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Evaluating the potential of automated telephony systems in rural communities: Field assessment for project LWAZI

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INTRODUCTION

Access to information is one of the key ways to unlocking social and economic growth. Through information, people learn where, when and how to improve their livelihoods. In this millennium, information and communications technology (ICT) plays a central role in enabling widespread access to information, largely through computers, internet and mobile telephones. In rural communities of developing regions, where infrastructure, distances, language and literacy are barriers to access, but where mobile phones are prevalent, automated telephony services could bridge an important gap and make a positive social impact.

South Africa is said to be the leader in ICT in Africa and is the 20th largest consumer of ICT products in the world (South African year book 2006/2007: 131). In particular, mobile phone usage has experienced massive growth due in part to its accessibility by non-literate people, and its 'leapfrog' development. (Tongia & Subrahmanian, 2006).
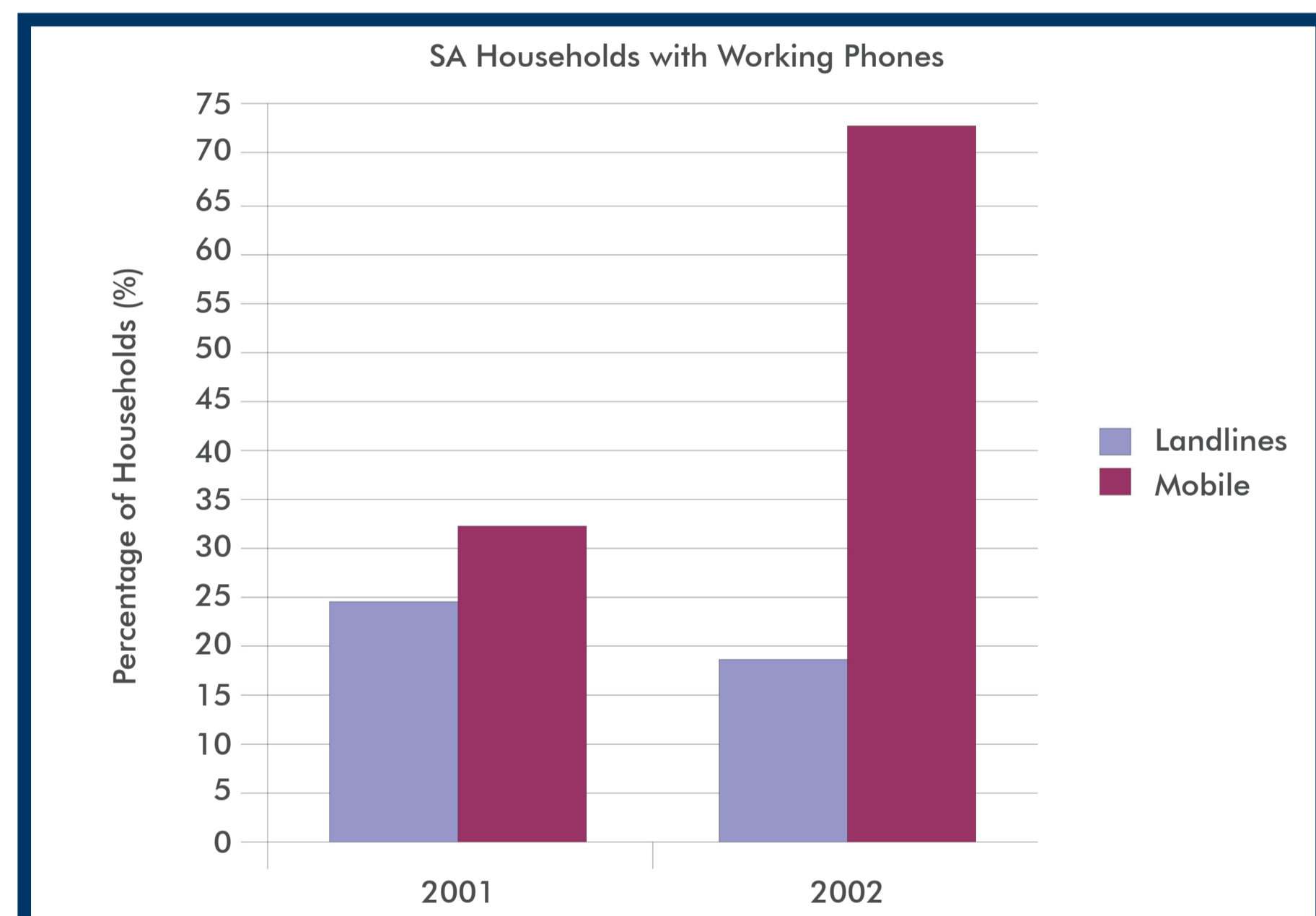

