

# ICT Innovation Nodes For E-Gov

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## ABSTRACT

Recognition for ICT in Government was far away from being an automatism in the early 1990s in Colombia. Its inception came from basic research and its passage and growth towards strategic agendas demanded the coming together of disparate interests. Now, Government thrives to position ICT as a foundation for innovative public policy. To do so, innovation in Government functionality as well as corporate and academic alliances are essential at organizational and personnel level. An upcoming challenge for officials and citizens that the ICT Ministry's Innovation Policy is taking on by the strengthening of stakeholders confidence and acknowledgment of ICT as an added value to their respective processes.

## Categories and Subject Descriptors

K.4.1 [Public Policy Issues]

## General Terms

Experimentation

## Keywords

Innovation, ICT Public Policy, Stakeholder Alliance, E-Government Innovation

## 1. INTRODUCTION

Back in 1997, Colombia had no definite policy on ICT. Moreover, information and communications technology as a strategic asset had yet to surface on policy-makers. Investment on technology was limited to expenditure in computer hardware for the most part. As a country, it was not clear how to strengthen the role of technology as it was not viewed by many as a contributing factor to sustainable development or even government practices.

Universities were the first to recognize by the early 1990s world trends in technology with the inclusion of internet to their research departments and later on to their class curriculum. By the end of the decade, the Colombian government saw in the internet an asset that could rebound on the development of businesses and international trade. Consequently, the role of government as a regulator for the use of internet became relevant. By the turn of the millennium it was clear that policy regarding the use of

internet was needed. Internet became a public asset managed from within the Communications Ministry. As a result, the Colombian government recognized the contributions that, at that time, communications and internet granted to its operations; so begun the design and advancement of the Colombian E-Government Program.

Over the years up to 2013, the Colombian government has increased its regard to the role of communications as a key factor that facilitates its actions and the completion of its mission statements. In 2009, government renamed the Communications Ministry as the ICT Ministry, and in so doing granted a duly significant role to the ICT industry and acknowledged the future potential that it generates to the economy and welfare of the people.

The use of technology by government was first established by the E-Government Program. Through it, access to information, formalities and procedures and interoperability amongst government entities have become more efficient. Through its accomplishments Colombian E-Gov. policy is now a leader in Latin America and has become a facilitator to the progress of the ICT industry. As seen in the table below, E-Gov. in South America is pulled by Colombia and Chile. Moreover, Colombia along with Chile is the best-ranked country in the region. Appropriation and standards implemented through the E-Gov. Manual (now in its third edition) has granted way for organizations in government to thrive and in so doing become an important demand for ICT services and goods.

Tabla 1.13 Desarrollo del gobierno electrónico en América del Sur in South America

País	Índice de desarrollo del gobierno electrónico		Calificación mundial en desarrollo del gobierno electrónico	
	2012	2010	2012	2010
Chile	0.6769	0.6014	39	34
Colombia	0.6572	0.6125	43	31
Uruguay	0.6315	0.5848	50	36
Argentina	0.6228	0.5467	56	48
Brasil	0.6167	0.5006	59	61
Venezuela	0.5585	0.4774	71	70
Perú	0.5230	0.4923	82	63
Ecuador	0.4869	0.4322	102	95
Paraguay	0.4802	0.4243	104	101
Bolivia	0.4658	0.4280	106	98
Guyana	0.4549	0.4140	109	106
Suriname	0.4344	0.3283	116	127
Promedio subregional	0.5507	0.4869		
Promedio Mundial	0.4882	0.4406		

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As ICT has grown to a significant position inside government, the implications of use of ICT soon brought attention to the risks associated to its use; among them, security and privacy of

information as well as industry-pushed IT solutions. Arises the question as to how to correctly articulate interests for public services with private-designed market solutions?

Currently, the Colombian ICT Ministry by means of the IT Vice-Ministry and the E-Gov. Directorate searches solutions for the cohesion between national interests that, while addressing citizens' issues allows for the progression of the industry. What has become clear from past experiences is the reality that an efficient ICT policy requires the understanding of a unified long-term vision. In a country where the disparity of corporate and public interests traditionally surpasses the union of stakeholders, the instauration of sustainable policy becomes a matter of great notice and difficulty.

