African Leadership in ICT (ALICT)

African Leadership in ICT and Knowledge Societies: Issues, Tensions and Opportunities for Learning

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The African Leadership in ICT (ALICT) Program is a three-year partnership between the Global E-Schools and Communities Initiative (GeSCI), the African Union Commission (AUC) and the Ministry for Foreign Affairs of Finland. The ALICT Programme is conceptualized to model a methodology and multi-stakeholder approach for capacity building and awareness raising of African leaders on the issues of the Knowledge Society, ICT, Education, Science & Technology and Innovation.

This paper examines leadership development within the context of the African Leadership in ICT programme. The paper assesses knowledge society and leadership issues, tensions and opportunities for learning based on desk and field research related to: the knowledge society, leadership and issues in the global context; the knowledge society pillars, leadership and issues in the African context; leadership development approaches for the knowledge age; and a four country needs assessment for African leadership in ICT and knowledge societies.

The paper identifies consensus in the literature on the need for alternative approaches for leadership research and development that is context specific, that is action oriented, that is focused on learning and that engages in an examination of real problems and solutions as they evolve through systems within societies.

The field research identifies an expressed need for a particular focus on institutional practice in leadership development. There is thus a critical opportunity in the ALICT leadership development programme for examining how the first generation of knowledge society leaders can influence change and preserve their vision through their organizations and institutions.

The paper summarizes recommendations from the desk and field research for *inter alia* developing general leadership capacity to translate knowledge society visions and strategies into implementation action plans, for developing specific leadership capacity for understanding the knowledge society and the innovation eco-system with its linkages between research & innovation, science & technology, education and development, and for developing personal leadership capacity in self-awareness and emotional intelligence to understand and communicate effectively with the people they lead.

1. Knowledge Societies and Leadership: Issues in the Global Context

Antithesis to Progression
Progression. The tide that embellishes our voyage with novelty and the unexplored
treasures of the treasure house.
Why do you tread on the retrogressive paths that bind your feet with the shackles of
stagnation?
…
Blow the trumpet with the force that cannot be denied.
Speak the words that resound within the habitation of deaf ears.
Roll away the curse of slumber and lethargy.
Ignite the embers of celestial fire.
Call for the baptism of change on the souls that are trapped in the abbeys of
retrogression.
The gathering of the clouds speaks of imminent rainfall.
Open your arms and embrace the inevitable.

Bethel C. Simeon, Badlisha Pan-African Poetry Exchange

In his poetic anthem to the force of progression that cannot be denied, Simeon (2011) identifies the tensions therein between regression towards the world that is known and understood and progression towards an uncertain future world. The future world is shrouded in metaphors of gathering clouds, imminent rainfall and celestial fires heralding a new beginning - a paradigmatic fiery baptism of change that needs to be embraced by the people and societies of the African continent as it does by the people and societies of all global regions. It is a force of change that is inevitable.

1.1 The emergence of knowledge societies and economies

The world of the 21st century is witness to change forces that are everywhere, gathering momentum and bringing with them storm clouds of uncertainty and risk as well as rainfalls of opportunities for new growth, learning and development. As societies seek ways to embrace change and harness it for development, knowledge has become a critical tool to address challenges for economic growth and a constitutive component for sustainable and meaningful development (UNESCO, 2005).

The availability of and access to knowledge has always been key to human existence and survival throughout the development of humankind. However it was the last chapter of the 20th century that would see a major transition from human development production that was based on labour, capital and natural resources to a 21st century emphasis on production and

investment through the application of knowledge (Seldon & Cairns, 2002). An unfettered agenda for trade liberalization and globalization accelerated and facilitated by emergent new technologies would be instrumental in the focus on knowledge as a major commodity and force to exert power and influence in the socio-economic development of nations and regions (Dahlman, 2007; Sachs 2008).

The Knowledge Society (KS) and the Knowledge Economy (KE) is about the capabilities of a country or region's constituents to leverage, mobilize and manage knowledge production through problem solving, learning and leadership as a conduit for enhancing competitiveness and socio-economic development and growth particularly in times of turbulent change (Seldon & Cairns, 2002). The KS and KE literature reveals a landscape of intertwined discourses and processes that are affecting local and global development and practices. Much of the debate and discourse centres on the dualism functions of knowledge in the development of a knowledge society and a knowledge economy where one may take precedence over the other. Hargreaves (2003, pxvi cited in Sugrue, 2008) succinctly suggests that the knowledge economy primarily serves the private good while the knowledge society encompasses also the public good. There is general consensus on the need for building a knowledge base for both facets to provide the strongest guarantee for the social well-being, competitiveness and development of a country or region today and in the future (Dahlman, 2007; Tapper, 2010).

 The conceptual framework of the knowledge-based society and economy is the convergence of knowledge/ information 'flows' and 'networks' which are becoming enmeshed as people and organizations are connected across the boundaries of nation states and continents (Tapper 2000; Barrio, 2007; Sachs, 2008; Spring, 2008).

The Organisation for Economic Co-operation and Development (OECD) codified a knowledge typology that clarifies the broader concept of knowledge as opposed to information that determines development transition towards knowledge-based economies. The typology consists of four knowledge categories, namely: *know-what* referring to knowledge about facts, *know-why* referring to scientific knowledge of the principles and laws of nature, *know-how* referring to the skills or capabilities of doing something, and *know- who* referring to who knows what and who knows how to do what (OECD, 1996 p12).

1.2 Knowledge society issues in the global context

Spring (2008) describes the prospects for countries and societies to benefit from the different world knowledges, the different ways of seeing and knowing in the global flow and the opportunities therein to adapt and adopt models of knowing appropriate to local needs and cultural contexts. Speaking from a developing world perspective, Addo (2001) suggests that indigenous knowledge can be ignored within the codified frameworks defined by western scientific knowledge. He further observes that the knowledge conduit of technology is not a neutral instrument to address needs and social frameworks of the developing world. Dahlman (2007) contends that developing countries need to find effective ways to tap into the ever-expanding stock of global knowledge, to attract and use foreign investment that can generate indigenous knowledge, innovation and business for sustainable development.

