KNOWLEDGE SHARING SERIES

ISSUE III

GCIO Development in Developing Countries

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific
/APCICT

Knowledge Sharing Series

Issue 3

GCIO Development in Developing Countries

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APCICT **ASIAN AND PACIFIC TRAINING CENTRE FOR INFORMATION AND COMMUNICATION TECHNOLOGY FOR DEVELOPMENT**

Knowledge Sharing Series

Issue 3: GCIO Development in Developing Countries

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ISBN: 978-89-960467-1-4

Cover Designer: Min Chong Koh
Design and Layout: Scand-Media Corp., Ltd.
Printed in: Republic of Korea

Supported by

KOICA
Korea International
Cooperation Agency

FOREWORD

The transformational power of information and communication technologies (ICTs) in connecting people, improving business efficiency and empowering communities - eliminates any doubt about the importance of making these technologies accessible to all and ensuring that everyone has the capacity to harness their potential.

The 'mobile miracle' has brought the benefits of ICTs within reach of nearly everyone. In less than five years, the number of mobile phone subscriptions in Asia and the Pacific more than doubled, rising from 1.08 billion to 2.53 billion.[1]

As we know however, ICT is not only about connectivity. More importantly, it is about leveraging the power of connected technologies for inclusive and sustainable development. Two decades ago, phones were used, almost exclusively, for talking to one another. Presently, a wide range of services and applications are available on mobile phones that are being used every day for banking, learning, and obtaining real-time information - helping to improve people's lives.

However, the benefits of ICTs are still not available to everyone. In fact, the digital divide in Asia and the Pacific is one of the widest in the world. For instance, the least developed Asia-Pacific countries and the Pacific island developing economies have, on average, fewer than 28 mobile phone subscriptions per 100 persons, compared to an average of 99 in high-income countries. A similar pattern can be found in Internet usage with 1 per 100 in least developed countries, compared to 78 per 100 in high-income countries.[2]

Without adequate access and capacity to utilize ICTs, least developed countries and marginalized populations risk falling further behind the rest of the world and will face great difficulties catching up, thus widening the digital divide.

Much remains to be done to ensure inclusive and sustainable Asia-Pacific growth. Unfortunately, the growth of ICT availability has not been matched by an equally rapid expansion in knowledge concerning the opportunities and challenges that ICTs present, and the ways to effectively leverage the potential of ICTs for development.

To bridge this knowledge gap, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) welcomes the launch of the Knowledge Sharing Series being spearheaded by the Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT/ESCAP), one of our ESCAP regional institutes. As ICT for development (ICTD) programmes are often huge undertakings, that cut across multiple sectors, and require the participation of stakeholders from multiple specializations, knowledge sharing is fundamental to the effective development and implementation of ICTD strategies and plans, to the creation of innovative ICT solutions to complex development challenges, and to the avoidance of pitfalls and duplication of efforts. Knowledge sharing is, in fact, an important component of lifelong learning and capacity building, as it promotes a better and deeper understanding of different aspects of ICTD from various perspectives. Knowledge sharing is also a catalyst for establishing partnerships. This Knowledge Sharing Series has been developed for precisely these reasons.

As our member States continue to grapple with the effects of global economic uncertainty, ICT as an enabler for development, has become a key element in national strategies for building social and economic resilience, and promoting inclusive and sustainable development. It is, therefore, more important than ever to share ICTD knowledge to develop synergies, pool resources and strengthen capacities for shaping a safer and more sustainable future.

Noeleen Heyzer
Under-Secretary-General of the United Nations
and Executive Secretary of ESCAP

[1] http://wwwupdate.un.org/wcm/content/site/chronicle/cache/bypass/home/archive/thedigitaldividend/digitalasiapacificinthe21stcentury?ctnscroll_articleContainerList=1_0&ctnlistpagination_articleContainerList=true.

[2] http://www.unescap.org/survey2011/.

PREFACE

The United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT/ESCAP) was established on 16 June 2006 in Incheon, Republic of Korea as a regional institute of the United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP). The role and mission of APCICT is to strengthen the efforts of the 62 ESCAP member and associate member countries to use ICTs in their socio-economic development through building the human and institutional capacity for ICT. In pursuance of this mandate, APCICT's work is focused on three inter-related pillars – Training, Research and Knowledge Sharing, and Advisory Services. Together they form an integrated approach to ICT human capacity building.

A core activity based on the integrated approach is the Academy of ICT Essentials for Government Leaders (Academy), a flagship programme of APCICT. The Academy is a comprehensive ICT for development (ICTD) training curriculum that aims to equip policymakers with the essential knowledge and skills to fully leverage opportunities presented by ICTs to achieve national development goals and bridge the digital divide. It has reached thousands of individuals and hundreds of institutions throughout the Asia-Pacific and beyond since its official launch in 2008. The Academy has been launched and embraced in 27 countries in the Asia-Pacific region and beyond, adopted in numerous government human resource training frameworks, and incorporated in the curricula of university and college programmes throughout the region. The Academy training curriculum, with 11 modules and more forthcoming, has been translated into 12 languages, and is available as an online course on the APCICT Virtual Academy.

Complementing the Academy, APCICT has been conducting research on ICTD human resources development and promoting knowledge sharing among member countries on different aspects of ICTD through the development and dissemination of in-depth analyses, policy notes, case studies and best practices. APCICT also has an online knowledge sharing portal that includes: (1) a handful of communities of practice with a network of professionals committed to share knowledge and learn about different aspects of ICTD; and (2) the e-Collaborative Hub, a dedicated online platform to enhance their learning and training experience through access to ICTD resources, training courses, news and events.

Based on a continuous demand for step-by-step "how-to" guidelines on different aspects of ICTD that translates technical details into a form that can be easily referenced, understood and applied by government officers, APCICT has created the Knowledge Sharing Series to further strengthen APCICT's knowledge sharing efforts and strategically contribute to ICTD capacity building.

The development of this third issue under the Knowledge Sharing Series would not have been possible without the support of the Korean International Cooperation Agency (KOICA) and the dedicated efforts of many individuals and organizations. I would like to especially acknowledge the author of this issue, Emmanuel C. Lallana, the participants of the Expert Group Meeting on "GCIO Development in Developing Countries" organized by APCICT on 7-8 February 2013 in Incheon, as well as everyone else who provided valuable feedback during the content development process. I hope that interested governments in the Asia-Pacific region will find the insights and practical guidance in this publication useful in developing and implementing a GCIO programme.

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Director
UN-APCICT/ESCAP

ABOUT ISSUE 3 OF THE KNOWLEDGE SHARING SERIES

The Knowledge Sharing Series intends to help bridge the knowledge divide on how ICTs can be used for social and economic development, and ultimately help bridge the digital and development divide.

Aimed at policymakers and at government officials in operational departments and offices in developing countries, the series provide step-by-step guidelines, concrete strategies, proven best practices and select case studies on different aspects of ICT for development (ICTD). By making research findings, analyses and lessons learned easily accessible and comprehensible, the series can be useful for making informed decisions.

Each issue in the series focuses on a specific ICTD theme, programme or project, and offers an end-to-end road map that can help policymakers in their planning, implementation, monitoring and evaluation processes.

Two issues have already been produced by APCICT under the Knowledge Sharing Series. The first issue, on the topic of “ICTD Institution Building”, provides fundamental knowledge needed to develop common vision and strategies, mobilize resources and promote institutional coordination. The second issue on “Cybersecurity”, focuses on developing cybersecurity policies and strategies and devising appropriate national initiatives to counteract cyberthreats.

This third issue focuses on the topic of Government Chief Information Officer (GCIO) Development in Developing Countries. It examines the crucial role of a GCIO in providing leadership on ICT matters within government and promoting ICT-enabled socio-economic development. It also examines the main issues related to skill development and training of GCIOs and will describe some good practices on GCIO programmes, which may be replicated in a developing country setting.

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Acronyms

APCICT	Asian and Pacific Training Centre for Information and Communication Technology for Development (United Nations)
APEC	Asia-Pacific Economic Cooperation
AGIMO	Australian Government Information Management Office
BYOD	Bring Your Own Device
CIO	Chief Information Officer
ESCAP	Economic and Social Commission for Asia and the Pacific (United Nations)
GCIO	Government Chief Information Officer
ICT	Information and Communication Technology
IDA	Infocomm Development Authority (Singapore)
IT	Information Technology
MOOC	Massive Open Online Course
NGCIO	National Government Chief Information Officer
OMB	Office of Management and Budget (United States of America)
PC	Personal Computer
SACC	Small Agency CIO Council (United States of America)
UK	United Kingdom
UN	United Nations
U.S.	United States

CHAPTER 1.
THE CIO AND THE GCIO

CHAPTER 1.

THE CIO AND THE GCIO

The continuing importance of technology in governance has heightened the necessity for an expert to lead public sector information and communication technology (ICT) strategy and delivery.

Richard Heeks is among the earliest who identified leadership and requisite competencies as among the key factors in the success or failure of e-government projects.[1] Jean-Pierre Auffret and colleagues argue that realizing the potential of e-government "is dependent on strong Technology Leadership (e-Leadership) realized through executive ICT leaders and Government Chief Information Officers (GCIOs)."[2] In the same vein, the Waseda University e-Government Ranking underscores the importance of a public sector Chief Information Officer (CIO) in formulating and implementing e-government strategies in government agencies.[3]

1.1 The Chief Information Officer

A widely accepted definition of the CIO is "the person in an enterprise (who is) responsible for the information technology and computer systems that support enterprise goals."[4]

The CIO came into being as a result of the increased importance of ICT in the enterprise.[5]

The job title of the person in-charge of information technology (IT) when computers were used primarily in accounting and finance was "Data Processing Director or Manager". The title changed to "Management Information System Director/Manager" when computers became vital to the operations of other departments of the organization. The job title CIO surfaced in the mid-1980s, when computers became critical to operations and business strategy.

Jeanne W. Ross and David F. Feeny suggest that the evolution of the role of the Senior IT Officer in the enterprise is a result of technological change and "surrounding forces".[6]

Technological changes led to the following three periods in the history of enterprise use of ICT:

- The **mainframe era**, covering roughly the 1960s to the early 1980s, when IT was largely synonymous with mainframe computers.
- The **distributed era**, starting at the end of the 1970s, when corporate IT became characterized by integrated networks of workstation personal computers (PCs), mini-computers and mainframes, connected through local and wide area networks.

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1 Richard Heek, "Success and Failures in eGovernment Projects", eGovernment for Development, 19 October 2008. Available from http://www.egov4dev.org/success/evaluation/factormodel.shtml.

2 Jean-Pierre Auffret and others, "Developing a GCIO System: Enabling Good Government Through e-Leadership", 2010, p. 1. Available from http://www2.iist.unu.edu/www/homepage/tj/tj-pub-63.pdf.

3 Waseda University, "Institute of e-Government released the 2011 World e-Government Ranking", 14 January 2011. Available from http://www.waseda.jp/eng/news10/110114_egov.html.

4 SearchCIO, "Definition: CIO (Chief Information Officer)", April 2008. Available from http://searchcio.techtarget.com/definition/CIO.

5 IBM, "The Emergence of the CIO". Available from http://www-03.ibm.com/ibm/history/ibm100/us/en/icons/emergenceofcio/.

6 Jeanne W. Ross and David F. Feeny, "The Evolving Role of the CIO", CISR WP No. 308, Center for Information Systems Research Massachusetts Institute of Technology, August 1999. Available from http://dspace.mit.edu/bitstream/handle/1721.1/2758/SWP-4089-43797710-CISR-308.pdf.

- The **web-based era**, starting in the mid-1990s, with a rapidly growing emphasis on the use of Internet and web protocols to drive both internally and externally oriented applications of IT.[7]

The surrounding forces that affected the evolution of the CIO are:

- The existing and planned applications of technology in the host organization
- The attitudes of senior executives towards technology and its potential impacts and role
- The characteristics of the principal vendors who deliver and service the technologies[8]

Thus, in the mainframe era, the Electronic Data Processing Manager was an operational manager of a specialist function. The task was the on-time delivery and reliable operations of IT.[9]

In the distributed era, the lead role of IT changed to: member of the executive team; organizational designer; technology advisor; technology architect; and informed buyer. The corresponding tasks for these roles are: managing the IT unit; recruiting and developing IT staff; educating line management; aligning IT with business; designing corporate architecture; scanning technologies; stabilizing and standardizing infrastructure; scanning the services market; and developing alliances with key IT vendors.

In the web-based era, the CIO is expected to be a "business visionary" who helps drive the organization's strategy. The CIO is tasked with developing new business models for the Internet and introducing management processes that leverage the intranet.[10] In sum, the CIO is "not just... a function head and transformation enabler, but also a co-leader of the business in identifying and capitalizing on new possibilities to deliver value with information."[11]

Let us now turn to the core traits of the CIO.

Today's CIOs are expected to be:

- Hungry for change. The CIO should transform IT applications, services and infrastructures to make them flexible, extensible and secure.
- Innovative beyond the customer's imagination. The CIO should enable collaboration across and beyond the enterprise and turn data into insights.
- Globally integrated. The CIO should initiate moves towards a shared services model, enabling integrated business operations and supply chains.
- Disruptive by nature. The CIO should be ready to support the evolving business models of the enterprise, including acquisitions, mergers and divestitures.
- Genuine, not just generous. The CIO should be working to reduce the IT footprint and associated energy use, along with the human effort required to support the IT infrastructure.[12]

In terms of mandate, the CIO's charge or charter is a consequence of the needs and expectations of the corporation. Thus, the CIO operates within one of four mandates: leverage, expand, transform and pioneer.[13]

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7 Ibid., p. 3.

8 Ibid., p. 2.

9 Unless specified otherwise, the subsequent information is taken from Table 1: The CIO Role and Its Driving Forces in Jeanne W. Ross and David F. Feeny, "The Evolving Role of the CIO", CISR WP No. 308, Center for Information Systems Research Massachusetts Institute of Technology, August 1999.

10 Ibid., p. 14.

11 Michael Swenson and Richard Pastore, "Executive Competencies and the Future-State CIO", CIO Executive Council, undated. Available from http://arkiv.idg.se/fileArchive/cio/future_state_cio.pdf.

12 IBM, "CIO as the master of change: Transforming the IT organization and driving transformation across the enterprise", June 2008, p. 3.

13 IBM, "The Essential CIO: Insights from the Global Chief Information Officer Study", p. 17.

Under the **leverage** mandate, the CIO is expected to streamline operations and increase organizational effectiveness.[14] They are expected to spend 50 per cent of their efforts on delivering IT services.

In the **expand** mandate, the CIO is creating "enterprise-wide efficiencies by streamlining business processes, improving collaboration across the enterprise and enabling faster, more effective decision-making."[15] CIOs with this mandate "are forsaking the do-everything-in-house approach that once characterized many IT shops and instead plan to partner extensively."[16]

The **transform** mandate is to change the industry value chain through improved relationships.[17]

While the **pioneer** mandate requires from the CIO radically innovate products, markets and business models.[18] In this type of organization, the dominant view of IT is as a "catalyst for change".