To this end, Colombian government has launched the innovation locomotive in order to thrust industries into international levels of proficiency and growth. Within this desire, ICT has been identified as a transversal backbone for productive and managerial policy. Government has been keen to point out the relevance of ICT in the enhancement of business practices and public policy. In turn, the ICT Ministry has been charged to develop innovation models that reinsure the place of ICT in the design and development of strategies in the industry and government entities. It is the objective that ICT becomes a true added value to pipelines inside stakeholder strategy.

## 2. SOLUTION STRATEGY

What has become clear throughout the design and structuring of Colombian E-Gov. policy is that more than government's push of national interest and imposing standards, often involvement from both the ICT industry and citizens proves beneficial for policy implementation. What better way to enhance appropriation and usage if not by cultivating the recognition of need amid users themselves. Use for ICT in this way begins at, surely, but also surpasses government entities.

In order to ensure a participative process for ICT solutions and therefore obtain input from stakeholders in the pipeline for policy design and implementation, the Colombian ICT Ministry has structured a working model for E-Gov. innovation within government entities.

The Innovation Model for Use and Appropriation of ICT in Government has created Innovation Nodes as a working national network of key stakeholders from the public, private and academic sectors. Together stakeholders, identify needs and opportunities for ICT solutions in government. Members can then jointly determine the roadmap for the design and implementation of innovative ICT solutions to those needs and opportunities.

Solutions must take into account both experiences and innovative ideas. ICT's role as a modernizing tool for government practices is achieved by the applicability and transferability of solutions it can offer to individuals' and organizations' processes. However, strategy for the inclusion of third-party actors is dependent on their readiness and the equilibrium to be found in the interactions amongst themselves in regards to government, corporate and society's interests. Consequently, as interactions amongst stakeholders who are mistrustful of government are essential to this model, issues like trust and reliability play a very important role.

For structuring of the model, and while ascertaining its relevance to increase E-Gov. policy reach, the coming together of stakeholders was a first point of concern.

Firstly, it is necessary to overcome a zealous mistrust towards public policy cycles at the back of every corporate manager. In addition, culturally, change management at the core of individual and organizational processes is still a burden to long-term innovation. Thirdly, the understanding of ICT as a strategic asset and managerial tool hardly undermines the traditional look at technology as hardware solutions.

These three realities set minds to believe that government had no intent but to meet quotas by imposing policy on innovation. However, innovation and its role to further the competitiveness of industries and governments must be a process whereby change is understood, welcome and nurtured and thereby becomes a detonator for the increase in process dependability and sustainability against the rise of new market realities. That is why E-Gov. innovation must willingly include and aggressively address the role of users and designers. To this end, the proposed model seeks the involvement of all those concerned and likewise demands the appropriateness of solutions presented to real problems. The junction of the two is only as appropriate as the derived solutions are.

## 3. ACHIEVEMENTS AND ADVANCES

With the involvement of key representatives of all sides in the definition of innovative ICT solutions for the betterment of government practices both among entities as well as towards citizens, the ICT Ministry launched in 2011 its innovation model for E-Gov. entitled *Innovation Nodes for Use and Appropriation of ICT in Government*. At that time, three themes were considered strategic for improvement in matters of E-Gov. efficiency in face of identified opportunities. Those three themes were: i) Services for Citizens ii) Cyber-security iii) IT Architecture for Government.

Each of these themes in effect constitutes an individual node. For each one, representatives from the public, private and academic sector join in to debate upon opportunities were ICT can, through innovative solutions, add value to current practices. The product of debates is the document, for each node, that presents a strategic agenda for ICT innovation in a given theme. These documents per node are named *Strategic Innovative Agendas* and present what is needed in the short and long term.

