SOUTH AFRICA
Seizing the Moment: Turning the Promise of Broadband Connectivity into Reality
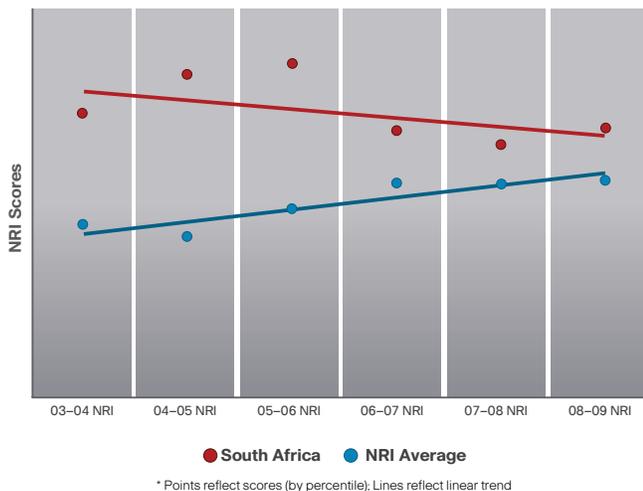
SOUTH AFRICA

Seizing the Moment: Turning the Promise of Broadband Connectivity into Reality

High-speed networks have become part of the basic infrastructure of any country, and as the foundation of the knowledge economy, they enable growth and will help to power recovery from the current economic crisis. For many countries, broadband networks also offer a unique, cost-effective opportunity to enhance competitive-ness and rise above physical and geographical constraints.

To measure national ability to improve quality of life through high-speed networking, Cisco Systems, Inc. sponsors the Global Information Technology Report (GITR) produced jointly by the World Economic Forum and INSEAD. This report and its Networked Readiness Index (NRI) provide an excellent opportunity to take stock of where countries stand in the race to harness the potential of ICT in general and broadband in particular.

The "league table" based on the NRI usually earns the headlines (South Africa this year ranks 52nd out of 134 countries). But NRI scores and their trends convey even more information. As the chart below illustrates, over the last six years South Africa's NRI score has trended down. Worldwide average scores, however, have been increasing, and hence South Africa's relative position has deteriorated. This should be a source of concern, as it reflects the country's ability to compete and benefit from the potential of Information and Communications Technology (ICT) and broadband.

NRI Scores

| 03–04 NRI | 04–05 NRI | 05–06 NRI | 06–07 NRI | 07–08 NRI | 08–09 NRI |

● **South Africa** ● **NRI Average**

* Points reflect scores (by percentile); Lines reflect linear trend

To provide greater perspective on a country's ICT development, we rely on a new edition of the "ICT Development Map" and on the novel analysis of "Internet Stages" included in this year's GITR. These two models were developed by Cisco to better understand the situation of most countries compared with its peers—benchmarking each country against other countries with best practice ICT Development positions provides reference points and a direction for developing a strategy toward ubiquity. Combining the two models with a review

of recent progress in broadband penetration, we can derive not only a set of diagnostics but also a vantage point from which to chart a course to improved network connectivity.

The Internet Stages

Each Internet Stage focuses on one or more key thresholds achieved toward nation-wide connectivity. Placing an individual country in this context provides a useful perspective on where it stands on the path to making the benefits of broadband access to Internet widely available to business and citizens.
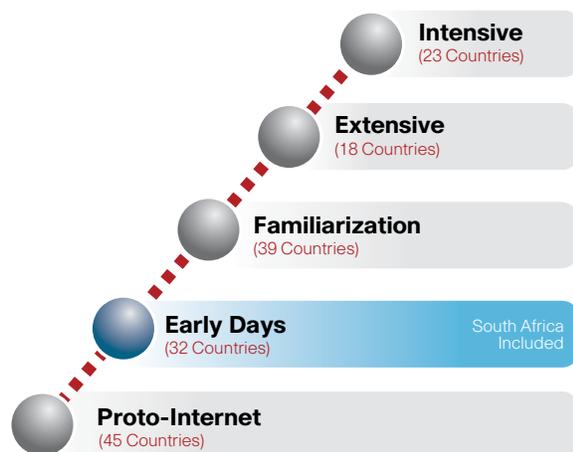
South Africa falls into the *Early Days* stage of Internet connectivity.

South Africa is one of 32 countries at this stage, out of a total of 157 countries. These are countries that have Internet usage rates between 5% and 15%; Internet use is not rare, but the majority of the population has yet to experience the Internet directly. Countries in the *Early Days* stage generally have significant urban populations, and Internet use averages mask major differences between urban and rural areas. Many people in these countries use the Internet through shared-access connections (cyber cafes or community centers), and the number of Internet users is a multiple of about five times the number of Internet connections in the country.

The *Familiarization* Stage.

