



Catalytic thought leaders
Building e-astuteness
Knowledge for innovation (research)
Collaboration
Aggregation

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www.nemisa.co.za
www.inesi.org.za



The NEMISA intends to benefit the total SA population by harnessing ICT for equitable prosperity and global competitiveness. It leads in the creation of key e-skills development strategies, solutions and practices within SA.

It is a national catalyst, collaborator, facilitator and responsive change agent in the development of SA – within the context of national goals and within a worldwide evolving information and knowledge-based environment.

e-skills knowledge for innovation (research)

Research as a driver for e-skills, a digital society and a knowledge economy

ICT for Rural Development CoLab co-presents paper on creating ICT pipelines at schools

The aim is for South Africa to become a digital society and knowledge economy, with an emphasis on inclusion. The foundations of this aim are outlined in the National Development Plan and there are numerous policies and national strategies that drive this. These include South Africa Connect, the broadband policy, the National Integrated ICT Policy White Paper, and the 2017 State of the Nation Address' emphasis on radical economic transformation and inclusion.

e-Skills are critical for a digital society and knowledge economy

A key element to developing South Africa in this direction is e-skills (digital skills) and this is recognised in national policies and strategies. Globally, it has become clear that there needs to be an ecosystem around infrastructure that drives use. For example, people with e-skills are needed to make use of the technology and ICT infrastructure.

? **What is an e-skill (digital skills)?** An e-skill is more than knowing the basics of how to use a computer (computer literacy). While it's essential to be computer literate, the important question is: what can you do with that? **An e-skill means being able to use technology to add benefit to your life – to actively take part in the world and move ahead.**

What is ICT? ICT stands for information and communication technology.

Fitting learnings to local context

The transition to a digital society and knowledge economy is happening around the world. While South Africa can learn from global case studies, particularly those in developing countries, the country needs to create strategies and plans that fit the local context.

Importance of research

Part of the process is research (knowledge for innovation). Research findings allow for evidence-based decision making that impacts on e-skills plans for South Africa, including policies and strategies associated with e-skills.

Research also plays a role in the monitoring of e-skills development. The findings from research allow for adjustments and alignments to plans and to implementation, as new information is discovered.

Research is also essential in developing innovation – from ways of doing to understanding how to create a greater impact.

Research presented – developing interest in ICT at schools

Dr Ron Beyers and Ms Lorna van der Merwe are co-authors of the research paper 'Initiating a pipeline for the computer industry – Using Scratch and LEGO robotics'. On 9 March 2017, they presented the research at a breakaway session at the Information Communication Technology and Society Conference 2017 (ICTAS2017). Ms van der Merwe is Acting Coordinator at the ICT for Rural Development CoLab, based at Walter Sisulu University, Eastern Cape.



Research abstract: Initiating a pipeline for the computer industry – using Scratch and LEGO robotics (By Ronald N Beyers, TELIT-SA, School of IT, North-West University, and Lorna van der Merwe, ICT for Rural Development CoLab, Walter Sisulu University)

The paper reports on a pilot project of limited scope to create a pipeline for the computer programming industry. It comes at a time when the demand for software programmers exceeds the dwindling supply of competent learners with suitable skills. This growing skills gap requires a bold intervention to turn this situation around.

Preliminary results from a user questionnaire indicate a positive reaction when learners are exposed to programming using Scratch Software. This is a prelude to introducing robotics using LEGO NXT units. The objective of such an intervention is to provide individuals with hands-on experience of programming to convince them to choose Information Technology as a subject in Grades 10-12. The overall aim is that they will one day choose a career in programming.

Article continued: Research as a driver for e-skills, a digital society and a knowledge economy

The event was technically sponsored by IEEE and hosted by the Faculty of Accounting and Informatics, Durban University of Technology. It took place in Umhlanga, KZN. Keynote speakers included Prof Bhavsar on 'Convergence of Internet of Things, Big Data, and High Performance Computing: Challenges and Opportunities' and Prof Jean-Paul Van Belle (University of Cape Town) on 'Emerging Technologies and Emerging Economies: Research Directions for Researchers in Africa'.