Table 1 below shows how CIOs (under different mandates) divide their time to deliver on the organization's view of the role of IT.

Table 1. Time spent by CIOs on tasks based on mandate

	Provider of fundamental technology services (%)	Facilitator of organizational process efficiency (%)	Provider of industry-specific solutions to support business (%)	Critical enabler of organization vision (%)
Leverage	52	28	14	6
Expand	27	32	27	15
Transform	14	26	34	27
Pioneer	8	14	26	52

The private sector CIO is not an undifferentiated category. CIOs in high growth markets exhibit unique characteristics different from CIOs in mature markets.

[14] Ibid., pp. 21-29.

[15] Ibid., p. 31.

[16] Ibid., p. 33.

[17] Ibid., p. 41.

[18] Ibid., p. 53.

Box 1. Growth market CIO

With the world's eyes on Brazil, China, India, Russia and other rapid-growth markets as the engines propelling the global economy, what are the typical characteristics of CIOs in these countries?

- At a basic level, the title of "IT director" is a far more common title than "CIO", which in part reflects the fact that the average company size in these markets is smaller (but growing fast).
- IT leaders in rapid-growth markets tend to have slightly shorter tenures, with far fewer having stuck around for a decade or more (13% versus 29%). They also tend to be younger, with an average age of 39 compared with 47 for their developed market peers.
- They're also palpably more ambitious: 35% want a bigger CIO role, and 18% fancy a shot at the top CEO job, compared with just 27% and 4% among CIOs in mature markets.
- While they identify the same target skills, they generally see a greater need to sharpen their skill set.
- They appear to be better networkers, with closer ties, on average, to both the front office and stakeholders outside the business. Nevertheless, they're rather less likely to be involved in their companies' strategic business decisions.
- Rapid-growth market CIOs are far more likely to hold an IT qualification: 60% hold a bachelor's or master's level degree in IT, compared with 40% of mature market CIOs.

Source: Ernst and Young, *The DNA of the CIO: Opening the door to the C-suite,* 2011, p. 14. Available from http://www.ey.com/Publication/vwLUAssets/DNA_of_the_CIO/$FILE/DNA_of_the_CIO.pdf.

Despite the greater prominence of CIOs in many organizations, they are not yet the key influencers of organizational strategy. According to an Ernst and Young study:[19]

> In a worrying number of businesses, the perception of IT still appears to be shaped by its role as "help desk." Indeed, …the views of the rest of the leadership team often remain stuck in the past, when IT was simply a back office function that operated the basement data center. Most leaders aim to keep any discussions with the CIO centered on IT budgets, with few seeing this as a chance to engage in a wider discussion about the value of technology.

This conclusion is supported by a CIO magazine survey on the top five activities consuming the CIO's time. These are:[20]

- Aligning IT initiatives with business goals (63%)
- Making improvements to IT operations and systems performance (54%)
- Implementing new systems and architecture (50%)
- Cultivating partnerships between IT and business (45%)
- Overseeing cost control and expense management (40%)

[19] Ernst and Young, *The DNA of the CIO: Opening the door to the C-suite*, 2011, p. 14. Available from http://www.ey.com/Publication/vwLUAssets/DNA_of_the_CIO/$FILE/DNA_of_the_CIO.pdf.

[20] CIO Magazine, "2013 State of the CIO Survey Results", January 2013, p. 4. Available from http://www.cio.com/documents/pdfs/2013%20State%20of%20the%20CIO%20Exec%20Summary.pdf.

But change is on the horizon. While today's CIOs are focused on their roles as function heads and transformation enablers, they hope to become more strategically oriented in the next 3-5 years. These CIOs hope to spend more of their time on the following activities:[21]

- Driving business innovation (54%)
- Developing and refining business strategy (45%)
- Identifying opportunities for competitive differentiation (41%)

1.2 The Government Chief Information Officer

Like the private sector CIO, the GCIO responsibilities have evolved over the years to include the following:[22]

- Policy
    - Standards/Architecture
    - Strategic Planning
    - Security/Privacy

- Operations
    - IT Service Delivery
    - Portal Management
    - Government-wide Enterprise Applications
    - Applications Development
    - Help Desk
    - Project Management

- Process
    - Procurement
    - Budgeting
    - Project Oversight
    - Performance Measurement
    - Business Process Re-Engineering

In the 1990s, the GCIO was responsible for ensuring that both government-as-a-whole and "user-agencies" benefit from a centralized approach to ICT.[23] The following are seen as the advantages of this centralized approach:

- The ability to develop standards that resulted in fewer technical impediments to cross-programme communication
- Infrastructure consolidation, with the possibility of huge financial savings
- Simplified procurement processes
- A stronger pool of technical skills available to all agencies
- Lower risk from big IT projects
- The ability to broker and coordinate outsourced IT services along with in-house services. The ability to develop and maintain portfolio management from an enterprise perspective (rather than a silo perspective)

At present, the role of GCIO is being impacted by Web 2.0.

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[21] Ibid.

[22] John Kost, "Creating a Public Sector CIO Job Description", Gartner Research Note, 18 September 2002, pp. 3-9. Available from http://www.gartner.com/id=370966.

[23] Ibid., p. 2.

Anthony Williams believes that Web 2.0 provides GCIOs "with significant opportunities to infuse innovation into the business of delivering services."[24] He also proposes that the GCIO should lead in the use of new collaboration tools in government. For him, the role of the GCIO is to "provide a digital infrastructure that ensures that governments can marshal the external sources of knowledge and expertise required to cope with an increasingly complex social, political, and economic environment."[25] Williams believes that the immediate challenge to today's GCIO are:[26]

- Persuading agencies to experiment with Web 2.0 technologies and new strategies for delivering services
- Persuading managers that social networking technologies are not a distraction but an essential tool in today's workplace
- Persuading customers that data sharing will result in greater convenience and higher quality services

Mobility is another technological development that is impacting today's GCIOs. Smart phones and tablets are not only used extensively by civil servants, they also offer new ways to link with citizens and business. In developing countries mobile devices are seen as becoming the main mode for dealing with government.

Already, the "Bring Your Own Device" or "BYOD" phenomenon is becoming mainstream. A 2012 survey of BYOD in private and public sector organizations across Europe, the Middle-East, and Africa showed "that organizations are taking considerable steps towards BYOD adoption."[27]

Accenture believes that there are at least four ways that mobility can transform governance:[28]

1. Mobile technology can bridge the digital divide.
2. Mobility can change relationships between citizens and government. It has the potential to reshape citizen engagement by promoting new dialogues between citizens and agencies using social media, gaming and other technologies.
3. Mobility can help government agencies become more insight driven. Mobility allows personnel to gather on-scene data in real-time so they can share it, make decisions and act.
4. Mobility can increase workforce productivity and satisfaction. Mobility can drive field service productivity. Government workers want an array of services on their mobile devices from training and business intelligence apps to time and expense and approvals apps.

A United States (U.S.) study "Feds on the Go: Network Needs for Maximum Mobility" reveals that if all federal employees had seamless remote connectivity and mobile access the Federal Government "stands to gain 364 hours of annual productivity—or nearly $14,000 worth of taxpayer-funded work."[29]

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[24] Anthony Williams, "Enabling Government 2.0: Providing Leadership for Government Transformation", in Intergovernmental Solutions Newsletter: The Role of the Government Chief Information Officer, p. 29.

[25] Ibid., p. 30.

[26] Ibid.

[27] Ali M. Al-Khouri, "Technological and Mobility Trends in E-Government", *Business and Management Research*, Vol. 2, No. 3 (2013), p. 98. Available from http://www.sciedu.ca/journal/index.php/bmr/article/view/3235/1916.

[28] Accenture, "Four Ways that Mobility can Transform Government Solutions", 2013. Available from http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Four-Ways-that-Mobility-Can-Transform-Government-Solutionsv2.pdf.

[29] Frank Konkel, "Study: More mobile would make feds more productive", FCW, 19 August 2013. Available from http://fcw.com/articles/2013/08/19/meritalk-mobile-productivity-survey.aspx.

With the transformative potential of mobility, among the challenges that GCIOs will face is how "to reconcile mission goals and restrictions with employees' desire to use their preferred mobile device."[30]

As noted by Gregory Smith:[31]

> Old-school technocrats are used to *controlled* environments and systems. Modern-day CIOs need to embrace and manage a changing technology that includes tablets, new smartphones, social networking (including via mobile), and collaboration in the cloud. These are all examples of disruptive technologies that are maturing and causing CIOs to rethink their strategies and governance models.

Box 2. Three reasons why it is important for a GCIO to be a social media practitioner

1. Because it is where the citizens are

In the public sector, we need to remember it really is all about the citizen. Our services should revolve around the citizen and meet them on their terms. Being "citizen centric" when we engage with citizens means we adapt to them, not the other way around. If we want true citizen engagement, we will get out of our government comfort zones and get into the comfort zones of the citizens. Depending on which survey you believe, social media is used regularly by more than half of our citizens. The hardest citizen demographics to reach, the young and the elderly, are eagerly adopting social media. For example, it is widely thought that more people use Facebook than regularly read the newspaper.

2. Because you cannot "lead" if you cannot "do"

CIOs need to lead the effort to focus our communications on the outlets the citizens use. We are uniquely qualified for this because of our focus on leadership, communications and technology. No other role in government presents the same nexus. If CIOs don't lead in this area, who will? But before we can lead in this effort, we must be practitioners. You will never convince a reluctant city manager to start a blog unless you can talk about it with first-hand experience.

3. Because you will be left behind in many ways if you don't

One of my favourite quotes, used in each and every presentation I have given since becoming a public sector CIO: *"When the pace of change outside an organization becomes greater than the pace of change inside the organization, the end is near."* - John R. Walter, President of AT&T.

The public CIO needs to keep pace with technology outside the organization, so they can ensure that government outreach and services remain relevant to the citizen. Senior municipal officials and elected officials expect CIOs to understand technology shifts, the advantages and the risks. Consequently there is little job security or opportunity to be found by CIOs that ignore technology trends. Ignore the pace of change, and your career may be what comes to an end. Social media is but one of a myriad of technologies that public CIOs need to keep pace with, but it is one that is vital to citizen centricity and citizen engagement.

Source: Barry Condrey, "Public CIO as Social Media Practitioner", CIO Musings - Life as a Public Sector CIO, 5 August 2012. Available from http://cio-musings.blogspot.com/2012/08/public-cio-as-social-media-practitioner.html.

[30] Dan Hou, "The Real Mobility Mandate: Make Government Easier", Government CIO Magazine, 1 September 2013. Available from http://www.governmentciomagazine.com/2013/09/real-mobility-mandate-make-government-easier.

[31] Gregory Smith, *Straight to the Top: CIO Leadership in a Mobile, Social, and Cloud-based World*, Second Edition (Hoboken, NJ, Wiley and Sons, 2013) p. 5.

GCIOs are not a homogeneous group. It is also important to recognize the difference between GCIOs in developed countries and GCIOs in developing countries.

It is argued that the GCIOs in the developed world progressed organically—it emerged out of a continuous process of ICTs moving from assisting the enterprise to strategic leadership.[32] While the GCIOs in developing countries were created by decree—it was copied from the developed country. But the main difference between the two is the role of the developing country GCIO in promoting ICT-enabled economic development.[33] This difference in GCIO roles would require difference in the skills and knowledge to discharge the tasks (i.e., core competencies): "GCIOs in developing countries have a harder job and the required level of core competence is somehow much larger than that in the developed world."[34]

1.3 The Similarities and Differences between GCIO and Private Sector CIO

For Nquyen Thi Thanh Hai, the private sector CIO focuses on "using the (enterprise) information resources to increase share-holder value and provide the return on investment", while the GCIO focuses on "using ICT to enable economic development and to improve the administrative systems to provide better services to citizens and business."[35]

Elsa Estevez and Tomasz Janowski enumerate the unique qualities of the GCIO:[36]

- Working to create public value by delivering concrete benefits to the stakeholders or to the public at large, typically measured in non-financial terms like safety, transparency, education, etc.
- Responding to a wider range of stakeholders including political leaders, government leaders, law-makers, other GCIOs and the media, all with different and often conflicting needs.
- Being affected by electoral cycles and political factors, GCIOs tend to work for different administrations, with a shorter tenure than the policy goals they are working to fulfil.
- Being at the centre of transformation from traditional forms of government into network forms where a government organizes existing resources and capabilities to produce public value
- Being part of governance networks, GCIOs are responsible for engaging non-state actors to address the lack of government capacity to satisfy interconnected public needs, to pursue desirable social change, and to address loss of public confidence in government's ability to address socio-economic needs.

D. C. Mistra believes that private sector and public sector CIOs are different in terms of control, orientation, clientele, motivation, working environment and risk-taking behaviour.[37] Table 2 summarizes the view of D. C. Mistra.

[32] Nguyen Thi Thanh Hai, "Strengthening ICT Leadership in Developing Countries", *Electronic Journal on Information Systems in Developing Countries*, Vol. 34, No. 4 (2008), p. 7. Available from https://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/472.

[33] Ibid.

[34] Ibid., p. 8.

[35] Ibid., p. 7.

[36] Elsa Estevez and Tomasz Janowski, "Landscaping Government Chief Information Officer Education", 46th Hawaii International Conference on System Sciences, 2013, p. 1684. Available from http://origin-www.computer.org/csdl/proceedings/hicss/2013/4892/00/4892b684.pdf.

[37] D. C. Mistra, "The Chief Information Officer (CIO) Concept in E-government: Select Lessons for Developing Countries", 2010, p. 3. Available from http://www.docstoc.com/docs/67900924/.

Table 2. Approaches to the CIO concept in private and public sectors

Characteristics	Private Sector	Public Sector
Control	Shareholders	Voters
Orientation	Result-oriented	Procedure-oriented
Clientele	Customer	Citizens and Non-citizens
Motivation	Profit	Service
Working Environment	Competitive	Monopoly
Risk-taking Behaviour	Risk-taking	Risk-averse

In order to deepen our appreciation of the similarities and differences let us compare the CIO and GCIO competencies.

A competency is a cluster of related knowledge, skills and attitudes that affects a major part of one's job (a role or responsibility) that correlates with performance on the job, that can be measured against well-accepted standards, and that can be improved via training and development.