To reach this stage, a country has Internet usage (the proportion of people who have experienced it) of at least 15%, but less than one-quarter of its households have a home connection. Worldwide, 39 countries are at this stage, with virtually all busi-

nesses (beyond micro-enterprises) having Internet connections, as well as many urban households. Familiarization with the Internet breeds high expectations, and the pent-up demand for online services and greater connectivity is a considerable factor in building Internet momentum. Most large South African cities are likely to be at this stage.

Intensive
(23 Countries)

Extensive
(18 Countries)

Familiarization
(39 Countries)

Early Days
(32 Countries)
South Africa Included

Proto-Internet
(45 Countries)

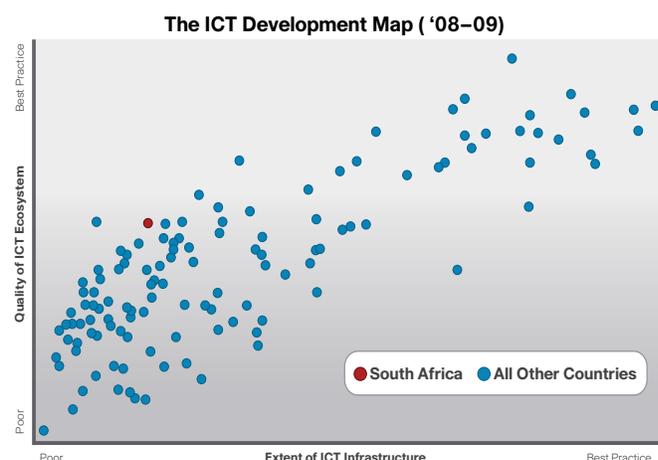## The *Extensive* and *Intensive* Use Stages.

These two stages (41 countries worldwide) are assessed by focusing on broadband connections. The *extensive* stage is largely transitional, where at least one-quarter of all households are connected to the Internet, but broadband is not yet prevalent. In the *intensive* stage, half or more of all households (plus all businesses and institutions) have broadband connections. These are mostly advanced economies in which, on average, two-thirds of the population already uses the Internet. E-commerce, e-government services, business collaboration, and social networking, among other services, are pervasive and have become an integral part of the social fabric and economy.

The ICT Development Map

The Internet stages previously identified help us understand the critical mass thresholds needed to accelerate network connectivity. To complement the diagnostic of a country's ICT development, we can use the ICT Development Map, which explores the interaction between ICT infrastructure and ecosystem coordinates and technology adoption, relying on data behind the NRI.[1]

· The *ICT ecosystem* refers to institutional factors that underlie entrepreneurial creativity and competitive dynamics for service provision. These factors are hard to measure, but include the legal and regulatory framework around ICT deployment and the general ease of doing business. doing business.

· *ICT infrastructure and capacity* refer to assets, such as networks and other infrastructure, as well as the existence of skills to use and manage the hardware effectively.

Revisiting the ICT Map with information from the 2008-09 NRI, we can position the 127
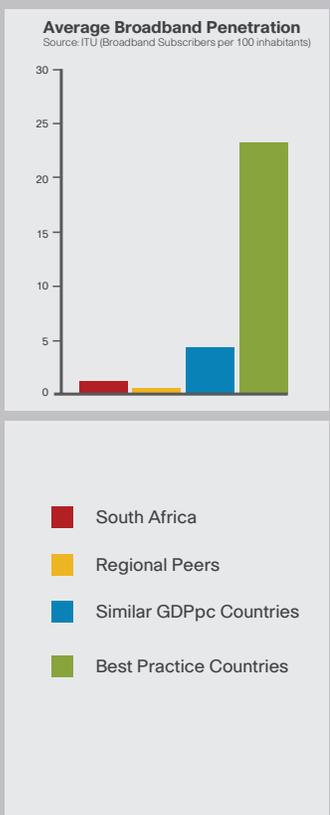
The ICT Development Map ('08–09)

Quality of ICT Ecosystem

Best Practice

Poor

● South Africa   ● All Other Countries

Poor   **Extent of ICT Infrastructure**   Best Practice

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[1]Data included in the NRI are generally for 2007. While there may be more recent data for individual countries, using NRI data helps to ensure comparability across countries.

economies for which data are available, including South Africa, against the two dimensions of ICT infrastructure and ecosystem.

South Africa's position demonstrates the challenge ahead and the need to maintain a dual focus on improving both the country's ICT infrastructure and ecosystem to foster technology adoption. In a situation like that of South Africa, further improvements in the ecosystem are needed, but the opportunity is there to build on a sound basis. The pay-off from strategic infrastructure investments to deploy broadband is much greater when they take place in the context of a propitious ecosystem.

This analysis of the ecosystem and infrastructure dimensions looks at ICT broadly (as an important foundation). However, increasingly the focus needs to be on broadband adoption and deployment. Broadband is the key driver of the many benefits of connectivity and, hence, it is useful to consider trends in broadband penetration and how they are influenced by ICT Map positions.