Each one of the nodes created works off a previous prospective analysis of its state of the art: what and how are services given and managed in the front and back offices of government entities; how are risks managed and information protected from a technological point of view; what and how IT systems are being employed to guarantee efficiency in government procedures. A thorough analysis offers a base line on what is being done as well as its pertinence. Furthermore, it is not enough to know and comprehend what a country is doing, but it matters also what other countries and world market trends are thriving toward. With a clear mindset on where we are and what we should be aiming at, stakeholders can determine and implement the solutions that will prompt the country forward. The gap between the two is sealed by the Strategic Innovative Agendas.

The implementation of innovative solutions comes by the financing of projects. It is the objective that this initiative be a participative process and therefore, all parties must gain and learn from each other and jointly grow for the benefit of the country and its society. This is the reason why, both design and implementation of solutions must include stakeholders. The ICT Ministry launches, in collaboration with the Administrative Department for Science, Technology and Innovation an Open Bid

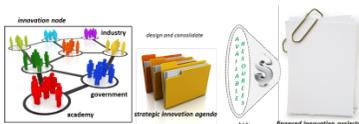
Process directed to: The financing of Innovation Projects on ICT for Use and Appropriation of ICT in Government.

In September 2012 a first open bid was launched for two topics that had begun work in 2011 by means of the Innovation Nodes: Services to Citizens and Cyber-Security. When the bid closed in October 2012 a total of 21 projects were presented and, of those, after the evaluation process took place, four were chosen for financing.

By the beginning and all throughout 2012, two more Innovation Nodes were created for i) Health and ii) Justice. Immediately, after the first bid was closed, in November 2012 a second bid was opened with the purpose of financing projects in Health and IT Architecture for Government. When the second bid closed, a total of 87 projects were received and six were chosen for financing.

The process to launch the bids was hazardous. The engineering of rules and regulations for the participants was delicate in terms of intellectual property specially but also in terms of trust and recognition of their counterparts as allies. Because of the willingness to stimulate cohesion amongst participants and stakeholders for ICT, it was determined that projects must be presented and executed by the union of enterprises and universities.

Because innovation generally in technology-pushed, the ICT industry understands it as a business opportunity for sales; nonetheless, it must also be a source for technological and intellectual development and therefore, research done by universities is relevant. The consideration of ICT innovation as both a business venture and an academic research experiment brings the union of academic and corporate to a new level in Colombia. The result, innovative solutions for government, demands the concern of public officials for the enhancement of outdated practices. The following diagram illustrates the process by which the coming together of members derives in the financing of innovation projects.



The interest of businesses for the development of projects was first met with the simplification of innovation matching sales quotas and quarterly results. To attack this issue, the evaluation process considered primarily the following:

First, it was made clear that the most important feature of the project must be its impact, transferability and applicability to government difficulties. As opposed to tailored responses to individual interests and needs, the more the project is adaptable to different public scenarios the more it is relevant.

Second, projects must have dual financing. The ICT Ministry offers a cash amount that, according to the size of the company, represents 75, 65 or 40% of total project cost. This means that for a small-sized company the ICT Ministry grants financing up to 75% of total budget; for a medium-sized company it goes down to 60%; and for a large-sized company it only reaches 40% of total budget. Accordingly, companies will finance the difference and will not find content in the sale of any good or service if it not guarantees return on investment.

Paired up with the profit from the intellectual property rights, the company that provides a service or sales a good that can be transferable, adaptable and has enough impact is looking to turn this project into a mid-to-long term business. Responsibility and thoroughness for project design and implementation is revered.

For universities and the academic sector interest was encouraged by the participation and recognition of research centers and investigating professors. It was of special interest for Government that the academic world translates its projections to realistic problems and that the gap between abstract and applied research closes.

By the joining of R&D efforts to day-to-day problems in the industry short-term innovation becomes long-term innovation and a culture of innovative processes takes hold of people inside organizations.

It is with this purpose that contracts for project execution are signed with the university; but both the company and the university that develop the project in union are together responsible for it and share rights to intellectual property.

Once solutions were designed their implementation at the core of government entities needed to be ensured. Interest for government entities was to be able to grasp at the trends in ICT as a useful tool for the improvement of their processes. The change in mindset from ICT as hardware solutions and purchases to CIOs at the heart of strategy requires understanding of needs and analysis of market opportunities.