The critical issue for developed and developing worlds rests on the inherent tension discussed at the beginning of this section between knowledge organization as a commodity for private ownership and as a tool for public good. The potential for development and catch up between developed and developing worlds is marred by increasing social inequalities and divisions based on unequal access to the global knowledge/information flow, content and infrastructure (Seldon & Cairns 2002).

The rasion d'etre for building knowledge societies is essentially about promoting a broader understanding of development in the knowledge age. It is about broadening the globalized agenda for the knowledge economy to empower a social vision for plurality and inclusion. It is about development towards knowledge societies to open up a more humanist process of globalization that is based on poverty reduction and human rights as well as welfare and prosperity for all (UNESCO 2005). It is about placing the development and growth of people and organizations at the centre so as to promote and support a culture of participation, learning and innovation through which new kinds of knowledge engagement and practice will emerge (Sachs 2008; Butcher 2010).

1.2 Leadership in the knowledge society

The knowledge society and economy presents more opportunities for developing countries to be exposed to everything that is happening globally. The African Union African Regional Action Plan on the Knowledge Economy (ARAPKE) encapsulates a vision for regional

development towards a knowledge-based economy requiring the collective efforts of multiple stakeholders to achieve the following objectives:

- *To use information to accelerate development, induce good governance and foster stability;*
- *To provide wellbeing and increase employment, reduce poverty and empower under-privileged groups;*
- *To enhance the natural capital and human capacity of the region and minimize internal inequalities;*
- *To further benefit from information by fully becoming part of the global information society.* (African Union, 2005 p10)

The implication is that countries in the region will need to develop greater capability to respond rapidly to the opportunities as well as the threats of the global knowledge society and economy (Dahlman, 2007; Sinko, 2011). In particular there is a requirement for developing leadership and management of change competencies for building empowering policies, visions, institutes and people capabilities to embrace the 'emancipatory potential' rather than languish in the 'deterministic imposition' of the knowledge-driven society and economy (Leadbeater 1999 cited in Sachs, 2008 p193).

2. Knowledge Society Pillars and Leadership: Issues in the African Context

Information and Communication Technology (ICT), Education & Training and Innovation are the critical pillars and key elements for development towards a Knowledge-based future (Hooker, 2010; Tapper, 2010). Butcher (2010, p7) visually captures the inter-relationship between the three pillars in Fig. 1. The *Innovation* pillar incorporates the fields of Science, Engineering, Technology and Innovation (SETI) in a single pillar. The *Education* and *Innovation* pillars are presented as interrelated drivers for *Development*. Overall Butcher establishes the *ICT* pillar as the enabler for Education and Innovation dynamics that will drive Development towards the *Knowledge Society*.
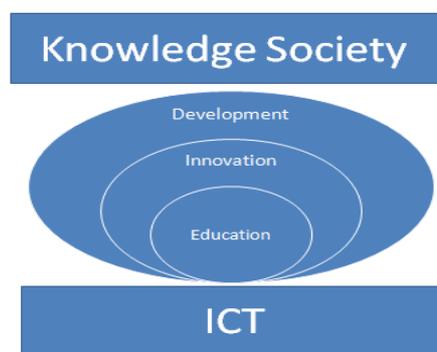

Figure 1: ICT as an enabler of Education, Innovation and Development towards the Knowledge Society (Butcher 2010)

The following section presents an overview of the Knowledge Society Pillars and issues in the Africa context followed by a discussion on the implications for Leadership Development.

2.1 Innovation and the Knowledge Society

The essence of innovation is novelty. Diyamett (2009) explains innovation as being a process of introducing something new or useful and the new thing itself. Dahlman (2007) relates how innovation can also be considered first use of knowledge over prevailing local practice in a country or region to create their own competitive advantage. The report on the *Knowledge for African's Development* conference (RSA, WB & FINNIDA 2007) highlights innovation as the guiding lens through which to view the dynamics of the Knowledge Society 'where risk taking is the norm and where unplanned opportunities and previously unrealized linkages can be expected' (p10). The UN Economic Commission for Africa (UNECA) (2010) describes innovation and change as integral to spurring knowledge society continuous learning cycles

for replenishing and renewing the knowledge stock in order to drive economic growth and competitiveness.

The critical element in the knowledge-innovation interplay is *knowing what* knowledge-innovation will be useful and *knowing how* to adapt it to specific local conditions (Dahlman, 2007 p13). The basic ingredient for nurturing the innovation dynamic is setting up systems to enable cross-fertilization of ideas between the fields of Science, Engineering, Technology, and Innovation (SETI) (Eriksson *et al.*, 2005). Bamiro (2007) presents the concept of a *national system of innovation* (NSI) as a useful framework for governments to create SETI settings that can promote integrated systems for innovation and production. The NSI framework encompasses two innovation structure features, namely: organizational structures such as public R&D laboratories, universities, private R&D centres, venture capital organizations, policy agencies, firms and companies where innovation related activities can take place; and institutional structures such as regulatory frameworks, incentive structures, patent laws and norms set up to influence innovational activities and cross-institutional and sectoral collaboration.

2.1.1   Innovation issues in the Africa context

Diymatt (2007) concurs that facilitating innovation requires a multi-dimensional and context specific approach. She speculates however on the viability of a *national system of innovation* concept in the developing world. It is a systems approach that is based on empirical evidence from the more developed world. Diymatt (ibid. p173) proposes that it is an *ex-post* rather than *ex-ante* concept used for evaluating as opposed to building systems of innovation in the African context.

There are numerous challenges in developing innovation systems in Africa, including but not limited to the following aspects: a fragility in African markets related to a low level of education and per capita income that inhibit demand for innovative products; a conspicuous disconnect between advances in science and technology in most African countries where technology has remained local and divorced from Africa's high level research in the scientific field which is global; an overemphasis on scientific research and training of more scientists as a way of fixing African technology challenges; a multiplicity and diversity of low-tech sub-systems in the African innovation system incorporating formal and informal sectors with different actors, problems and challenges requiring different policies to facilitate innovate

activities (ibid.); an African skills drain of scientists and engineers to the developed world; a fragile status of endogenous technological 'know how' as a result of passive policies enabling an influx of foreign technology artifacts; public organizations divorced from productive sectors (Bamiro, 2007); a cultural, organizational and institutional lock-in to existing paradigms of operation where deep-rooted ideas and practices make it difficult to adopt new and different ways of doing things (Dahlman, 2007; Eriksson *et al.* 2005).