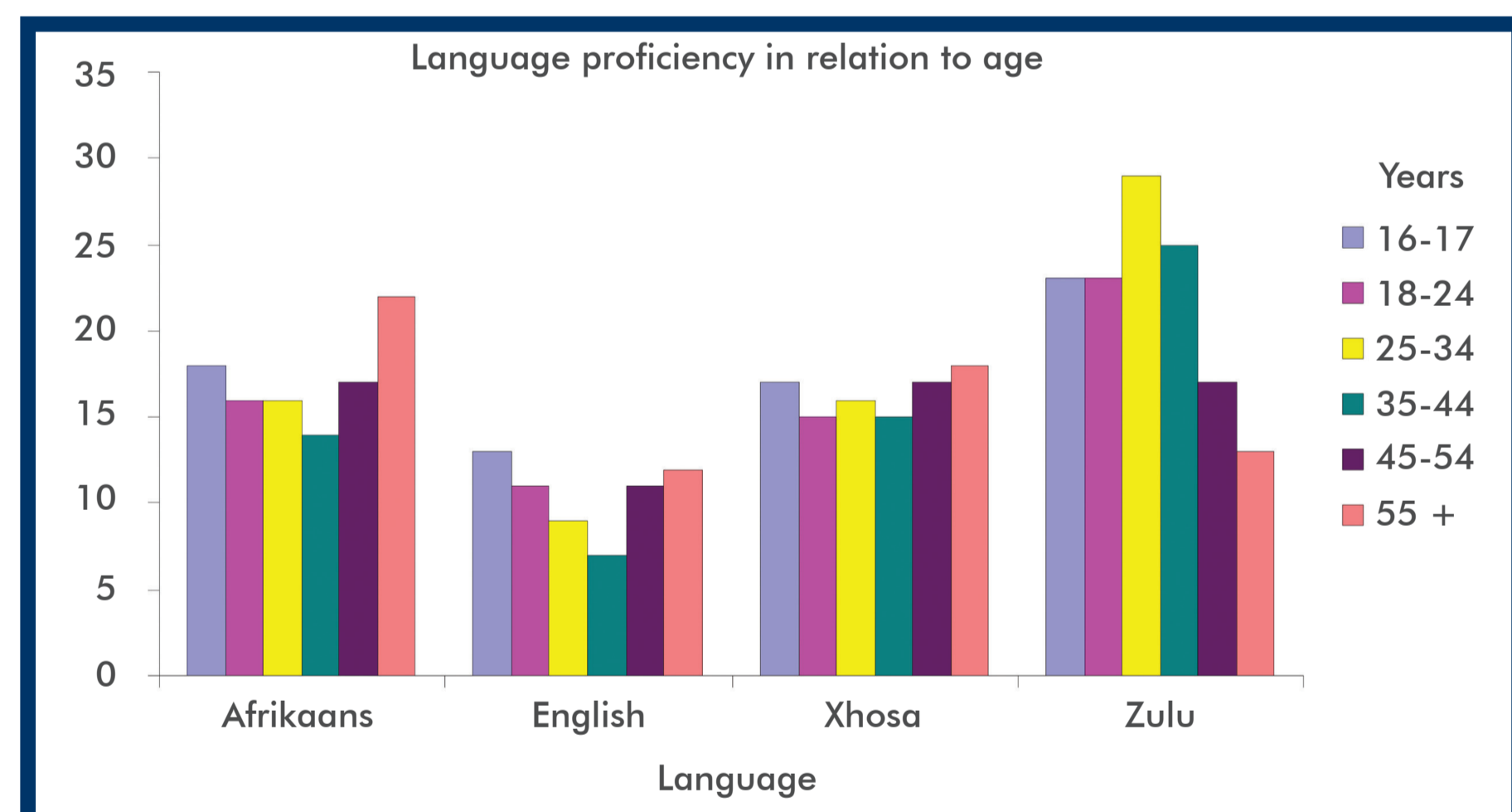Figure 1: Phone use in South African households