"Our aim was to share information about ICT skills needs in SA, as well as the CoLab activities that address skills needs, such as the partnerships to introduce school pupils to programming in short workshops," says Ms van der Merwe.

She noted that the research highlights the need for increasing the pipeline of students studying programming in South Africa. It also highlights the impact of working with partners, such as the ICT for Rural Development CoLab



Dr Ronald N Beyers from North-West University and Lorna van der Merwe from ICT for Rural Development CoLab, based at Walter Sisulu University, Eastern Cape

working with Dr Beyers from Young Engineers and Scientists of Africa (YESA).

The research was joint winner of the best paper. It will be published this quarter in an IEEE publication. ☑

The provincial e-skills CoLabs

The provincial e-skills CoLabs are based at universities. Each leads in a specific area in e-skills:

- **e-Inclusion and Social Innovation CoLab**, based at the University of the Western Cape
- **e-Enablement for Effective Service Delivery CoLab**, based at Durban University of Technology
- **ICT for Rural Development CoLab**, based at Walter Sisulu University
- **Creative New Media Industries CoLab**, based at the National Electronic Media Institute of South Africa (NEMISA)
- **Connected Health CoLab**, based at the University of Limpopo
- **Knowledge-based Economy and e-Social Astuteness (e-Literacy) CoLab**, based at the Vaal University of Technology
- **e-Agro-tourism CoLab**, based at the North-West University



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e-skills development for e-astuteness

e-Inclusion for socio-economic transformation

The importance of radical economic transformation was emphasised in the 2017 State of the Nation Address. The focus was on inclusion of all members of society.

Socio-economic inclusion is a fundamental driver for NEMISA. Its organisational model operates nationally and provincially, by collaborating with e-Skills CoLabs (situated at universities). In each of the provinces, CoLabs engage with intermediaries to drive the e-skills agenda through further collaboration and partnerships. This includes developing a network of smart centres ie local level engagement.

Implementation at community level

This organisational model allows for planning and implementation at all levels. Most importantly, it creates links with communities in urban, peri-urban and rural areas by developing partnerships with e-centres, community centres and other developed infrastructure. e-Skills (digital skills) interventions and training can then happen where it is needed most. It is about translating policy and strategy into implementation – developing e-skills and e-astuteness to support the broadband rollout, as well as national policies and plans.

e-Centre managers in train-the-trainer model

A train-the-trainer model is used where e-centre managers are trained in various aspects around e-skills and centre

Participants from the Digital Inclusion:
e-Centre Management Programme



Digital inclusion: e-centre management programme conducted in the Western Cape

? What is e-astuteness? e-Astuteness is the capacity to continuously appropriate technology into personal work, education, business, and social and family contexts for both personal and collective benefit.

e-Astuteness allows individuals to take personal advantage of ICT in social or economic situations, through the appropriate e-skills. It does not necessarily depend on formal education or high levels of literacy. **e-Astuteness is about 'being astute' with technology tools in all areas of life.**

management. The e-Inclusion and Social Innovation CoLab, based at the University of the Western Cape, initiated the collaborative partnership that runs this course.

Digital Inclusion for e-Centre Managers

The Digital Inclusion: e-Centre Management Programme is a partnership between the Centre for Innovative Education and Communication Technologies (CIECT) of the University of the Western Cape, Cape Access (Western Cape Government), and the e-Inclusion and Social Innovation CoLab. The programme is offered to e-centres within the Western Cape in urban, peri-urban and rural environments.

Audience: The course has been offered to Cape Access Centre e-centre managers across the Western Cape Province. There have been 8 e-skills training cohorts since April 2011, amounting to 130 participants. This 2017 rollout involved a group of 15 participants at the Paarl-East Thusong Centre.