Diymatt (2009) proposes a shift from a macro linear approach to a micro interactive learning approach in developing innovation systems. She advocates innovation 'clusters' to coordinate interactive learning among actors at different system levels from local firms and co-operatives to regional science parks affiliated to university knowledge and research hubs. She believes that the cluster nexus is better suited to address the *know what, why, how* and *who* parameters of innovation development in the African context. The cluster approach can provide a platform for building social capital and systems of innovation incrementally at a local level; for identifying organizational and institutional structures to support the cluster innovation and product commercialization as the local system matures; and as an action base that can make a practical contribution to policy on innovation systems development at the macro level.

2.1.2 Leadership in Innovation and the Knowledge Society

The *Knowledge for Africa 10 Priorities* (WB, RSA, FINNIDA, 2007) report advocates the mobilization of the whole of society to own innovation systems and integrate dynamics of reform. In this framework there is a need for visionary leadership capable of mobilizing stakeholders to revamp, revitalize and interconnect systems and sub-systems from low tech manufacturing to high tech research & development (Sinko 2011). There is more specifically the need for leadership competency to grasp the 'boundary crossing convergence' of organizational, institutional and cross-sectoral knowledge building in innovation development (Hershock 2007, p229); to manage the 'distributed and less hierarchical organizational forms' (Wilson 2004, p858); to recognize the 'value-creating potential of the organizational knowledge base' (Van Niekerk & Waghid, 2004 p3); to communicate and handle the networks of how the knowledge /innovation will flow within and across organizations and into the expanding local and global social networks and knowledge flows (Tapper, 2000 p532; Ordonez, 2007 p255). As Sinko (2011) observes innovation does not of

itself travel from the top down nor from the bottom up. It will require a new genre of organizational flexibility and leadership style to assist it into the flow.

2.2 Education and the Knowledge Society

Governments worldwide recognize the pivotal role of education in innovation and knowledge building strategies. Much of the literature assesses the role of educational and training systems as a critical pillar to provide trained manpower (engineers, scientists, technicians, craftsmen, artisans) in the quantity and quality needed to address the challenges of the workplace as well as the research and development institutes (Dahlman 2007; Bamiro, 2007; Spring 2008). Butcher (2010) relates the requirement for lifelong learning to keep pace with changing global job markets and technologies. This would involve preparation in primary and secondary schools with emphasis on learning general skills and competencies (communication, mathematics and science skills, new literacy skills, problem-solving and interpersonal skills, and self-directed learning skills to learn other subjects) and at tertiary level on capacity building in science and technology, discipline-specific skills, research and development. Bamiro (2007) highlights the need for post-graduate programmes for building specific research capacity to handle knowledge-innovation process development - 'adoption, adaptation, major or minor changes' (p240) – to meet needs and demands for national and regional competitiveness and growth.

Bamiro (ibid.) contends that there is a fundamental disconnect in most countries between the needs of the economy and the products of education systems. Buckley (2011) writing from a private sector perspective laments the predominant emphasis on humanities oriented subjects in school curricula and the lack of emphasis on science, technology, engineering and mathematics – the STEM subjects. He argues that the STEM subjects are critical for producing graduates who can lead in new emerging knowledge economy sectors related to information technology (cloud computing, advanced software development) and science, engineering and technology convergence (nanotechnology, electronics engineering). Hershock (2007) assesses that education systems are welded to strategies for reforming existing structures as opposed to recognizing the 'emerging imperative for fundamental educational change' (p243).

2.2.1   Education issues in the Africa context

Africa boasts the largest percentage of young people in the world with over sixty per cent of its population under 25 years old. The youth population represents a critical asset and a vast reservoir of potential talent and skills that could be harnessed into creating a productive workforce (African Economic Outlook, 2011 cited in Swarts *et al.,* 2011). The region's education systems however struggle both in quantitative and qualitative terms to meet the demands of the emerging African knowledge economies. There have been significant achievements in access particularly at primary level. The greatest challenges remain at secondary, vocational and tertiary levels where countries are not producing sufficient numbers of technical experts to build production and create dynamics for employment in the emerging regionally and globally connected knowledge economies. The qualitative short-comings relate principally to: curriculum reform for strengthening STEM subjects; revamping secondary and tertiary infrastructure to provide adequate equipment for practical acquisition of concepts; and addressing teacher competencies to shift from dominant pedagogies of 'lecturing and note taking' (Nampota, 2009 p68) to utilizing strategies and new technology integration to promote meaningful learning of concepts (Sinko 2011, pp280 - 281).

2.2.2 Leadership in education and the knowledge society

The innate conservatism of education systems can explain the dominance of incremental reform (West-Burnham 2009). The tension between the push for more radical innovation and the pull of existing organizational structures and embedded institutional practices (traditional knowledge codification and timetabling) continually serve to decelerate the change agenda (Hershock, 2007). There is a demand for profound rethinking of the role of education and training systems and constituent actors inclusive of leadership actors to adapt and respond to skill demands of employers, technological progress and macro trends for knowledge-based socio-economic development (Schwalje, 2011).   Science and technology need to be strengthened in secondary and tertiary education. Vocational education needs to gain more recognition. There is a particular requirement for putting in place systemic foresighting and forecasting mechanisms to provide reliable information on the future skills base and the professional competencies needed (Sinko 2011). Within this framework there is a need for a different model of educational leadership – one that is extended beyond the schools and institutions and is engaging horizontally in a 'whole of education' perspective with other education clusters and engaging vertically in a *triple-helix* 'whole of government' approach

with government, industry, education & research institutions. The engagement focus requires interplay, communication and learning on how to critique policies and strategies for developing capacity and innovation across education and training systems that will meet the needs and demands of the emerging and future knowledge societies (Collarbone & West-Burnham 2008; OECD, 2010).

