countries

- Different stages of ICT usage and penetration (infrastructure, legal framework)
- The ICT Program lacks performance targets and focus
- Bureaucracy
- Cultural issues (entrepreneurship, service concept, piracy, corruption)
- Lack of national symbol nor sizable organisations to effectively compete internationally

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Food For Thought

The Ideal Framework for an

Effective National Program

to Support and Grow ICT SMEs

Ideal Framework

- Infrastructural Environment
- Role of Government
- Role of Industry

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Ideal Framework
Infrastructural Environment

- Information and Telecomms Infrastructure
- Legal and regulatory infrastructure
  - eCommerce, IP, data privacy, contract
- Conducive Business Environment
- Cultural
  - Fostering entrepreneurial spirit, minimisation of piracy and corruption

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Ideal Framework
Role of Government

- Vision and a National Plan
  - Quantitative timeline and performance targets, focussed technologies and markets, funding and resources
- Promote conducive Business Environment
  - Free trade agreements, simple biz registration, tax and funding incentives for foreign investment and start-ups, foster MNC/SME partnership, tech/software parks, effective participation of SMEs in government ICT projects, foster commercialisation and export
- Legal Enforcement
  - Piracy/IP, corruption, data privacy breaches

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Ideal Framework
Role of Government

- Marketing/Promotion/Communications
  - Export market intelligence, national and international awards and recognition, trade delegations and business matching, conduit for information for regional/inter bodies, APEC, OECD, Asean
- Quality and Standards
  - Encourage the adoption of quality ISO/CMM certfications, and international technical standards to ensure interoperability.
- Education and Training
  - Managing an entreprenurial business, IP , IT as a career and nurturing the ICT professionals

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Ideal Framework
Role of Industry

- Networking/collaboration of SMEs
- Collaboration of SMEs and MNCs
- Conferences and seminars
- Awards and recognition
- Professional development and IT as a career
- Mentoring
- Regional and international networking
  - ASOCIO, APICTA

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APICTA
Asia Pacific Information and Communications Technology Awards

- APICTA, the Asia Pacific Information and Communications Technology Awards, is a regional awards program providing networking and product benchmarking opportunities to ICT innovators and entrepreneurs in the region.
- The Award is designed to stimulate ICT innovation and creativity, promote economic and trade relations, facilitate technology transfer, and offer business matching opportunities via exposure to venture capitalists and investors.
- Its 16 member economies include Australia, Brunei Darussalam, China, Hong Kong SAR, India, Indonesia, South Korea, Macau SAR, Malaysia, Myanmar, Pakistan, Philippines, Singapore, Sri Lanka, Thailand and Vietnam

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APICTA

- 16 Categories of Award
  - eGovernment
  - eLearning
  - Tertiary Students
  - Communications
  - eLogistics
  - Tools and Infrastructure
  - eHealth
  - Start-Ups
  - eInclusion and eCommunity
  - Secondary Students
  - Tourism and Hospitality
  - Financial Industry Apps
  - Security
  - R & D
  - Industry Apps
  - Media and Entertainment

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Sample interesting policy support

- Australia -**ICT procurements of $20 million and above**
- For ICT contracts of $20 million and above, Australian Government agencies are to include a minimum target level for SME participation ranging between 10-20 per cent of the contract value, depending on the proportion of hardware and software/services (10 per cent for hardware, 20 per cent for software/services).

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Sample interesting policy support

Japan – matching **knowledgeable retirees** to advise on business strategy, which tends to be lacking in SMEs through a retirees' database.

Singapore – IDA has **dedicated office overseas** (China, US, India, MEast)

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Sample interesting policy support

Singapore – a branding program

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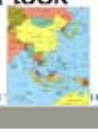
Some closing observations

- Program should monitor and provide performance measures, success stories
- Government-industry partnership is a key ingredient for effectiveness
- Aim to grow SMEs to achieve critical size to compete internationally
- There is no quick magic bullet (India took 25 years to be where it is)



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Mr Paul Corson

US Department of Commerce

"The Innovation Challenge – The U.S. Experience"

Paul J. Corson is the Chief of Staff and Senior Policy Advisor to the International Trade Administration's Deputy Assistant Secretary for Europe and Eurasia at the U.S. Department of Commerce.

Mr Corson manages the operations of a team responsible for eliminating foreign trade barriers and ensuring market access for U.S. firms in over 50 countries and territories.

Mr Corson also leads an initiative exploring the policy environment for entrepreneurship and innovation in the United States and abroad.

Previously, Mr Corson held a number of senior management positions for SMEs in the United States, the Caucasus and Central Asia.
Prior to joining the Department of Commerce, Mr Corson managed operations for TFI International, a general construction, personnel and services company operating in Central Asia.

From 1998-2003, Mr Corson helped launch an international telecommunications start-up.
He managed domestic and international operations, as well as strategic partnerships in Africa, Asia, Latin America & the Middle East.

Mr Corson holds an MA in International Relations from The George Washington University.

Mr Paul Corson wanted to reinforce the audience's own innovative thoughts and ideas, relate their work and needs to the world of public policy, and challenge the audience to engage with their own policymakers.

Quoting the Prime Minister of Slovenia, Corson said that, in order to progress, one has to think creatively and act bravely.

"As policy makers and working with entrepreneurs and innovators, we ourselves, need to think like those we seek to serve and to act more like those we seek to serve".

In many countries, SMEs represent over 95% of enterprises and generate almost two-thirds of the private sector jobs. From 1990 to 2003, SMEs in the United States created more net new jobs than larger enterprises.

Policymakers must keep in mind the special needs and concerns of as SMEs as they seek to foster economic growth. Three important responsibilities including: promoting innovation, creating a supportive legal and regulatory environment, encouraging entrepreneurship, and capital formation.

Innovation. Corson noted how in a world of constant change, being unique is not unique anymore. Despite that there are still innovators among us.

Those innovators create new products new services, and they captivate the mind and they exert the soul.

He described an innovative public-private partnership whereby companies donated unused intellectual property to one American state.

The state then offered for free the rights to develop businesses based on the IP to those willing to build local businesses and create local jobs.

Legal and regulatory environment. Corson stated that investors and SMEs alike are looking for governments to protect copyrights and patents, create good stable tax structures, and ensure fair legal systems based on the rule of law.
The United States actively supports the creation and maintenance of pro-entrepreneurship, pro-innovation business environments around the world.

Capital formation. Corson quoted a Japanese entrepreneur who said, "money will go anywhere, if there is a good deal and good opportunity, money will follow or will come".
Whether in Chiclayo or elsewhere, Corson stressed the importance of creating policy environments that support capital formation.

He offered the example of an American state that attracted large amounts of R&D and venture capital investment because of its willingness to change existing policies, think creatively and act bravely.

trade.gov

INTERNATIONAL TRADE ADMINISTRATION

The Innovation Challenge

Paul J. Corson
Office of Europe
U.S. Department of Commerce
27 August 2008

Our Challenge

trade.gov

"In order to progress, one has to think adventurously and act bravely."

Slovenia PM Janez Jansa

Importance of SMEs

trade.gov

2/3s of Economic Activity

SMEs

95% of Enterprises

60-70% of Employment

Key Characteristics

trade.gov

Innovation

Economic Growth

Legal & Regulatory Environment

Capital Formation

World View

trade.gov

(U.S. Department of Defense)

Contrasting World View

trade.gov

(The World Islands, Nakheel Corp)

World View from Washington DC

trade.gov

Innovation

trade.gov

"For Singapore to maintain its competitive edge, we need to keep innovating and bringing new ideas and products to the market. Being entrepreneurial is key to doing so."

Mr. Teo Ming Kian
Chairman of the Economic Development Board, Singapore

Capital Formation

trade.gov

"Money is human kind's greatest invention. Money doesn't discriminate. Money doesn't care whether a person is poor, whether a person comes from a good family, or what his skin color is. Anybody can make money."

Tekafumi Horie
Japanese Entrepreneur

Legal & Regulatory Environment

trade.gov

"When it comes to creating the perfect venture capital ecosystem, it's not quite enough for a country to have large accessible markets and high caliber entrepreneurs…Investors are looking for governments that protect copyright and patents, encourage importing and exporting, have good stable tax structure and a fair legal system."

Deloitte
Global Trends in Venture Capital 2008 Survey

A Child's View

trade.gov

(Play Doh Hasbro)

Contacts

trade.gov

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Mr Fabio De Paula

Intel

"Promoting Innovation: R&D, Venture Capital and IP"

Promoting Innovation: R&D, Venture Capitaland IP

Fabio joined Intel Capital in 2001. He brings 20 years of IT and Telecom expertise in Brazil. The last 8 years in venture capital and private equity experience. Having completed 12 deals in 7 different companies with Intel Capital he also brings another 12 years of solid experience in companies like Lucent Technologies, Booz Allen & Hamilton, and IBM, representing these US corporations in areas such as coordination of highly complex projects, strategic consulting, sales and marketing, and engineering. Fabio was also a founding managing partner of South Net, a leading LAR Internet incubator affiliated from Southern Cross Private Equity to form new companies in the Internet boom period. Fabio is board observer for TelecomNet/Ativi, Spring Wireless, Yavox, Infoserver, and Neovia. He has also invested in and managed exit in Sysgold (acquired by Spring Wireless). Fabio has a B.S. in Electronic Engineering from University of São Paulo, a B.A. extension from FGV, and a MBA from University of Chicago.

Innovation is a way to develop the competitive countries. It is a crystal catalyst that transforms the intellectual capital and entrepreneurship into economic development.

The essential factors for accelerating the system for the Venture Capital (VC) Industry, are the actions governments can take regarding tax incentives, generating the environment for industry growth in terms of laws, reducing the bureaucracy, opening companies to the global market, creating the right macroeconomic environment and public support. Other key factors are also, of course, the technological innovation, the rules of the commercialization of intellectual property, unique financial capital in outer states of the company, and anchoring states, to provide money to help support a company or for start-ups. There is a need for supporting networks for the industry, and the government can influence in all the vectors with significant, and simple policies to support all these vectors in order to accelerate the process.

There is much to be done regarding IP commercialization, and bring R&D into the universities. Use the intellectual property to become a new company or become an enterprise with trade opportunities in the market. The formation of a new technology-based company, the availability of investment in the several stages of the company's growth and the access to long-term financing.

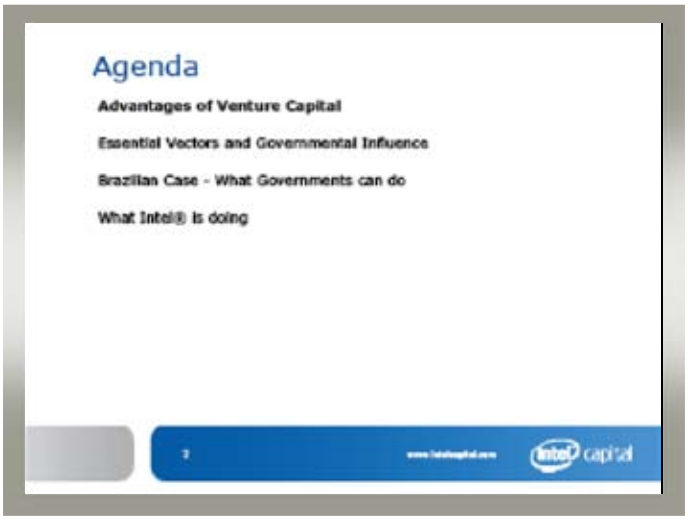
Generally, it is the human capital that needs to be developed. The financial capital and having the right environment, to provide these things in order to grow and to accelerate innovation, enterprising and capital must match and these elements become interconnected.

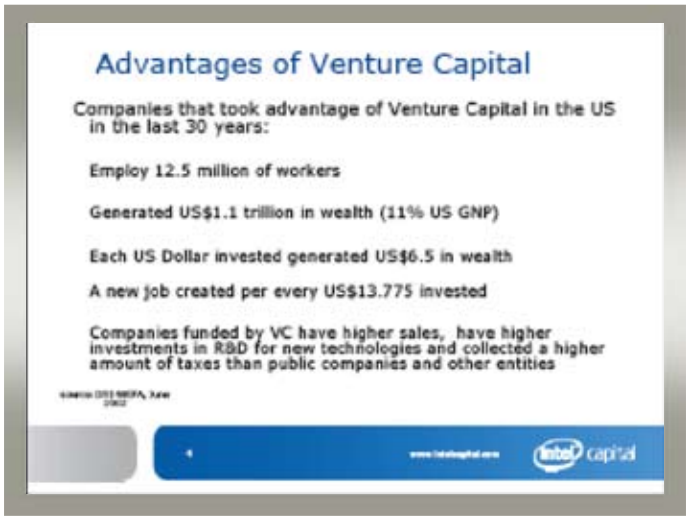
Innovation is a cycle. When someone creates something that starts in the R&D of the company or of a university, you need entrepreneurship in order for someone to transform that new intellectual property into something that can be used by the society.

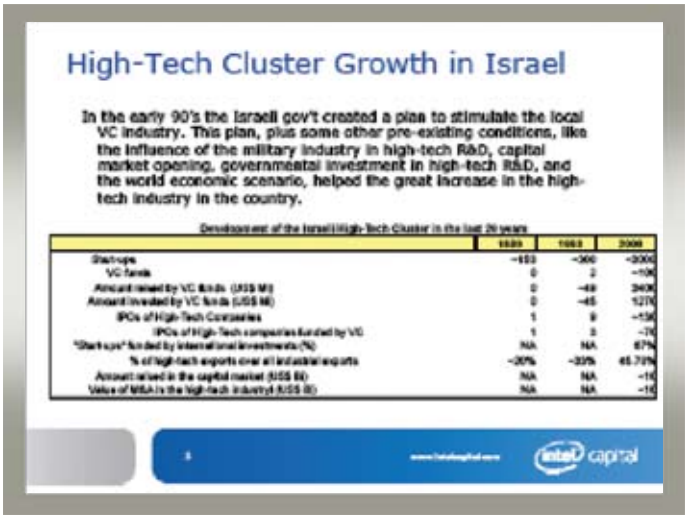
You need to create companies and you need these companies to be successful throughout the different stages. Companies need capital, especially human capital. They need entrepreneurs, people with a good formation, people that can help with the management of these companies and make the company successful. This whole cycle creates the innovation cycle. The larger the successful storage of data, the more you need to feed into the cycle, the more entrepreneurs willing to take the risk to form a new company, the more people are willing to fund R&D, the more investors willing to invest in the company and promote their growth. Regarding the Brazilian case, we brought the attention of the VC industry. Brazil has nowadays a total of US$16.7 billion in total commitments, 163 funds and many portfolio companies from these funds that are developing. There was an unprecedented investor interest from 2004 to 2007 and the industry grew almost threefold in that period. That was the result, of the microeconomic environment, but also, a lot of government initiatives and polices.

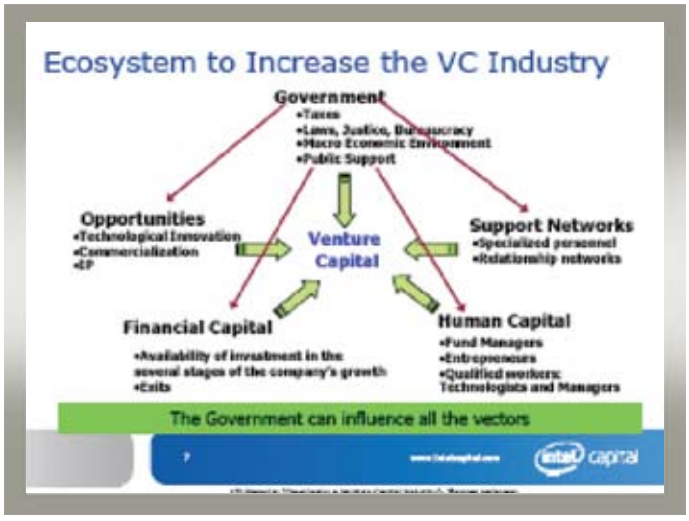
The polices were in/out of the five vectors, and there was plenty of promotion regarding the creation of CIF funds generated by government agencies. The idea was to get government resources to promote the creation of new venture capital funds in different states, to promote the informatics law, to provide tax incentives for the companies, to give rebates for investments and R&D, to promote the innovation law, give tax incentives to retail companies, to sell IT products. The Brazilian Development Bank (DNGS) created reasonable funds aimed for small and medium sized technology companies, and is also creating a later stage of that program called "Friends of Funds" with a focus in active industry funds, and many other initiatives. In 2003, we presented the five vectors of the problems and how to attack the problems to help to cross a VC and innovation industry and they were, different actions and locations, an entrepreneur new culture, IT

commercialization, the creation of new technology companies, the different stages of financial capital and there has been significant improvements in all of these vectors during these last three years. The Brazilian case is a success, this is why we have been investing in Latin American companies, we have been helping to visualize entrepreneurs, and to look out for funds that were created from this FINAP program. We have created a program in education in Brazil, Capital and Intel in order to acquire the rights for the entrepreneurship curriculum from Berkeley University in the US, and we are using that curriculum distributed to different universities around the world. We also created a sponsored business plan together with the program that is being held in different parts of the world. The objective is to promote entrepreneurship, bringing an entrepreneurship curriculum to Latin American Universities, to promote entrepreneurship in the region. We have been supporting multiple initiatives from government, universities, NGOs like Endeavor.