When? The interactive face-to-face phase occurred from 6-9 February 2017. The online phase was conducted from 13 February to 10 March 2017.



Article continued: e-Inclusion for socio-economic transformation

Course content: The course is designed to focus on e-centre managers within community centres. A core focus is the ability to market and promote their e-centres. It's a hands-on multi-modal training programme where participants focus on e-skills while navigating through dedicated course material. There are various interactive activities (both online and offline) that look at: people, communication and marketing skills. These are vital for the e-centre managers who gain e-skills and marketing and communication knowledge to assist with promoting the e-centres and transferring knowledge to community members in urban, peri-urban and rural areas.

Certification: This is a SAQA-accredited course. (SAQA is the South African Qualifications Authority.) The course is accredited at NQF level 6. Participants receive a Certificate of Attendance once they have completed the face-to-face interactive workshop, engaged with the content and provided evidence of the learning objects created.

Participants are also expected to complete the 4-week online phase, submit all required assessment tasks, and engage within the online platform by making use of the discussion forum. Participants then receive a Certificate of Competence.

Trainers: As one of the first e-skills interventions, funded from the national e-skills budget, the CIECT team designed, developed and now facilitates this course. The 2017 cohort was also supported by CIECT facilitators, who have specialised skills and 'know-how' to facilitate, assess, monitor and track a course.

Future: Given the recent technological developments and socio-economic realities, it is critical that the course remains relevant and aligned to the needs of intermediaries (e-centres). The aim is to conduct stakeholder engagement to review and update the material for future rollout. ☑

e-skills development for e-astuteness

The latest 2017 results from Statistics SA's Quarterly Labour Force Survey show a slight decline in unemployment in South Africa (for the last quarter of 2016). The unemployment rate declined by 0.6 of percentage point to 26.5%. However, it is still 2 percentage points higher compared to the same period in the previous year.

Of particular concern is youth unemployment (ages from 15-34). Youth are the most vulnerable, with 10.6 percentage points above the national average for joblessness. The Stats SA results also showed that there are 8.9 million people who

e-Skills for socio-economic participation

Northern Cape and Southern Gauteng programme around e-skills and finding employment

wanted jobs but were unemployed.

Lack of education impacts unemployment

Analysis from Stats SA shows that education plays an important role in finding employment. Graduates have an unemployment rate of 7%. Those with an education level below matric make up 59% of the unemployed.

Social network isolation, multi-generational unemployment and lack of job-finding methods

Research from the Centre for Development and Enterprise →

Participants in the GOAL2WORK programme around e-skills and finding employment.



Article continued: e-Skills for socio-economic participation

(www.cde.org.za) shows that rural youth, in particular, are often isolated from the social networks that link them with job opportunities. Multi-generational unemployment has left many young people with no role models or mentors to guide them in finding a job. More youth have become increasingly resigned to never finding a job. A further finding is that people outside the labour market have little understanding of how it worked and were not aware of the best job-finding methods.

Using e-skills to find jobs (e-inclusion)

An e-skill is more than knowing the basics of how to use a computer. It's about what can you do with technology. An e-skill means being able to use technology to add benefit to your life – to actively take part in the world and move ahead.

This can clearly be seen when seeking employment. With job-seeking skills, e-skills and access to the internet, rural youth can link to online social networks as part of finding unemployment and can use the internet and e-skills to search for jobs.

This aligns with government policies such as the South Africa Connect, the broadband policy, and the National Integrated ICT Policy White Paper. e-Skills are seen as critical for developing South Africa into a digital society and knowledge economy, as well as developing the economy.

For a practical example, take the case of broadband rollout. e-Skills are needed so that people can make use of

? What is an information or knowledge society? This describes a society based on creating, distributing and using information and knowledge.

It is a society with an economy where the use of information and knowledge becomes one of the most significant economic and cultural activities.

the infrastructure and technology. This includes having the know-how (e-astuteness) to search for jobs.