2.3 Information and Communication Technology and the Knowledge Society

Information and Communication Technology (ICT) is the new critical infrastructure and revolutionary engine underpinning the rise of knowledge-based societies and economies (Dahlman 2007; UNESCO, 2005). ICT is speeding up the global flow of knowledge and information (Spring, 2008), promoting interaction with the global economy that is replacing the national economic milieu (Tapper 2000), and creating new value chains and networks that enable consumers as well as producers to participate in the innovation process (Eriksson *et al.* 2005). ICT is redefining the way in which humankind interacts and expresses creativity (Addo, 2001), where the democratizing spirit of grassroots innovation networks can render precarious some centralized visions and social relations within groups and organizations (Wilson, 2005; UNECO 2005). ICT is an essential element for monitoring and providing appropriate and accurate data to inform public and private sectors of the changing needs of markets and systems (Dahlman, 2007; Collarbone & West-Burnham, 2007). In education there is increasing evidence of a correlation between countries investing in ICT to enhance education performance in the core subjects of mathematics, science and reading and high scoring in international achievement tests such as OECD PISA (OECD, 2009).

While ICT is critical for enabling access to knowledge networks, investment in technology of itself does not guarantee success for knowledge creation and refinement. ICT is a tool that can be harnessed for development and competitiveness. For innovation to happen there is a need to build higher-order skills for knowing how to access and use knowledge and innovation networks. There is a further requirement to mobilize mass technology deployment to enable system wide opportunities for participation in and contribution to the innovation processes (Eriksson *et al.,* 2005; Butcher, 2010).

2.3.1 ICT issues in the Africa context

The status of ICT use in the African socio-economic development landscape would suggest that innovation is just beginning with enormous potential for rapid expansion (Swarts *et al.,*

2011). Kapstein (2009) relates a growth in African mobile communications since 2000 that has significantly outpaced expansion in any other region in the world. Ledgard (2011) reports on connectivity improvements by way of undersea cables hooking up populations and countries in the region to an internet with faster speeds, more affordable costs and predictions that by 2014 '69% of mobile phones in Africa will have internet access'.

The challenges in the Africa context are related to capacity, capability, and resources (human and financial) to harness the burgeoning ICT potential successfully and effectively. There are several implications for capacity building in the skills necessary to use the knowledge networks, for developing and implementing appropriate policies, legal and regulatory systems, for setting up infrastructure and communication systems, and for restructuring institutional processes in order to take advantage of technology efficiencies to support knowledge-based transformation and development (Dahlman 2007; Butcher 2010).

2.3.2 Leadership in ICT and the knowledge society

There is a requirement to ensure that leaders are capacitated to make informed policy and investment decisions to enable ICT to support socio-economic development effectively. This would encompass building both leadership functional ICT skills and ICT management skills. It would also involve building leadership capacity to articulate and convince audiences in highly challenging cross-sectoral and multi-stakeholder environments of the value of ICT investment and diffusion to achieve their goals and more particularly to make a difference with the past and penetrate the future development potential of 'being connected' in the dynamic local and global innovation networks (Wilson, 2004; Butcher, 2010; Sinko 2011).

3   New Leadership Approaches for the Knowledge Age

The global and regional contexts and issues examined in the previous sections would indicate a requirement for new mindsets and skills to provide leadership in the political, economic, social and cultural dimensions of development towards knowledge societies (Swarts 2010, cited in Hooker and Bassi 2011). There is a recognition that organizations need to learn how to adapt quickly if they are to participate and compete in the rapidly changing environments of the knowledge age. Leadership plays a central role in influencing and enabling organizational change (Van Niekerk & Waghid, 2004). The challenge lies in building leadership capacity for 'understanding and responding to the patterns of interdependence characterizing the social, economic and political spheres' of knowledge societies and economies (Hershock, 2007 p227).

3.1 New leadership mind sets and skills

Changing mindsets would focus on influencing leadership behavioral change to adopt different ways of doing things (Earl, Carden & Smutylo, 2001). Lest there is a complete abandon of old for new, Wilson (2004) presents a caveat of leadership attributes such as 'passionate commitment, focus, discipline and charisma' that still hold true as 'universal and timeless characteristics' for leadership development (p858). The knowledge age would demand additional broader capabilities as in what Medveš (2006 cited in Pagon, Banutai and Bizjak 2008 p6) would categorize as a conglomerate of cognitive (creativity, problem solving, strategic thinking etc), functional (technological skills, intercultural skills etc) and personal/social (teamwork skills, compassion, mobilizing people etc) leadership competencies for successful management of organizational change. All in all competencies that represent a mixture of leadership *skills, attitudes* and *knowledge* critical for coordinating multi-stakeholder values and interests and consolidating meaningful shared trajectories of innovation towards knowledge intensive societies (Wilson 2004, p858).

3.3 New leadership theories

The most common leadership styles in contemporary theory are transactional and transformational. The former presents the traditional power-centred leadership approach where 'leaders' orient 'followers' towards task completion. The latter presents a more progressive distributed leadership approach where 'leaders' motivate 'followers' towards assuming a joint vision for longer term strategic goals beyond the self-interest of task completion (Van Niekerk & Waghid, 2004 p3). In each case leadership resides within the

personal qualities of the leader or the functions they perform. From this framework a trajectory of new leadership theories and approaches are emerging shifting leadership concepts towards parameters for influencing change in others (relational theories), finding alternative leadership narratives (critical theories) and constructing shared meanings (construction theories) (Bolden & Kirk, 2009).