Agenda

Advantages of Venture Capital

Essential Vectors and Governmental Influence

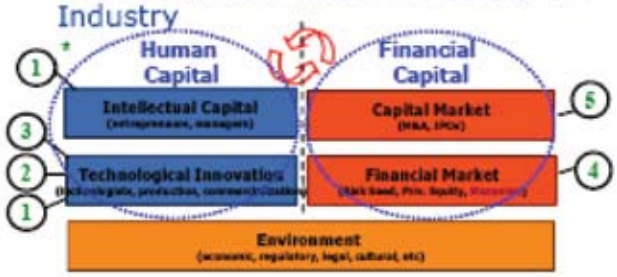
Brazilian Case - What Governments can do

What Intel® is doing

Priorities to Boost Investments

1. Education and Entrepreneurship Culture
2. IP commercialization
3. Formation of new technology-based companies
4. Availability of investments in the several stages of the company's growth
5. Exits and access to long-term financing

Necessary Elements to a Healthy VC Industry

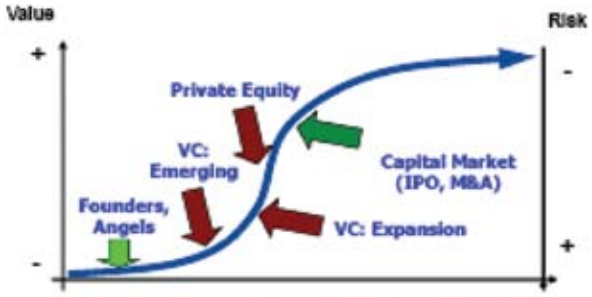


Innovation, Enterprising and Capital must match (money is just one of the elements)

All these elements are interconnected (not independent)

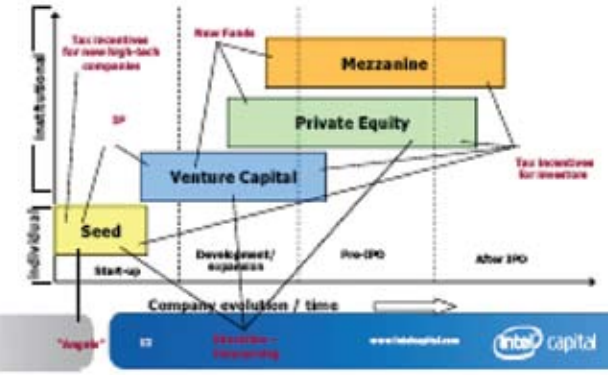
* Priorities same as the previous slide

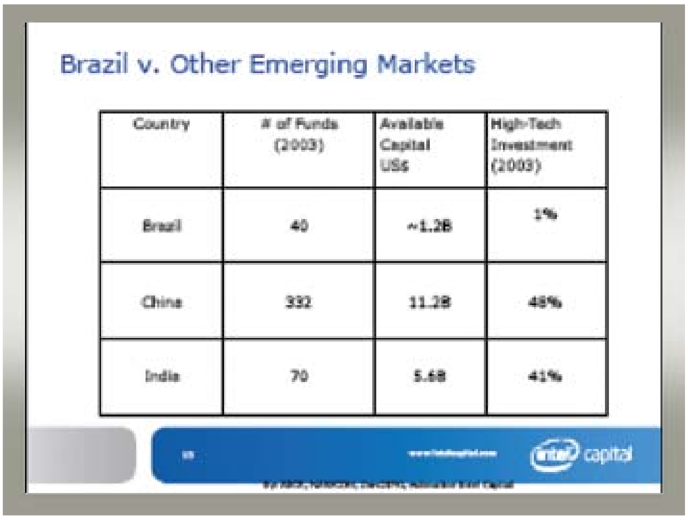
Investment Cycle: Investors vary in each development stage of the company



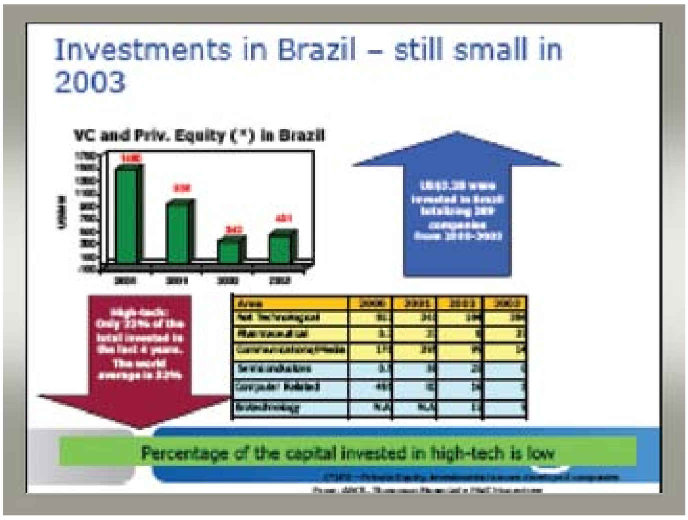
Necessary Elements (another approach)

Priorities in the different development stages

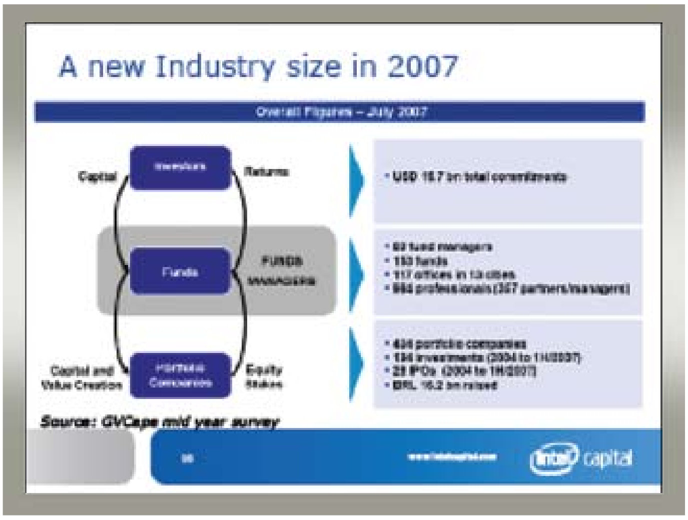


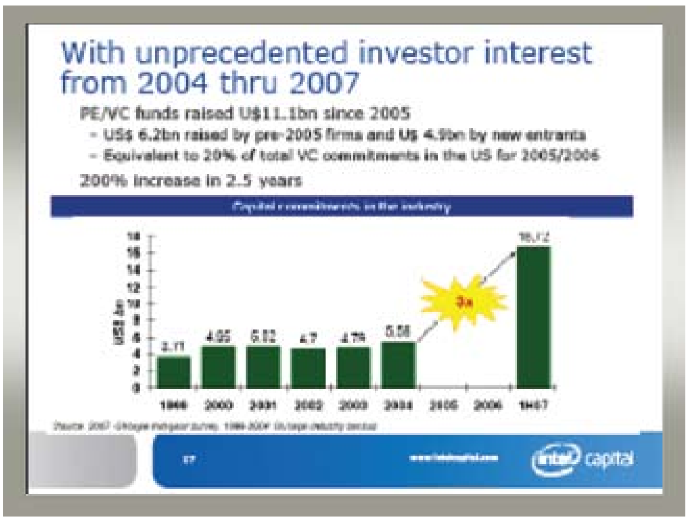


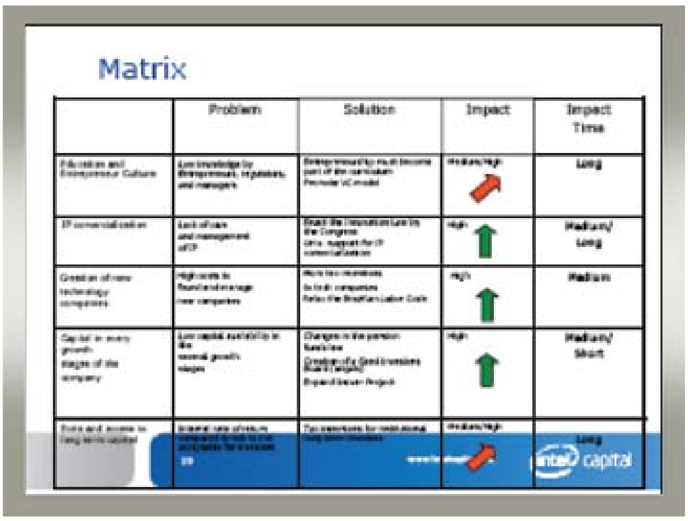
Country	# of Funds (2003)	Available Capital US$	High-Tech Investment (2003)
Brazil	40	~1.2B	1%
China	332	11.2B	48%
India	70	5.6B	41%



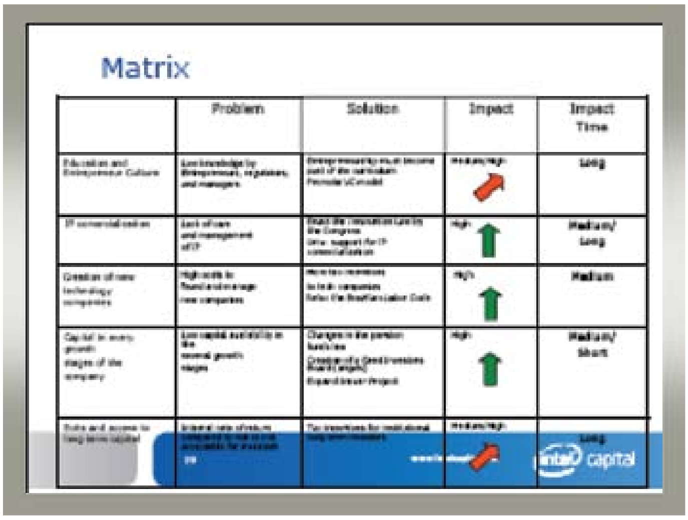
Area	2000	2001	2002	2003
Net Technological	[illegible]	[illegible]	[illegible]	[illegible]
Pharmaceutical	[illegible]	[illegible]	[illegible]	[illegible]
Communications/Media	[illegible]	[illegible]	[illegible]	[illegible]
Semiconductors	[illegible]	[illegible]	[illegible]	[illegible]
Computer Related	[illegible]	[illegible]	[illegible]	[illegible]
Biotechnology	N.A	N.A	[illegible]	[illegible]

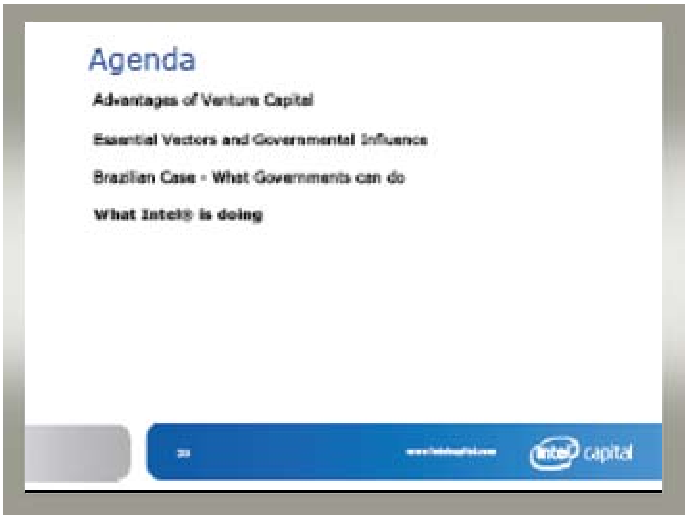






	Problem	Solution	Impact	Impact Time
[illegible]	[illegible]	[illegible]	[illegible]	Long
[illegible]	[illegible]	[illegible]	High	Medium/ Long
[illegible]	[illegible]	[illegible]	High	Medium
[illegible]	[illegible]	[illegible]	High	Medium/ Short
[illegible]	[illegible]	[illegible]	[illegible]	Long


Matrix
Problem
Solution
Impact
Impact Time
Long
Medium/ Long
Medium
Medium/ Short
Long
capital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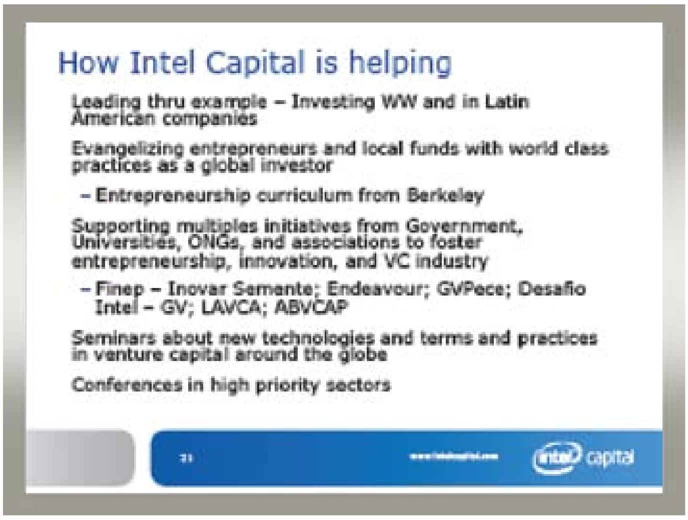
How Intel Capital is helping
Leading thru example – Investing WW and in Latin American companies
Evangelizing entrepreneurs and local funds with world class practices as a global investor
– Entrepreneurship curriculum from Berkeley
Supporting multiples initiatives from Government, Universities, ONGs, and associations to foster entrepreneurship, innovation, and VC industry
– Finep – Inovar Semente; Endeavour; GVPece; Desafio Intel – GV; LAVCA; ABVCAP
Seminars about new technologies and terms and practices in venture capital around the globe
Conferences in high priority sectors
capital


Thank you, Gracias, Obrigado !
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Intel Capital - Latin America
intel capital

Mr Urs Gasser

Faculty Fellow Harvard University

Dr Urs Gasser is the executive director of the Berkman Center for Internet & Society at Harvard University. Before joining Harvard, he served as an associate professor of law at the University of St. Gallen (Switzerland), where he directed the Research Center for Information Law.

Urs Gasser's research and teaching focuses on information law and policy and the interaction between law and innovation. Current research projects – several of them in collaboration with leading research institutions in the U.S., Europe, and Asia – explore policy and educational challenges for the future generation of digital natives, the regulation of digital media and technology (with emphasis on IP law), ICT interoperability, the institutional settings for fostering entrepreneurship, and the law's impact on innovation and risk in the ICT space.

Mr Gasser is a graduate of the University of St. Gallen (S.J.D. 2001, J.D. 1997) and Harvard Law School (LL.M. 2003). For his academic work, he has received several awards, including Harvard's Landon H. Gammon Fellowship for academic excellence and the "Walther Hug-Preis Schweiz", a price for the best doctoral theses in law nationwide, among others.

He has published and edited, respectively, six books and has written over 60 articles in books, law reviews, and professional journals. Publications within the last two years have included a study on ICT interoperability and eInnovation, an article on search engine regulation and an extensive comparative legal study on anti-circumvention legislation. He is the co-author (with John Palfrey) of Born Digital: Understanding the First Generation of Digital Natives (Basic Books, New York 2008), which is being translated into eight languages, including Chinese and Russian.

Dr Gasser frequently acts as a commentator on comparative law issues for the US and European media. He is also an advisor to international technology companies on information law matters.[5]

Mr Gasser reported on the findings of a transatlantic study on ICT Interoperability and E-innovation. This study has been conducted by the Research Center for Information Law at the University of St. Gallen and the Berkman Center for Internet & Society at Harvard Law School. The key questions and the context of the study are: how can innovation be promoted in the digital age? And, what's the role of governments to support innovations in the ICT environment?

The starting point is the notion that the increased levels of interoperability lead to more innovation. And in fact, the Internet itself can be seen as the ultimate interoperable system, as a network or networks that basically tie together different systems that have not been able to interoperate in the first place, but now create a much larger interoperable system. The three questions driving the study were:

1. What is ICT interoperability? What does it mean?
2. Is interoperability a policy goal? What are the advantages and disadvantages of interoperability in the ICT space?
3. What are the means to achieve higher levels of ICT interoperability? When do we conclude it is a sound a policy goal?

In my presentation, I will focus on the third question: how can higher levels of interoperability be achieved? And, what can governments do to work toward a more interoperable framework? First, let me outline the underlying method of our report, which was based on three case studies. The first case study addressed the interoperability problem in the context of digital rights management systems. Digital rights management systems play an important role in digital content such as music or movies.

The second case study was on digital identity systems, one of the applications will be national identity cards for citizens in electronic format.

The third case study focused on mash-ups as a subset of web services, something that was mentioned in Michael Mudd's presentation in regards to the growing importance of the web-based services and these kind of tools.