GOAL2WORK programme around e-skills and finding employment

The Knowledge-based Economy and e-Social Astuteness (e-Literacy) CoLab has partnered with Vaal University of Technology (VUT) and GOAL2WORK to run programmes around e-skills and finding employment. The CoLab is based at VUT.

"The aim is to empower unemployed youth to successfully plan for and conduct an effective job search," says Antoinette Lombard, Director of the Knowledge-based Economy and e-Social Astuteness (e-Literacy) CoLab. →

Graduates in the GOAL2WORK programme around e-skills and finding employment.



Article continued: e-Skills for socio-economic participation

The CoLab has been conducting ongoing e-literacy and e-skills programmes to disadvantaged youth. "Post-course evaluation showed that individuals lacked specific job seeking skills, including the e-skills for this endeavour," says Ms Lombard. "Consequently, we developed the GOAL2WORK partnership."

When? The GOAL2WORK programme ran from 21- 23 February 2017, 6-8 March 2017, and 14-16 March 2017. The course is 3 full days and ran in Sebokeng and Pofadder.

Audience: The target audience is unemployed youth, as well as anyone looking for a job. There were a total of 94 delegates.

Course content: GOAL2WORK (<http://goal2work.co.za/>) is a job search programme designed to give work seekers tools and strategies for job searches. It is offered in a workshop format and modules include:

- Planning a job search
- Individual skills analysis
- CV preparation
- Understanding background screening
- Target marketing and effective networking, including social media networking
- The internet as a job search tool
- Interacting with agencies and responding to job ads
- Training on job interviews which involves interview videos, role plays and instruction

The GOAL2WORK programme was developed by recruitment industry veterans, career specialists, educationalists in the job search field. It develops job-seeking skills while fostering self-esteem and confidence.

Delegate responses

- If it wasn't for this programme I couldn't have had the experience or the confidence that I have at this moment.
- This workshop was an eye opener for me as did not know that I had to put so much time and effort in my job search, but it has helped me a great deal,
- I would also love to see this programme go to the North West and other provinces
- I just want to say thanks! You guys really made me look at job searching in a positive way.
- I am more confident after this workshop and I believe with everything that I have I learnt I might get a job within a very short space of time.
- I know how to handle interviews with confidence and things to say during interview because now I know what to put on my CV and not what to put.

Trainers: GOAL2WORK trainers have recruitment and career guidance experience and are experienced facilitators.

Future plans: GOAL2WORK is currently developing the programme onto an e-learning platform. This will allow for greater numbers of work seekers to be trained (massification). ☑



Participants in the GOAL2WORK programme around e-skills and finding employment.

e-skills catalytic thought leadership

Black IT Forum Gauteng hosts Finland ICT companies

The Black IT Forum in Gauteng hosted Finland ICT companies on 31 March 2017 in Johannesburg. Representatives at the meeting included those from government, the private sector, and SMMEs in ICT. The theme was: 'Digitalisation in education and postal services – smart cities and connectivity'.



Trends in e-skills and the e-skills environment

- Social media, such as Facebook, has changed the way people interact. Having the e-skills (digital skills) to use Facebook means having an advantage in business networking, engaging socially, receiving information etc. **Facebook has increased its number of African users to 170m and plans to expand further.** The figure is 42% higher than the recorded users in 2015. (For further information, see www.bloomberg.com/news/articles/2017-04-05/facebook-adds-wifi-hotspots-to-sustain-africa-customer-growth)
- **Hospitals in Africa have started using SOPHiA, an artificial intelligence programme that allows genomic data analysis to identify disease-causing mutations in patients.** The hospitals become part of a larger network of 260 hospitals in 46 countries that share clinical insights across patient cases and patient populations. This feeds a knowledge base of biomedical findings to accelerate diagnostics and care. The hospitals include the Centre for Proteomic & Genomic Research in Cape Town, South Africa. It is seen as triggering a technological leapfrog movement in healthcare across Africa with data-driven medicine and artificial intelligence. (www.sophiagenetics.com/home.html) Connected health (e-health) and the e-skills associated with this are seen as a priority area for NEMISA.
- **Cyber security trends for 2017 include a shift to targeted social attacks, where users are coaxed into compromising themselves** through, for example, phishing. Prevention includes up-to-date education for users and development of processes. (Trends from Sophos, a security solutions company. See www.globalsecuritymag.com/Cyber-security-current-and-20161220.67853.html for more information.) According to the IDC report, 'InfoBrief Synchronised Security Market Analysis – MEA' sponsored by Sophos, IT security ranked highest in SA in terms of IT priorities. **e-Skills around cyber security are highlighted by NEMISA.**