In education development a PricewaterhouseCoopers study (2007 cited in Collarbone & West-Burnham, 2008) presents the existence of five broad leadership approaches in education systems - from traditional to managed, to multi-agency, to federated to systemic leadership - each approach pushing back the frontiers of the school leader to go beyond the school boundaries and contribute to the wider system at local, national and regional levels. In organization development Van Niekerk & Waghid (2004) relate the appearance of developmental or servant leadership which seeks to shift the organizational development focus from objectives to people and from command and control to collective collaboration. The authors further describe approach variants for 'middle-up-down' leadership based on an understanding of knowledge as primarily enabled by a middle management that can 'narrow the gap between the vision of the organization and grass roots reality' (p3).

Wilson (2004) believes contemporary leadership theories to be inadequate for the 'digital age', describing them as 'too static, too macro, too e-political, too conceptually under-developed' (p860) for the complex, distributed, cross-sectoral dynamics that need to come into play in networked societies. There is much literature critique of the theories of leadership and management in general as emanating from a western perspective (House & Aditya, 1997; Bolden & Kirk, 2009). Nkomo (2006) underpins the critical omission of the voice of the 'Other' in organizational and leadership studies whether 'it is African or other non-Western perspectives' (p2) and the implications therein for stereotyped solutions for development issues and challenges.

There is a consensus in the literature for the need for alternative approaches for leadership research and development that is context specific, that recognizes the embeddedness of leadership practices within the particular cultural, political, technological, economic and social relations of a society, that engages in examination of real problems and solutions as they evolve through systems within each society, that is action oriented and focused on learning (Van Niekerk & Waghid, 2004; Nkomo 2006). There is a further recognition of the

need to leverage new technologies to address development of new leadership *skills, knowledge* and *attitudes* towards mobilizing a more interactive and distributed leadership that links macro and micro systems and networks in joint synergies towards knowledge society development (Wilson, 2004).

Van Niekerk & Waghid (2004) propose that the emerging paradigm for developmental leadership in the 21st Century closely relates to the spirit of African Leadership incorporated in the "Ubuntu" ("connectedness of people") humanist philosophy. Mbigi (2004 cited in ibid) identifies key new leadership values that are expressed in the Ubuntu collectivist ideal for development where there is: respect for the dignity of others; teamwork where none of us is greater than all of us; service to others in the spirit of harmony; interdependence where the most successful leaders are those who have become skilled empathetic leaders; persuasion, where there is a clear distinction between conventional authoritarian leadership styles and that of developmental leadership.

4 Four Country Needs Assessment for African Leadership in ICT: Issues, Tensions and Opportunities for Learning

In March 2011 GESCI conducted a four country needs assessment for the African Leadership in ICT (ALICT) pilot programme in selected countries in the Southern and East African regions. The needs assessment resulted in country reports from South Africa (Akpor *et al.,* 2011), Zambia (Chilala & Kumar, 2011), Mauritius (Santally *et al.,* 2011), Tanzania (Senkondo & Twinomugisha, 2011) and a summary report (Hooker & Bassi, 2011).

The research methodology was a mixed methods qualitative and quantitative approach consisting of interviews, focus group discussions and a survey conducted with senior and middle management in Education, Science & Technology and Research Ministries, Institutes and Agencies in each country. The interviews were based on an activity system protocol and presented questions to participants on each country's knowledge society (KS) mandates, policy objectives, resources, regulatory frameworks and community networks. Activity systems are currently widely applied to study the integration of new technology and innovation within local working situations as well as within the broader social, economic, and policy contexts and dynamics in which they are situated (Engstrom 2001, 2003) (Fig. 2).
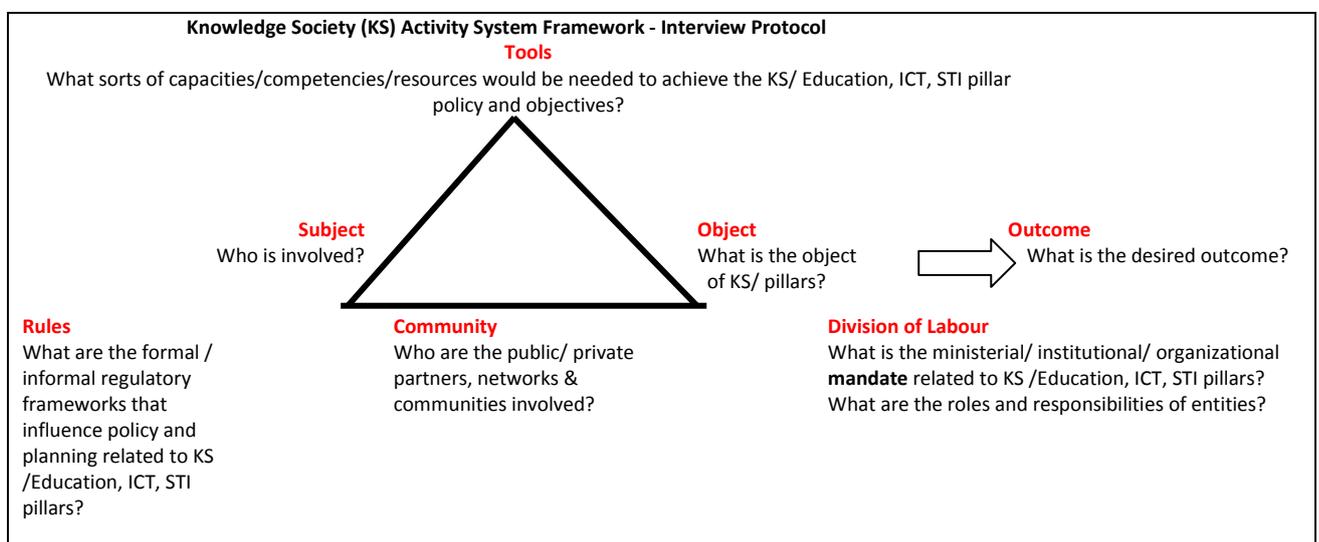
Figure 2: Knowledge Society Activity System Interview Protocol (Adapted: Engestrom 2003)

The focus group protocol asked participants to discuss country engagement on KS pillars of Innovation, Education and ICT at individual, organizational and environmental system levels. The survey asked respondents to rate the importance and prioritization for capacity development of 13 leadership competencies at the different system levels (Appendix 1).