Based on the three case studies, we can conclude a number of things. First, interoperability means different things in different contexts. I'll give you just two examples so that we know what we're talking about. If you buy a song on iTunes, you cannot play this song on any other player than the iPod. This is one case where we diagnose a lack of interoperability.

A second finding of our study is that interoperability is not only about technical issues. ICT Interoperability also has a human factor. Whether in the area of digital music distribution, identity cards, or mash-ups, there are always users who interact with technology and content.

The third and probably key finding of our research is that, in most instances, more ICT interoperability leads to more innovation. I would like to give you one practical example: When Facebook opened up its APIs, thousands of new applications were written by programmers around the world. However, there are exceptions in which a higher levels of interoperability don't necessary foster innovation.

In our study, we offer a number of explanations for the postive effects of interoperability on innovation. Competition theory is one area where we can find support for our hypothesis. An increase in interoperability reduces market entry barriers. Lower market entry barriers mean that entrepreneurs can more easily enter the market to compete with incumbent players. Increased competition, in turn, is good for innovation.

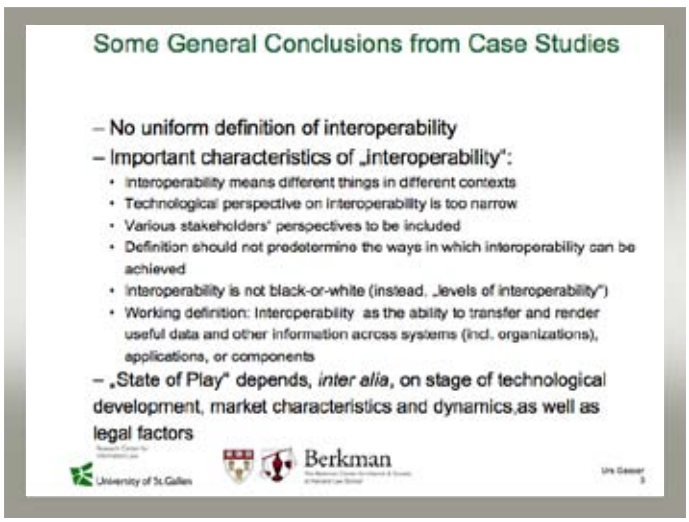
A forth finding of our research is that ICT interoperability comes with costs. For instance, higher degrees of interoperability might trigger privacy concerns. More interoperable systems have

[5] *Official Website of the Berkman Center for Internet and Society at Harvard University, 2009. Urs Gasser. URL: http://cyber.law.harvard.edu/people/ugasser*

arguably more access points to data, to information and that increases the vulnerability of the system as such. There are several other potential drawbacks.
On balance, however, the study concludes that a higher level of ICT interoperability should indeed be a public policy goal. But we alos need to keep in mind that interoperability is not an end in itself, but rather a means to achieve certain goals, including innovation and user autonomy.

The third part of our research tried to gain a better understanding of how higher levels of interoperability can be achieved. The results can be summarized in a sort of a road map for policy makers and for governments. We propose that in the first step, when governments think about ICT interoperability and innovation, it is important to define the actual policy goal that is pursued or problem that needs to be solved. Interoperability as such is not a goal but a means to get somewhere, to get more autonomy or to get more competition or to foster innovation. Second, we advise governments to consider all the facts of the situation – including, for instance, the maturity of the technology, the market environment, the incentive structure of the key stakeholders, etc.

In the light of these facts and goals, policy-makers should then select the best tools to solve this particular problem. It's important to understand that a broad range of different tools and approaches (incl. IP licensing, open standards, but also mandating standards or the use of procurement power) can be used to work towards higher levels of interoperability, and each tool has its own characteristics, strengths, and weaknesses. In many instances, not one single approach, but rather a blended approach might be the appropriate choice to achieve higher levels of interoperability. As a generally matter, however, we believe that private actor driven approaches to interoperability are more suitable than government-based approaches. However, this doesn't suggest that governments don't have an important role to play. In any event, governments can play a very important role as conveners, especially, when it comes to standards setting initiatives. There is a lot of discussion about the importance of standards, and experience shows that governments can in fact facilitate the creation of such standards as core building blocks of a more interoperable ecosystem.



Potential Benefits (1/3): Innovation & Competition

– Hypothesis: Interoperability is good for innovation
– Strong anecdotal evidence that high levels of interoperability have led to innovation:
- Email as prime example of the „generative internet"
- Facebook-apps as examples of „user-driven innovation"
- New business models emerge, e.g., due to interoperable ID systems

– Theoretical basis and concepts (ICT-context)
- Zittrain's „generative internet" (technology's capacity to generate change)
- Von Hippel's „user-driven innovation" (users, not R&D departments)
- Innovation as „incremental improvements" (a la Christensen)

– However: Impact on „radical" innovation less clear
→ Interoperability can negatively affect certain types of innovation (see next slide)

Pro Memoria: Potential Drawbacks

– Increased vulnerability of components or systems due to increased number of access points to data

– Privacy risk as a consequence of increased complexity of interoperable systems and increased access to such systems

– Achieving interoperability, especially via government-led top-down approaches, might adversely affect business models that are built upon lock-in (e.g. iTunes - iPod)

→ Mostly (important) implementation problems, not arguments against interoperability

Potential Benefits (2/3): Innovation & Competition

– Support in competition theory: Interoperability leads to increased competition (reduction of lock-in effects and market entry barriers) and, as a result, to more innovation
– However:
- Possibility of anti-competitive behavior in the context of interoperability initiatives (e.g. hijacking standard-setting initiatives)
- Incentives to innovate not only on the „level playing field", but due to lack of interoperability → Schumpetrian competition for the market

– Lack of reliable empirical evidence

→ Interoperability does not always lead to more innovation; requires a „case-by-case analysis" (see, e.g., anti-trust case analysis)

Conclusions

– Benefits of ICT interoperability far outweigh its potential drawbacks in most situations. Interoperability is generally a sound public policy goal due to its largely positive effects on innovation and competition and in light of normative arguments (consumer choice, ease of use, etc.)

– ICT interoperability should be promoted, where efficient to do so, not for its own sake, but because it tends to lead to other public benefits in the digital age.

Potential Benefits (3/3): Beyond Innovation

– Interoperability enhances user autonomy and choice
– Interoperability also often increases freedom of other stakeholders (flexibility)
– Interoperability reduces access barriers both to digital content and a great variety of services (e.g. e-commerce platforms)
– Interoperability enables emergence of niche-markets (long-tail); increases variety of applications (e.g. Facebook)
– Interoperability is a crucial building block of an open ICT ecosystem that, in turn, is believed to foster innovation and growth

Approaches to Interoperability: Framework

Selected Approaches (1/3): Open Standards

– Definition unclear; may include characteristics like:
- Approved by formalized committee that is open to participation by all parties and operates on continuous basis
- Standards open to the public, specifications available free of charge
- IP irrevocably available royalty-free
- No constraints on re-use of the standards

– Assessment
- Generally positive, but nuanced, case-by-case analysis recommended
- Effectiveness: Depends on the initiative, since purely voluntary (problem: patent portfolios that are used to block standardizing processes)
- Efficiency: Standard-setting processes often complex, time-consuming, and relatively expensive (e.g. compared to unilateral or bilateral approaches)
- Flexibility: High degree of flexibility (market-driven, multi-stakeholder involvement), but may also have certain „freezing effects"

Conclusion: What Governments Can Do

– Identify the actual end goal or goals (interoperability as a means, not a goal)
– Consider the facts of the situation (incl. key variables like time, maturity of the relevant technologies and markets, user norms, ..)
– In the light of goals and facts, consider possible options against benchmarks like effectiveness, efficiency, and flexibility
– Consider blended approaches (e.g. supporting standard setting process in combination with procurement power)
– In most cases, the private sector is best-suited to address the interoperability challenge
– States may play convening role and should remain poised to intervene in case of abuse or if problems persist

Selected Approaches (2/3): Disclosure of Interoperability Information

– French IP provision on DRM interoperability (2006) as a case-in-point
- Software publishers, manufacturers of technical systems, and service providers may contact newly created regulatory body to request disclosure of interoperability information (for a fee)
- Sanctions in case of non-compliance with agency's order

– Assessment
- Effectiveness: Depends on concrete implementation, e.g., amount and characteristics of information to be disclosed, number of parties granted access, sanctions, ...
- Efficiency: Questionable (e.g. administrative costs)
- Flexibility: Generally good responsiveness to changes in technology, market environment, etc.

Thank You!

Prof. Dr. Urs Gasser, LL.M. (Harv.)
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Director, Research Center for Information Law, Univ. of St. Gallen
Faculty Fellow, Berkman Center, Harvard Law School
Fellow, Gruter Institute for Law and Behavioral Research

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http://blogs.law.harvard.edu/ugasser/

Selected Approaches (3/3): Public Procurement

– Exercise market power by favoring interoperable products or services when undertaking procurement decisions
- Example: Finland's tax board implemented Liberty Alliance procedures when improving tax e-collection process.

– Assessment
- Effectiveness: Limited to areas where government's procurement decisions have considerable and lasting market impact (often not the case)
- Efficiency: Relatively efficient
- Flexibility: Relatively low, exercise of procurement power can create technological lock-in on the part of the government

Brad Boaden

Case Studies in Government Initiatives for Re-Skilling and Certification

Partnering with Gorvernment for Skills and Certification

Bart Boaden is the vice president of worldwide sales and membership for the Computing Technology Industry Association (CompTIA), the leading trade association for the world's information technology (IT) industry.Mr Boaden leads CompTIA's world-wide certification sales and membership programs through teams based in the US, Canada, United Kingdom, Germany, Japan, China, India, Australia, and South Africa.He joined CompTIA in December 2007.

Mr Boaden brings over 20 years of experience in senior international sales and government relations programs (including public policy) with IBM, Ernst & Young and Fujitsu and with federal and state agencies at the SES level.

In government, Mr Boaden's roles included foreign policy analysis and trade/transport/investment attraction policy.At IBM and Fujitsu he led both field based and inside sales teams of over 300 people in up to 26 countries with revenue accountabilities for $3.6 billion for the sale and delivery of IT infrastructure, software, consulting, services and outsourcing.At Fujitsu, his team closed $220 million of business in nine months, primarily by the successful pursuit of large outsourcing contracts and the renewal of existing but troubled contracts.At IBM and Ernst & Young, a major responsibility was to create a stronger sales culture and put both businesses onto growth platforms in both national and Asia Pacific wide contexts.

Mr Boaden's experience extends to technology start ups such as Esphion (a network security company), purchased by the NASDAQ-listed networks company, Allot, in November 2007.Allot purchased Esphion on the basis of network security deals completed by Mr Boaden with True Company, Thailand's largest Internet Service Provider.

In the area of alliances, Mr Boaden has run alliance programs with Oracle, Microsoft, HP, IBM and Sun as executive owner. Mr Boaden's international experience includes Asia-based roles in Singapore, Sydney, Hong Kong and Tokyo.

CompTIA was formed 27 years ago, with four members and since then it has grown to 2,000 members stretching across 20 countries. CompTIA offers 12 vendor neutral certification exams, and more are under development. The key service lines include public policy, and a public policy team led by Bob Kramer that focuses on a broad range of technology and integration related subjects. We also have a services section team, which drives industry forums for IT senior executives who lead customer services and operational excellence for their companies. Our programs help members compare the quality of services they offer companies, or offer customers, with a level of services often for other companies in their own industry. It is particularly helpful for SMEs to participate in these forums, to gain insights on industry benchmarks and where they can lift their own performance. CompTIA is probably best known for its skills programs and we have a range of vendor neutral certification exams. We actually have approximately 1,3 million of people that have been certified by CompTIA.

I realize that APEC officials have deep experience working closely with a wide range of business associations, but there are a number of distinctive elements about CompTIA. One key element is our reach. We are a genuinely international yet fully integrated private association. In APEC we have representation in six member economies, and on the policy front, we also have significant ground resources. We have full global representation.

Another distinctive element, is its diversity. Many of our members are very large, but far more of them are small companies with less than a 100 employees. CompTIA's membership represent a US$1.7 trillion industry, there is a global flow of technology, of investment, and that phenomena is reflected in the countries where people are being trained in technology.

The tools offered by CompTIA are its membership, certification programs, upon which we also build a range of services, like public policy, like plus marks, like CompTIA university programs, and these services draw to help members understand how the market is about to change, and to equip them with the skills, the people and the path they will need to prosper.

While activities are focused in the technology industry, we also service a range of market verticals, from the retail industry, the technology and training industry, through the government sector, which is quite a large sector for us. In the IT space, we work closely with software companies, with consulting companies, infrastructure companies and service companies, Telsca in Australia and Horizon in the United States.

Much of CompTIA's work is with smaller companies, there are some notable programs. The first is the authorized service standard program or IAC. In a nutshell the IAC program demonstrates to potential business partners that the companies have made a commitment to hire and have certified knowledgeable technicians. And this is a very important credential for businesses looking to partner.

A second program that we are excited about is CompTIA's security plus mark. This is a vendor neutral accreditation which aims to give the companies who have not dealt with one another before, a level of trust in each confidential business data.

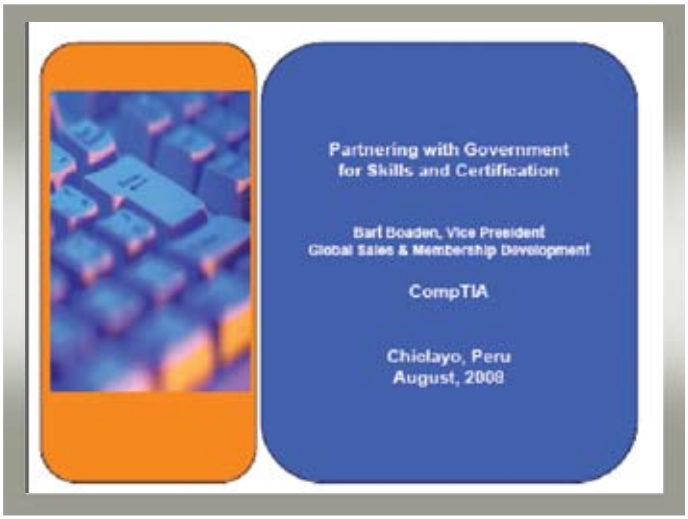
But maybe a biggest suggestion for governments and businesses is CompTIA's ability to accompany business partners who collectively offered to promote skills in every APEC economy. A class for training includes global knowledge from the United States, Japan, India and China-we partnered very close with NIRT. We also work very closely with New Horizon and across the Americas.

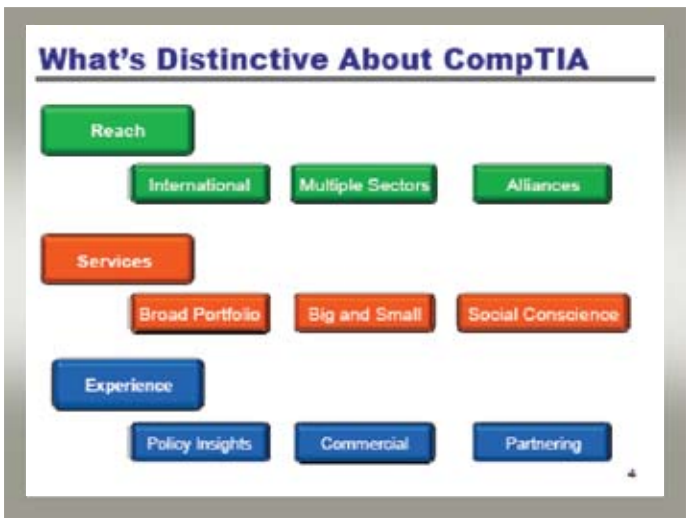
We also ensure that our examinations are conducted in secure and supervised environments, in testing centers. We have about 12,000 testing centers around the world, and when it comes to designing vendor neutral certifications, we worked hard to establish cornerstone committees from priors and companies across the technology value chain who helped validate with us that the CompTIA certification will meet the everyday need for the industry. Within the APEC context, these capabilities are currently being demonstrated in a range of economies. In Viet Nam, we're

really excited about the work we're doing with the Ministry of Information and Communications and the Civil Services. In Thailand, Mark has talked before about the work that we are doing with CIFA that would create a morestructured IT program for teaching and testing the A+ skills for the toy business sector.

So in countries like Australia, the US, Canada, Japan and New Zealand, the IT academic enrollments have declined and this, coupled with retiring baby-boomers is leading to a skills shortage in these markets. So, this initiative with the 19 governments, is designed for filling the shoes of the technical workers.

I would like to invite APEC officials to consider CompTIA in the air of global partners that can team with you to bring appropriate mandate programs, such as pubic procurement policy designed to develop a more skilled-technology workforce. CompTIA would also welcome discussion with member countries and member economies, on the specific skills challenges that you believe CompTIA could partner with you. It might be skills in a certain industry or in a certain geographical region.