The CIO Executive Council has identified the following competencies for private sector CIOs:[38]

- **Market Knowledge** – Understanding the market in which a business operates
    - Basic – Knowing the market and operating conditions of one's own area
    - Moderate – Identifying and understanding the market at a nuanced, customer segment level
    - Advanced – Having deep knowledge to see how to transform the industry landscape
- **External Customer Focus** – Serving and building value-added relationships with customers or clients
    - Basic – Being reactive and responsive to customer requests
    - Moderate – Knowing the customer perspective and starting to anticipate evolving customer requirements
    - Advanced – Having deep external customer relationships, dedicated to creating enduring mutual benefit
- **Commercial Orientation** – Identifying and moving towards business opportunities, and seizing chances to increase profit and revenue
    - Basic – Being aware of and supporting the need for the organization to make money
    - Moderate – Making the most of opportunities to improve revenue and profit in one's own area
    - Advanced – Changing the rules of the game and creating sustainable competitive advantage

[38] CIO Executive Council "Executive Competencies and the Future-State CIO", pp. 3-5. Available from http://www.cio.com.au/campaign/370102?content=%2Fwhitepaper%2F370492%2Fexecutive-competencies-and-the-future-state-cio-overview%2F%3Ftype%3Dsection%26arg%3D22%26location%3Dart_related.

- **Strategic Orientation** – Being able to think long term and beyond one's own area

    - Basic – Focusing on immediate issues and context, and adapting to strategy
    - Moderate – Defining strategy for one's own area and contributing to broader strategy discussions
    - Advanced – Developing multi-business unit, corporate or breakthrough strategies in complex environments

- **Change Leadership** – Transforming and aligning an organization through its people to drive for improvement in new and challenging directions

    - Basic – Being neutral to change and willing to accept change as necessary
    - Moderate – Advocating for change, communicating and persuading others, and planning for successful change
    - Advanced – Embedding a culture of change and driving coordinated change through complex organizations

- **Collaboration and Influence** – Working effectively with, and influencing those outside of, one's functional area for positive impact on business performance

    - Basic – Responding if asked, but not initiating collaboration
    - Moderate – Motivating others to work with self, using informal structures, contributing to broader organization and building relationships
    - Advanced – Forging transformational partnerships

- **Results Orientation** – Focusing on improvement of business result

    - Basic – Fulfilling assigned tasks and wanting to do good work
    - Moderate – Delivering beyond expectations, relishing challenges, and setting new goals for self and team
    - Advanced – Transforming processes and creating whole new business models in search of results

- **People and Organizational Development** – Developing the long-term capabilities of others and the organization as a whole, and finding satisfaction in influencing or even transforming someone's life or career

    - Basic – Focusing on problems, occasional feedback and development opportunities
    - Moderate – Providing structured individualized development support, and systematic feedback both positive and negative
    - Advanced – Building and sustaining a talent management culture in the organization as a whole

- **Team Leadership** – Focusing, aligning and building effective groups both within one's immediate organization and across functions

    - Basic – Having a directive approach using a command-and-control style of leadership
    - Moderate – Having a collaborative style, engaging team members in making plans, and persuading and rewarding individuals and the team
    - Advanced – Building high performance, high morale and self-managing teams that function well in complex environments

- **Function Expertise** – Having the ability to lead one's own functional area or unit to achieve operational excellence

    - Having moderate to high level of performance is assumed here

Note that function expertise (or IT competency) is only one of ten competencies desired. This is very different from the competencies desired of GCIOs.

Among the first competency standards for GCIOs is the U.S. government's Clinger-Cohen Core Competencies.[39] This was an off shoot of the Information Technology Management Reform Act of 1996 (also known as the Clinger-Cohen Act). The Clinger-Cohen Core Competencies was first published in 1997. The latest version was released in December 2013 and includes new competencies for IT governance, IT programme management leadership, vendor management, cybersecurity/information assurance strategies and plans, social media, cloud computing, open government, information collection, and information accessibility.[40]

Table 3. Elements in the 2012 Clinger-Cohen Core Competencies Framework

Competency 1	**Policy and Organization**
1.1	Department/agency missions, organization, functions, policies and procedures
1.2	Governing laws and authorities
1.3	Federal government decision-making and policy-making processes
1.4	Linkages and interrelationships between agency heads and their Chief Executive Officers
1.5	Intergovernmental programmes, policies and processes
1.6	IT governance
Competency 2	**Leadership and Human Capital Management**
2.1	Key CIO leadership attributes
2.2	Professional development and career planning
2.3	Competency performance and management
2.4	Partnerships and team building
2.5	Personnel performance management
2.6	Attracting, motivating and retaining IT personnel
Competency 3	**Process and Change Management**
3.1	Organizational development
3.2	Process management and control
3.3	Quality improvement models and methods
3.4	Business process redesign/reengineering models and methods
3.5	Cross-boundary process collaboration

[39] Chief Information Officer U.S. Department of Defense, "DoD IT Workforce". Available from http://dodcio.defense.gov/dodit/dodit_competencies.aspx.

[40] CIO.GOV, "CIO Council Releases Updated Clinger-Cohen Core Competencies & Learning Objectives", Chief Information Officers Council, 17 January 2013. Available from https://cio.gov/cio-council-releases-updated-clinger-cohen-core-competencies-learning-objectives/.

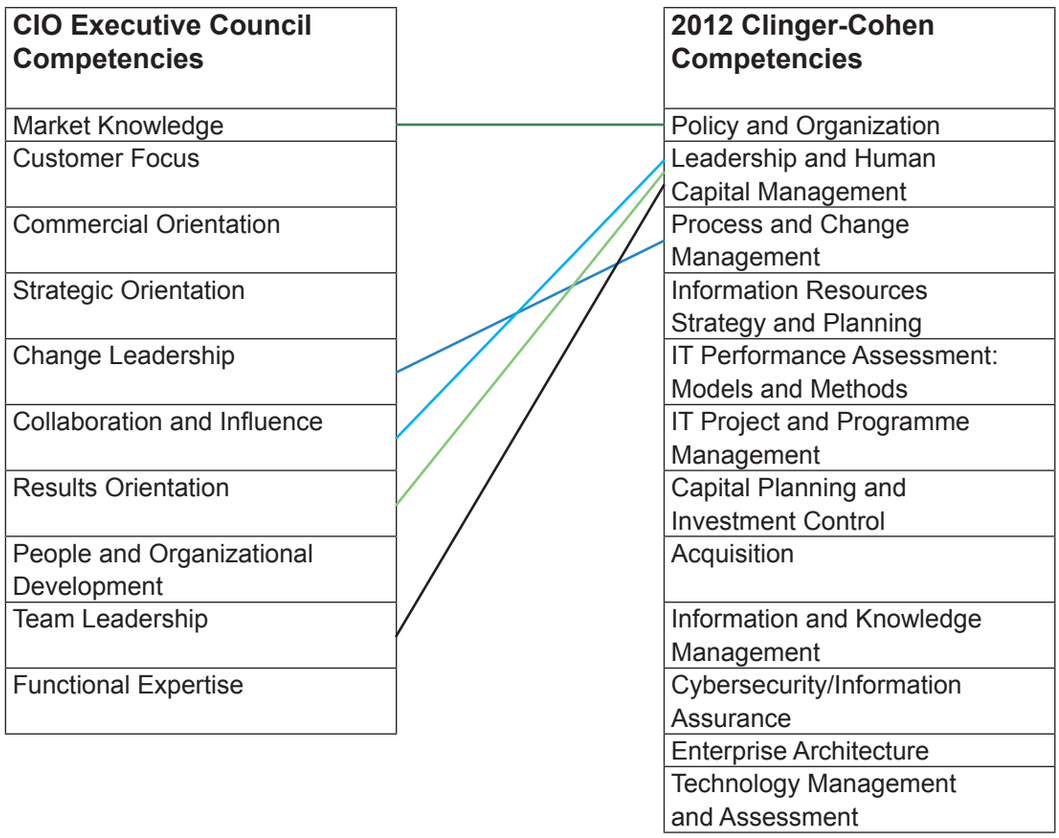
Competency 4	Information Resources Strategy and Planning
4.1	Information resources baseline assessment analysis
4.2	Interdepartmental, inter-agency IT functional analysis
4.3	IT planning methodologies
4.4	Contingency and continuity of operations planning
4.5	Monitoring and evaluation methods and techniques
Competency 5	**IT Performance Assessment: Models and Methods**
5.1	Government Performance and Results Act and IT
5.2	System development decision-making
5.3	Measuring IT success
5.4	Defining and selecting effective performance measures
5.5	Evaluating system performance
5.6	Managing IT reviews and oversight processes
Competency 6	**IT Project and Programme Management**
6.1	Project scope and requirements management
6.2	Project integration management
6.3	Project time, cost and performance management
6.4	Project quality management
6.5	Project risk management
6.6	System lifecycle management
6.7	Software development, testing and implementation
6.8	Vendor management
6.9	IT programme management leadership
Competency 7	**Capital Planning and Investment Control**
7.1	Capital planning and investment control best practices
7.2	Cost-benefit, economic and risk analysis
7.3	Risk management models and methods
7.4	Weighing benefits of alternative IT investments
7.5	Capital investment analysis models and methods
7.6	Business case analysis
7.7	Investment review process
7.8	IT portfolio management
Competency 8	**Acquisition**
8.1	Acquisition strategy
8.2	Acquisition models and methodologies
8.3	Post-award IT contract management
8.4	IT acquisition best practices
8.5	Software acquisition management
8.6	Supply chain risk management in acquisition

Competency 9	Information and Knowledge Management
9.1	Privacy, personally identifiable, and protected health information
9.2	Information accessibility
9.3	Records and information management
9.4	Knowledge management
9.5	Social media
9.6	Web development and maintenance strategy
9.7	Open government
9.8	Information collection
Competency 10	**Cybersecurity/Information Assurance**
10.1	CIO cybersecurity/information assurance roles and responsibilities
10.2	Cybersecurity/information assurance legislation, policies and procedures
10.3	Cybersecurity/information assurance strategies and plans
10.4	Information and information systems threats and vulnerabilities analysis
10.5	Information security controls planning and management
10.6	Cybersecurity/information assurance risk management
10.7	Enterprise-wide cybersecurity/information assurance programme management
10.8	Information security reporting compliance
10.9	Critical infrastructure protection and disaster recovery planning
Competency 11	**Enterprise Architecture**
11.1	Enterprise architecture functions and governance
11.2	Key enterprise architecture concepts
11.3	Enterprise architecture interpretation, development and maintenance
11.4	Use of enterprise architecture in IT investment decision-making
11.5	Enterprise data management
11.6	Performance measurement for enterprise architecture
Competency 12	**Technology Management and Assessment**
12.1	Network, telecommunications and mobile device technology
12.2	Spectrum management
12.3	Computer systems
12.4	Web technology
12.5	Data management technology
12.6	Software development technology
12.7	Cloud computing
12.8	Special use technology
12.9	Emerging technology

Source: CIO Council, "2012 Clinger-Cohen Core Competencies & Learning Objectives", December 2012. Available from https://cio.gov/wp-content/uploads/downloads/2013/02/2012-Learning-Objectives-Final.pdf.

Figure 1 matches the CIO Executive Council and the Federal CIO Council (Clinger-Cohen) competencies to help the reader fully appreciate the difference in expected competencies of the CIO and GCIO.

Figure 1. The matching of the CIO Executive Council and the Federal CIO Council (Clinger-Cohen) competencies



From figure 1, we can see that private sector CIOs in developed societies deem leadership and business skills more necessary than public sector CIOs. The competencies of GCIOs in developed countries are more focused on technical ICT skills.

Other countries have defined their respective GCIO core competencies but they are not as comprehensive as the Clinger-Cohen competencies.

A 2010 survey of 10 countries (including China, Japan, Republic of Korea, New Zealand, Russia, Thailand and Viet Nam) revealed the following as the common elements of their GCIO core competencies:[41]

[41] Government CIO Survey Results, *Journal of E-Governance*, Vol. 34 (2011), pp. 9—10. Available from http://iospress.metapress.com/content/u2g86j8454j83432/fulltext.pdf.

- National e-government design and planning
- Process/change management
- Cybersecurity knowledge and experience
- Project/programme management
- Procurement and acquisition planning

Box 3. Terms of reference of Malaysian GCIO

1. To act as a change agent through the alignment of the public sector ICT strategic plan with the requirements of the national development plan
   a) To drive the public sector ICT strategic plan
   b) To strengthen public sector ICT governance

2. To strengthen ICT policy, standards and practice
   a) To drive adoption of enterprise architecture in public sector
   b) To drive suitable regulations, policies, standards and good practices in the implementation of e-government
   c) To steer the implementation of ICT shared services in the public sector

3. To encourage ICT acculturation in the public sector service delivery system
   a) To drive visionaries of ICT programmes in the public sector

4. To innovate in e-government applications, infrastructure and ICT security
   a) To identify new generation services
   b) To drive information sharing towards cross-agency services

Source: Malaysian Administrative Modernisation and Management Planning Unit, "Government Chief Information Officer (GCIO)". Available from http://www.mampu.gov.my/web/en/gcio.

CHAPTER 2. INSTITUTIONALIZATION

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INSTITUTIONALIZATION

Today we see the public sector CIOs at all levels of government—national (federal) and local. At the national level, there is the GCIO for the whole-of-government or National GCIO (NGCIO), as well as those who serve specific government agencies or Agency GCIOs.

However, the NGCIO is a relatively new position.

The U.S. GCIO was a created in 2002 by virtue of the e-Government Act of 2002.[42] But it was not until 2009 that the title "Federal CIO" was used.[43] The title previously used for the most senior ICT official in the U.S. government was "Administrator for e-Government and Information Technology". The Federal CIO heads the Office of e-Government and Information Technology under the Office of Management and Budget, Executive Office of the U.S. President (White House).[44]

Ireland appointed its first NGCIO only in May 2013.[45] The Irish GCIO reports to the Minister for Public Expenditure and Reform and leads the government's CIO Council.[46]

Australia split the NGCIO function in 2012 with the creation of a new position—the Australia Government Chief Technology Officer.[47] The Australian GCIO leads the Australian Government Information Management Office (AGIMO) within the Department of Finance and Deregulation. The other position, the Australian Government Chief Technology Officer heads the newly created Technology and Procurement Division within AGIMO.

The United Kingdom (UK) created the position of a government-wide CIO in 2004. But in March 2013, it abolished the cross-government CIO and the Head of Profession for ICT.[48] The UK moved the GCIO function to the Government Digital Service—a new team within the Cabinet Office tasked with transforming government digital services.[49] The elimination of the GCIO is described as part of the effort to move away from "large procurement approach to technology" to "commissioning and co-delivering digital public services."[50] Prior to this change, it was observed that UK CIOs were performing as "quasi-procurement and contract managers," rather than really driving business performance based on meeting user needs.

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42 Public Law 107–347—Dec. 17 2002. Available from http://www.gpo.gov/fdsys/pkg/PLAW-107publ347/pdf/PLAW-107publ347.pdf.

43 *The Washington Post*, "Corrections", 19 September 2009. Available from http://www.washingtonpost.com/wp-dyn/content/article/2009/09/18/AR2009091803626.html.