4.1 Needs Assessment Highlights

4.1.1 Status of knowledge society development

In all of the four countries surveyed there are several common objectives which underpin national policy and strategy frameworks for development towards knowledge societies (KS). The Education, ICT, Science, Technology and Innovation pillars are recognised as vital and inter-related resources for the change process.

South Africa emphasizes the critical role of innovation and research and identifies the technological and scientific knowledge embodied in the knowledge and skills of the South African people as key to economic competiveness and growth (Akpor *et al.,* 2011 p 15). Mauritius focuses on "humanpowerment" for building a creative and competent human resource base (Santally *et al.* 2011 p8). Tanzania articulates an emphasis on human capital development for developing skilled, flexible and innovative individuals and that is conducive towards mindset transformation and knowledge creation (Senkondo and Twinomuguisha, 2011, p10). Zambia identifies the significance of ICT as a critical pillar and driver for knowledge-based economic transition (Chilala and Kumar, 2011 p6). All countries are addressing several faces to policy development and implementation for knowledge societies where a number of transitions at the social, political, economic, academic and community development levels are required simultaneously (Figure 3).
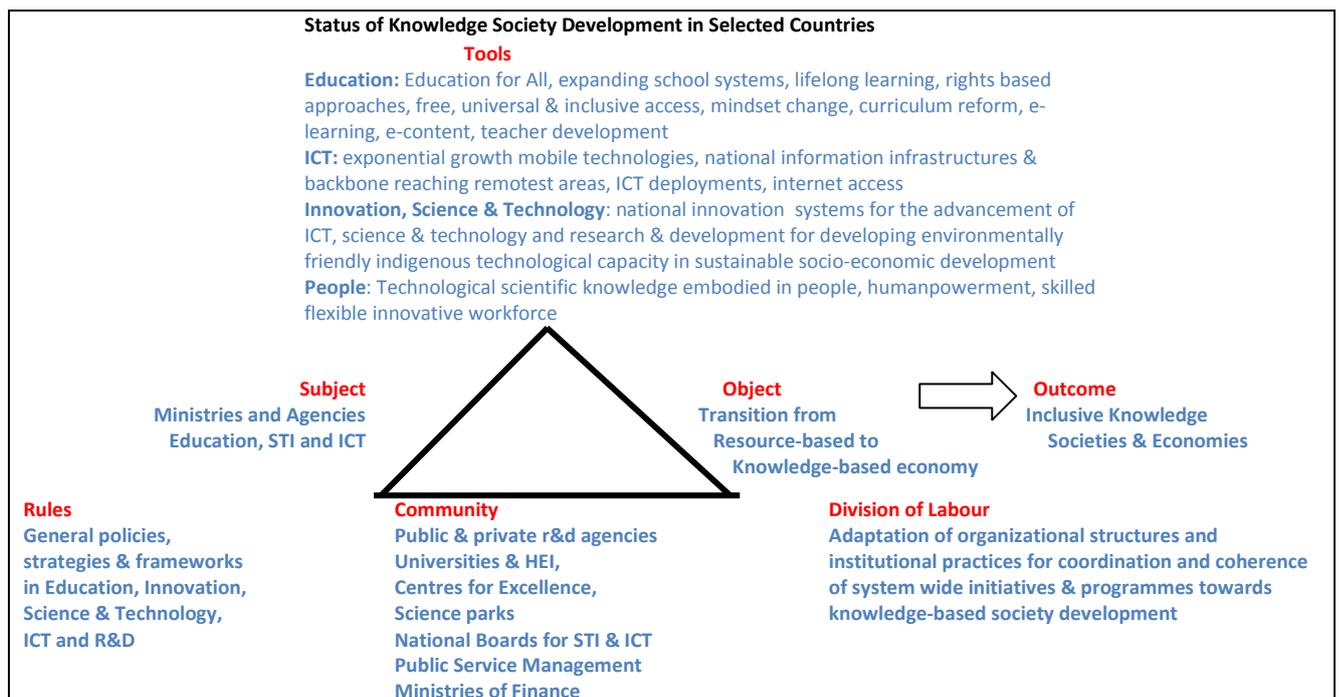

Figure 3: Status of Knowledge Society Development in Surveyed Countries (Source: Hooker & Bassi, 2011)

The interviews and focus group discussions revealed tensions in several aspects of policy and objectives implementation, including: a general lack of cross-sectoral coordination and policy coherence across KS pillars of Education, ICT, Science and Technology and Innovation; fragmentation in real application of policies and plans; acknowledgement that the issue of access to education has taken precedence over quality; challenges in curriculum reform for more emphasis on science, technology and mathematics in primary and secondary, in capacity building for science & technology research and development in tertiary, in teachers' competencies for effective pedagogy, content and technology integration in teaching and learning; a need for more focus on long-range objectives, including confronting failure to commercialize results of scientific research already happening in surveyed countries and to create more substantive opportunities for sharing information, research and development (Hooker and Bassi, 2011 pp36-38).

4.1.2 Leadership competency importance-priority survey

In the importance survey senior and middle level management respondents used a three-point Likert scale (3 for important, 2 for moderately important and 1 for unimportant) to rate the importance of 13 knowledge society (KS) leadership competencies (Appendix 1).

Senior level officials ranked the *environmental level KS vision competency*[1] (M=2.80, SD=0.21), the *environmental level KS policy and strategy competency*[2] (M=2.80, SD=0.16) and the *individual level KS creativity and innovation competency*[3] (M=2.80, SD=0.16) as the three most important competencies for leadership development.

Middle level officials ranked the *individual level KS effective communication competency*[4] (M=2.79, SD=0.23), the *organisational level KS policy and strategy competency*[5] (M=2.69,

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[1] *Environmental level KS vision competency* on national leadership capacity to develop, communicate and give direction to Knowledge Society vision, mission and values *Policy and Strategy competency* on national leadership ability to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI

[2] *Environmental level KS Policy and Strategy competency* on national leadership ability to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI

[3] *Individual level KS Creativity and Innovation competency* related to leadership ability to plan and encourage organisational modernization, creativity and innovation related to KS and pillars of ICT, Education and STI

[4] *Individual level KS Effective Communication competency* on individual leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development

[5] *Organisational level KS Policy and Strategy competency* for organisational leadership ability to translate the KS (ICT, Education, STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions

SD=0.35) and the *environmental level monitoring & evaluation competency*[6] (M=2.66, SD=0.36) as the three most important competencies for leadership development.