Our Portfolio

Services for better business outcomes

Member needs:

- Market insight
- Skills for business and customer growth
- Business networks
- Partners
- People

Bundled Services That Offer End to End Solutions

Policy | Master Certification | CompTIA University | Trustmarks

CompTIA Membership and Certification

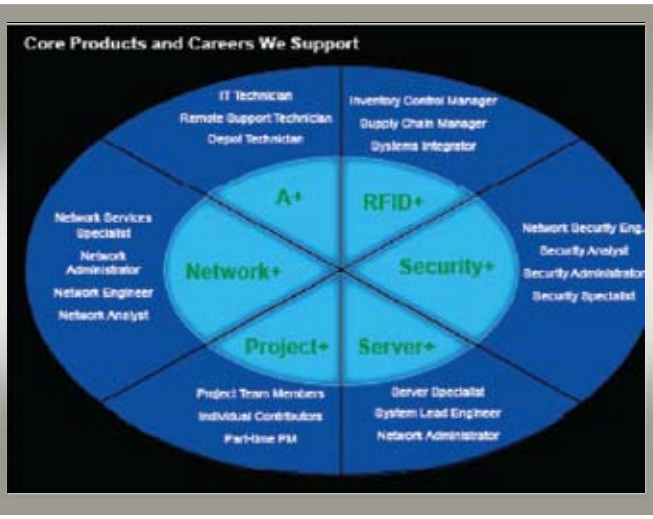
Our Work With Small Companies

- Programs like Authorized Service Center and Security Trustmark serve reseller and smaller companies
- Experience helping large companies team with small companies
- Networking events like "Breakaway"
- Vendor neutral-inclusive on size
- Developing broad educational and workforce development programs that create a skills market for all companies to tap

A Good Foundation for Partnership

- Deep knowledge of public policy
- Vendor neutral
- Support for global standards, ISO certified
- Committed to international technology development
- Record of teaming with governments on technology education

Are there immediate opportunities for collaboration?



Partnering for Richer Solutions

CompTIA's TechCareer Compass
- Maps skills requirements, training, career roadmaps and certification information to 25 different IT roles

Training Partners
- Global Knowledge
- TAC
- Zenos
- NIIT
- Boston Business College
- Sunny Tech

Testing Partners
- Prometric
- Pearson VUE

States Career Cluster Initiative
- Promotes technical education capabilities

Cornerstone Program
- Intel
- Fujitsu
- IBM
- HP

Skilling Initiatives with APEC Members

USA	•National Leader for State Career Cluster initiative
Singapore	•National ICT Competencies Framework
Australia	•K12 skilling with the Queensland Department of Education
Indonesia	•Building a common ICT course with the Ministry of Education
Thailand	•Pilot skills program with SIPA
Vietnam	•Pilot skills program with Ministry of Information and Communications
Malaysia	•Working with the Ministry of Higher Education to train university students

11

Canada's Information Communications Technology Council

Canada

ICTC CTIC

Objective
- Identify schools in areas that require more technicians.
- Define skill-set required.
- Establish a larger footprint of schools offering CompTIA Certifications.
- Increase knowledge of opportunities available.

Solution
- Work with Industry Canada to manage requirements and expectations.
- Engage Government at all levels for funding and awareness.
- Career day to get students excited about IT
- IT Career Guide ( ).
- Strategic partner with Cisco Academies in Canada.

Results
- Consensus between Academic and Industry (100+ attendees) to address skills shortage.
- Province of Alberta seeking funding for FIT (Focus on IT) http://www.ictc-ctic.ca/en/.

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Department of Defense – Defense Information Assurance Program (DIAP): Information Assurance Workforce Improvement Program

U.S. DEPARTMENT OF DEFENSE

Objective
- Improve IA posture by certifying workforce and raising baseline skill levels.
- Assign appropriately trained personnel to IA positions.
- Sustain the workforce by enabling personnel to keep current in technologies and techniques.
- Extend the discipline so that all leaders understand the impact of IA on mission accomplishments.
- Evaluate the workforce through measuring impact on IA posture.

Solution
- DoD Directive 8570.1M outlines job functions are mandated to comply with DoD Directive 8570.1, using commercial, vendor neutral baseline certifications.

Results
- 5 year plan to implement training and certification plans for identified IA personnel.
- Identified IA personnel in year 1 (2006).
- 10% of personnel have met requirement by year 2 (Dec. 2007).

12

Two potential Areas for Collaboration

- Help APEC countries to develop mandate programs to lift specific skills?
- Work with APEC countries to put in place end-to-end skills solutions for priority sectors?

14

Harvey Bronstein

Senior International Economist Small Business Administration

US Government Programs to Promote Small Business Innovation

With career interests in international economics, trade and the economics of developing countries, Mr. Bronstein is senior international economist at the U.S. Small Business Administration. Primarily involved in supporting U.S. efforts in trade policy and with emerging market economies, he is responsible for promoting the interests of small business in trade, economic policy and international development.

Mr. Bronstein has most recently worked in Europe, Latin America, the Middle East and Asia, and advances U.S. relations with multilateral organizations including the Organization for Economic Cooperation and Development (OECD), where he has been vice chair of its 30-nation small business working party, Asia-Pacific Economic Cooperation (APEC), the SME Congress of the Americas, and collaborates closely with the U.S. international affairs agencies. Formerly he was at the U.S. Agency for International Development focusing on Africa and previously Eastern Europe during the time these countries were making the transition from socialism. He has recently spoken and written on topics such as economic growth and technological change, trade and economic relations with China, globalization and its impact on U.S. manufacturing.

Prior to the international phase of his career, Mr. Bronstein worked in the field of industrial organization and antitrust (competition policy), most notably on the landmark AT&T divestiture, which led to restructuring the U.S. telecommunications industry. He was awarded a Ph.D. fellowship and completed his graduate degree in economics at Boston University, where he also taught; his undergraduate degree is in political science and economics.

Today I'd like to discuss two general topics. First, the influence of the economic environment and SME innovation in the United States. Second, some of the government programs which promote SME innovation. Even before I begin my talk, however, let me jump to my conclusion:

The economic policy and enabling environment for SME innovation in the United States is far more important than government programs designed to promote small business innovation.

There are two ways to consider the influence of the economic environment. These are the macroeconomic and microeconomic. I've been a student for a long time of economic growth; after all, this is the fundamental concern of economics at the macroeconomic level. At one time the thinking among economists was this -- innovation occurs due to a one time insight, some kind of brilliant scientific advance or invention. This was the exogenous view of economic growth, based on the belief that innovation was caused by influences not related to the economy itself, that is, coming from outside the economic system, independent of economic forces or inducements. More recently, however, growth economists believe that the basis of technology advance and innovation comes from market forces or incentives. This is the endogenous view, based on the belief that the forces causing innovation come from within the economy. These two views fall under what I term the macroeconomic perspective.

Every year the Organisation for Economic Cooperation and Development or OECD does an overview of science and technology policy in the OECD countries. Its 2007 report says, "around the world innovation and globalization are the two major sources of countries' economic performance. They affect productivity, job creation, economic growth, and citizens' wellbeing". Innovation and globalization, the two most dominant economic forces today, are emphasized. Several years ago in 2001, the OECD published the result of its special Growth Project, to go beyond economic theory and determine the basis of modern economic growth. The New Economy Report concluded that there are four factors that determine economic growth: creation of SMEs, innovation, human capital and diffusion of information and communications technology. So we see that two of our topics today, SME and innovation, are crucial to an economy's growth.

The second perspective I'd like to discuss is the microeconomic. This shows what is happening in an industry at the market level and within each sector of an economy, in terms of innovation. It indicates the need for market incentives for innovation and developing new technologies, occurring primarily through private firms. Here government's role is to provide an enabling environment conducive to business activity and innovation. This refers to such things as the legal, tax and regulatory systems, and how they affect incentives to innovate. Examples already mentioned today include intellectual property rights protection, and other incentives such as research and development tax credits.
It is instructive to consider whether government or the market should take the lead in encouraging innovation. Some economies choose to rely on government programs, industrial planning and subsidies. Other economies, ones that have a more robust business system, prefer to rely more on private incentives with less government involvement. In the US, the preference is to maximize market and private incentives, with the government playing a supplemental role, rather than an explicit one. In the US the vast majority of research and developing or R&D spending is non-governmental. The OECD, in its Science and Technology Scoreboard publication for 2007, points out the trend toward more private-sector spending on R&D and considers the policies which seek to foster innovation from the private sector.

I like to use the term destructive innovation, similar to the term Joseph Schumpeter famously used when referring to "creative

destruction" in describing the essential nature of capitalism. We usually think of innovation as encouraging economic growth and being constructive, but there is an aspect of innovation which, in fact, is destructive. This is because new technology destroys or makes obsolete existing technologies. The US has a very vibrant economic system. The creation of new jobs and entire new industries often occurs and results in the destruction of old jobs, old firms, and old industries. In fact many millions of jobs are destroyed or lost in the US every year, typically replaced with a similar or larger number of new jobs. This is a continuous process beginning with innovation, leading to obsolescence, and resulting in new economic activities. However, this process has a negative side. New innovations and technologies can be destructive, and frightening, leading to industrial restructuring, job losses in old industries, and upsetting traditional economic, political and social relationships. Yet when we look at this in the long-run over the years, the process of destructive innovation has coincided with economic growth and higher living standards.

In the US, historical studies of innovation indicate that one-half of industrial innovations originated in SMEs. Even Bill Gates started in his garage, as did Thomas Edison. While they went on to found huge corporations and invent new industries, much of their creative work occurred when they were small enterprises. Some of the policy choices the government needs to make in terms of public intervention are to develop SME innovation programs. Sometimes the most important thing is not to focus on the program itself but on the enabling environment. For example one of the more successful ones in the United States has been the R&D tax credit. In 2005, the US government gave up US$5 billion of tax revenues or tax intake, in order to promote the R&D tax credit. There is also the availability to finance innovative SMEs, including through venture capital.

In the second part of my talk, I'd like to describe four US government programs to encourage SME innovation. These are the Small Business Innovation Research (SBIR), the Technology Improvement Program (TIP), university R&D collaboration, and the Manufacturing Extension Partnership (MEP).

The Small Business Innovation Research program or SBIR is a central government program, which provides about US$2 billion a year in funding, exclusively for SMEs. Government ministries are required to set aside a certain percentage of their R&D budgets to support SME research. The first phase of the program is the feasibility study, a demonstration of what the SME sees as the potential feasibility for its R&D. Phase One studies can receive an award of as much as US$100,000. If Phase One is successful, an award of up to US$750,000 is made to move the concept from the feasibility stage to Phase Two, to demonstrate the possibility for commercialization. Ideally this leads to Phase Three, the commercialization of technology, which does not directly involve the government or government funds. 5,000 Phase One and 2,000 Phase Two projects are made each year.

In the last few years a new program, the government's Technology Improvement Program or TIP, has focused on some specific technologies that have a critical public need, such as improving the sustainability of the nation's infrastructure. It encourages high-risk innovations and features cost-sharing with private businesses. TIP is a successor to the Advanced Technology Program which encouraged emerging technologies and their commercialization. The ATP existed from 1990 to 2005 with most of its 800 awards going to SME. The criteria for awards were not simply scientific feasibility but economic impact as well. During its existence the ATP gave out over US$2 billion to support research in biotechnology, photonics, chemistry, manufacturing, information technology and materials science.

In terms of university-SME linkages, in the US universities receive a substantial amount of government research funding, and there is now a requirement that the universities themselves reserve or set aside some of their R&D funds for SME. This is the Small Business Technology Transfer or SBTT program. It follows the spirit of a long-existing US law which encourages American universities that receive government funding to patent innovations and technologies developed with government funding. Several hundred awards amounting to US$200 million are made each year through universities to SMEs under the SBTT program.

The final program to mention is the manufacturing extension partnership or MEP. This is to encourage the diffusion of new technologies to manufacturers, primarily to SMEs. A manufacturer may try to find out the latest technology appropriate for their sector. It focuses on productivity, quality control, design, and the use of appropriate technology. The MEP is wide spread in the United States with over 300 locations to serve SMEs. It assists thousands of clients and has a yearly budget of US$100 million.

I hope you have been able to follow all this information, from the economics of destructive innovation to description of US government programs promoting innovation. My PowerPoint presentation is being made part of the presentation today, and I am willing to take questions after this session. Thank you.

1. SME and Innovation Key to Economic Growth

- Macroeconomic View: Innovation and technological advance a product of a country's economic system, business environment and institutions.
  - Not due to one-off scientific insights or luck.
  - Technology responds to market incentives.
- OECD Growth Project, which resulted in the well-regarded *New Economy Report* (2001), highlighted four critical factors to explain modern economic growth:
  - SME creation
  - Encouraging innovation
  - Human capital
  - Diffusion of ICT

3

Enabling Environment for SME Innovation

- Microeconomic View: market incentives needed for innovation and developing new technologies
- Legal, tax and regulatory environment provides incentives or disincentives for innovation, for example, intellectual property rights protection or R&D tax credits

4

Government or Market?

- Should government subsidize innovation, or leave it to the market?
- Countries with a robust market system may prefer to minimize government intervention
- Other countries may choose to rely more on government programs, industrial planning and subsidies
- In the U.S. preference is to maximize the market and provide for an enabling environment, with government playing a supporting rather than explicit role
- 85% of U.S. R&D spending is non-government

5

Destructive Innovation

- U.S. experiences high rates of innovation and high rates of entrepreneurship; not a coincidence.
- This may illustrate what economist Joseph Schumpeter famously termed "creative destruction."
- Creation of new jobs, new firms and new industries often occurs as a result of new technologies, while causing the destruction of industries and jobs tied to old technologies.
- Continuous process of innovation and self-renewal can be profoundly disruptive and frightening, yet leading to higher growth and living standards.
- Studies of innovation in the U.S. indicate that as much as one-half of industrial innovation originates in SMEs

6

2. Programs for SME Innovation

- Perhaps the most important program isn't a program at all, but the broader enabling environment: R&D tax credits ($5 B in 2005), availability of finance for innovative SMEs including venture capital, and general pro-business policies.
- Specific U.S. programs
  - SBIR
  - TIP (predecessor ATP)
  - University R&D (spin-offs to SMEs)
  - MEP (innovation up-take for SMEs)

7

Small Business Innovation Research

- Over US$2 billion/year of central government R&D funding goes to SMEs under SBIR.
- Graduated system
  - Feasibility Studies -- Phase I (5,000 awards/year) up to $100,000 for approximately six months to support exploration of technical merit or feasibility of an innovation or technology.
  - Full R&D -- Phase II (2,000 awards/year) up to $750,000 for two years to expand Phase I results. During this time, R&D work is performed and developer evaluates commercialization potential.
  - Non-funded commercialization -- Phase III. SME finds private sector funding.
- About one-half for military purposes, most of remainder for health.

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SBIR (2)

- Objective of SBIR -- to produce innovative products and services from federal R&D.
- At first it was believed that little federal R & D would result in spin-off commercialization.
- However, SBIR has produced a stream of innovations far exceeding early expectations.
  -- 39% of Phase II projects are resulting in commercialized products or services, covering a broad range of new technologies.

9

TIP - High Risk Innovation

- Technology Improvement Program (TIP) a new program to support and accelerate innovation in high-risk, high-reward R&D addressing critical public needs.
- Funds cost-shared with private sector, up to 50% gov. match, for R&D conducted by SMEs or joint ventures.
- Maximum award US$3m up to three years for a single project and $9m over five years for a joint venture.
- Example: Develop innovative technologies for inspecting, monitoring and predicting failure of components in critical infrastructure such as roadways, bridges, drinking and waste water systems.
- TIP is successor to ATP

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Advanced Technology Program

Advanced Technology Program (ATP): provided early-stage funding grants of emerging technologies with commercialization potential, based on competitive submissions. Not a specific SME program, but SMEs have benefited from nearly one-half of funding

- Economic impact was one of the evaluation criteria
- More than one-half of the awards (800) went to SMEs
- $2.2 B in funding from 1990 - 2005
- Biotechnology, photonics, chemistry, manufacturing, information technology, and materials science
- Biggest impacts in biomedical

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University – SME Linkages (1)

Small Business Technology Transfer Program

- a SME-university program that requires U.S. government-funded research institutions to set aside a portion of their research funds for SME
- 800 awards -- $200 million per year

12

University – SME Linkages (2)

- Under U.S. law, universities encouraged to retain ownership of government-funded research.
- Universities must then patent the research and collaborate with industry to commercialize

13

Manufacturing Extension Partnership

Making advanced technology adoption a reality for business

- 350 locations to service SMEs on:
  - Productivity
  - Quality control
  - Product design
  - Identify and apply appropriate technologies

Annual budget US$100 m; thousands of clients

Large majority of clients are firms < 100 employees

14

Vladimir Kozharnovich

Senior Industrial Development Officer, works for the Investment and Technology Promotion Branch, Programme Development and Technical Cooperation Division of the United Nations Industrial Development Organization (UNIDO).