44 Office of Management and Budget, "Office of e-Government and Information Technology", The White House. Available from http://www.whitehouse.gov/omb/e-gov.

45 Andy Price, "Bill McCluggage appointed first Irish government CIO", Public Technology.net, 10 May 2013. Available from http://www.publictechnology.net/news/bill-mccluggage-appointed-first-irish-government-cio/37780.

46 Gary Flood, "Ireland Names First National CIO", InformationWeek: Government, 9 May 2013. Available from http://www.informationweek.com/government/leadership/ireland-names-first-national-cio/240154544.

47 Gelnn Archer, "Announcing a new direction for AGIMO", Australian Government Department of Finance, 17 December 2012. Available from http://agimo.gov.au/2012/12/17/announcing-a-new-direction-for-agimo/.

48 Mike Bracken, "Of the web, not on the web" Government Digital Service, 14 March 2013. Available from http://digital.cabinetoffice.gov.uk/2013/03/14/of-the-web-not-on-the-web/#more-10559.

49 About the Government Digital Service. Available from http://digital.cabinetoffice.gov.uk/about/.

50 Mike Bracken, "Of the web, not on the web" Government Digital Service, 14 March 2013. Available from http://digital.cabinetoffice.gov.uk/2013/03/14/of-the-web-not-on-the-web/#more-10559.

2.1 An Enabling Environment

The NGCIO needs an enabling environment to succeed.

Empowering the NGCIO usually means creating a legal/policy framework that: (1) identifies the GCIO's function within government; (2) defines the responsibilities and competencies of the GCIO; and (3) provides the authority and resources to be able to discharge those responsibilities.

Governments use different instruments to empower the NGCIO. The 2010A GCIO survey of 10 countries in 2010 showed that in six per cent of these countries the GCIO position was created through a Cabinet Resolution; three per cent by law passed by the legislature; and one per cent by Executive Decree.[51]

In the U.S., the Federal CIO was created by law in the e-Government Act of 2002. Aside from this law, there are other laws that support the GCIO functions. These include the Government Paperwork Elimination Act of 1998, the Clinger-Cohen Act of 1996, the Federal Acquisition Streamlining Act of 1994, and the Government Performance Results Act of 1993.

In Austria, the Federal CIO operates within an e-government framework that is comprised of the following laws: the e-Government Act, General Administrative Procedures Act, Service of Official Documents Act, and the Electronic Signature Act.[52]

An important feature of the legal/policy framework is the ICT Governance Framework.

ICT governance, in the context of the public sector, means creating structures to ensure that government's ICT strategy is aligned with its overall governance strategy.[53] For CIOs, an ICT governance framework provides "an operating framework under which clear, constant and consistent decisions can be made."[54]

Proper ICT governance in the public sector includes five dimensions:[55]

1. The **leadership mandate**. Without a clear, top-level mandate (for the CIO) to lead and manage both the ICT function and the transformational programme, any major public sector ICT undertaking is doomed to failure.
2. The **organizational structure**. These are the structural components of the ICT organization, which should balance the quest for ICT scale advantages (achieved through centralization and rational reporting relationships) with the closeness to the users that results in usability and project success.
3. The **decision-making processes**. These are the ways by which the various ICT demands that compose the project portfolio are identified, prioritized and met by ICT supply. It also prescribes how users and providers of ICT services will interact. This challenge is greater in the public sector as the diversity of the stakeholders and the complexity of their hierarchical and cross-agency relationships serve to confuse issues.

[51] Government CIO Survey Results, *Journal of E-Governance*, Vol. 34 (2011), pp. 9–10. Available from http://iospress.metapress.com/content/u2g86j8454j83432/fulltext.pdf.

[52] Digital Austria, "Legal framework of eGovernment in Austria". Available from http://www.oesterreich.gv.at/site/6514/default.aspx.

[53] This is based on the definition of IT Governance in Karen D. Schwartz, "IT Governance Definition and Solutions", CIO, 22 May 2007. Available from http://www.cio.com/article/111700/IT_Governance_Definition_and_Solutions#what.

[54] Scott Lowe, "Ways that strong governance and policy frameworks help the CIO succeed", Tech Republic, 5 January 2012. http://www.techrepublic.com/blog/tech-manager/ways-that-strong-governance-and-policy-frameworks-help-the-cio-succeed/7183.

[55] Detlev Hoch and Miguel Payan "Establishing Good IT Governance in the Public Sector", McKinsey & Company, 1 March 2008. Available from http://www.hci.org/lib/establishing-good-it-governance-public-sector.

4. The **mindsets and skills**. These are the attitudes and capabilities needed in order to carry out ICT management tasks. People working in ICT are generally attracted to open-minded, flexible and tolerant environments. This is contrary to typical government service, which is traditionally dominated by rules and protocols. Consequently, it is not only the ICT staff and organization that must change but the non-ICT colleagues and the government structures.
5. **Performance metrics and incentives**. Metrics must be defined to allow performance to be assessed and rewarded.

Below are examples of the GCIO leadership mandate.

The Australian GCIO is responsible for whole-of-government ICT policy and governance, while the Chief Technology Officer is in charge of whole-of-government ICT services delivery.[56]

Austria's Federal CIO "advises the federal government at strategic and technical levels, supports the formulation of its e-government policies, chairs the Platform "Digital Austria" and promotes Austrian e-government solutions in the European and international arena."[57]

Ireland's GCIO is responsible "for the strategic direction of technology in support of the wider mission and strategic change objectives in the public sector."[58]

In the Republic of Korea, public sector CIOs leads in:[59]

- Planning, prioritizing, coordinating and executing ICT initiatives and projects
- Acquisition and allocation of ICT resources such as budget, facilities and human resources
- Reengineering business processes
- Enacting or revising regulations regarding e-government projects

The remit of Malaysia's GCIO includes the following:[60]

- Acting as a change agent through the alignment of the public sector ICT strategic plan with the requirements of the national development plan
- Strengthening ICT policy, standards and practice
- Encouraging ICT acculturation in the public sector service delivery system
- Innovating in e-government applications, infrastructure and ICT security

> Singapore's GCIO "provides technology advice, master planning and project management to government agencies; identifies and conceptualizes e-government programmes and projects; and drives the development and implementation of e-government programmes and projects".[61] Singapore's GCIO is responsible for whole-of-government master planning, ICT architecture, applications and resilience, and ICT policies and standards. Singapore's GCIO also provides

[56] Glenn Archer, "Announcing a new direction for AGIMO", Australian Government Department of Finance, 17 December 2012. Available from http://agimo.gov.au/2012/12/17/announcing-a-new-direction-for-agimo/.

[57] ePractice.eu, "eGovernment Factseheet - Austria — Actors", last updated in October 2011. Available from http://www.epractice.eu/en/document/288171.

[58] Department of Public Expenditure and Reform, Ireland, "Appointment of Chief Information Officer, Department of Public Expenditure and Reform", 3 May 2013. Available from http://per.gov.ie/2013/05/03/appointment-of-chief-information-officer-department-of-public-expenditure-and-reform/.

[59] Kijoo Lee, "The Role of the CIOs in Korea's Public Sector", presentation made on 22 September 2004. Available from http://info.worldbank.org/etools/docs/library/117306/682_kijoo_lee.ppt - broken link (please check).

[60] Malaysian Administrative Modernisation and Management Planning Unit, "Government Chief Information Officer (GCIO)". Available from http://www.mampu.gov.my/web/en/gcio.

[61] James Kang "Roles and Positioning of National CIOs", presentation made at the e-Government Conference in Helsinki, Finland on 29 May 2013. Available from http://www.vm.fi/vm/en/04_publications_and_documents/03_documents/20130605Presen/023_Roles_and_Positioning_of_National_CIOs_for_Performance_.pdf. All subsequent information on Singapore's GCIO is take from this presentation.

ICT professional services to 50 government agencies in planning, implementing and managing agency's ICT programmes, infrastructure systems, operations and processes. In addition, Singapore's CGIO spearheads ICT projects in key economic sectors in partnership with private sector and sector regulators, and develops cross-sectoral capabilities.

Governments use various organizational structures for their national GCIOs. A number of GCIOs are part of the office of the head of government (.e.g., Austria, Malaysia, United States of America and Vanuatu). Some are part of the ministry that is responsible for finance and government reform (.e.g., Australia, Finland and Ireland). Others are with agencies responsible for internal affairs/interior (.e.g., Germany and New Zealand).

In Austria, the "eGovernment Platform" is the body that coordinates all e-government activities.[62] It is chaired by the Federal Chancellor. The Federal CIO is a member of this council with the Vice-Chancellor, the Minister for Justice, the Minister for Home Affairs, the Minister for Finance, the Secretary for the Arts and Media, the trio of chairmen of the Provincial First Ministers' Conference, the presidents of the municipal and local authorities' associations, the chief association of social insurance organisations, the Austrian Chamber of Commerce, the Main Association of Austrian Social Security Institutions, and the directors of the legal and technical e-government working groups of the provinces. The Austrian Federal CIO chairs the "Federal Platform Digital Austria", which is the centre stage for coordination and strategy of e-government in Austria.[63]

Table 4 provides more details of the different organizational arrangements of various national GCIOs.

Table 4. Varieties of GCIO organizational arrangement

Country	Title, Concurrent Title	Agency	Units/Departments
Australia	GCIO; First Assistant Secretary, Governance and Resource Management, Department of Finance and Deregulation Australia also has a Government Chief Technology Officer who is responsible for whole-of-government ICT services and procurement	AGIMO is a part of Department of Finance and Deregulation	• Under the GCIO o Governance and Policy Branch o ICT Skills, Capability and Investment Branch • Under the Government Chief Technology Officer o Technology and Procurement Division o Online Service Branch o Government Network Services Branch o ICT Procurement Branch o Procurement Policy Branch o Procurement Management Branch

[62] Digital Austria, "eGovernment structure". Available from http://www.oesterreich.gv.at/site/6508/default.aspx.

[63] Ibid.

Hong Kong	GCIO	Office of the GCIO is under the Commerce and Economic Development Bureau	• Policy and Community
			  ○ Strategy Development
			  ○ Industry Facilitation
			  ○ Digital Inclusion
			• Consulting and Operations
			  ○ IT Strategy
			  ○ Business Transformation
			  ○ IT Operations
			  ○ IT Professional Development
			  ○ Administration Division
			  ○ Finance Division

Malaysia	GCIO; Deputy Director General – ICT, Malaysian Administrative Modernisation and Management Planning Unit	Malaysian Administrative Modernisation and Management Planning Unit, Prime Minister's Department	• ICT Shared Services Division • eKL Division • ICT Compliance Division • e-Government Management Development Division • ICT Policy and Planning Division
New Zealand	GCIO; Chief Executive, Secretary for Internal Affairs, and Secretary for Local Government	Service and System Transformation Branch, Department of Interior	• Government ICT Strategy and Planning • Government Technology Services • Government ICT Supply Management Office • Service Transformation
Singapore	GCIO; Assistant Chief Executive, Infocomm Development Authority	Government Chief Information Office Wing, Infocomm Development Authority	• Cluster Development Group includes Government Cluster Group with Enterprise Architect Office and Government Infocomm Governance Division • Government Infrastructure and Services Group • Government Innovation and Service Delivery • e-Government Group • GCIO Service Management and Capability Development • ICT Strategy and Performance Management

Note that in Singapore, the Ministry of Finance is the "e-government owner". The ministry sets the policy directions on the use of ICT in government; provides funding for e-government programmes and projects; and champions whole-of-government ICT initiatives.[64] The Infocomm Development Authority of Singapore (IDA) is the GCIO. IDA's GCIO Wing provides advice on technology, master planning and project management services to the Ministry of Finance and government agencies; identifies and conceptualizes e-government programmes and projects; and drives the development and implementation of e-government programmes and projects.

The common thread in all these arrangements is that the NGCIO is part of a "powerful" ministry—one that would have the authority and ability to push the e-government agenda even when faced with resistance from the bureaucracy.

2.2 The Office of the GCIO

The scope of the NGCIO's responsibilities requires an office with competent staff. It has been observed that it may be difficult for one person to possess all the competencies that have been specified for the GCIO. This is true in both developed and developing countries. In the U.S., "the law (Clinger-Cohen Act) clearly implies that the CIO will retain a staff of people that together have this set of required competencies, and create an office environment where they can work together on a daily basis."[65] In Indonesia, the solution was to create "second layer of G-CIO to help (the) G-CIO".[66]

In discussing the Office of the GCIO we start with considering the components of effective organizations.

For the Bridgespan Group the following are argued to be the components of an effective organization structure:[67]

- Leadership
    - Clear vision and priorities
    - Cohesive leadership team

- Decision-making and structure
    - Clear roles and accountabilities for decisions
    - Organizational structure that supports objectives

- People
    - Organizational and individual talent necessary for success
    - Performance measures and incentives aligned to objectives

- Work processes and systems
    - Superior execution of programmatic work processes
    - Effective and efficient support processes and systems

[64] Lo Yoong Khong, "Government Chief Information Office (GCIO) – An Overview", presentation made at the Second ASEAN CIO Forum on 11 June 2013. Available from http://aseancioforum.bppt.go.id/file/PD2.3%20-%20Mr.%20Lo%20Yoong%20Khong%20-%20GCIO,%20an%20Overview.pdf.

[65] Balanced Scorecard Institute, "CIO Responsibilities". Available from http://www.balancedscorecard.org/FinancialPerspective/tabid/100/Default.aspx.

[66] Arry Akhmad Arman, "The Importance of CIO Education and Supporting Standard", presentation, undated. Available from http://aseancioforum.bppt.go.id/file/PT1.1%20-%20Dr.%20Arry%20Akhmad%20Arman%20-%20The%20Importance%20of%20CIO%20Education%20&%20Supporting%20Standard.pdf.

[67] The Bridgespan Group, "Designing an Effective Organizational Structure", presentation, January 2009. Available from http://www.bridgespan.org/getmedia/b1139597-adfe-4dd7-bbb2-ac8c67883020/Effective-Organizations_-Structural-Design.pdf.aspx.

- Culture
    - o "High performance" values and behaviours
    - o Capacity to change

Next to the components of the effective organization, we should think about how to select the position and structure of the ICT organization.

John Mahoney suggests the following activities to choose the position and structure of the ICT organization that is to be led by the GCIO:[68]

1. Use external trends and governance context to shortlist ICT organization types
2. Use drivers of government goals to shortlist positions and structures
3. Use government priorities to choose ICT organization style and finalize the rest

Mahoney believes that external trends and the specific context of governance determines the limit of the ICT organization type. Below is the range of ICT organization types to choose from:[69]

- Heritage. The strategic target of this organization type is "tactical technology management". The objective is to deliver on promises and IT efficiency dominates.
- Aligned. The strategic target here is "strategic technology management". The objective is aligning ICT and governance.
- Engaged. The strategic target is "government systems leadership". The objective is enhanced governance.
- Pervasive. The strategic target is "information and process leadership". The objective is to transform government.
- Community. The strategic target is "ICT dispersed in government". The objective is for agency heads to fully own ICT sourcing and execution with few or no ICT-specific roles.