The apparent conflict between senior and middle management importance attribution was clarified in interviews and focus group discussions where the following tensions emerged: senior management related concerns on the proliferation of good policies without proper implementation strategies, on visions and mandates which seemed to be developed from borrowed ideas that have not been contextualised for country environments, on the lack of enabling structures and programmes for implementation of mandates; middle management articulated perceptions of senior management incapacity to effectively communicate strategies for implementing policies, of inadequate expertise and lack of dialogue among the government ministries, agencies and civil society, all of which have robbed key institutions of the opportunity to work towards a shared vision in the light of the KS and its pillars (Hooker and Bassi, 2011 pp33-35).
.
A quadrant analysis was carried out on survey respondent importance-priority mean ratings in a final exercise to determine the areas of highest importance and priority for the pilot ALICT leadership development programme. The domains of *environmental level dialogue, environmental level policy and strategy* and *organizational level policy and strategy* emerged as the critical gap areas for leadership development (Table 1).

Table 1: Quadrant Mapping of Importance-Priority Competencies for Leadership Development (Source: Hooker & Bassi, 2011)

		Quadrant III: High Importance, Low Priority	Quadrant IV: High Importance, High Priority
IMPORTANCE	High	• Environmental Level-KS M&E • Individual Level-KS Effective communication • Individual Level-KS Creativity and innovation	• Environmental Level-KS dialogue • Environmental Level-KS Policy & Strategy • Organisational Level-KS Policy & Strategy
		Quadrant I: Low Importance, Low priority	Quadrant II: Low Importance, High Priority
	Low	• Environmental Level-KS System Management • Organisational Level-KS dialogue • Organisational Level-KS Vision • Organisational Level-KS System Management • Individual Level-KS Motivation & Collaboration	• Environmental Level-KS Vision • Organisational Level-KS M&E
		Low PRIORITY High	

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[6] *Environmental level Monitoring & Evaluation competency* related to national leadership capacity to use M&E systems and practices as an evidence-based foundation to planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy.

It would seem from these patterns that senior and middle level managers are ranking competencies and priorities for leadership development that are focused on a down to earth translation of the knowledge society concepts into practical strategies and plans that can be applied in organizational practice. A noteworthy gap is the absence of individual leadership skills in the high importance-priority quadrant for leadership development. This could be interpreted as an expressed need for a critical focus on institutional practice in the leadership development programme – as in a focus on organizational level appropriation of the individual leadership level engagement with knowledge society development issues. There is thus a critical opportunity for learning through the ALICT leadership development programme on how the first generation of knowledge society leaders can influence change and preserve their vision through their organizations and institutions in a manner that will persist over many generations.

4.1.3 A Model for Leadership in the Knowledge Society

The situational analysis reports produced critical findings on leadership development needs for ICT and the knowledge society, with recommendations for *inter alia* developing general leadership capacity to translate knowledge society visions and strategies into implementation action plans and activities, developing specific leadership capacity for understanding the innovation eco-system and its linkages between research & innovation, science & technology, education, and development towards knowledge societies and economies, and developing personal leadership capacity in self-awareness and emotional intelligence to understand and communicate effectively with the people they lead.

In January 2012 GESCI will pilot a pedagogical model for African Leadership development in ICT that seeks to address the needs and opportunities identified in the four country situational needs analysis reports. The model will use a *CPE* approach containing *Change* (creativity, innovation), *Production* (task) and *Employee* (relation) dimensions to define, assess and strengthen knowledge society leadership on individual and organizational levels. The model will incorporate opportunities for leadership experimentation in context to promote learning, individual improvement and knowledge sharing. The main focus in implementing the model will be to shift from the theoretical and the general towards an emphasis on critical individual assessments and experiments in context. The interplay

between the individual level and the context level will be the most crucial aspect in promoting change and development.

5   Conclusion

This paper examined four parameters of the African Leadership in ICT (ALICT) programme in relation to knowledge society issues, tensions and opportunities for learning from global to regional to country specific contexts.

In January 2012 a pedagogical model for African Leadership development in ICT and Knowledge Societies will be piloted that will contribute to the advancement of the Knowledge Society in Africa.

The pilot will offer opportunities for learning and contribution to the knowledge base on how leadership development can address the issues and challenges of knowledge society development in the African context. More specifically there will be opportunities to learn and conduct further research on how leadership capacity, vision and purpose can be institutionalized and sustained for local, national and regional development towards knowledge societies and economies.

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Appendix 1 – Leadership Importance Prioritization Survey

Survey: African Leadership in ICT (ALICT) – Leadership Competencies

The table below lists three Leadership competency domains for *national environmental, organizational and individual levels* which are based on inputs from stakeholders who attended the ALICT high level workshop consultation in December 2010 as well as inputs from the leadership development literature.

Importance –Prioritization of Leadership in ICT & KS Competency Domains
1. How important are each of the Leadership in ICT & KS competencies? (Please tick as appropriate).
2. Identify the *top three priorities* you would like the African Leadership in ICT (ALICT) programme to focus on in the pilot phase (Write the no. 1 beside the 1st priority competency; the no. 2 beside the 2nd priority competency; and the no. 3 beside the 3rd priority competency)

Table 1: Leadership Competency Importance-Prioritization Survey (Source: Hooker & Bassi, 2011)