Innovation Managment for Intrepreneurs

Mr. V. Kozharnovich has more than 17 years of working experience in industry, research institutes and the USSR State Committee for Science and Technology before he joined the United Nations Industrial Development Organization (UNIDO) in 1989. At present, he is responsible for UNIDO's programme on establishment and management of International Technology Centres (ITCs), creation/ strengthening national technology and innovation centres, promotion, transfer and commercialization of new technologies and innovations, management of technological change of SMEs at the industry level. He has also developed and implemented the UNIDO International Programme on technology transfer and investment promotion for manufacturing building materials based on local resources for low cost housing in the developing countries. He is also UNIDO's focal point for the WTO Working Group on Trade and Transfer of Technology.

UNIDO (The United Nations Industrial Development Organization) is a specialized UN agency that works towards improving the quality of life of the world's poor by helping countries achieve sustainable industrial development. UNIDO views industrial development as a means of creating employment and income to overcome poverty. It helps developing countries and economies in transition to produce goods they can trade on the global market. It also helps provide the tools – training, technology, and investment – to make them competitive and encourages production processes that will neither harm the environment and limited energy resources.

We are working with the ground level of industrial enterprises and our tasks are to help developing countries become competitive in line with all economic changes, globalization, policy environment, restrictions on environment tools, standards, etc.

We are basically speaking about the management of technology and innovation enabling to manage the change on a continuous basis, so enterprises are able to compete in the market and satisfy consumers' demand on new goods and their quality.

The role of technology is being increased in the new global economic context. It has the following challenges, especially for SME sector: (i) global competition is getting fiercer, (ii) cooperation and strategic alliances are now essential, (iii) rapid technological change and changing costumer demands require flexibility in manufacturing and management, (iv) quality and environment requirements are higher than ever. At the same time, there are new opportunities, in particular: (i) technological innovation plays a central part in facing these challenges, (ii) ensuring constant technological improvements at the enterprise is the cornerstone for both survival and success, (iii) the process of successful dissemination and transfer of technology and the investment promotion depends on the absorption capacity of enterprises, particularly the SMEs.t

The rapid economic growth worldwide has been achieved by countries, which have adopted technology as the engine of growth. The new context of globalization, WTO regulations and other factors are critically enhancing the role placed by technological innovations in both economic growth and the competitiveness of business. Top management of the technology-based companies regards technological leadership today as a key prerequisite for the companies' success and growth.

Innovation is the heart of economic growth and social development. And now, even economic growth is a result of technology. It is acknowledged that products representing more than 70 percent of manufacturers' sales today will be obsolete over the next 6 years due to changing customer demands and competitive offerings. Innovation will be the single most important factor in determining a country's success in this century. First of all, the challenge refers to technological change and globalization; and also, how to find technological innovation. A key feature is that economic development will depend on the knowledge, innovation, application and delivery of new goods and new developments into the market. It is very important because there are no more global, national or local markets, only relations with World Trade Organization (WTO) regulations and globalization issues. The market is just a global market and you need to compete in such an environment. Basically, many developed countries are already far away on the knowledge basic order, which is really based on the technological advances and innovations. Others are trying to decide how to innovate, find knowledge and mechanisms on how to use to add value in the local available resources.

During the UN Conference on Science and Technology for Development that took place in Vienna, Austria held in 1979 about the role of science and technology for the developing countries, the Vienna program was developed.

The reason for that meeting was to identify where to go, where the countries can be helped, and which countries are not really marginalized completely from the technological path. At that time, the experts identified that there were few technologies which really changed the technological path and were multidisciplinary in nature and cross-sectorial in their impact. Such technologies have become well known and they were called emerging technologies, such as genetic engineering, new materials, informatics and micro-electronics, manufacturing technologies, energy renewal, marine industrial technologies, etc. They were considered as being the ones leading technological progress and we needed to develop special programs on technological advances enabling to help the countries develop their institutional capacity, policies, strategies, so they go along the technological process. Now, the scenario has completely changed. There are even less technologies that are driving the progress in the past. These are biotechnology, material technology and nanotechnology with information technology serving as a basis for merging them together. In many cases, there is a dispute in defining if nanotechnology is actually a process, a technology or an assembling process. Intellectual property rights is a key issue in this convergence process: how to defend a new product from micro enterprises, from new designers and artisan producers, and bring this new product to the market to test?

The private sector would basically like to see the change, they'll see it if they sell more. But entrepreneurs wish to see that they can increase the export trade, bring their new products accepted by customers into the global market.

In our programmes, Everybody is working as a team, especially in the SME sector, because challenges are becoming critical. But we need to distinguish the origin of SMEs in different regions. We should agree on the size of an enterprise to be considered as SME and take into consideration that the definition of an SME depends on the location (USA, Europe, India or Africa, for example).

As to the previous approach to management of innovations, entrepreneurs were responsible for all these changes. Now, all the staff of the company should be involved in this process.

In conclusion, innovation is a key issue to survive and, all people should be involved. Each person has his/her own approach, his/her own mind, his/her own history and so on. There is so-called "indigenous innovation" (for example in China), which is really a historically accumulative knowledge of how to do this and work together. There should be some type of balance on how to work the revolutionary and practical approaches and involve all actors.

This is what we have in our case, experiences and instruments. We have the so called "investment technology promotion offices", which are basically in developed countries. They are linking technology, innovation and funding mechanisms and looking for potential partners for developing countries in the countries where they are located. We have nine "international technology centers" as a framework for technology sourcing and transfer providing the needs of a recipient country with options, so that they can select and absorb.

Specialists have been saying that the management of companies and the organizational positions of the company have changed due to the following factors: globalization, speed of technology change, global technology revolution and also, different extrinsic requirement standards, the environment, etc.

In the past, change management was about mobilizing your employees around the newest strategies, strategic intent or skill building movements. Today, in the innovative environment where constant change is a daily reality often forced upon us by new technologies, new competition, or global pressures, it is not about one big organizational push to reach a specific goal. It is about how you as an individual contributor maintain a spirit of constant agility, flexibility and innovation without losing site of your strategic and performance goals.

There are a lot of opportunities and perspectives that come with change. What is needed to be done is to take a new approach, be innovative in thinking and change the mind-set towards to continuing improvement. The successful leaders of the future will be those individuals who not only learn how to cope but to excel while everything is changing around them. This will take guts and smarts. What needs to be done is just to equip yourself with the best thinking methods you can get your hands on and you just might find that it's not bad around you after all, but actually a world is full of more opportunities than ever before

"Innovation Management for Entrepreneurs"

APEC MSME Innovation Management Seminar

27 August 2008, Chiclayo, Peru

[illegible]
Senior Industrial Development Officer
Investment & Technology Promotion Branch
United Nations Industrial Development Organization
(UNIDO)

Challenges and Opportunities of the 21st Century

- Markets are becoming increasingly global and knowledge-intensive.
- Industries and sectors are constantly being reshaped through these global forces and the knowledge push – even those which have been around for millennia (such as the agricultural, fishery and forestry sectors).
- Only by raising the knowledge capacity of firms, can we base their competitive advantage on providing best new products, processes and services in the world.
- This is why the true factor of competitiveness lies in our brains and in our creativity. It is "knowledge" in the broadest sense of the word.

Technology & the Economy

- Economists agree that the creation and diffusion of technological knowledge and innovation are at the heart of economic growth
- At least two-thirds of per capita economic growth is due to technology
- Technology provides the impetus for economic growth
- Technology-based economic development focuses on enhancing the discovery, development, commercialization and adoption of technology
- Economic growth is the function of capital and labour, which is influenced by technology
- Innovation will be the single most important factor in determining a country's success in the 21st century
- Over the next 5 years, products representing more than 70 percent of manufacturers' sales today will be obsolete due to changing customer demands and competitive offerings
- The key to higher standards of living and job creation is the extent to which innovative ideas and technologies are embedded in manufacturing processes, products and services

Challenges and Opportunities of the 21st Century

- The great challenge will be to use technology and innovation for growth and profitability. Controlling technology will be the competitive edge of the future.
- If a country is to play a substantive role in sustainable and competitive manufacturing in the future, its industry must become proactive in developing a strong self-sustaining innovation capacity to meet customized concepts for high value added sustainable use and production.
- Many important aspects of future manufacturing will also create pressure to change the established structures and management of industry.
- A further need is for a change in the format of science education to encourage acquisition of the necessary knowledge and skills.

Key Determinants of the 21st Century

- Knowledge is now recognized as the key to determining competitiveness in the 21st century, which emphasizes the role of information, technology and learning in economic performance.
- A key feature in the 21st century is that economic development rests upon knowledge and innovation and their useful application.
- Today's most technologically advanced countries are truly knowledge-based. By creating new knowledge and its commercialization, they create millions of knowledge-related jobs and thus generate new wealth from their innovations.
- The term of "knowledge-based economy" results from a fuller recognition of the role of knowledge, technology and innovation in economic and social development.

Challenges and Opportunities of the 21st Century

- Businesses must become more responsive to innovation and radical technological advances, adopting more flexible and intelligent systems for production and people management.
- In a world facing inevitable rises in resource costs, entrepreneurs must embrace the concept of sustainability, recycling and reuse.
- Companies will need management practices to innovate to better cope with and thrive in a business landscape marked by fundamental technological change and globalization
- Research community will be required to co-operate with industry in the setting of objectives for sustainable manufacturing, and to support industry by establishing roadmaps with quantifiable objectives and developing more effective tools for the assessment of sustainability.
- With solid government-research-industry collaboration, and positive competence building and a strongly life-cycle-oriented production-consumption pattern could do much to fulfil the objective of making a country as being a world's competitive knowledge-based economy.

Trends in Science & Technology

- The continuing diffusion of information technology and new applications of biotechnology will be at the crest of the wave. IT will be the major building block for international commerce and for empowering non-state actors.
- The integration – or fusion – of continuing revolutions in information technology, nanotechnology, biotechnology and materials science will generate a dramatic increase in investment in technology, which will further stimulate innovation within the more advanced countries.
- Older technologies will continue lateral "sidewise development into new markets and applications through 2015.

Challenges of Industry: *Future of Management*

- Decades of management decision-making practices, organizational designs, and approaches to employee relations will provide no real hope that companies will be able to avoid faltering and suffering painful restructurings.
- Companies will be challenged to change in a way for which it has no precedent.
- The 20th-century model of designing and managing companies, which emphasized hierarchy and the importance of labor and capital inputs, lags behind the need for companies today to emphasize collaboration and wealth creation by talented employees.
- It also actually generates unnecessary complexity that works at cross-purposes to those critical goals.

Trends in Science & Technology

- Biotechnology will drive medical breakthroughs that will enable the world's wealthiest people to improve their health and increase their longevity dramatically. At the same time, genetically modified crops will offer the potential to improve nutrition among the world's one billion malnourished people.
- Breakthroughs in materials technology and nanotechnology will enable the development of new devices with unforeseen capabilities and generate widely available products that are multi-functional, environmentally safe, longer lasting, and easily adapted to need of industry and particular consumer requirements.

Challenges of Industry: *Future of Management*

- Forward-looking executives will respond to this looming challenge by bringing the same energy to innovative management that they now bring to innovative products and services.
- The opportunity is substantial. Against the backdrop of the digital age's dramatic technological change, ongoing globalization, and the declining predictability of strategic-planning models, only new approaches to managing innovation and employees and organizing talent to maximize wealth creation will provide companies with a durable competitive advantage.
- As companies discard decades of management orthodoxy, they will have to balance revolutionary thinking with practical experimentation to feel their way to new, innovative management models.

Challenges of Industry

- Global competition is getting fiercer
- Flexibility is becoming increasingly necessary in order to adjust to rapid technological pace and changing consumers' demands
- Quality requirements are higher than ever
- Cooperation and strategic alliances are now essential

Challenges of Industry: *Future of Management*

There are four reasons the management of innovation and technology may well change as radically over the first few decades of this century as it did during the adolescence of the last one:

- First is the impact of new technology and innovation.
- New set of challenges: the increasing demand for companies to be adaptable, innovative, and exciting places to work. The winners will be those that enable their thinking-intensive employees to create more profits by putting their collective mind power to better use.
- A third force for change is a revolution in expectations.
- Decision-making will be more peer based: the tools of creativity will be widely distributed in organizations. Ideas will compete on an equal footing. Strategies will be built from the bottom up. Power will be a function of competence rather than of position.

Implication for the Agents of Innovation

- For firms, competitiveness increasingly requires them to build distinctive capabilities enabling to innovate.
- For managers, the quest for competitive advantage increasingly implies the need to maintain, develop and utilise the innovation and knowledge assets.
- For employees, new type of incentive structures are required to ensure they are motivated to innovate and retained.
- For investors, more of a firm's wealth-creating potential is tied up in intangible assets, including the knowledge of the workforce.
- For the regulator, some features of the knowledge-based economy have implications for the nature of competence.
- For policy makers, the challenge is to create a framework which supports continued development of scientific and technological excellence, greater competition and a culture of innovation.

Difficulties and Challenges Facing Companies

- Lack of access to information on new technologies and innovations.
- Inadequate institutional infrastructure, management and marketing human skills.
- Organizational rigidities within the firms themselves.
- Limited access to finances.
- Regulatory constraints.
- Inefficient R&D institutes and disconnection from needs of industry, especially SMEs.
- Inadequate human resources and mechanisms for their upgrading.
- Lack of resources, knowledge and capabilities within policy institutions.
- Low efficacy of government support schemes.

How to Promote Innovation Management and Culture to Innovate

- Set up a scheme to promote innovation management in order to consolidate and build/encourage the sharing best practices in this field through the development of a worldwide networking.
- Support public awareness initiatives to build citizens' trust in innovation.
- Harmonise innovation management certification systems and lay the foundation for a truly area in innovation management.

The Role of International Organizations in Innovation Management and Technology Cooperation

- Ensure exchange of experience and best management practices
- Provide options in tools and methodologies
- Ensure independent evaluation and selection of right approaches
- Provide support services through UNIDO tools and methodologies
- Strengthen trust between service providers and recipients of services
- Decrease financial risks
- Develop new vision and innovation strategy for sustainability

Difficulties and Challenges Facing Companies

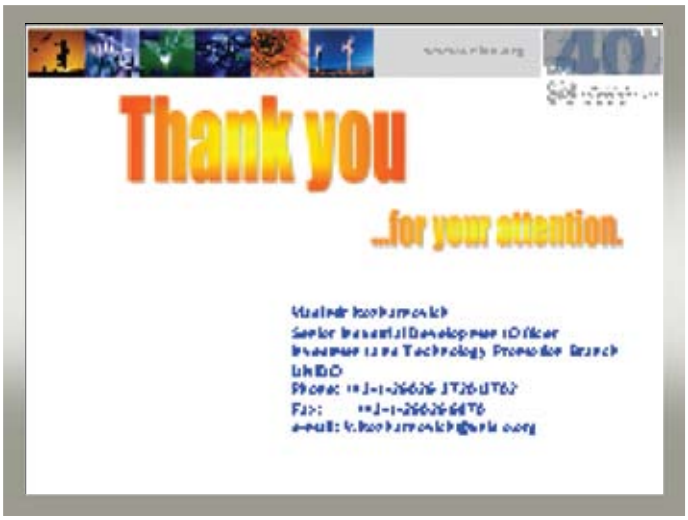
- The main difficulties revolve around the fact that introducing Innovation Management within a company means an extra effort that requires time, motivation and money.
- The challenge is to motivate management support, to think of the future and foster creativity, to install a culture of innovation, to formulate an innovation strategy and to implement an innovation process.

Other difficulties include:

- Innovation management cannot be handled as a product or as a production management.
- Many firms do not have the capacity to identify innovations and introduce them into the normal production process.
- Lack of investments and difficulties to accept failures.