When shortlisting the positions and structures (bullet point no. 2), relevant decision makers "should maximize the most important (government) assets" and the ICT organization type chosen.[70]

The last step in Mahoney's road map (bullet point no. 3) is finalizing the choice of ICT organization type, positions and structure using government priorities.

In designing the Office of the GCIO, it is also useful to consider the Saudi Arabia general design recommendations for the IT organization, as follows: [71]

- Base management decisions on facts and adequate understanding of the situation
- Align the organization structure with the IT strategy
- Keep the customers in mind and seek the state of being "customer centric"
- Address real causes of problems, not just symptoms
- Design the organization based on required services, functions and the estimated workload
- Keep the end results in mind; the end results of the IT department are its services to the customers

[68] John Mahoney, "IT Organization Position and Structure: Getting It Right" Gartner presentation, 2008. Available from http://www.calisto.bg/userfiles/file/IT_Organization_Position_and_Structure_-_Getting_It_Right-v2.pdf.

[69] Adapted from Ibid., p. 4.

[70] Ibid., p. 5.

[71] The Saudi eGovernment Program (Yesser), "Best Practices of IT Organization Design", Version 1.0, 4 June 2007, p. 35. Available from http://www.yesser.gov.sa/en/Methodologies/Methodologies%20and%20Best%20Practices/Best%20Practices%20of%20IT%20Organization%20Design/Best_Practices_of_IT_Organization_Design_en.pdf.

- Take into consideration the environment, the stage of the IT department, and the planned management style that will be applied in managing the IT department
- Invest in a suitable set-up for project management as it is one of the major functions of the IT department
- In re-designing the organization structure, apply the concept of re-engineering that seeks a radical change rather that an enhancement or minor improvement
- Apply international standards as much as possible
- The change process is one of the most challenging endeavours, it requires careful and comprehensive planning, execution, tracking and corrective action when deviation occurs
- The organization design process is a systematic process, based on facts and experience in the IT field. If done well, the organization structure can be one of the strongest and most helpful tools in implementing strategy, change and improvement in general
- It is recommended that the IT department reports directly to the top management of the organization

2.3 Cross-Agency Coordination and Collaboration

To be an effective whole-of-government CIO, NGCIOs must work closely with Agency GCIOs and other government officials.

In the U.S., the solution was to create the CIO Council and the Small Agency CIO Council.

The CIO Council's mission is "to improve practices related to the design, acquisition, development, modernization, use, sharing, and performance of Federal Government information resources."[72] Its functions, as defined by the e-Government Act of 2002, are to:[73]

- Develop recommendations on government information resources management policies and requirements
- Share experiences, ideas, best practices and innovative approaches related to information resources management
- Assist the (Federal CIO) in the identification, development and coordination of multiagency projects and other innovative initiatives to improve government performance through the use of IT
- Promote the development and use of common performance measures for agency information resources management
- Develop recommendations on IT standards
- Assess and address the hiring, training, classification and professional development needs of the government related to information resources management
- Work with the Archivist of the United States to assess how the Federal Records Act can be addressed effectively by federal information resources management activities

The CIO Council is led by the Deputy Director for Management of the Office of Management and Budget (OMB) and the Federal CIO. The members are the CIOs of "large" federal government agencies.

[72] CIO.gov, "About", Chief Information Officers Council. Available from https://cio.gov/about/.

[73] Public Law 107–347—Dec. 17 2002. Available from http://www.gpo.gov/fdsys/pkg/PLAW-107publ347/pdf/PLAW-107publ347.pdf.

The Small Agency CIO Council (SACC) is composed of CIOs of 90 sub-Cabinet, independent federal government agencies who are not members of the CIO Council.[74] It serves as a forum to discuss common interests and best practices. It also serves as a channel between small agency CIOs and the OMB's Office of e-Government to ensure that small agencies interests are considered in the latter's guidance and reporting requirements.[75] The SACC is part of the Small Agency Council whose goals are to:[76]

- Help federal policy oversight agencies develop management policies that affect small agencies
- Exchange approaches for improving management and productivity in small agencies
- Share management resources so as to strengthen the internal management practices of small agencies

Australia has a CIO Committee that is composed of CIOs representing central government bodies, portfolio departments and delivery agencies.[77] The CIO Committee identifies ICT issues and solutions, and emerging trends to be applied at a whole-of-government level. Among its specific tasks are to:

- Support the implementation of the ICT Strategic Vision
- Function as "thought leaders" in the Australian public service's ICT arena
- Forecast likely issues that will affect the government's use of ICT
- Undertake specific ICT projects referred to it

The CIO Committee also makes recommendations on specific policies that should be mandated across government. It is chaired by the Australian Government CIO.

Ireland's Public Service CIO Council "is a representative forum for senior managers with responsibility for ICT and/or eGovernment."[78] It deliberates and makes recommendations on key ICT and e-government issues. It also provides "expert input to decisions and actions to maximise the positive impact of ICT and eGovernment on Public Service modernisation and customer service."[79]

In Austria, the ICT Board deals with national and local e-government initiatives, not just national/federal initiatives. The ICT Board is "responsible for creating the legal and technical requirements as well as coordinating the planning and development of e-government solutions between the federal government, the provinces and local authorities.[80] This ICT Board is chaired by the Federal CIO with the CIOs of the provinces as members. It has working groups "to provide advice and assistance to ministries as well as to provinces, cities and local authorities whenever the need arose."[81]

[74] Small Agency Council, "Committees: Small Agency CIO Council", last updated on 26 January 2010. Available from http://www.sac.gov/committees/cio/.

[75] Ibid.

[76] Small Agency Council, "About", last updated on 26 January 2010. Available from http://www.sac.gov/about/.

[77] Australian Government Department of Finance AGIMO, "Governance, Awards & Data", Australian Government Department of Finance. Available from http://agimo.gov.au/governance-awards-data/cioc/ The subsequent discussion is based on this website.

[78] Department of Public Expenditure and Reform, Ireland, "Appointment of Chief Information Officer, Department of Public Expenditure and Reform", 3 May 2013. Available from http://per.gov.ie/2013/05/03/appointment-of-chief-information-officer-department-of-public-expenditure-and-reform/. Available from http://per.gov.ie/2013/05/03/appointment-of-chief-information-officer-department-of-public-expenditure-and-reform/.

[79] Ibid.

[80] Digital Austria, "History and Organisation". Available from http://www.oesterreich.gv.at/site/6507/default.aspx.

[81] Ibid.

2.4 Stakeholder Engagement

The government-wide GCIO has internal and external stakeholders. The former includes government/political leaders, career public sector managers and other civil servants. External stakeholders include social, political and economic actors like citizens, businesses, politicians, journalists, professional associations and non-governmental organizations.

Stakeholder engagement would help the NGCIO understand expectations and satisfy the needs of various stakeholders. Stakeholder engagement is "the process by which an organisation involves people who may be affected by the decisions it makes or can influence the implementation of its decisions."[82]

Organizations engage stakeholders for a number of reasons. These include:[83]

- Risk management – "If we don't do it, we can't operate."
- Sustainability compliance management – "If we don't do it, we won't be successful."
- Market development – "If we do it, we can access new markets."
- Innovation – "If we do it, we will be up to speed with our products."
- Strategy – "If we want to grow, we have to do it and it will not only save us money, but make us better."

In conducting stakeholder engagement, the NCIO must have a good understanding of the stakeholder landscape. To be effective, stakeholder engagement needs to be:[84]

- Issue-based
- Proactive instead of reactive
- Learning orientated in order to get to tangible issue-based results
- Measurable in terms of (the organization's) internal targets
- Based on a thorough methodology

Among the steps that NCIOs can take to achieve stakeholder satisfaction are:[85]

- Manage shareholder satisfaction with returns on technology investments. It is important to figure out a way to measure shareholder satisfaction with returns on technology investments. Measurement tools used must be qualitative as well as quantitative.
- Improve management's technology quotient.
- Ensure that employees feel like they work for a tech-savvy company.
- Actively contribute to open source projects and organizing hackathons to improve "brand" perception in the community. Active participation in the open source community not only help makes business processes more effective and efficient, it is also an inexpensive way to build technical intelligence capabilities.

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82 Wikipedia, "Stakeholder engagement", last updated on 17 September 2013. Available from http://en.wikipedia.org/wiki/Stakeholder_engagement.

83 Petra Kuenkel, "Stakeholder engagement: A practical guide", The Guardian, 10 April 2013. Available from http://www.guardian.co.uk/sustainable-business/stakeholder-engagement-practical-guide.

84 Ibid.

85 Chiranjeev Bordoloi, "First Key to Agile IT Governance: Stakeholder Satisfaction", CIO, 20 June 2012. Available from http://www.cio.com/article/708824/First_Key_to_Agile_IT_Governance_Stakeholder_Satisfaction?page=1&taxonomyId=3165.

Box 4. Words matter – “stakeholders” not “customers”

Much of what we do in IT requires communicating subtle and complex issues to others. When we use precise language to describe a situation or relationship, we honour precision and clarity, thereby increasing our reputation with others and ultimately our chances for professional success.

Turning “users” into “customers”

For years, IT staffers and managers have referred to the business folk with whom they worked as “users”.

As IT staff realized they needed to be a little more friendly and supportive of their business colleagues, and given that IT is fundamentally an internal service function, internal IT teams copied external service providers and began referring to their colleagues, with the best of intentions, as “customers”.

The term “customer” is problematic because it has very specific connotations, especially in North America, where we have grown up on a steady diet of phrases such as “The customer is always right”, “Never argue with a customer” and “Give the customer what they want”.

But the truth is that your colleagues are not your customers and you are not an external service provider. You are both in business together.

Do you want your colleagues to be happy? Of course, but that’s not your only consideration. Your role is not just to provide what they ask for, but to provide guidance, governance and to apply professional IT discipline to their requests. All of this is in the service of the greater good of the business.

What’s the right term?

So, if “customer” is the wrong term, what’s the right one? My personal favourite is “stakeholder”. A stakeholder is someone who holds a stake or an interest in an undertaking. And that’s exactly the way it is. You each have a stake in the other’s success. Not only is it a more accurate term, but it generates more mutual respect.

“Customer” may indeed sound friendlier or more service oriented. But is that really in the best interests of IT and the overall business? Using the term “stakeholder” in place of “customer” may seem like a small issue, but it sets a more appropriate tone for the relationship between IT and the business functions it supports.

Shifting from “customer” to “stakeholder” will not only impact how others see you but, more importantly, will influence how you see yourself, and how you navigate relationships with your business colleagues.

Source: Marc J. Schiller, “Words Matter: ‘Stakeholders,’ Not ‘Customers’”, CIO Insight, 19 March 2013. Available from http://www.cioinsight.com/it-management/expert-voices/words-matter-stakeholders-not-customers/#sthash.TAJ21ZjW.dpuf.

CHAPTER 3.
TALENT MANAGEMENT

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Like other scarce resources, talent must be managed. In this chapter we will discuss the following components of talent management: development, engagement, and retention of GCIOs.

3.1 Development

Many governments do not rely solely on on-the-job experience for developing GCIOs. They have recognized that training is an essential tool for GCIO development.

Below are examples of existing GCIO training programmes in different countries.

The U.S. Federal CIO University is a virtual university that offers GCIO training, which can be credited towards a graduate (Master of Arts or Master of Science) degree.[86] The Federal CIO University is composed of Syracuse University, George Mason University, George Washington University, Carnegie Mellon University, La Salle University, University of Maryland-University College and National Defense University's Information Resources Management College.

All the Federal CIO University programmes aim to develop the Clinger-Cohen competencies among the participants through different curricula.

Singapore's e-Government Leadership Centre is a joint initiative of the IDA, the National University of Singapore's Institute of Systems Science and the Lee Kuan Yew School of Public Policy.[87] The mandate of the e-Government Leadership Center is to share the knowledge and lessons learnt in Singapore e-government with foreign government participants to help the latter accelerate the achievement of the development goals in their respective countries.

There are two GCIO training programmes in the Philippines. The first is the gCIO Development Programme jointly developed and implemented by the Career Executive Service Board (the government agency responsible for training and the career advancement of public sector managers), the De La Salle University College of Computer Studies, and ideacorp (an independent, not-for-profit organization working on ICT for development issues). This programme aims to equip participants with knowledge and skills to use ICT to create an effective, efficient, accountable and collaborative governance. The faculty is composed of university professors who have extensive ICT experience in the public and private sectors, current and former government ICT executives, and private sector ICT executives.

The other GCIO Training Programme in the Philippines is conducted by the National Computer Institute of the DOST ICT Office.

Indonesia has the GCIO Master Programme and GCIO Certification Programme.[88]

[86] CIO.gov, "CIO University", Chief Information Officers Council. Available from https://cio.gov/innovate/future-ready-workforce/cio-university/.

[87] eGL Singapore, "Inspiring leaders through e-Government education". Available from http://www.egl.sg/aboutus_factsheet.htm.

[88] Background paper on Indonesian GCIO training prepared by Yudho Giri Sucahyo – there's no annex.

In 2011, the Indonesian government collaborated with the University of Indonesia, Institut Teknologi Bandung, Institut Teknologi Sepuluh Nopember, Universitas Gajah Mada and Universitas Negeri Padang to develop the GCIO Master Programme. Participants in the programme receive a full scholarship from the Indonesian government. Like the Federal CIO University, the curriculum of the GCIO Master Programme is not uniform. For instance, the University of Indonesia's implementation is called the Masters of Information Technology Programme with a GCIO focus.[89] It uses materials developed by the UN-APCICT Academy of ICT Essentials for Government Leaders.

To date, the GCIO Master Programme has been implemented seven times with about a hundred students per implementation.[90]

Indonesia also introduced a GCIO Certification Programme in 2011. Here participants take a three-day training course and need to pass a 100 question multiple-choice test prior to certification. Below are the relevant statistics for this programme:[91]

- 2011: 15 locations, 824 participants, passing rate 50% – 412 certified GCIO
- 2012: 6 locations, 294 participants, passing rate 57% – 168 certified GCIO
- 2013: 10 locations, 551 participants, passing rate 51% – 282 certified GCIO

In India, the CIO Training Programme is being conducted by the National e-Governance Division in the Ministry of Communications and Information Technology, in collaboration with the National Institute for Smart Government. The programme aims to facilitate "deep understanding of factors that result in failure and sustained success of e-Governance projects" among central and state government officials.[92]

In Saudi Arabia, Yesser has organized an Executive Training on Foundations of Government Information Leadership.[93] The training programme, jointly developed and implemented with the Saudi Computer Society and Electronic Governance Center, has the following objectives:

- To present the policy and development context for e-government and IT
- To introduce the GCIO function and its role in managing e-government and IT in this context
- To outline key knowledge areas for GCIO and other government information leaders
- To showcase aspects of IT and e-government development in Uganda and other countries
- To provide an opportunity to apply the knowledge learnt through small team projects
- To establish professional connections in order to collaborate in the future

The target audiences are: (1) decision makers and managers from government organizations responsible for e-government and IT initiatives; (2) current or aspiring CIOs in government; and (3) private sector CIOs who would like to learn about unique requirements and opportunities for public sector e-government and IT.