Leadership in ICT and Knowledge Society Competency Domains		Important	Moderately important	Not important
National Environmental Level	**KS dialogue** National leadership capacity to establish inter-ministerial & inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI			
	KS Vision National leadership capacity to develop, communicate and give direction to Knowledge Society (KS) vision, mission and values			
	KS Policy & Strategy National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI			
	KS System Management National leadership capacity to manage implementation of inter-related plans, strategies, and programmes on KS and ICT, Education and STI pillars			
	KS M&E National leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy			
Organizational Level	**KS dialogue** Organizational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, STI) inclusively and constructively			
	KS Vision Organizational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy			
	KS Policy & Strategy Organizational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions			
	KS System Management Organizational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education & STI) goals and objectives			
	KS M&E Organizational leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy			
Individual Level	**KS Effective communication** Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organizational and national development			
	KS Creativity and innovation Leadership capacity to plan, manage and encourage organizational modernization, creativity and innovation related to KS and pillars of ICT, Education and/or STI			
	KS Motivation & Collaboration Leadership capacity to create organizational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI			

Table 2: Profile of the respondents (N=103)

Profile	No of Respondents
Senior Level Management	41
Middle level Management	62

Table 3: Leadership Competency Importance Rankings (Source: Hooker & Bassi, 2011)

Competency areas of the KS	Senior Level Officials				Middle Level Officials			
	Mean	SD	Overall Rank	Rank (out of 13)	Mean	SD	Overall Rank	Rank (out of 13)
Environmental	**2.73**		**1**		**2.57**		**2**	
KS dialogue: National leadership capacity to establish inter-ministerial & inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI	2.76	0.24		four	2.53	0.52		6
KS Vision: National leadership capacity to develop, communicate and give direction to Knowledge Society (KS) vision, mission and values	2.80	0.21		1	2.48	0.61		11
KS Policy & Strategy: National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI	2.80	0.16		1	2.65	0.40		5
KS System Management: National leadership capacity to manage implementation of inter-related plans, strategies, and programmes on KS and ICT, Education and STI pillars	2.66	0.23		8	2.52	0.38		7
KS M&E: National leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy	2.63	0.34		9	2.66	0.36		3
Organisational	**2.61**		**3**		**2.56**		**3**	
KS dialogue: Organisational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, STI) inclusively and constructively	2.54	0.40		13	2.66	0.34		four
KS Vision: Organisational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy	2.60	0.30		11	2.48	0.52		11
KS Policy & Strategy: Organisational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions	2.71	0.26		5	2.69	0.35		2
KS System Management: Organisational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education & STI) goals and objectives	2.63	0.34		10	2.52	0.58		7
KS M&E: Organisational leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy	2.60	0.35		11	2.47	0.61		13
Individual	**2.73**		**2**		**2.61**		**1**	
KS Effective communication: Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development	2.68	0.28		7	2.79	0.23		1
KS Creativity and innovation: Leadership capacity to plan, manage and encourage organisational modernization, creativity and innovation related to KS and pillars of ICT, Education and/or STI	2.80	0.16		3	2.52	0.45		7
KS Motivation & Collaboration: Leadership capacity to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI	2.70	0.22		6	2.52	0.52		7

Note: The mean scores in bold represent the weighted average of competencies for each domain

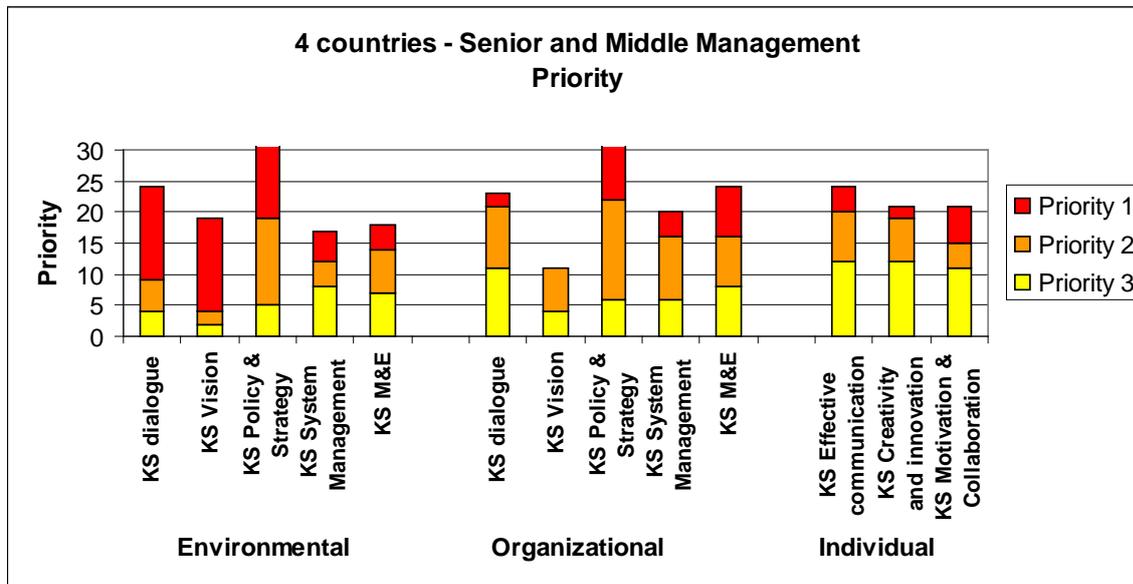**4 countries - Senior and Middle Management Priority**

Figure 1: Leadership Competency Priority Rankings (Source: Hooker & Bassi, 2011)

Table 4 : Quadrant Mapping of Importance-Priority Competencies for Leadership Development (Source: Hooker & Bassi, 2011)

		Quadrant III: High Importance, Low Priority	**Quadrant IV:** High Importance, High Priority
IMPORTANCE	High	• Environmental Level-KS M&E • Individual Level-KS Effective communication • Individual Level-KS Creativity and innovation	• Environmental Level-KS dialogue • Environmental Level-KS Policy & Strategy • Organisational Level-KS Policy & Strategy
		Quadrant I: Low Importance, Low priority	**Quadrant II:** Low Importance, High Priority
	Low	• Environmental Level-KS System Management • Organisational Level-KS dialogue • Organisational Level-KS Vision • Organisational Level-KS System Management • Individual Level-KS Motivation & Collaboration	• Environmental Level-KS Vision • Organisational Level-KS M&E
		Low **PRIORITY** High	