UNIDO Experiences and Instruments

- 19 Investment & Technology Promotion Offices (ITPO)
- 9 International Technology Centers (ITC)
- 45 Subcontracting and Partnership Exchange (SPX) Offices in 28 countries
- 34 National Cleaner Production Centres
- Tools and methodologies, including software, for:
  - > Investment & technology promotion
  - > Technology transfer
  - > Technology needs assessment
  - > Entrepreneurship development



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Mr José Luis Herce-Vigil

Deputy Director and Head, Patent Cooperation Treaty (PCT) and Patents Arbitration and Mediation Center, and Global Intellectual Property Issues, PCT Information Systems Division, World Intellectual Property Organization

The Patent World - A Free Journey

Mr Herce-Vigil, studied his PhD in Chemical Engineering at the Institut du Génie Chimique in Toulouse France (1972-1974), and later on did his Postdoctorate degree at the Institut für Chemische Technologie at Darmstadt, Germany.
He is the Deputy Director and Head of the Information Services Section (1992-to date) of the World Intellectual Property Organization, and before he has worked at the United Nations Industrial Development Organization (UNIDO) as an Industrial Information Officer (1986-1992)

Currently, at WIPO he is responsible for:
The transfer of technology, solutions to technical problems, creation of SME, etc
The training and expert assistance to Government authorities, chambers of commerce, chambers of industry, universities, association of inventors, etc.
The establishment of industrial property information centers
The coordination of activities with 18 donor countries and 102 developing countries and countries with economies in transition

He has also conducted lectures, seminars, workshops and courses in more than 97 countries and in more than 300 universities, chambers of commerce and industry, professional associations, associations of inventors, etc. in six languages

Everything is changing rapidly. The lecturer that mentioned the Jordan pharmaceutical industry story was right. All but two Jordan companies are patenting European and American technologies: two multinational Jordan companies are developing their own technologies and now they have patents in Japan, Europe and the United States. In addition, they have plans in the United States, Portugal, Saudi Arabia, Italy and South Africa. A country that 50 years ago was a colony, now has multinational pharmaceutical companies. It has now high-tech development that is really impressive. I have visited these companies, we have had seminars with them and their data bases are great. Their information management allows them to know when and where a patent is due. Thanks to this, they will start exporting with absolutely fast pace.
Some years ago, production was done in huge factories. Nowadays, these factories are installed at cheap manpower countries, such as China, Viet Nam, India, etc.
The service concept has also changed, The “Mercedes Benz” became famous because it offered cars to last forever without problems, with spare parts. Currently, no one will buy a car to keep it for 50 years or more.
Technology has advanced so much that we may create automobiles to last 120 years, but who will ever buy them?
Electronic devices are no longer produced to last, they will cost more to repair than to buy new ones.
The second most competitive country in the world is Singapore. Its geographical extension is only of 600 m2. The third economy is Hong Kong, China. These are extremely small economies in size but very competitive. Unfortunately, no Latin economies are found in this ranking.
Business skills. Singapore ranks the first. Hong Kong, China, Singapore, Seoul, Tokyo and New York are listed as the most important trade centers of the planet.
Low cost manpower leads to more inventions, together with political stability. A trustable judicial system is needed to solve conflicts.
A proper education level is also needed since multinationals are interested in investing in countries with not only inexpensive manpower but with intelligent and skilled graduates from universities in Latin America, Asia or Africa. These multinational companies consider that it is cheap to do research with local researchers if the university level is high.
Investment should be fostered to increase GDP and GDP per capita.
Patents are important and needed. There was a comparison between the requirements for an inventor to obtain a patent in different countries. In the United States, three months are needed to obtain a patent and two months are needed in Switzerland.
Every week, we receive at the office inventors, industrial engineers, and technicians who apply for patents but money is always a problem.
My organization applies all the knowledge it possesses to create small and medium enterprises. Concepts and patents are sent to the countries that apply for them in order to let them reproduce such products.
Without mattering the type of product or the profession of the inventor, the internationally accepted requirements should be considered to encourage inventors and consumers.

THE PATENT WORLD - A FREE JOURNEY

- TABOOS - MYTHS
- MISUNDERSTANDINGS
- MAGIC (IN VOCABULARY)

INTELLECTUAL PROPERTY

- INDUSTRIAL PROPERTY
- COPYRIGHT

PATENTS

- AND COPYRIGHT ARE DIFFERENT

THE WORD PATENT

- "LITTERAE PATENTES" = OPEN LETTER (WITH A ROYAL SEAL)

COPYRIGHT

- PROTECTS ARTS AND PATENTS PROTECT INVENTIONS (TECHNOLOGY)

THE PATENT SYSTEM

- OFFERS TO INVENTORS THE EXCLUSIVE RIGHTS TO EXPLOIT THEIR INVENTIONS

IN RETURN FOR THE DISCLOSURE OF THE INVENTIONS TO THE PUBLIC

ONLY WAY TO IMPROVE!

LIMITED PERIOD OF TIME AND TERRITORY

AND...

- MECCA-COLA EUROPE
- AMERICAN-COLA EUROPE
- FUNAWAY-COLA EUROPE
- CLASSIC-COLA EUROPE
- CONTINENTAL EUROPE
- ...

"I START WHERE THE LAST MAN LEFT OFF"

T.A. EDISON
(1,100 PATENTS)

AND...

- FUJI-COLA PERU
- NORTE COLA ARGENTINA
- TROPICOLA CUBA
- ZAM-ZAM COLA IRAN
- JARRITOS-COLA MEXICO

AND...

- KOLASHALER
- STAR-COLA
- MEX-COLA
- NICARAGUA
- MYANMAR
- MYANMAR

CHINA...

USE OF THE INVENTION

- INVENTOR
- ENTERPRISE
- BUT...

INVENTION

DEFINITION?

LIMITED PERIOD OF TIME AND TERRITORY

NEW SOLUTION TO A TECHNICAL PROBLEM

WIPO SERVICES

- 5,500 SPECIALISTS
- 60,000,000 DOCUMENTS
- US$ 1,500,000

$KG VOLSKSWAGEN <

$KG MEAT (MX)

COST (% OF INCOME PER CAPITA AND US$)

DENMARK	0%	US$0
N. ZEALAND	0.2%	US$39
US	0.6%	US$210

TASK OF INDUSTRIAL PROPERTY OFFICES

- PATENT INFORMATION SERVICES ("STATE OF THE ART")

LEAST DIFFICULTY IN HIRING LABOR

- SLOVAKIA
- AUSTRALIA
- DENMARK
- BOTSWANA
- USA
- NAMIBIA

TOP ECONOMIES ON THE EASE OF DOING BUSINESS

1. NEW ZEALAND
2. USA
3. SINGAPORE
4. HONG KONG, CHINA
5. AUSTRALIA
6. NORWAY
7. UK
8. CANADA
9. SWEDEN
10. JAPAN
11. SWITZERLAND
12. DENMARK
13. NETHERLANDS
14. FINLAND
15. IRELAND
16. BELGIUM
17. LITHUANIA
18. SLOVAKIA

MOST DIFFICULTY IN HIRING LABOR

- MAURITANIA
- CENTRAL AFRICAN REP.
- TOGO
- CHAD
- BURKINA FASO
- NIGER

LEAST RIGIDITY OF EMPLOYMENT

- CHINA
- SINGAPORE
- MALAYSIA
- US
- CANADA

VIETNAM

- AFTER THE CHINESE...

MOST RIGIDITY OF EMPLOYMENT

- CHAD
- CONGO
- BURKINA FASO
- NIGER

CIPLA (IN)

- BOMBAY BASED PHARMACEUTICAL CO.
- OFFERS TO SELL AIDS DRUGS IN AFRICA

NONE CAPITAL REQUIREMENT

- AUSTRALIA
- CANADA
- FRANCE
- US
- VIET NAM

CIPLA (IN)

FOR LESS THAN 4% OF THE PRICE CHARGED BY MULTINATIONALS

TIME 22.11.03

CIPLA

- HAS ANNOUNCED THAT IT WOULD START MAKING A GENERIC VERSION OF TAMIFLU

DOC. BSNLNE002051016e1ah0001b

2005 Dow Jones Reuters Business Interactive LLC

INFORMATION ON ACTIVITIES

- OF COMPETITORS
- OF OTHER R&D TEAMS

PHARMACEUTICAL EXPORTS (INDIA)* (bUS$)

2000	$1.98
2001	$2.11
2002	$2.45

* TIME SEPT. 22,2003
* SOURCE CHEMEXCIL

WE EXPORT...

WITH EXCELLENCY AND QUALITY

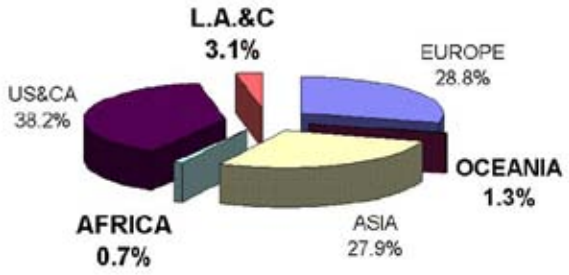
COMPETITIVE INTELLIGENCE

- WHO PRODUCES WHAT, WHERE AND HOW

25 COUNTRIES

- + 700,000 PATENTS
- 95% OF THE WORLD PATENTS
- ONLY CN (10) AND MX (24) ARE DEVELOPING COUNTRIES

R&D IN THE WORLD



"IF YOU ARE NOT PLANNING TO COMMERCIALIZE YOUR INVENTION, DO NOT PATENT!"

EPO

IF A PATENT COSTS US$7,000 (IN US)

WITHOUT ANNUALITIES (MAINTENANCE)

COST OF A PATENT AS YEARS OF GDP/HEAD

SOUTH AFRICA	2
ALBANIA	10
ALGERIA	5
ARMENIA	13
BANGLADESH	26
BOLIVIA	7
BULGARIA	6
CAMERUN	10

IF A PATENT COSTS US$7,000 (IN US)

- COUNTRIES WITH GDP PER HEAD < US$7,000
- 153 COUNTRIES

WHAT TO DO WITH PATENTS?

WHAT TO DO WITH PATENTS?

NATIONAL AND REGIONAL PATENTS!

R&D - JP & CN

- ENGINEER JP $5000
- ENGINEER CN $400

CHINA

- THE NUMBER OF PATENT GRANTED AT THEIR PATENT OFFICE HAS TREBLED IN THE PAST 4 YEARS

CHEAP LABOUR & OPEN ECONOMY

AVERAGE SALARIES (PROGRAMMERS) US$

US	$6,000
FR	$3,300
CN	$840
IN	$840

NOUVEL OBS. 20-26.10.05

LOWER COST PER UNIT

- LOW SALARIES
- HIGH PRODUCTIVITY
- ECONOMY OF SCALE

UN CONFERENCE ON TRADE AND DEVELOPMENT

- 87% OF MULTINATIONALS RANKED CHINA AS THE WORLD'S MOST ATTRACTIVE PLACE TO DO BUSINESS

CHINA'S TOP 7 EXPORTS IN 2002 (IN%OF EXP.)

CLOTHING	12.5
OFFICE MACHINES	20.7
TELECOMM. APPARATUS	6.8
TOYS, GAMES, SPORT. GOODS	4.7
MUSICAL INSRUMENTS	3.9
ELECTRIC POWER MACH.	3.4
FOOTWEAR	3.4

UNCTAD

FOREIGN DIRECT INVESTMENT (bUS$)

- 1984 US$2.7
- 2004 US$60.6

EXEMPLE

- KOREAN CAR INDUSTRY

FOREIGN DIRECT INVESTMENT PER CAPITA

- VN > CHINA

- INNOVATION RATE
- HIGHER QUALITY
- REDUCED PRICES

CHINA

- TVs
- T-SHIRTS
- BUT...

IS VIETNAM IN 200...

LIKE CHINA IN 1990...?

GDP GROWTH VN

99	00	01	02	03	04	05
4.8	6.8	6.9	7.0	6.0	7.7	7.0

CN

- 1982-1989
- 1999-2003 12 TIMES MORE Ph.D.

EXPORTS GROW

20% A YEAR

CHINA DOCTORATES

ENGINEERING	38%
NATURAL SCIENCES	22%
MEDICINE	15%

"IF YOU WANT ONE YEAR OF PROSPERITY, GROW GRAIN. IF YOU WANT TEN YEARS OF PROSPERITY, GROW TREES.

IF YOU WANT 100 YEARS OF PROSPERITY, GROW PEOPLE."

UNIVERSITY OF FLORIDA

- SPORTS DRINK "GATORADE"
- GENERATES $11m PER ANNUM IN ROYALTIES

* S.C. OWEN, IP MATTERS THOMPSON-DERWENT JULY 2003

UNIVERSITIES (1980-US)

- PUBLIC LAW 96-517
- GIVING UNIVERSITIES THE RIGHT TO LICENCE PATENTED TECHNOLOGIES

US (PUBLIC RESEARCH ORG.)

- US$1.337 b

AUTM LICENCINS SURVEY

GDP (1997- bUS$)

ALBANIA	2.5
ANGOLA	3.8
BOLIVIA	7.4
CONGO	1.8
CUBA	6.5

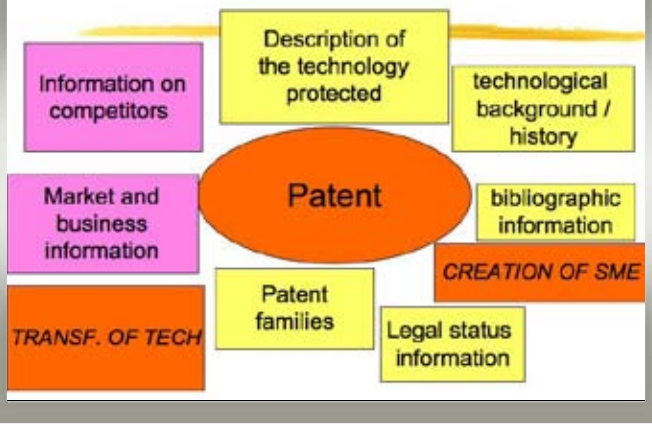
AND (USA 2003)

- 250,000 NEW JOBS

THE OBJECTIVES OF OUR UNIVERSITIES

NEED TO BE SHIFTED TO THE PRODUCTIVE USE OF SCIENTIFIC RESULTS

Patent information is...



WPIS

- ESTABLISHEMENT OF INFORMATION CENTRES
- TRAINING & ASSISTANCE
- SERVICES
- ONLINE SERVICES

"IT IS EASIER TO DESINTEGRATE AN ATOM THAN A MYTH"

A. EINSTEIN

WIPO SERVICES

- 5,500 SPECIALISTS
- 60,000,000 DOCUMENTS
- US$ 1,500,000

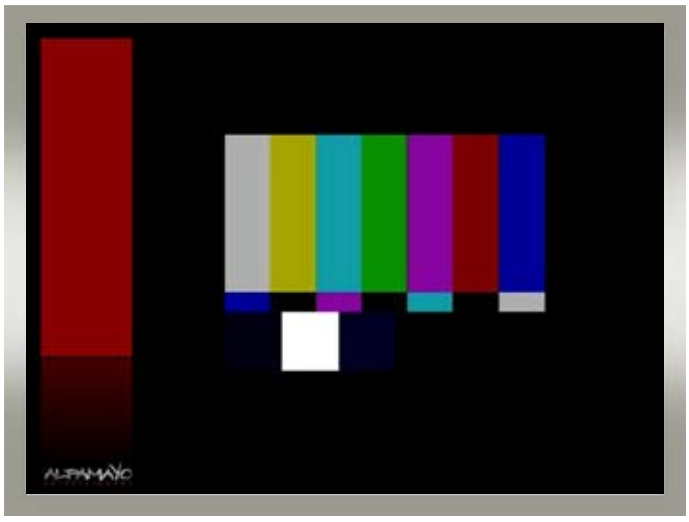
OMPI-WIPO

- 34, CH. DES COLOMBETTES
- 1211 GENEVA 20, SWITZERLAND
- FAX 41 22 338 9764
- wipo.mail@wipo.int
- luis.herce@wipo.int
- www.wipo.int

Jaime Carbajal
ALPAMAYO Entertainment

Director and General Manager

Economist, graduated from the Peruvian Catholic University. He is one of the pioneers and most recognized experts in corporate strategy especially targeting publicity and public relations. He is the founder and was the Director of Business Magazine and ha also produced and directed specialized business programs for radio and T.V.
He has taught at the Peruvian Catholic University, the San Ignacio de Loyola University and the San Martín de Porres University.
He has worked for the Japanese Cooperation Agency (JICA), for the AID and for the United Nations Development Programme.
He currently works as an advisor to national and international companies in Peru. He is the CEO of a group of enterprises linked to entertainment and culture, one of them being Alpamayo Entertainment (cartoons), Alpamayo sound (music), JC Entertainment (fiction of cinme and t.v.) and Crisol Bookstores.



How we were born

One day, I was visited by a friend who brought with him an animated video made by a group of young animators, bringing to life one of their book stories.

Even though the video didn't last more than a minute, the impact was huge after seeing on screen, a story that I have seeing only printed.

Leaving aside all logics, when I was asked if I would transform this little segment into an animated film, of course, my answer was "Let's do it".

This is when **Alpamayo Entertainment** born. Since then, four years have passed.

Piratas en el Callao

How we started to walk

We started from nothing. To begin with, we only had 10 animators, four PC's and a story.

Having to face the scarcity of material resources, the only thing that abounded was the will to realize what, after being a dream possible had become into a specific purpose…

An objective brought to reality of what we have achieved in four year of intense work

Piratas en el Callao

Voices of main characters


Stephanie Cayo


Alberto Cabello


Magda Botteri


Ignacio


Alberto Isola


Jacques L'Hermite

What we have achieved

As the dream became a reality, now we can summarize concrete data such as:

- To produce and exhibit 03 animated movies.
- To have 01 under production process.
- To produce the first animated feature in Latin America
- To have a team of 28 animators.
- To sell our productions in 30 countries.
- To achieve the auspices of more than 20 companies.
- To revolutionize the marketing technique film in Peru.
- To achieving the interest of TV Azteca, who joined us as a shareholder.