This is not a complete list of training programmes geared at GCIOs and other ICT leaders in government. Estevez and Janowski examined "78 education programmes from 21 countries around the world to determine to what extent they build GCIO-relevant competencies and how much attention different programme groups pay to policy, design, implementation and operation

[89] Fakultas Ilmu Komputer, "Beasiswa MTI GCIO". Available from http://www.cs.ui.ac.id/beasiswa-mti-gcio/?lang=en.

[90] Arry Akhmad Arman, "The Importance of CIO Education and Supporting Standard", presentation, undated. Available from http://aseancioforum.bppt.go.id/file/PT1.1%20-%20Dr.%20Arry%20Akhmad%20Arman%20-%20The%20Importance%20of%20CIO%20Education%20&%20Supporting%20Standard.pdf.

[91] E-mail exchange of author with Yudho Giri Sucahyo.

[92] Department of Electronics and Information Technology, "Chief Information Officers Training Programme begins on 16 January 2012", Ministry of Communications and Information Technology, Government of India. Available from http://deity.gov.in/content/chief-information-officers-training-programme-begins-16th-january-2012-last-date-applying-31.

[93] Saudi e-Government Programme, "Executive Training on Foundations of Government Information Leadership", 24 May 2013. Available from http://www.yesser.gov.sa/en/mediacenter/events/Pages/CIO-2013.aspx.

aspects of public sector ICT."[94] They looked at "the knowledge areas and skills required to fulfil GCIO roles, based on the content taught by programmes and the review of GCIO vacancy announcements."[95] The result of this survey is as follows:

- Required knowledge areas –
    - Leadership
    - Public administration
    - Public policy
    - Innovation and trends
    - Legal aspects
    - Strategy development
    - Architecture and standards
    - Information management
    - Project management
    - Financial management
    - Information systems
    - Economics
    - Human resources
    - Operations management
    - e-Government
    - Development and ICT
    - Sustainable development
    - International development
    - Networking and partnership
    - Performance management

- Required skills –
    - Leadership
    - Communication
    - Inter-personal skills
    - Negotiation
    - Analytical skills

The previously mentioned survey of 10 countries and jurisdictions also included questions on training courses and curricula. This survey revealed the following training courses/curricula that are provided by GCIO and government ministries and agencies:[96]

- Developing e-government strategic plan – 80%
- Determine e-government policies – 70%
- Building-up ICT organizational structure – 50%
- Involvement in ICT master plan – 60%
- Delivery of programmes and services – 60%
- Project management, monitoring and evaluation – 80%
- Develop ICT operation centre – 50%
- Foster e-participation – 60%
- Enhance citizen-centric e-services – 70%
- Allocation of ICT financial investment – 40%

[94] Elsa Estevez and Tomasz Janowski, "Landscaping Government Chief Information Officer Education", 46th Hawaii International Conference on System Sciences, 2013, p. 1685. Available from http://origin-www.computer.org/csdl/proceedings/hicss/2013/4892/00/4892b684.pdf.

[95] Ibid., p. 1688.

[96] Government CIO Survey Results, *Journal of E-Governance*, Vol. 34 (2011), pp. 9-10. Available from http://iospress.metapress.com/content/u2g86j8454j83432/fulltext.pdf.

Aside from customized training programmes, governments can also use massive open online courses (MOOCs) to develop GCIOs.

A MOOC is "an educational resource resembling a class that has assessment mechanisms and an endpoint, that is all online, that is free to use without admissions criteria, and that involves hundreds of students or more."[97] According to a New York Times article:[98]

> The evolving (MOOC) form knits together education, entertainment (think gaming) and social networking. Unlike its antecedent, open courseware—usually written materials or videotapes of lectures that make you feel as if you're spying on a class from the back of the room—the MOOC is a full course made with (learners) in mind.

Among the elite U.S. universities that provide MOOCs are Stanford University (http://see.stanford.edu/see/faq.aspx), University of California – Berkeley (http://webcast.berkeley.edu/), Massachusetts Institute of Technology (http://ocw.mit.edu/index.htm), Duke University (http://itunes.duke.edu/), Harvard University (http://www.extension.harvard.edu/open-learning-initiative), University of California – Los Angeles (https://www.uclaextension.edu/r/search.aspx?c=free+courses), Yale University (http://oyc.yale.edu/) and Carnegie Mellon University (http://oli.web.cmu.edu/openlearning/).[99]

These universities offer a wide range of MOOC topics. Stanford offers MOOCs from Quantum Mechanics to The Future of the Internet. Its MOOC on Introduction to Artificial Intelligence had 160,000 students from 190 countries (with 23,000 reportedly completing this course).[100] Carnegie Mellon University's Open Learning Initiative offers the following ICT courses: Principles of Computing, Responsible Computing and Media Programming.[101]

MOOCs are used by educators, students and self-learners. The MIT Open Course Ware site is being used for the following purposes:[102]

- Educator uses: enhancing personal knowledge (42%), finding reference materials for students (17%), learning new teaching methods (15%), incorporating open course ware materials (12%)
- Student uses: complementing a course (45%), enhancing personal knowledge (40%), planning course of study (11%)
- Self-learner uses: exploring interests outside of professional field (40%), planning future study (19%), reviewing basic concepts in field (19%), keeping current in field (11%).

MOOCs can be used to provide an inexpensive and quality way to train GCIOs (as well as other government ICT officers and staff).[103] MOOCs offered by U.S. universities can be used immediately for training after determining the competencies that need to be developed. This will obviate the need for developing customized training materials (and the costs associated with it.).

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97 Juliana Marques, "What is a Massive Open Online Course Anyway?" MOOC News and Reviews, 7 June 2013. Available from http://moocnewsandreviews.com/what-is-a-massive-open-online-course-anyway-attempting-definition/#ixzz2gMRoRBdO.

98 Laura Pappano, "The Year of the MOOC", *New York Times*, 2 November 2, 2012. Available from http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html?pagewanted=all&_r=0.

99 BDPA Detroit Chapter, "MOOCs: Top 10 Sites for Free Education with Elite Universities". Available from http://www.bdpa-detroit.org/portal/index.php?Itemid=20&catid=29:education&id=57:moocs-top-10-sites-for-free-education-with-elite-universities&option=com_content&view=article.

100 Ibid.

101 Carnegie Mellon University Open Learning Initiative, "See Our Open + Free Courses". Available from http://oli.cmu.edu/learn-with-oli/see-our-free-open-courses/

102 MIT OpenCourseWare, "2011 Program Evaluation Findings Summary", 22 November 2011. Available from http://ocw.mit.edu/about/site-statistics/11_Eval_Summary_112311_MITOCW.pdf.

103 R. Hunter Trumbo, "Cheap Training", Government CIO Magazine, 1 June 2013. Available from http://www.governmentciomagazine.com/2013/06/cheap-training#sthash.YIVISIEp.dpuf.

"Trainees" can take specific MOOC and they could meet regularly (as a study group) to further discuss the topics covered in the MOOC. With this approach MOOCs can become the foundation for developing a culture of ongoing improvement in your organization, and they can offer the chance for your team to develop skills beyond just the course content. They allow members of your team to interact on a non-work project, develop a shared understanding of a topic, and switch the roles of teacher and student among members of your organization.[104]

We will discuss how to create a face-to-face competency-based GCIO training programme in the next chapter.

3.2 Engagement

Like corporations, governments have at least three options when recruiting an NGCIO. These are:[105]

1. Promoting someone from within the national ICT office to the top ICT spot;
2. Rotating a non-ICT executive to bring a user's perspective to the role, while providing him/her a career-rounding experience; or
3. Recruiting from the outside but include the strongest internal prospects as part of the candidate pool.

In choosing which option to take, the decision makers should consider four factors: (1) The health of the ICT functions; (2) the fit of the ICT function with the overall direction of the government; (3) the state of the remaining ICT leadership team; and (4) preparedness to approach the external talent market. Below are the questions to ask for each of the four factors:[106]

- The health of the ICT function –
    - Reputation: Does it have a reputation for listening and being responsive to the bureaucracy?
    - Results: Is the ICT office organized to maximize effectiveness?
    - Governance: Is there an effective ICT governance system in place that allows government to prioritize ICT projects?
    - Economics: Are ICT finances in order? Do projects routinely come in on time and under budget?
    - Structure: What ICT functions or roles do not (or will not) report to the NGCIO? Does the NGCIO report to the right person?

- The fit of the IT function with the overall direction of the government –
    - Growth: Has the ICT function been able to support and enhance the government's delivery of new services or development of new policies?
    - Cost reduction: Has ICT been successful in eliminating costs, both within the ICT organization and elsewhere in the bureaucracy?
    - Leveraging data: Has ICT taken an entrepreneurial approach in helping government leverage data to enhance internal operations, improve transparency and accountability, and create new products or services for the public?
    - Global best practices: How do we compare with other e-government initiatives?
    - Evolution: Are any major strategic changes being considered (either organically or through an acquisition) that will change what is expected from ICT?

[104] Ibid.

[105] Eric Sigurdson, "Our CIO Is Leaving – Now What? A Practical Guide to CIO Succession", Russell Reynolds Associates. Available from http://www.russellreynolds.com/content/our-cio-leaving-now-what.

[106] Ibid.

- The state of the remaining IT leadership team –
    - Internal candidates: Are there one or more obvious candidates who have been groomed for the GCIO role? What are the strengths and weaknesses of the internal candidate(s) and how can any weaknesses be mitigated? Are there other ICT executives who have the personal competencies to be GCIO but simply need more experience in key areas (infrastructure, enterprise resource planning, etc.)?
    - Impact: How will an internal promotion affect team dynamics? How will the human chain reactions set off by an internal promotion reverberate throughout the bureaucracy? Who might leave (or threaten to) and who will fill the vacancy of the promoted candidate?

- Preparedness to approach the external talent market –
    - Transition: How well does government embrace outsiders?
    - Positioning: What is the strategic importance of ICT to governance as evidenced by the CIO's reporting relationship and whether the CIO has a "seat at the table" with the rest of the CEO's leadership team?
    - Interim plan: Should an interim CIO be appointed until the new CIO comes on board?
    - Miscellaneous: Are there special considerations—a remote location, diversity requirements, cultural fit or challenging government events—that could hinder recruiting new external talent?

Box 5. The first 100 days of a new CIO: Nine steps for wiring in success

1. Start the first 100 days before your first day
2. Clarify and strengthen your mandate
3. Build relationships with business unit executives and agree upon priorities
4. Understand the upside and downside
5. Develop the plan
6. Build your team
7. Rally the IT organization
8. Demonstrate leadership through visible results and actions
9. Continue your personal journey

Source: Michael Bloch and Paul Willmott, "The first 100 days of a new CIO: Nine steps for wiring in success", McKinsey & Company, December 2012. Available from https://www.mckinseyquarterly.com/Business_Technology/BT_Strategy/The_first_100_days_of_a_new_CIO_Nine_steps_for_wiring_in_success_3040.

3.3 Retention

Retaining a highly competent NGCIO will be a challenge for a number of governments.

The biggest danger is that s/he will be pirated. Higher salary and better benefits are magnets that can pull NGCIOs to the corporate world or international organizations.

Bureaucratic red tape could drive a highly skilled GCIO to the private sector. Technologists can get frustrated with the bureaucracy.

Fortunately for governments, most of those who want to be or who are already GCIOs are not primarily motivated by material rewards. Many of them are attracted to public service because government provides challenging and meaningful work. Thus, retaining them would mean providing the environment that would allow them to operate with minimum distractions and/or obstacles.

Regular and overt support from the highest leadership, if deserved, is also vital for retaining NGCIOs. This is good for morale and encourages loyalty. Equally important is that it is a signal to the bureaucracy that the leadership is solidly behind e-governance in general, and the NGCIO in particular.

An NGCIO would also be reluctant to leave a talented ICT team, particularly one that s/he helped developed.

How does a government create a talented ICT team, and a pool from which to tap skilled and experienced ICT talents? One answer is by having an ICT track in the civil service that provides a clear road map for advancement and a defined path to develop skills and gain experience in the various aspects of ICT work in government.

An example is the UK civil service track called the "Government IT Profession".[107] This track encourages professional development in IT for those working in the UK public sector. It uses a proficiency model that has six core competencies and two advanced ones, which helps IT professionals in government choose whether to: (1) specialize; (2) gain in-depth expertise and experience in- a few skills; or (3) gain broader experience in a number of skills.[108] The Government IT Profession is led by a Board that manages the implementation of the Government ICT Capability Strategy. This strategy "aims to take the Profession to the next level of maturity though establishing profession-wide, cross-departmental career frameworks, processes and standards."[109]

Australia also has a strategy to develop ICT professionals in government. The strategy includes the following:[110]

- A whole-of-government ICT career structure
- A whole-of-government strategic ICT workforce plan
- A series of leadership events to promote greater understanding of ICT issues at senior levels of government
- A whole-of-government tele-working policy for ICT staff
- A sponsorship of annual ICT awards
- A reduction in Canberra-centricity of government ICT activities

[107] HM Government, "The Government IT Profession". Available from http://it.civilservice.gov.uk/the-government-it-profession/.

[108] Ibid.

[109] Civil Service, "Government IT profession". Available from http://www.civilservice.gov.uk/networks/government-it-profession.

[110] AGIMO, "Enhancing the APS ICT skills base", Australian Government Department of Finance. Available from http://agimo.gov.au/collaboration-services-skills/ict-skills/enhancing-the-aps-ict-skills-base/.

Box 6. Six types of restless CIOs

Can you tell if a CIO is at risk of leaving or being pushed out? Analyst Frank Scavo, president of Computer Economics, an IT research firm in Irvine, California, says these six types should be on the watch list.

1. The **Irrelevant CIO**: When a CIO focuses too much on ongoing IT support instead of evaluating the direction of the business and using technology to help the company move forward, s/he is at grave risk of making himself or herself irrelevant. This is a CIO who is a prime target for being pushed out.

2. The **Frustrated CIO**: A CIO might feel as though s/he has hit a career dead-end when s/he really wants to make a difference but has been pigeonholed as a glorified IT support technician and is not given a chance to help set long-term goals and strategy.

3. The **Burned-Out CIO**: Some CIOs are tired of being in a pressure-cooker, and tired of having projects to deliver while being starved of funds.

4. The **Bored CIO:** An IT leader may grow restless and start looking for challenges elsewhere if, for example, s/he has turned around the IT department and now has nothing left to add.