In a sense, government changes perspective of ICT corporations from suppliers to strategic allies for ICT solutions. However, this understanding is hard to impress onto decision-makers. *Innovation Nodes* then become the instrument through which they can observe and petition the industry and the universities to take action and become allies to the fulfillment of policy. As a result the alliance becomes two-fold, as opposed to the orthodox mechanism by which government finances the sale/purchase of generic, one-size-fits-all solutions.

By all sides, Innovation Nodes are an avenue for the strengthening of alliances between the industry, academia, and government. Solutions require trust and understanding of ICT's contribution to individual and national goals not only in the short term but especially in the long term. Change implies not only the defiance of organizational standards but a cultural change at personal levels for salesmen, public officials and research professors.

Increase in projects from the first bid process to the second validates the interest in the advancement of ICT as an added value for government. With of over a thousand members of all parties involved in the participative process for the construction of the Strategic Innovation Agenda for each node, and only two years of activities, the spectrum of new areas, themes and topics is widening.

#### 4. FUTURE PROJECTION

Working strategy from the ICT Ministry searches to position ICT as a strategic sector for public policy and at the same time an asset to pipelines in different sectors of the national economy. Furthermore, by the creation of a functional model for innovation Colombia projects international leadership in the region. It is the intent that ICT innovation in Colombia signifies growth and recognition of governance. With this in mind, in the short term it is crucial that Innovation Nodes position themselves as the instrument for the pairing of supply and demand.

To date, forums and workshops are the occasion for interaction between stakeholders. In the near future, participative systems like crowdsourcing, inverse auctions must give way to international reach and thereby the strengthening of supply and demand. To learn and exchange with world leaders and propel the industry to international standards by the inclusion of IT development as a cornerstone for business, the transformation of local franchises is a clear objective. Subsequently, innovation management, knowledge management, human resource training are components that are addressed as of right now for all members of Innovation Nodes. In doing so, Colombia seeks to reach regional leadership for ICT innovation supported on the strength of its industry and a real partnership of its education system.

Moreover, through its leadership, Colombia can accompany and inspire the modulation of similar innovation models to be implemented in comparable economies in the region. Realisms like industries based on sales revenue as opposed to technological development, academia research distanced from market realities and public policy, and government officials lacking view of ICT as a keystone for process innovation within entities, are all descriptions of regional trends.

The fortitude of the welfare of citizens and the buoyancy of sustainable economies relies on capacity to overcome not only present but future threats. Information access and management to solidify issues like national security, healthcare, justice systems, public services amongst others is each day more important and therein lays the vision of leadership through ICT that Colombia builds as a country. As a country, Colombia addresses overlapping problems and can then prompt the economic relevance of the country as an individual as well as a strategic partner for its allies.

To this end, ICT Innovation model begins to create momentum. In 2013, a new topic emerges: Smart Cities. For the future of world-class cities government recognizes the importance of hubs for business and academic research in view of economic growth.

Now, as 2013 advances, issues that troubled project implementation in the past have been addressed from the beginning. Mistrust among allies, view of ICT as an added value to pipelines and risk aversion to innovation are been treated by means of specialized workshops, training and data analysis. Still, the best way to encourage participation in Nodes and engagement in project proposal remains the retribution of positive experiences from on-going projects.

Through this, it is clear that Colombia must address issues that trouble government as well as citizens. By the merger of the two, it can achieve leadership and pull ICT development to attract business and position government as a driver of innovation. The success achieved by the first tow bid processes, passing from 21 projects considered to 87 and a number of participants that surpassed a thousand in only two years proves the interest of stakeholders and more so the availability of business opportunities that bring together universities and companies.

Topics that affect innovation processes from a non-technological perspective are then also relevant. In 2013, spectrum for innovation has been widened. Past experiences like this one enable Innovation Nodes to be an evolving intent. Government can evolve as well and respond as needed to keep up with world trends.

## 5. ACKNOWLEDGMENTS

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