But for all the above, to achieve the goal that was set for ourselves when we started this challenge:

Having laid the foundation for creating an animated film industry in Peru

Piratas en el Callao

Results

- In Peru, this was the leading film in attendance at the box office before and after its premiere.
- Being also the best Peruvian film premiere during the five years prior to its premiere
- Being in theater for eleven (11) weeks and the second film of the season with the highest recollection during its premiere week.
- Gathered a total of 265,306 spectators, being the best sell box office movie in Perú, in the four years prior to its premiere.
- It also was ranked as the fourth best animated movie in Peru.

Piratas en el Callao

Countries to which was sold

Argentina	Ecuador	Indonesia	Perú
Bolivia	El Salvador	Kosovo	Rusia
Bosnia	Guatemala	Macedonia	San Marino
Chile	Honduras	México	Serbia
China	Hungría	Montenegro	Suiza
Costa Rica	Italia	Nicaragua	Turquía
Curacao	India	Panamá	Vaticano

Dragones: Destino de Fuego

Voices of main characters


Gianmarco Zignago


John-John


Silvia Navarro


Marina


Gianella Neyra


Lily


Jesús Ochoa


Vildrock

Piratas en el Callao

Trailer

Dragones: Destino de Fuego

Countries to which was sold

Argentina	Honduras	Perú
Bolivia	México	Rusia
Colombia	Nicaragua	Turquía
Chile	Panamá	Uruguay
Ecuador	Paraguay	

It was also sold to countries in Eastern Europe

Sales: DVD

Argentina	Perú
México	USA

Sales: TV

Argentina
México
Perú

Dragones: Destino de Fuego

Dragones: Destino de Fuego

Trailer

The maturity

At the end of this phase, since we run out of stories, we decided to convene, along-with Crisol Bookstores, a contest of the most original story by which 98 proposals were submitted.

After which we choose two (2) of them to become our next projects.

- Valentino y el Clan del Can
- La búsqueda del diente mágico

Valentino y el Clan del Can

Results

- To achieve the assistance in agreement to the objective being a young children movie.
- To prove a significant step forward in the quality of animation.
- To congregate a large number of private companies this in fact participated as sponsors for the film.

Valentino y el Clan del Can

Valentino y el Clan del Can

Trailer

Valentino y el Clan del Can


Christian Meier


Mariana Ochoa


Gisella Valcárcel


Bruno Asenzo


Pablo Saldarriaga


Marco Zarrino


Jhowan Tomasevich


Perry MacKay

With what we have achieved

Differences of production resources

	Hollywood	Us
Production time	60 month	18 month
Capital invested by film	US$ 140 millions	US$ 1 million
Animators numbers	400 animators average	28 animators

With what we have achieved

Differences of production resources

	Hollywood	Us
Number of machine for rendering	1200	100 Half, half time
Value of PC using	US$ 30,000	US$ 1,200 Assembled in-house
Software used	Developed ad-hoc	Available on the market

¿What encourages us to continue?

- As Alpamayo, to become a reality with the objective of contributing to a solid foundation for the creation of the animated film industry in Peru.

- Have achieved, in parallel, to create a company such as JC Entertainment, whose first production *My problem with women*, was successful not only in all the places where it was displayed but has being also sold to Power TV (UK) and Revaille LLC (USA), two of the most important producers on the planet.

The lessons from our experience

Weakness

- We want to reach more countries and the fact of being Latin-Americans limited us.
- We have gained everything but money is still a shortage.
- As a consequence, we are running out of breath.

Strengths

- We have five centuries of history, which is something that many countries lack off.
- We have achieved all our initial objectives.
- We have laid the foundation of a animated film industry

¿What do we need?

More money, more time and more trading partners

But we are also confident that we will achieve!

Because, as Peruvian we possess the inca spirit to work, which is synonymous of:

- Force of will to confront the difficulties
- Ingenio to provide solutions to problems, and
- Stubbornness to overcome them.

The lessons from our experience

From our experience, we have learned that:

- Our success should not be measured by the number of films we make but how we contribute to consolidate the growth of the entertainment industry in Peru.

- We should not wait passively for the support of third parties but to work hard and be creative to achieve this

- The talent, ability and creativity that exists in Peru not only overcomes all the obstacles that we face but to deliver a worldwide high quality product.

Thank you.

Mr Rob Kiernan

Business Manager RINEX Technology

Innovation in Agribusiness Australian Case Study

Mr Kiernan has a Bachelor degree of Applied Science (Surveying and Mapping) from the Western Australian Institute of Technology (Curtin University). He has won the Australian Antarctic Medal, and is also a member of the Royal Institute of Navigation and the Institute of Surveyors.

Since 1995 and to-date he is the managing director of Rinex Technology, located in Perth Western Australia. He is one of the co-founders of Rinex Technology, an engineering agribusiness engaged in the development and manufacturing of precision agricultural systems. He is responsible for international business development of company's products and intellectual property.

He has vast experience in the private sector and the academic field. RINEX was a perfect case study and example for the MSME Innovation Management Seminar.

Rinex Technology is Australia's longest serving agribusiness which is dedicated to the design and manufacture of precision farming systems. RINEX currently employs over 20 people from their head office in South Perth, Western Australia. RINEX supplies product throughout Australia and exports to North America and across Europe via a distribution network and through Original Equipment Manufacturers. In 2008 sales exceeded AUD$4m with steady growth anticipated in the coming years.

RINEX commenced business in 1995 as a true "start-up" business with two working directors who devised their inaugural business plan in a car park in South Perth. It was identified that GPS technology within the agricultural industry was expected to see exponential growth in the near future. The directors had extensive knowledge in the GPS industry, but next to no knowledge in the agricultural sector. The most direct knowledge was that one of the director's wives had grown up on a farm as a child. However the directors firmly believed that precision farming was an emerging industry and that they were suitably qualified to supply engineering solutions within the industry. Accordingly the two directors completed their business plan, which was financed by personal investment from the two directors.

The business was commenced by developing software tools for mapping yield data which was recorded on a combine harvester and interfaced with a GPS receiver. The software, which is still in use today with a number of research organizations, was freely distributed via the internet to promote both precision farming as an industry and RINEX as a supplier of the technology. By working with national research organizations the company was able to acquire a knowledge base in the agricultural industry and also form a credibility with researchers and farmers alike.

An overwhelming aspect of precision farming is that farms are large open expanses of area where GPS can be easily utilized. This was one of the key elements identified by the company directors. By working with the farming community and understanding their business and where technology could improve their situation was a goal for RINEX. Both company directors had a strong background in the surveying, exploration and mapping industry which provided the vision for emerging products in precision farming. Navigation and guidance systems were being utilized in other industries, particularly in ships working at sea which exhibited many similarities to tractors working in open fields. Both required positioning to determine exactly where they were to undertake some task.

As RINEX commenced business GPS guidance had just emerged in the aerial application industry for agricultural. There was an immediate economical benefit to using these systems as they were able to remove two ground personnel from the operation who would show the aircraft where to fly. Although this equipment was relatively expensive it was satisfactory for that particular task. Some innovative farmers also tried to use the same equipment in their tractors for land based applications however it lacked many requirements for this particular application.

One of the key elements in ground applications was that tractors often followed the contours of the land or worked around and the around the fields for both agronomic and logistical purposes. Hence the GPS guidance system would also be required to work this way, quite simply it was a case of making the technology work with the existing farming practices. RINEX was the first company in the world to develop a GPS guidance system which did exactly this, it allowed farmers to continue working their fields

in the same manner and provide the benefits of technology.
Having established the algorithms for GPS guidance in the field, a suitable hardware platform was also required to deliver this technology to the operator in the tractor. The typical laptop computer was cumbersome and operating any pointing device in a moving vehicle which literally bounced across the paddocks was also cumbersome. The technology of computer touch-screens was also in its infancy at this stage, however a suitable product was identified and modified accordingly for use in a tractor. The physical computer was likewise modified for use in a tractor and interfaced with a GPS receiver to become the first RINEX GPS guidance system.

The "FARMTRAX" system was commercially launched in 1997 and exhibited at trade shows around Australia. It was met with skepticism that the technology and the product was too space-age, or nothing more than a toy and that it would be impractical for use in the industry, and it would not achieve its objective. Furthermore as the system was built upon a computer, and many farmers still did not own one in their business or house, there was reluctance to use the technology. However the product was recognized by the early adopters and some leading farmers and agricultural contractors as an invaluable tool for their business.

A natural progression for new and innovative products such as the FARMTRAX and indeed precision farming as an industry is that the early adopters often help shape the product for the future. This was truly the case for RINEX whereby the early adopters became mentors for the company directors in understanding more of farming as a business and allowing them to further develop the product.

The mere fact that the FARMTRAX system was a computer triggered these early adopters to start thinking as to what else the system could be used for in the tractor. This led to a number of functions being quickly implemented onto the system including database management so that records of the fields and farms being worked could be saved. These historical records form the backbone of many farms as to the different cropping programs and the seasonal conditions with the measured outputs and the relative success or failure for that particular year. The FARMTRAX system has automated this process and has allowed these records to be geo-referenced via the GPS.

The FARMTRAX system introduced many further improvements and features to both automate processes on the farm for efficiency and economical benefits. These have included the application of variable rate application for fertilizer and seed to minimize impact upon the environment and boost productivity. This also used remotely sensed data including satellite and near-infrared images which could be used in the determination of soil characteristic maps. The system has also introduced automation for both, vehicle steering and implement shut-off / control to increase accuracy and efficiency of product application.

The RINEX hardware systems have been incrementally improved with technological advancements over the years from the original FARMTRAX system. However one integral concept has not changed across the years or product range, but in fact has been copied by virtually all competitive products, is the graphical interface with the touch-screen. This concept is now the industry standard for in-vehicle guidance and data management systems and is used by tractor manufacturers and GPS solution providers across the world.

RINEX has continued to be at the fore-front of technological advancements with automation in switching controls based upon the position of the vehicle and areas of application. This technology continues to increase crop production and decrease the exposure to mismanagement in environmental control. The application of herbicides and insecticides in cropping programs is more critical than it has been in the past with crops exhibiting resistance properties from poor management and over application in the past.

In summarizing RINEX continues to be a market leader in the precision farming industry through innovative design. This can be attributed to the company's desire to understand the farming business from an outside stand point to see where technology can benefit the industry.

Precision Agriculture

- Increase site specific and whole farm efficiencies
- Minimize the impact on the environment
- Increase in profitability

Mission Statement

To supply precision farming technologies as cost effective solutions, enabling farmers to be more efficient through the use of these technologies

GPS guidance solutions

- GPS guidance adopted for farming applications
  - ▶ Poor visibility
    - →Night operations, dusty conditions, tall crops
  - ▶ Environmental factors
    - →Evaporation or wind blowing foam markers
  - ▶ Field memory
    - →No need to repeat laps to remark with foam
  - ▶ Automatic area computations
    - →Increase applications and chemical accuracy
  - ▶ Operator fatigue
    - →easy to use, less stress for operators

Product Evolution

- 1997 Product launch – FarmTRAX system
  - ▶ Real time mapping system with colour touch screen
  - ▶ Intuitive guidance system
    - →Parallel →Pivot
    - → Lock →Contour →Racetrack

Product Innovation

- 1998 FarmTRAX enhancements
  - ▶ Farm, field & product database
  - ▶ In-field variable rate technology
  - ▶ Real-time yield mapping

Early Innovators

RINEX 1998

JOHN DEERE

John Deere 2005

Company Development

- 1999 – commence AutoSTEER investigations
  - ▶ Design interface to Beeline® system
  - ▶ Develop "Virtual Road" software

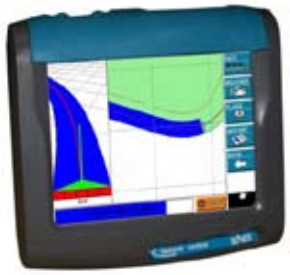
Product Awards

- HARDI International
  SIMA 2005 February 2005
  HARDI CO-PILOT

- HARDI International
  Agri-Techinca 2005 November 2005
  HARDI Auto Section Control

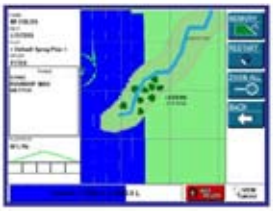
Guidance Innovation

- 2000 Enhancements
  - ▶ Virtual road display
  - ▶ Virtual memory
- 2001 Enhancements
  - ▶ AutoSTEER release
- 2002 Enhancements
  - ▶ AutoSPRAY release



Guidance Innovation

- 2005 Enhancements
  - ▶ AutoFIELD
    - ▶ Automatic field recognition
  - ▶ Driver security
    - ▶ Biometric recognition
- 2007 Enhancements
  - ▶ FieldNET
    - ▶ Multi vehicle system
  - ▶ RePLAY
    - ▶ Guidance recall



OEM guidance systems

Topcon (XEE Technologies)

ZYNX – vehicle guidance software modules

HARDI

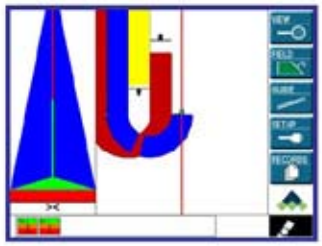
HARDI CO-PILOT – vehicle guidance and automatic boom section control software modules

Company evolution

- Establish branch office in North America
- Continue expansion in Australia
  - ▶ Specialist personnel in Engineering / GPS systems

Product Innovation

- Multi vehicle system
  - Mapping
  - Guidance
  - AutoSPRAY



AutoSPRAY evolution
Automatic boom section control

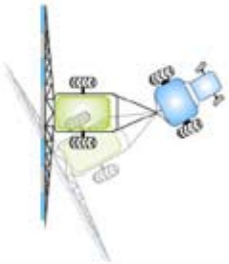
- 2002 Product release
  - Guidance system
    - →Overlap plotted on screen
- 2004 Autonomous solution
  - AutoSPRAY 4080
    - →Connects with any GPS

Product Awards

- FieldNET release 2007
  - Horsham – March 2007
    - → Innovation / Technology
  - Dowerin – August 2007
    - →Guidance Technology
  - Newdegate – September 2007
    - →Commercial Invention
  - Paskerville – October 2007
    - →Innovation / Technology

AutoSPRAY features

- Vehicle modeling
  - →Up to 3 hitch points
- Electronic/Mechanical lags
  - →On/Off latencies
- Variable overlap
  - →User selectable
- Manual override
  - →On/Off available
- Non-Intrusive
  - →Rate controller



Guidance and Data Management

- Plan Centric Concept
  - Create Plans
  - Treat according to plan or adjusted plan
  - Store historical records of work done
  - Review records
  - Based around AutoFIELD

Business Summary

- Market Leader
  - Others follow
- Innovative engineering solutions
  - Guidance
  - Automated GPS control management
  - Integrated office management
- Open architecture approach
  - Interface to third party systems
- Decade of experience in Precision Agriculture
  - Unmatched by any Australian Business

Joo-Yong Kim

Director

Presentation from APEC SME Innovation Center / TIPA on Innovation Management Policies and Best Practices in APEC

Innovation Management Policies and Practices in APEC

Dr. Kim has been working as director of the APEC SME Innovation Center of TIPA (Korea Technology and Information Promotion Agency for SMEs) since 2002. He is responsible for the research and development of SME innovation policies, awareness programs including forum and training, publication of periodicals, international cooperation, and others.

Prior to joining TIPA, he had been working for service providers for 20 years. They include system integration, management consulting and manufacturing companies.

He obtained his Ph.D. in Industrial Engineering from North Carolina State University, Raleigh, North Carolina, USA (1991) and an MS in Industrial Engineering from Iowa State University, Ames, Iowa, USA (1988). He holds a BS from Seoul National University, Korea (1979).
Recent publications related to Innovation and International cooperation include:
-APEC Informatization Survey for Small and Medium Enterprises (2003)
-Informatization Level Survey of Korean SMEs (2002,3,4,5)
-The Survey and study on New Product Introduction in Korean SMEs (2005)
-A Research on the Innovation Promoting Policy for SMEs in APEC (2006)
-Development of Human Capital for SME Innovation Policies (2007)

Innovation Management Policies and Practice in APEC

System Approach to R&D
The Linear Model suggests that the sequence from research through development to production is a standard path of innovation in both firms and national economies, and no feedback role is built into the system. The Linear Model has now been replaced by the 'System approach.' A system of innovation includes all the important factors that influence the exploration and exploitation of innovations.

SME Innovation Policy
The traditional SME policy typically refers to policies implemented by a ministry or government agency charged with the mandate to promote SMEs. By contrast, the SME innovation policy is defined as those measures taken to stimulate more innovative and entrepreneurial behaviour in a region or nation. The SME innovative policy includes potential entrepreneurs as well as the existing SMEs. It is also sensible to environmental conditions.

Innovation Management policy and best practices
The best practices are 1) Australia, COMET program, 2) Canada, IRAP program, 3) Japan, SME support centers, and 4) Thailand, ITAP program. Among these best practices, the general pattern is that most of best practice programs include extensive consultation programs for SMEs innovation and often accompanies financial supports or at least networks to private intermediaries.