5. The **Underpaid CIO**: A CIO might start to dream about earning a higher salary when s/he sees the fees charged by some of the consultants and advisers hired.

6. The **Miscast CIO**: Once in a while, a talented IT professional rises to the CIO's position only to realize that s/he's in the wrong job, and probably disappointed to learn that s/he had to spend most of the time managing people, not technology.

Source: Todd R. Weiss, "Graceful exits from IT: Why CIOs decide to move on", Computerworld, 16 July 2012. Available from http://www.computerworld.com/s/article/9229074/Graceful_exits_from_IT_Why_CIOs_decide_to_move_on.

CHAPTER 4. DEVELOPING A COMPETENCY-BASED GCIO TRAINING

CHAPTER 4.

DEVELOPING A COMPETENCY-BASED GCIO TRAINING

A competency-based training is an "educational process that focuses on specific core competencies that have been clearly defined."[111] It is an approach that "places emphasis on what a person can do in the workplace as a result of completing a programme of training or based on workplace experience and learning".[112] The benefits of competency-based training include the following:[113]

- It ensures that training is cost-effective, goal-oriented and productive
- It targets specific training needs
- It standardizes performance across an organization
- It improves quality of products and services

Box 7. Characteristics of competency-based training programmes

- Competencies are carefully selected.
- Supporting theory is integrated with skill practice. Essential knowledge is learned to support the performance of skills.
- Detailed training materials are keyed to the competencies to be achieved and are designed to support the acquisition of knowledge and skills.
- Methods of instruction involve mastery learning, the premise that all participants can master the required knowledge or skill, provided sufficient time and appropriate training methods are used.
- Participants' knowledge and skills are assessed as they enter the programme and those with satisfactory knowledge and skills may bypass training or competencies already attained.
- Learning should be self-paced.
- Flexible training approaches including large group methods, small group activities and individual study are essential components.
- A variety of support materials including print, audiovisual and simulations (models) keyed to the skills being mastered are used.
- Satisfactory completion of training is based on achievement of all specified competencies.

Source: Richard S. Sullivan, The Competency-Based Approach to Training, JHPIEGO Strategy Paper No. 1, JHPIEGO Corporation, 1995. Available from http://www.rhrc.org/resources/general_fieldtools/toolkit/51b%20CBT.pdf.

[111] Jack Shaw, "Training Definition and Terms", Free Management Library. Available from http://managementhelp.org/blogs/training-and-development/2011/08/11/training-definitions/#sthash.bzpHunX5.dpuf.

[112] Funded Agency Channel, State Government of Victoria, Australia, "Competency Based Training and Assessment". Available from http://www.dhs.vic.gov.au/funded-agency-channel/management-toolkit/workforce/education-and-training/types/competency-based-training-and-assessment.

[113] The Competency Group, "Competency-Based Training". Available from http://www.thecompetencygroup.com/competency-solutions/competency-based-training.aspx

In the following sections we will discuss the key stages in designing a competency-based training programme for GCIOs. These stages are:

- Establish competencies
- Assess current ability
- Develop a competency-based curriculum
- Pilot implementation and assess
- Evaluate programme and revise

The objective of the subsequent discussions is to provide a broad overview of what is involved in creating a competency-based training for GCIOs, and is not meant to be a comprehensive step-by-step guide.

4.1 Establish Competencies

From our previous discussions we saw that the Clinger-Cohen Competencies are among the earliest and most comprehensive GCIO competency frameworks. It is thus not surprising that governments use it as a point of reference in developing their respective GCIO training programmes. For instance, the Asia Pacific Economic Conference Telecommunication and Information Working Group uses the Clinger-Cohen Competencies in designing their GCIO Training Model.[114]

One way to use the Clinger-Cohen Competencies is to use it to evaluate each of the competencies in terms of its usefulness and/or responsiveness to your GCIO's ability to discharge his/her function. In the case of Indonesia they selected/grouped the Clinger-Cohen Competencies into eight core competencies, which are:[115]

1. Policy and Organization
2. Information Resources Strategy and Planning
3. e-Government
4. Information Security and Information Assurance
5. Project Management and Change Management
6. IT Project Management and Acquisition
7. IT Investment Planning and Management
8. Enterprise Architecture and IT Performance Assessment

It would also be worthwhile to look at competencies of private sector CIOs like the CIO Executive Council's "Executive Competencies and the Future-State CIO" (discussed in Chapter 1), or Debra Hust Allison's "The Future CIO: Critical Skills and Competencies."[116] Also worth considering is the British Computer Society's competency framework for CIOs and senior IT leadership positions.[117]

[114] APEC Telecommunications and Information Working Group, Establishment of Government CIO Training Model and Network for e-Government Development: Final Project & Evaluation Report, May 2006. Available from http://publications.apec.org/publication-detail.php?pub_id=363.

[115] Background paper on Indonesian GCIO training prepared by Yudho Giri Sucahyo. See Indonesia Case Study in Annex – there's no annex.

[116] Debra Hust Allison, "The Future CIO: Critical Skills and Competencies", Research Bulletin 15, EDUCAUSE Center for Applied Research, 2010. Available from http://www.educause.edu/library/resources/future-cio-critical-skills-and-competencies.

[117] British Computer Society, *A Competency Framework for Chief Information Officers and Senior IT Leadership Positions* (Swindon, 2008). Available from http://www.bcs.org/upload/pdf/cio-competency-report.pdf.

In the Philippines, the organizers of the GCIO Training Programme reviewed both the Clinger-Cohen Competencies and other private sector CIO competencies. After the review, they decided to focus on the following four "core" or "basic" competencies: Leadership, Enterprise Architecture, Technology Lifecycle Management, and Communications. These competencies would be the minimum and common requirement that all Filipino GCIOs must have. They also decided that other competencies (beyond the four) are also needed and will be developed in future programmes.

After selecting the competencies it is important to determine the performance indicators for each competency. Achievement of these indicators will directly relate to successful performance. In the U.S., the CIO Council added "Learning Objectives" to the Clinger-Cohen Competencies "to identify the level of performance desired to be mastered within an academic or experiential environment.[118] The learning objectives have two purposes: (1) identify key concepts and capabilities to be taught; and (2) serve as a professional development guideline for both individuals and organizations.

An example of the learning objectives for one of the competencies—IT governance—is given in box 87.

Box 8. Learning objectives for Clinger-Cohen Competency 1.6 – IT governance

General Discussion: IT is an integral part of an agency's overall governance. It consists of the leadership and organizational structures and processes that ensure the agency's IT sustains and extends the agency's mission by supporting its information management and delivery needs. CIOs must not only be a part of the overall agency governance, but must also ensure that they have functioning governance mechanisms for policymaking, enforcement and decision-making on IT issues that are effective, transparent and accountable.

1.6 LO 1: Review the overall agency governance structure to determine where the CIO participates and with what kind of authority.

1.6 LO 2: Identify where the CIO derives his/her authority—statutorily directed or by delegation—to participate in the agency's major decision-making processes—namely, budgeting, requirements development and acquisition

1.6 LO 3: Discuss the advantages and disadvantages of the CIO's role on various agency governance bodies.

1.6 LO 4: Discuss the role of CIOs in other agencies' governance structures.

Source: CIO Council, "2012 Clinger-Cohen Core Competencies & Learning Objectives", December 2012. Available from https://cio.gov/wp-content/uploads/downloads/2013/02/2012-Learning-Objectives-Final.pdf.

[118] CIO Council, "2012 Clinger-Cohen Core Competencies & Learning Objectives", December 2012. Available from https://cio.gov/wp-content/uploads/downloads/2013/02/2012-Learning-Objectives-Final.pdf.

4.2 Assess Current Ability

With the selected competencies, the bar has been set. The next step is to assess the skills gap or discrepancies between existing skills among current GCIOs and the skills required for effective CIO job performance.

This is normally called training needs analysis. Aside from identifying the skills gaps, a needs analysis is also useful in identifying problems that may **not** be solved by training; and conditions under which the training and development activity will occur.[119]

Box 9. Conducting a successful capability assessment

1. Demonstrate visible senior management buy-in—for instance, by applying the same assessment to the executive team, and through supporting memos, town hall discussions, brown bag group lunches, and executive team meetings about the effort.
2. Provide detailed definitions of competency levels tailored to the specific IT organization so that scoring is objective, thereby avoiding "good" and "bad" judgments.
3. Assign a single implementation point person and clear owners of individual areas—for instance, the head of the programme management office could lead the implementation of project management capabilities. As a rule, the more senior and visible the implementation leader is, the more likely the implementation will be successful.
4. Direct human resource and corporate communication staff members to lend their respective expertise to the process. For example, human resource staff can support the effort to rationalize job titles, and communication staff might lead on stakeholder management.
5. Measure improvement over time by conducting periodic assessment and review. Ask questions like: After three months, how many job descriptions have been updated? After six months, how many gaps have been addressed through retooling, training and hiring?

Source: Booz & Company, Mind the Gap: Finding Where IT Skills Fall Short In Financial Services, 2008. Available from http://www.booz.com/media/uploads/Mind_the_Gap.pdf.

In Sudan, the content of their GCIO training was determined after assessing the skills of the current GCIOs relative to the minimum skills needed (determined by the competencies adopted).[120]

4.3 Develop a Competency-Based Curriculum

A competency-based curriculum "specifies the outcomes which are consistent with the requirements of the workplace".[121] The components of a competency-based curriculum are: (1) training modules and (2) course design.

[119] Judith Brown, "Training Needs Assessment: A Must for Developing an Effective Training Program", *Public Personnel Management*, vol. 31, no. 4 (Winter 2002), p. 571. Available from http://www.owlnet.rice.edu/~antonvillado/courses/09a_psyc630001/Brown%20(2002)%20PPM.pdf.

[120] Background paper on Sudan GCIO training prepared by Saleem Zoughbi – there's no annex.

[121] Technical Education and Skills Development Authority, "Competency-Based Curriculum Development", presentation, undated. Available from http://www.tesda.gov.ph/uploads/tvet_files/CBC%20presentation.ppt.

Training modules are “packages of instructional content”. Designing training modules includes “defining the learning objectives, identifying the standard elements and creating a template for reuse.”[122]

Learning objectives constitute the knowledge, skills and attitudes that the trainees will be able to learn or acquire upon completion of the training programme. Some key points about learning objectives include the following:[123]

- The learning objective is performance-based
- It is clear and not subject to misinterpretations—the trainees know exactly what is expected of them and how they will be tested
- The shift and onus for learning is upon the trainees themselves
- The training lesson is action-oriented (an active verb is used to describe the objective). It guides the learning process (method) and will demonstrate whether the lesson has been learned
- The end result is observable and measurable

In designing training modules, it should not be assumed that one unit of competency will lead to one module of training. In some cases it may be appropriate to develop modules that address several units of competency.

Please remember that if you use any (or all) of the Clinger-Cohen Competencies, all you need to do is to ensure that the learning objectives already specified are relevant to your training programme.[124]

Good course design involves:[125]

- Creating an effective learning environment
- Making the learning steps clear for participants
- Developing activities and exercises that help the participants master the material
- Emphasizing critical learning objectives
- Maximizing learning opportunities for participants

4.4 Pilot Implementation and Assess

A pilot implementation of your GCIO training programme is necessary. Below are a number of reasons why:[126]

- A pilot test will help confirm if you are ready for full-scale implementation
- It is an opportunity to gauge your target population’s reaction to the programme
- It can help you make better decisions about how to allocate time and resources
- It can help ensure that you are well prepared to measure the success of your programme

[122] Tara Duggan, “How to Design Training Modules”, Hearst Communications, Inc. Available from http://smallbusiness.chron.com/design-training-modules-57801.html.

[123] Claire Belilos, “Demystifying Training Design: Defining Effective Training Objectives”, CHIC Hospitality Consulting Services. Available from http://www.easytraining.com/training.htm.

[124] Technical Education and Skills Development Authority, “Competency-Based Curriculum Development”, presentation, undated. Available from http://www.tesda.gov.ph/uploads/tvet_files/CBC%20presentation.ppt.

[125] Intulogy, “Training Design Process”. Available from http://www.intulogy.com/process/.

[126] The National Campaign to Prevent Teen and Unplanned Pregnancy, “Tips and Recommendations for Successfully Pilot Testing Your Program: A Guide for the Office of Adolescent Health and Administration on Children, Youth and Families Grantees”. Available from http://www.hhs.gov/ash/oah/oah-initiatives/teen_pregnancy/training/tip_sheets/pilot-testing-508.pdf.

In conducting pilot testing consider the following:[127]

- Have a system in place to monitor and capture information about how well the programme is working
- Implement according to your plan, and then adjust as necessary
- The pilot test will raise issues that may make it tempting to overhaul your plans, but remember these findings are preliminary
- Share the good news and involve the community

Pilot testing would also allow you to test your assessment tools.

Assessment "is the process of collecting evidence and making judgments on whether competency has been achieved, to confirm that an individual can perform to the standard expected in the workplace."[128]

The following "principles of assessment" should provide guidelines in conducting assessments:[129]

- Validity refers to the extent to which the interpretation and use of an assessment outcome can be supported by evidence.
- Reliability refers to the degree of consistency and accuracy of the assessment outcomes; that is, the extent to which the assessment will provide similar outcomes for students (trainees) with equal competence at different times or places, regardless of the lecturer (trainer) conducting the assessment.
- Flexibility refers to the opportunity for trainees to negotiate certain aspects of their assessment (for example, timing) with their trainer.
- Fair assessment does not advantage or disadvantage particular trainees or groups of trainees. This may mean that assessment methods are adjusted for particular trainees (such as people with disabilities or cultural differences) to ensure that the method does not disadvantage them because of their situation. An assessment should not place unnecessary demands on trainees that may prevent them from demonstrating competence (for example, an assessment should not demand a higher level of English language or literacy than that required to perform to the workplace standard outlined in the competencies being assessed).

[127] Ibid.

[128] Innovation & Business Skills Australia, Mandatory Text for the Training Package Assessment Guidelines Section, Training Package Development Handbook, version 1.2, October 2010. Available from http://www.nssc.natese.gov.au/__data/assets/pdf_file/0020/71273/TxtTrainPackageAssessGuideSection.pdf.

[129] Department of Training and Workforce Development, Western Australia, *Designing assessment tools for quality outcomes in VET*, third edition, 2012, pp. 5-6. Available from http://moodle.westone.wa.gov.au/file.php/6/vet_publications/Designing_assessment_2012_content.pdf.