About NEMISA

Unite around a common pillar to fight poverty and inequality, active citizenry, an inclusive economy, building capabilities, a capable developmental state and leadership working together to solve problems

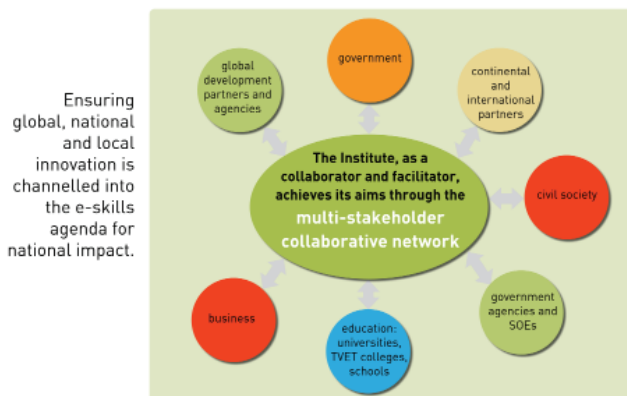
NEMISA is a globally-recognised collaborative model that allows stakeholders to sustainably meet South Africa's e-skilling objectives.

NEMISA is a national catalyst, facilitator and responsive change agent in the development of SA, within the globally evolving information and knowledge-based environment, by leading the creation of key e-skills development strategy, solutions, practices and implementation, to benefit the total population.

Alignment to government policy: The above objectives are aligned to the new broadband policy, South Africa Connect, and the National Development Plan 2030, among other national and international goals.

Multi-stakeholder collaborative platform: NEMISA provides a formal multi-stakeholder collaborative platform that aligns all stakeholders (business, government, civil society and education) with a common vision. This common vision ensures that e-skills initiatives are coordinated within a national framework, reducing duplication and increasing impact.

multi-stakeholder collaborative network



Five focus areas: NEMISA primarily focuses on five components.

- Knowledge for innovation (research)
- e-Astuteness (teaching and learning)
- Multi-stakeholder collaboration
- Innovation
- Aggregation (monitoring and evaluation framework)

Providing national, provincial and community level access:

Through collaborative partnerships, NEMISA is organised on a national

Join NEMISA's network

As a national catalyst for the development of e-skills in South Africa, NEMISA calls on e-skills stakeholders to become involved in the integrated approach to e-skills development through our multi-stakeholder collaborative network.

Contacting NEMISA

For more information, contact info@nemisa.co.za.

level, a provincial level and a local community level. NEMISA's central office coordinates nationally and globally.

The e-skills knowledge production and

coordination CoLabs (e-skills CoLabs): These are situated at universities, with one in each province. There are currently 7 e-skills CoLabs:

- **e-Inclusion and Social Innovation CoLab**, based at the University of the Western Cape
- **e-Enablement for Effective Service Delivery CoLab**, based at Durban University of Technology
- **ICT for Rural Development CoLab**, based at Walter Sisulu University
- **Creative New Media Industries CoLab**, based at the National Electronic Media Institute of South Africa (NEMISA)
- **Connected Health CoLab**, based at the University of Limpopo
- **e-Literacy and e-Business (knowledge economy and e-social astuteness) CoLab**, based at the Vaal University of Technology
- **e-Agro-tourism CoLab**, based at the North-West University

There will ultimately be nine e-skills CoLabs correlating to the nine South African provinces.