South Africa's broadband penetration is very low by any standard (keeping in mind the limitations of a national average in a large, diverse country). There is a significant gap with respect to countries at similar income levels and a vast gap with respect to the "best practice"

Average Broadband Penetration
Source: ITU (Broadband Subscribers per 100 inhabitants)

- ■ South Africa
- ■ Regional Peers
- ■ Similar GDPpc Countries
- ■ Best Practice Countries

[2]Three different comparator groups are used for the benchmarking analysis in this note: "Regional peers" (Algeria, Egypt, Ghana, Kenya, Morocco, Nigeria, Tanzania and Uganda) are countries in the region closest in population size; "similar GDPpc countries" (Argentina, Brazil, Bulgaria, Costa Rica, Kazakhstan, Malaysia, Mauritius and Panama) are countries with the closest income levels; and "Best Practice countries" (Australia, Canada, France, Germany, Malaysia, South Korea, Taiwan and the United Kingdom) are those countries with high ICT ratings that have most comparable population sizes.

countries.[2] This concern is heightened by the fact that these gaps do not appear to be narrowing—quite the contrary.

The period between 2005 and 2007 was a time of significant expansion of Internet usage around the world (possibly a key inflection point in that regard). An analysis of broadband penetration over that two-year period confirms the value of the balance between infrastructure and ecosystem, as countries along the diagonal (indicative of balance between progress on the ecosystem and infrastructure fronts) saw the greatest

increase in broadband line penetration. Countries with poor or moderate ICT environments face the prospect of lagging still further behind in their ability to harness the power of networks for competitiveness and social inclusion.

In this context, South Africa's increase in broadband penetration by 0.6 percentage points (from barely perceptible levels to 0.7%) should become a call to action. Countries that are well positioned in the ICT Map have seen their already-high broadband penetration increase by about 7 percentage points (from 15% to 22%).

Broadband Penetration Growth
(% Point Increase Over Two Years)

Ecosystem	Poor	Moderate	Good	Best Practice	
			4.7	8.8	Best Practice
	N/A	1.2	6.6	6.7	Good
	0.3	1.5	5.5		Moderate
	0.4	1.2	N/A		Poor
Infrastructure					

A Framework for Assessing Networks and Taking Remedial Action

For countries to take advantage of the potential that broadband networks offer for economic growth, it is critical to remedy their weaknesses in either ICT ecosystem, infrastructure or both. We have therefore proposed a framework in this year's GITR to provide an avenue for assessing bottlenecks and exploring remedial action.

The six areas around which the framework revolves represent key components of a "Net Strategy" that can help countries leapfrog Internet connectivity stages. They include actions around infrastructure investments that offer excellent economic cost-benefit ratios and many social externalities, as well as institutional reforms and policy interventions that have very low or no financial costs. Please review the GITR report for more detail on this powerful new tool.

A new era has dawned as Internet use crosses critical mass thresholds across the world and technology expands the range of connectivity options. The emergence of the Web 2.0 era of

| Applications and Content | Policies and Regulations | Market Structure (Competition) |
| Skills for ICT | Government Budgets | P & P Infrastrucutre Investment |
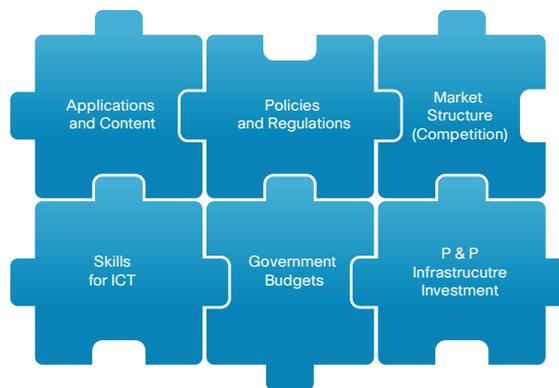
technology-powered innovation has coincided with a major financial crisis that is bound to result in major global economic restructuring. Countries will see major benefits if they understand the power of broadband networks and are able to implement strategies to seize the moment. Not only will they improve national competitiveness across sectors, but they will turn the crisis into an opportunity for new growth and employment creation—driven by the knowledge economy—with a major, lasting impact on the country's welfare.

You can view the 2008/09 Global Information Technology Report beginning 1100 CET, 26 March 2009 at the following link: http://www.weforum.org/gitr

This note is intended to contribute to the discussion of strategies to harness the potential of broadband and high-speed networks in pursuit of economic and social goals. It was prepared by Enrique Rueda-Sabater and John Garrity from Cisco Systems, Inc. and draws primarily on data included in the 2008-09 GITR. For details on the Stages, ICT Map and Net Strategy Framework used in this note, please see *From Mobility to Ubiquity: Ensuring the Power and Promise of Internet Connectivity*—a chapter in the same GITR.