Australia and Canada
Australia and Canada operate the extensive consultation program with financial grants, which provide technological and managerial consultation to SMEs and start-ups. These programs are renowned for their success in stimulating SMEs' innovation and start-ups. These programs are renowned for their success in stimulating SMEs' innovation and commercialization. The combinations of financial supports and customized-consultation services are identified as the critical factor in their successes.

Japan and Thailand
The best practices of Japan and Thailand are both the consultation services to SMEs, but Japanese consultation services focus on the management side while Thailand's ones focuses on technological capabilities developments.

Korea: e-Coupon Consulting Service
Starting 1999, the consulting service program has supported management and technology consulting of SMEs by deploying experts possessing expertise and field experiences. Last year the number of beneficiaries almost reached 3,000 SMEs.

Summary
The best practice study implies that innovative technology support cannot be successful without counseling support for commercialization. This kind of combined supports can manifest themselves at individual firm level like Australia and Canada. Japan and Thailand definitely possess R&D promotion programs in addition to separate counseling support. Likewise, Korea possesses various counseling programs along with technology support. Those four member economies may have to consider the design of separate programs into combined ones.

Innovation Management Policies and Practices in APEC

2008 APEC SMEWG Meeting
Chiclayo, Peru
August 24-27, 2008

SME Innovation Center

APEC SME Innovation Center

- It was proposed by Korea and endorsed by APE C SME Ministers in 2005
  - As a major instrument interconnecting all SME innovat ion stakeholders in APEC
- Vision & Roles
  - To be a center for promoting SME innovation in the A PEC region
  - To enhance innovation capacity of policy makers, inter mediaries and SMEs; to develop SME innovation mod els; and to establish cooperative networks for SME inn ovation

Introduction

Part I: Analysis & Synthesis
- •Marketing Policy
- •HRD policy
- •Technology policy
- •Financing policy
- •Management innovation
- •Clustering and networking

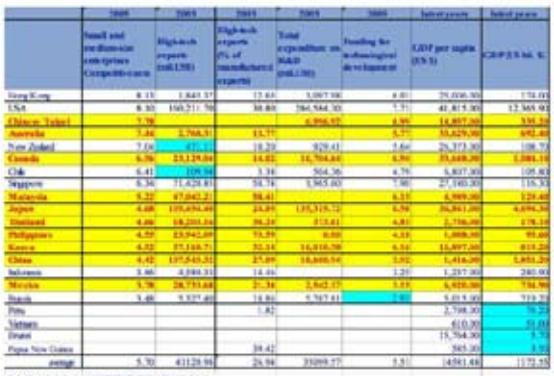
Part II: Member economy profile

Part III: Best practices

Research approach

- **Stage 1**: literature review in April, 2006
- **Stage 2**: questionnaire survey in June, 2006
  - Mail to 10 member economies
- **Stage 3**: expert forum in June, 2006
  - Preliminary forum with 7 member economies
- **Stage 4**: interview survey in July, 2006
  - Visit to 10 member economies
- **Stage 5**: final reporting in December, 2006

Selection of 10 member economies



SME Innovation

SME innovation policy

- Traditional SME policy
  - It is implemented by a ministry or government agency charged with the mandate to promote SMEs
  - It takes the existing SMEs as exogenous and develops instrum ents to promote their viability
- SME innovation policy
  - Defined as measures taken to stimulate more innovative and e ntrepreneurial behaviour in a region or nation
  - Includes potential entrepreneurs as well as the existing SMEs
  - Sensible to environmental conditions that affect the decision-m aking process of entrepreneurs
  - The environment ranges from the individual to the enterprise, cl uster, network, region or nation.

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System Approach to technology innovation

- R&D model of innovation
  - Knowledge is discovered in universities, passed on to firms throu gh publications, patents, and other forms of scientific correspond ence, and to final customers in the form of products or services
  - "The linear model of innovation"
- System Approach
  - Many firms access valuable knowledge both through market exc hange (e.g. through the purchase of capital or intermediate good s or licensing agreements), and through less formal contracts wit h suppliers, customers, universities, government agencies and ot hers
  - A system of innovation includes all the factors that influence the exploration and exploitation of innovations in the context of natio nal, regional or sectoral system

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Innovation Management Policy

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Innovation Management Policy Framework

- Four elements of management strategy
  - Environmental scanning
  - Explicitness of management strategies
  - Internal R&D efforts
  - Marketing capabilities
- Supporting policies
  - Providing information on the external environment
  - **Offering consulting** on establishing systematic management strat egies
  - Educating innovation and enhancing mindset to strengthen internal R&D efforts
  - Assisting with e-business for marketing capabilities

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Innovation Management Policy Offering consulting

- Consulting support
  - Consulting services through the entire process of business ranging from planning, financing, production to marketing
- Consultant accreditation system
  - Certified by qualification examination
  - Nurtured through programs at educational institutions
- Code of ethics
  - Process transparency and free of moral hazard,
- Awareness raising
  - Educational program, seminar, and conferences

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Innovation Management Practice

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Best Practices

- Australia's COMET
- Canada's NRC_IRAP
- Japan's Support Center
- Thailand's ITAP
- Korea's e-Coupon Consulting

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Australia
COMET: Commercializing Emerging Technologies

- Financing assistance
  - In the tier 1 stage,
    - grant value up to $64,000 can be provided.
    - The rate of assistance is available at 80% of the eligible expenditure.
  - In the tier 2 stage,
    - grant value up to an additional $56,000 can be provided.
    - The rate of assistance is available at 50 % of the eligible expenditure.
- Lesson learned
  - Combination of financial support and management ad visory services

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Australia
COMET: Commercializing Emerging Technologies

- Focus & target
  - On improving the flow of finance into business incubation and stim ulating the growth of innovative firms
  - Targeting early-growth-stage firms, spin-offs and individuals to co mmercialize their innovation technology
- Outcomes as of 31 December 2004
  - More than A$313 million raised in equity capital by COMET custo mers,
  - Over 600 strategic alliances, licences and agreements, and
  - Around 265 manufacturing commencements and products / servic es launched
- Extended until June 2011 with additional funds of A$100 million

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Canada
IRAP: Innovation Research Assistance Program

- Overview
  - The longest serving policy program for 6o years
  - Major tool to support SME innovation with project fund and advic e
- Collaborating network
  - Collaborative network of more than 100 technology organizations and NRC's 34 network centers of excellence
  - International mission program sent 75 SMEs in 2004/5
  - US and EU linkages to facilitate SME-led research collaboration
- Performance
  - Sales contribution of 20 times more than IRAP fund
  - Higher growth rates, higher level of investment attraction and hig her possibility to be acquisition targets

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Australia
COMET: Commercializing Emerging Technologies

- Business service assistance
  - TAC: tailored assistance for commercialization
    - Works with 15 private sector Business Advisers and 1 National Mana ger on strategies like business plan, prototype and market analysis
    - provides assistance of 80% of eligible costs incurred with average A $50,000 to A$60,000
  - MSD: management skill development
    - dollar-for-dollar assistance up to $5,000 to enable individuals to under take courses
  - COMET assistance is available for up to two years

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Canada
IRAP: Innovation Research Assistance Program

- Budget of C$127 million in 2006/7
  - C$80 million for project fund
    - 2,615 IRAP-funded projects on ICT, professional services, ma nufacturing process and others
    - Project size from less than C$15,000 to maximum C$1 million.
    - Repayable contribution of C$14 million
    - Proposal of 4-5 pages of an initial plan looking ahead of 6~36 months
    - Selection criteria
      - level of technical and commercial risk
      - economic and social benefit to Canada
      - increase of company R&D capability through the project
      - consistency with national priorities and contribution to regional dev elopment

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Canada
IRAP: Innovation Research Assistance Program

- C$27 million for advice
  - Industrial Technology Advisors (ITA)
    - 260 advisors, 110 locations for 10,000 clients per year
    - Full-time ITAs for two years with a half of salaries paid by IRAP and another half by SMEs
    - Consulting service for more than 3 months
- Lesson learned
  - The project, closely linked with advisors, increases the success rate and satisfaction from the client SMEs

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Thailand
ITAP: Industrial Technical Assistance Program

- Overview
  - To build SMEs' indigenous technology capability, launched by the National Science and Technology Development Agency (NSTDA)
  - To diagnose and find solutions to the problems and needs of SMEs by sourcing qualified experts in the field, either from Thailand and overseas
  - ITAP started in 2000, preceded by ICS (Industrial Consultancy Service) for 9 years
- Performance
  - Technical advice to 1,920 by providing experts from 10 overseas countries including Australia, Canada, Japan, USA, UK and Germany during 2002-2006
  - Technology acquisitions for 496 SMEs through 42 trips to 13 countries for visiting technology sources

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Japan
SME Support Centers

- Three types
  - 8 National support centers
    - Venture firms and high-level management issues
  - 57 prefectural SME support centers
    - Managerial problems of local SMEs
  - 261 regional SME support centers
    - Small business with easy access
- National support center
  - Expert dispatch program
    - A long-term and continuous dispatch of experts in management, technology, finance, and legal affairs
  - Incubator manager dispatch program
    - To provide consultation services about business planning, expansion of sales channels, and patent strategies for tenant enterprises

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Thailand
ITAP: Industrial Technical Assistance Program

- Industrial consultancy
  - Diagnoses preliminary technical problems and assists in R&D by experts, both local and overseas
  - Supports up to 100% of preliminary problem diagnosis expenses
    - Up to 50% of the consultancy costs to a maximum of 500,000 Bhat for problem-solving or technology development
- Technology acquisition service
  - Provides SMEs with opportunity to obtain first-hand information on technological advancements and innovations
  - Arranges overseas technology trips, and in-bound and out-bound matchmaking events
    - To find new and appropriate technology
    - To establish technological and business partnerships with foreign companies

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Japan
SME Support Centers

- Prefectural SME support center
  - implementing over-the-counter consultation services, provision of information, dispatch of experts, and evaluation of business feasibility
- Regional SME support center
  - providing consultation services for local SME entrepreneurs, over-the-counter consultation, and information about SMEs support system of the national and Prefectural governments
- Lesson learned
  - Comprehensive and systematic supports for SMEs innovation
  - Expert and incubator manager dispatch program for long-term supports and response to specific needs

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Thailand
ITAP: Industrial Technical Assistance Program

- Lessons Learned
  - ITAP provides differentiated diagnosis and business and technical services in accordance with SMEs' technology level
  - The public research institute, as technology intermediary, provides SMEs with indirect services that enable them to enhance their technology capability

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Republic of Korea
Consulting Service

- Since 1999,
  - Management area
    - identifies problems and provides solutions
    - assists SMEs in general consulting, innovation consulting, and business transformation
  - Technology area
    - deals with process improvement and product development
    - Supports utilization of foreign experts
  - Business start-up consulting
    - provides SMEs with consultation from reviewing business plan s to management skills
- Since 2005,
  - Service adopted coupon-based consulting

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Republic of Korea
e-Coupon Consulting Service

- Program expansion since 2007
  - Environmental management
  - New consulting on CSR and family's enterprise inheritance
- Lesson learned
  - Reduction to 20 days from 55 days of a lead time from applicatio n to agreement
  - Promotion of the consulting business industry in Korea by meetin g consulting demand
    - Annual consulting exposition and conference,
    - Research on promoting consulting service business, and
    - Nurtures consultants using academic institutions

Republic of Korea
e-Coupon Consulting Service

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Summary

- The best practice study implies
  - Financing assistances for technology innovation m ake synergistic effects when coupled with consultin g supports for commercialization
  - The practices in Australia and Canada have broug ht about good performance in terms of project outc omes
- Unified approach recommended
  - Japan and Korea have various technology support programs in addition to separate consulting progra ms.
  - These member economies may have to coordinate the separate programs into more unified ones.

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Republic of Korea
e-Coupon Consulting Service

- Features
  - Transparency by adopting e-coupon
  - Consulting firm choice on a demand-basis
  - Reviewer body for monitoring progress and quality
  - Rated consulting firms into a database
- Continuity of consultation
  - Consultant designated as a guardian
  - Six months later, the program also evaluates business performance of the participating SMEs

Find details at the site: www.apec-smeic.org, or e-mail to Dr. Joo-Yong KIM, director of APEC SM E Innovation Center at jooykim@tipa.or.kr

Thank you!

APEC
SME Innovation Center

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Ms Annalisa Primi

ECLAC Division of Production, Productivity and Management from the United Nations Economic Commission for Latin America and the Caribbean ECLAC-UN"

Ms. Primi obtained her Master degree in Cooperation and Development from the European School of Advanced Studies at the University of Pavia, Italy. Her final dissertation was on: "The costs of distance: rural poverty through a territorial perspective". Ms. Primi works at the division of productive and entrepreneurial development of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) in Chile. Her main areas of expertise are: industrial development, productivity dynamics, trade and growth, industrial and technology policies. Some of her most recent publications include: 2005, "An enclave led model of growth: the structural problem of informality persistence in Latin America", paper to be presented at the GRADE workshop A Micro Approach to Poverty Analysis, University of Trento, Italy, (co-authors: Mario Cimoli and Maurizio Pugno)

Other publications made by Ms. Primi:
2004, "Science and technology policies in open economies: the case of Latin America and the Caribbean", ECLAC, Santiago, presented at the First Meeting of Ministers and High Authorities on Science and Technology, Lima, November 2004. (Co-authors: Mario Cimoli and João Carlos Ferraz).
2004, "Mapping new voices: identifying clusters of innovative thinking in policymaking in Latin America and the Caribbean", presented at the Pocantico Workshop of Carnegie Council's Global Policy Innovations Project, (Co-author: Mario Cimoli)
2003, "Gowth and Structural Stagnation: informality persistence and low porductivity trap in Latin America", conference paper presented at the Intenrational Conference on "Poverty, inequality and the quality of growth", University of Trento, December 2003. (co-autor: Mario Cimoli).

At ECLAC we have gained experience on a learning process for doing science, technology and innovation politics in Latin America. We know that it is a slow process.
ECLAC is the Economic Commission for Latin America and the Caribbean of the United Nations that carries out research aimed to provide consultancy in public policies and capacity building activities. Differing from UNIDO, we do not work with companies, but at a government level, with political authorities and provide technical assistance through our agencies that work with science, innovation and technology and which support the productive development based on the demand of the countries.
They share the systemic approach in national innovation systems like something that happens in a context with different kinds of agents.
Regarding innovation, we are in a very favorable context. Innovation is important for development. It is impossible to have new inventions in Latin American countries if technological competitiveness capacities are not developed. We start from a delayed basis regarding scientific, technological and productive skills, so when we are in an open and globalized economy we cannot compete unless skills are aligned.
So, talking about science, politics and innovation, for Latin American countries, we should consider that the majority of my productive stakeholders have low technological and productive skills focused in sectors that need a low level of knowledge.
We should always consider that a learning process and an accelerated process of communicating knowledge are not linear.
We should differentiate a public-private cooperation in the design and innovation of policies, because I cannot design policies without thinking about the stakeholders that will implement it. Cooperation is crucial but we should also consider that it does not occur automatically. If we design a sectorial fund, for example, it does not mean that it will immediately work. All actors should be considered (companies, agents, universities). Politics go together with the strengthening of the actors.
Trial and error topics have been already addressed. In other words, not only through trial and error, in innovation processes but also in the creation of policies.
Then, the current challenge is to have a long-term policy, but at the same time to be able to change and renew according to what is happening in the world.
ECLAC analyzed the models of technological innovation policies in Latin America. There are three points to consider regarding technological policy in Latin America.
First, it is not a new thing. The replacement time of imports is important. A successful scientific and technological policy in Latin America was created but it needed basic infrastructure for research. Second, it needs other similar policies and, mainly, a support policy for the industrial development. Finally, human resources' quality should be improved through raising the level of universities and schools. So, if there are three aspects to evaluate politics, what do we do in Latin America? The Policy design of science and technology just like in other countries. The problem is its implementation. If Latin American countries do not design policies, they copy it. On the Internet there are technology and science plans available and they are all the same.
Evaluation of a public policy is not as important as accountability. The best practice that can be used is the role of the public research laboratories regarding the scientific basis. Indeed, there is a governmental role in proceedings and mechanisms, but it should not be a challenge.
The public policy objective should not be to have an additional innovation process in the market. The objective should be to support the economic development of the country: the creation of jobs, better quality, better paid jobs and create an internal market and a future demand for the companies. Without an internal market, countries cannot survive. An internal demand should also be considered. Funding is not the only problem for innovation.
Sectors are different; we need customized policies for the sectors and the government and for the entrepreneur.

A country should choose what sector should be fostered.
There is also the issue of who to prioritize: the so-called winners or the ones that are behind. This is complex, because there are big countries as Brazil that can do better and can pick the nationwide strategic areas that are three: health, communications technology and power. Then, winners are: aerospace, mechanics, and also the fine sectors should be strengthened and should improve its productivity.
ECLAC manages a forum for Latin American countries to try to overcome some of these bottlenecks regarding scientific and technological policies. Regional cooperation, to open a space in the United Nations for diversity and completeness of the regional countries is something not easy to achieve without political cooperation in science, technology and innovation.