The e-skills CoLabs provide knowledge spaces for collaboration at a provincial level.



Article continued: Information on The Institute

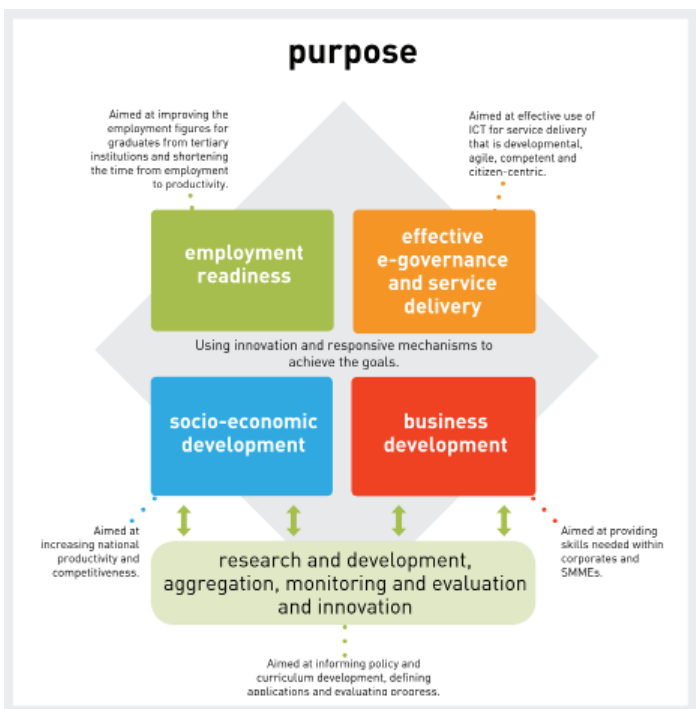
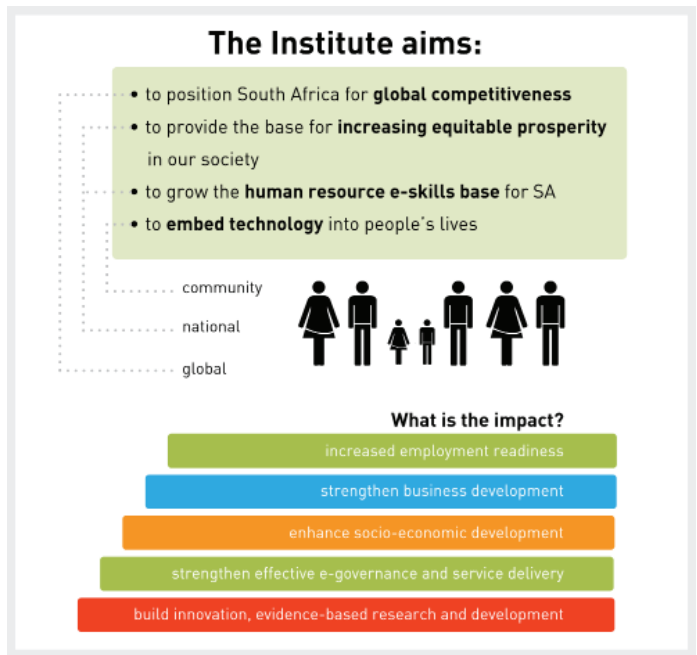
Smart community knowledge production centre (smart centre): These allow for interaction and coordination at a local community level. NEMISA's smart centre network is currently being developed across the country.

NEMISA's national research network is a multi-stakeholder collaborative network that focuses on knowledge for innovation (research).