Box 10. Delivery and evaluation activities

- Administration of a pre-course questionnaire to assess the participants' knowledge and attitudes about course content
- Administration of pre-course skill assessments to ensure participants possess the entry level skills to complete the course successfully
- Delivery of the course by a trainer/facilitator using an interactive and participatory approach
- Development of the participants' skills using a humanistic approach, which means participants acquire the skill and then practice until competent
- Presentation of supporting information and theory through interactive and participatory classroom sessions using a variety of methods and audiovisuals
- Administration of a mid-course questionnaire to determine if the participants have mastered the new knowledge associated with the skills
- Evaluation of each participant's performance (i.e., knowledge, attitudes, practice and skills). The evaluation by the trainer is performed using competency-based checklists. The participant is either qualified or not qualified as a result of the knowledge, attitude and skills assessments
- Presentation of a statement of qualification that identifies the specific skills the individual acquired

Source: Adapted from Richard S. Sullivan, The Competency-Based Approach to Training, JHPIEGO Strategy Paper No. 1, JHPIEGO Corporation, 1995, p. 6. Available from http://www.rhrc.org/resources/general_fieldtools/toolkit/51b%20CBT.pdf.

4.5 Evaluate Programme and Revise

A training programme evaluation completes the process. Evaluation helps programme implementers to:[130]

- Make informed decisions regarding programme operations and service delivery based on objective evidence
- Ensure the most effective and efficient use of resources
- Objectively assess the extent to which the programme is having or has had the desired impact, in what areas it is effective, and where corrections need to be considered
- Meet organizational reporting and other requirements, and convince donors that their investments have been worthwhile or that alternative approaches should be considered

Donald Kirkpatrick's "Four Levels of Learning Evaluation" is the most widely used and popular model for evaluation.[131] It is composed of four levels: (1) Reaction, (2) Learning, (3) Behaviour, and (4) Results, that progress from the easiest to conduct to the most difficult. Table 5 below provides more details on Kirkpatrick's four-level evaluation scheme.

[130] Nina Frankel and Anastasia Gage, "M&E Fundamentals: A Self-Guided Minicourse", MEASURE Evaluation, January 2007, p. 6. Available from http://www.cpc.unc.edu/measure/publications/ms-07-20.

[131] Employment Security Department, Washington State, "Evaluating Training Programs: Kirkpatrick's 4 Levels". Available from http://www.wa.gov/esd/training/toolbox/tg_kirkpatrick.htm.

Table 5. Kirkpatrick's Four-Level Evaluation Scheme

Level	Measurement Focus	Question to Ask
1-Reaction	Trainees' perceptions	What did trainees think of this training?
2-Learning	Knowledge/skills gained	Was there an increase in knowledge or skill level?
3-Behaviour	Worksite implementation	Is new knowledge/skill being used on the job?
4-Results	Impact on organizations	What effect did the training have on the organization?

Source: United States Department of Labor, "Kirkpatrick's Four-Level Evaluation Scheme". Available from http://www.msha.gov/training/trainingtips/trainingeval/Tip1.htm.

Another evaluation framework that can be used to evaluate the competency-based GCIO training programme is the "Outcome-Based Education Inventory". In this framework, successful programmes are those that measure high in the following nine dimensions:[132]

- Statement of learning outcomes – The extent to which there is a clear statement of learning outcomes
- Communication with staff/students – The extent to which staff and students in an institution are made aware of the existence of an outcome statement and are familiar with it
- Educational strategies – The strategies adopted such as problem-based learning, community-based learning and multi-professional learning should reflect the learning outcomes
- Learning opportunities – The learning opportunities should be selected to match the learning outcomes. In so doing, a range of methods will be adopted including the use of new learning technologies
- Course Content – The extent to which teachers/trainers spend time in planning the content of the curriculum and the teaching methods to be used based on the expected learning outcomes
- Student Progression – The learning outcomes can be used to assess a student's progress towards the exit learning outcomes.

Lessons learned from the programme evaluation should be used to improve your competency-based GCIO training programme.

[132] Ronald M. Harden "Outcome-based education – the ostrich, the peacock and the beaver", Med Teach, vol. 29, no. 7, 2007, pp. 667-669. Available from http://www.ncbi.nlm.nih.gov/pubmed/18236254.

Box 11. The evaluation results of Sudan's GCIO Training Project (2010-2012)

Background

The project was to plan and implement training workshops for CIOs of ministries in the federal government. The project rationale was to set the minimum capabilities and skills of current GCIOs.

The competencies included in this training were focused on two aspects:

- Technical: Advanced network management skills and database administration
- Planning: Management skills, project management and introduction to strategic planning

The training programme is composed of two or three workshops per year, and the duration of each workshop would normally be three days.

Evaluation Results

Overall

1. The initiative worked relatively well, but it had scheduling problems as it did not have funding for all of its activities.
2. The champion was the National Information Center, the central government agency for ICT.
3. Some international partnerships were forged, such as with United Nations agencies, but support was on a case-by-case basis and each workshop was sponsored separately.
4. Each workshop was evaluated separately but generally they worked well.
5. The training programme was replicated by some state and local CIOs, moving the programme from the federal level to state level. However, funding continued to be an issue.
6. The main purpose was to bridge the competency gap between the majority of the GCIOs, and this worked well to some degree, so the National Information Center could start planning for a more advanced training programme to further develop skills.

Strengths

1. This training programme was flexible to suit all backgrounds and tries to bring them to a unified level of skills.
2. It addressed technical and planning skills even if at introductory level.
3. This programme enabled decision makers to objectively gauge the skills level of different CIOs.

Weaknesses

1. Lack of funding.
2. Lack of commitment to the programme from government agencies.

Source: Written by Saleem Zoughbi.

4.6 Adult Learning

It is very important to use adult learning principles in your GCIO training programme.

Adult learning, according to Malcolm Knowles—an adult education expert, is premised on the following:[133]

- The need to know – Adults want to understand the value of the training.
- Learner's self-concept – Adult learners are self-motivated and self-directed; are independent; like to find their own way; can make their own decisions; and want to manage their own learning.
- Role of the learner's experience – Adult learners are a valuable resource because they bring the richness and diversity of their lives with them.
- Readiness to learn – Adults are ready to learn when they identify something they want to know or become proficient at, or when they experience something that connects with their life situations.
- Orientation to learning – Adult learners want to be engaged in life-centred or problem-centred learning experiences.
- Motivation – Adults are responsive to external motivators such as a better job or increased salary. However, the best motivators are internal; for example: increased job satisfaction; heightened self-esteem; better quality of life; and personal growth and development.

[133] Adult Learning Australia, "Adult learning principles". Available from https://ala.asn.au/adult-learning/the-principles-of-adult-learning/.

Box 12. What makes a good training?

What to look out for:

- Technical expertise. In order to run a training course on a particular topic, the training provider should be competent, professional and experienced within the specific field.
- Training material. The written material is also key to its success. Rather than expecting participants to write lots of notes, loosing track of the topics, the best courses are those that supply a comprehensive training handbook and other adequate supporting material that participants can refer to once they leave the course.
- Adaptability. The aims of the training should be carefully assessed to provide the most accurate programme. By determining precisely what participants expect from the training it is possible to focus on what is most important and work on practical and tailor-made exercises.
- Class size. It is essential that the class size is manageable. Each participant should have access to all the relevant equipment and receive the attention they deserve. Often the bigger the class size the poorer the results. For companies, it is far better to send a number of smaller groups than to expect a trainer to teach a large group of participants effectively. Six participants per class is ideal.
- Class homogeneity. For better results, all participants should be of a similar skill level to avoid frustration from either having to wait or being left behind.
- After-course care. Many training providers assume that once a particular training is over, it is the end of their relationship with the participants. However, offering an ongoing service that lasts beyond the course completion is the sign of quality from the training provider. Some providers offer a post-course technical support service and a comprehensive consultancy service.

In short, good trainings rely on the trainer to assess the participants' level, set the targets, give clear explanations, provide practical exercises and encourage interaction within the group. These are the key points for making training a great and useful experience.

Source: WebBySab, "What Makes a Good Training", 13 June 2009. Available from http://www.webbysab.com/category/goodtraining/.

CHAPTER 5.
GCIO AND GOVERNMENT TRANSFORMATION

CHAPTER 5.

GCIO AND GOVERNMENT TRANSFORMATION

As we have seen, the GCIO is not just a manager of a specialized function or technical unit. The GCIO is responsible for three main areas:[134]

- **Running the business of ICT**. This includes the operational excellence portion of ICT management, and driving the efficiency side of ICT.
- **Enabling the mission through technology solutions**. This is the effectiveness side of ICT where ICT is an enabler of mission- and business-led initiatives
- **Leading and delivering innovation to the enterprise**. This is where ICT is leveraged to help transform the way the mission is delivered.

It has been suggested that the corporate CIO is "best suited for a transformational business role because most business transformations are dependent on technology and focus on breaking traditional business silos."[135] The same report suggested that there are four different types of CIOs, based on their roles in business transformation:[136]

- **Soldiers**. CIOs who focus on implementation. They provide little business leadership and largely follow orders with regard to ICT activities other than infrastructure.

- **Leaders of ICT**. CIOs who balance ICT and enterprise needs. This is a traditional CIO role in which the CIO ensures that all appropriate ICT functions are involved in the transformation. Past this largely ICT role, these CIOs represent their organization in defining the business strategy, developing the road map and implementing the plan.

- **Change Consultants**. CIOs who advise on the business transformation process. These CIOs know the mechanics of a business transformation and guide others throughout the process.

- **Transformation Leaders.** CIOs who lead and run the business transformation. These CIOs ensure the effective application of business and technical components, including resource allocation, funding, system selection and progress tracking.

CIOs have distinct contributions in the five-step business transformation process (see table 6).[137]

[134] Deloitte, *The CIO Lifecycle: Thriving in transition and beyond* (2010), p. 4. Available from https://www.deloitte.com/assets/Dcom-SouthAfrica/Local%20Assets/Documents/CIO%20Lifecycle_Thriving_in_Transition.pdf.

[135] William Atkinson, "CIOs Better Placed for Business Change", CIO&Leader, 30 September 2013. Available from http://www.cioandleader.com/cioleaders/features/17988/cios-placed-business-change.

[136] Ibid.

[137] Marc Cecere, "The CIO's role in business transformation – Five key steps", CIO UK, 22 July 2013. Available from http://www.cio.co.uk/insight/strategy/cios-role-in-business-transformation-five-key-steps/.

Table 6. The five-step business transformation process

Business Transformation Steps	CIO role/contribution
Strategy: Focus on defining the end state and the activities to get there	• Help define the business strategy and support ICT strategies • Drive planning processes for scenarios, visioning, etc. • Bring in system capabilities very early • Verify the viability of the strategy
Road map: Define a course of action to implement the new operating model	• Help define the business road map • Define and guide the process required to create the road map • Identify high-risk problem areas in ICT components of business plans • Define the underlying ICT components of the road map
Design: Create a detailed end state and a plan for getting there	• Drive designs towards enterprise goals • Establish mechanisms to control demand • Ensure that technology components are robust and realistic
Implement: Execute the process, system and other changes	• Monitor progress against milestones and adjust as needed • Show how others have gone through the transformation • Focus on the technical details, especially data and testing
Monitor: Measure the value and plan improvements	• Measure the value of the transformation • Start continuous improvement programmes

Source: Marc Cecere, "The CIO's role in business transformation – Five key steps", CIO UK, 22 July 2013. Available from http://www.cio.co.uk/insight/strategy/cios-role-in-business-transformation-five-key-steps/.

To be successful transformation leaders, GCIO must also possess the following behavioural patterns and essential skills:[138]

- **Commit to Leadership First and Everything Else Second**. The highest performing CIOs are effective because they embrace the idea that everything they need to accomplish will be achieved through people, by people, and with people. They do not pay lip service to that idea. They live it. They lead.

- **Lead Differently than You Think.** A high-performing CIO is an incredibly complex and creative thinker. Yet when the time comes to lead, they do not rely on their superior "smarts" and analytical skills to come up with the best possible solution. They act collaboratively.

- **Embrace Your Softer Side**. Effective CIOs manage the paradox of gaining more influence by letting go of control and allowing themselves to be vulnerable. In turn, that vulnerability enables them to create deep, personal connections—connections that provide the ability to inspire people both inside and outside their organization.

[138] Thomas Wailgum, "7 Essential CIO Skill That Get Results", CIO, 19 October 2010. Available from http://www.cio.com/article/626991/7_Essential_CIO_Leadership_Skills_That_Get_Results_.

- **Forge the Right Relationships to Drive the Right Results**. This skill may not be surprising. High performing CIOs spend a greater percentage of their time and energy managing relationships that exist sideways: with internal peers, external suppliers and customers/ stakeholders. They purposely invest in horizontal relationships that form the foundation to drive extraordinary results.

- **Master Communication**. Through their focus on clarity, consistency, authenticity and passion, the best CIOs make sure their message is not only understood but also felt. They want to communicate a feeling that compels people to take the right actions.

- **Inspire Others.** The best CIOs provide a compelling vision that connects people to how their contributions are meaningful and valued.

- **Build People, Not Systems**. By developing people all around them, these CIOs increase their capability and capacity to deliver results. They also know that leaving behind the next generation of leaders is the best thing they can do for the organization—it will be their lasting legacy.

Two final points on the GCIO.

The first is from Vivek Kundra, the U.S.' first Federal CIO, regarding the choices GCIOs face:[139]

> There's a natural tension for every CIO in terms of being an enforcer and being an enabler. Unfortunately, most CIOs end up picking the enforcer role. I think it's an active choice they make. They become "Dr. No," and nobody wants to deal with them.

The other point is from the consulting firm Deloitte:[140]

> A CIO's longevity in government service is greatly enhanced by elevating the vision of what value IT can deliver and helping others to see IT as a multi-faceted, mission-led, technology-enabled business transformation agent. The results are that the CIO can be a strategic player within the senior staff, and even a game changer many times over.

Box 13. Critical success factors and key principles for CIO

Success factor 1: Align information management leadership for value creation
- Principle I: Recognize the role of information management in creating value
- Principle II: Position the CIO for success

Success factor 2: Promote organizational credibility
- Principle III: Ensure the credibility of the CIO organization
- Principle IV: Measure success and demonstrate results

Success Factor 3: Execute CIO responsibilities
- Principle V: Organize information resources to meet business needs
- Principle VI: Develop information management human capital

Source: United States General Accounting Office, Maximizing the Success of Chief Information Officers: Learning from Leading Organizations, Executive Guide, February 2001. Available from http://www.gao.gov/new.items/d01376g.pdf.

[139] Andrew Nusca, "Picking the brain of 'rock star CIO' Vivek Kundra", ZDNet, 24 April 2013. Available from http://www.zdnet.com/picking-the-brain-of-rock-star-cio-vivek-kundra-7000014476/.

[140] Deloitte, *The CIO Lifecycle: Thriving in transition and beyond* (2010), p. 10. Available from https://www.deloitte.com/assets/Dcom-SouthAfrica/Local%20Assets/Documents/CIO%20Lifecycle_Thriving_in_Transition.pdf.

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ISBN 978-89-960467-1-4

Published under programme supported by Korea International Cooperation Agency (KOICA)