NDP Priority Areas supported by NeSPA 2013
Pillar 1: Unite around a common pillar to fight poverty and inequality
Pillar 2: Active citizenry
Pillar 3: Inclusive economy
Pillar 4: Build capabilities
Pillar 5: A capable developmental state
Pillar 6: Leadership throughout society to work together to solve problems

Wide-ranging opportunities for business: NEMISA's positioning and organisational model provides numerous opportunities for businesses to engage effectively within the e-skills space:

- There is high-level government engagement. This is integral to developing the e-skills agenda and ensuring that national and provincial policies, as well as all stakeholder decisions, reflect a common goal.
- Business corporate social investment (CSI) has an elevated impact that is aligned with national priorities. The elevated impact and the high-level government engagement allow businesses to position their individual CSI initiatives prominently to their stakeholder base, including the media.
- Businesses are given the opportunity to showcase their talents nationally, provincially and locally.
- Because of the inclusive national priority alignment within the NEMISA's multi-stakeholder collaborative network, businesses are able to position their work within a local context and a developing country framework.
- The link that NEMISA has with universities through its CoLabs and research network means that business can also align new approaches using the benefits of an academic environment and a research function.



- Most importantly, NEMISA provides an environment where CSI is part of a model where stakeholders work together – 'doing with' and not 'doing for'. ☑

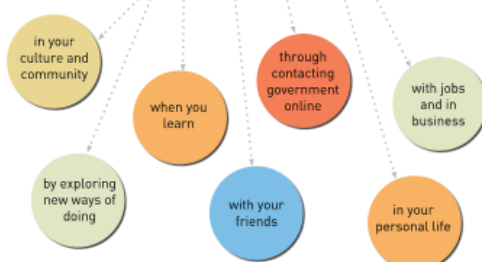
Taxonomy for e-skills

An e-skills taxonomy is more than just definitions. The e-skills agenda requires a shift in thinking with outcomes such as changes in policy. The terms used are part of creating the environment for this shift. Following are definitions for some of the words that form part of the e-skills taxonomy.

e-Astuteness	<p>The capacity to continuously appropriate the technology into personal work, education, business, social and family contexts for both personal and collective benefit.</p> <p>e-Astuteness is defined as a knowledgeable capacity, based on personal and interpersonal skills, that involves:</p> <ul style="list-style-type: none"> • Understanding people and situations • Building alignment and alliances • An acute understanding of strategic direction • Applying strategic behaviour <p>e-Astuteness allows individuals to take personal advantage of ICT in social or economic situations, through the appropriate e-skills. (Building social connections is an example of a social situation and obtaining a job or starting a business is an example of an economic situation.)</p> <p>e-Astuteness does not necessarily depend on formal education or high levels of literacy.</p>
e-Literacy (digital literacy)	e-Literacy (digital literacy) is the ability of individuals to use digital tools and facilities to perform tasks, to solve problems, to communicate, to manage information, to collaborate, to create and share content and to build knowledge, in all areas of everyday life and for work.
e-Skills	The ability to use and develop ICTs within the context of an emerging South African information society and global knowledge economy, and associated competencies that enable individuals to actively participate in a world in which ICT is a requirement for advancement in government, business, education and society in general.
e-Social astuteness	<p>e-Social Astuteness is defined as the use of ICT and e-skills for more astute ways of people interacting with others, which include:</p> <ul style="list-style-type: none"> • Social interactions • A level of awareness and understanding of diverse social situations • The various alternatives open to them for response <p>e-Astuteness focuses on individual benefit whereas e-social astuteness focuses on interacting with others for group benefit.</p>

What is an e-skill?

An e-skill means being able to use technology so you can actively participate in the world and move ahead.



Official South African definition (from the National e-Skills Plan of Action)

The ability to use and develop ICTs within the context of an emerging South African information society and global knowledge economy, and associated competencies that enable individuals to actively participate in the world in which ICT is a requirement for advancement in government, business, education and society in general.

Partners in NEMISA's multi-stakeholder collaboration

Education



Government/South Africa



Civil society



Business



Global developmental partners