Figure 2: Language proficiency of South Africans

Communities in rural areas do not have ready access to government services: they must either walk or use unreliable and costly public transport to access basic services. In their study of evaluating the costs and strategies of coping with chronic illnesses, for example, Goudge et al. (2007) found that people in rural areas do not go to free health care facilities because they cannot afford transport.

NGOs face the same challenge. Many produce information to assist households affected by HIV/AIDS, for example, but most of the materials are published on websites. Literacy and language barriers and a lack of infrastructure render this information inaccessible to those who would most benefit from it, especially those living in rural areas and townships (Benjamin, 2007).

Automated telephony systems, especially those powered by human language technologies (HLTs), can improve connection and access of citizens currently excluded from government services.

Figure 3: Public phones in Tshidilamolomo

THE LWAZI PROJECT

The HLT research group of the Meraka Institute was commissioned by the Department of Arts and Culture to develop a multilingual telephony system to assist South African government service delivery, 'LWAZI' derived from the IsiZulu word for knowledge, aims to make a positive impact in the daily lives of South Africans - by connecting them to government and health services (LWAZI,

2008). Telephony - which overcomes barriers of language, literacy, and distances - has led to an application for the technology, which would either be modelled on the current successful national initiatives (e.g., Thusong Services Centres (TSCs) operating primarily in rural areas or which would directly support them.

RESULTS OF THE TSC SITE VISITS
Kgautswane

Kgautswane is 350 km from Tshwane in Limpopo. Limpopo has three principal languages: Sesotho sa Leboa (SePedi), (52.1%), Xitsonga (22.4%) and Tshivenda (15.9%). Its population is 5.3 million with an unemployment rate of 35.6%. More than 33% of adults of 20 years and older have never received formal education, mining sector is the most important sector in its economy (SA Year book 2006/2007).

The TSC in Kgautswane focuses on six services, namely government social and administrative services, office services, education and skills development services, local economic development services, business services and community, and ICT activities.

The community learns about the TSC services through home-based care visits and communication by the chief. The centre manager sometimes uses school children as messengers to the community; these messages are in vernacular. In most instances, elderly community members seek information on dates for grants, policy changes, availability of free services for grandchildren in their care, and health services. The youth seek information on employment opportunities.

A meeting was held with one of the two community development workers (CDWs) in the area. Her services include assisting people to obtain relevant documentation and informing the counsellor of community needs and the community of meetings and events at the counsellor's office. She owns her personal mobile phone and everybody contacts her on it. Her communication costs amount to R55 per month. No stipend for telephone or transport is available, although both are essential for her job.

Tshidilamolomo

Tshidilamolomo is 115 km east of Mafikeng, in the North West, on the border with Botswana. The North West has 3.3 million people with an unemployment rate of 32% and a literacy level of 57% (SA Year book 2006/2007).

Figure 4: Private phone in Mafikeng

The TSC in Tshidilamolomo offers the following services, with varying days of operation:

- South African Police Services
- Clinic
- Department of Social services
- South African Social Security Agency (Monday to Friday)
- Department of Home Affairs (Thursdays)
- Department of Justice (once a week)
- Department of Correctional Services (once a week).

The CDW confirmed that most community members read and write their home language fairly well, with poor English proficiency. Many adults are improving their literacy by attending adult basic education and training. Economic activity includes agriculture, manufacturing and retail. Public transport is approximately 15 km away and comprises a morning bus to town and one that returns in the late afternoon. Many people use donkey carts as transport. Taxis are new as part of the government recapitalisation programme.

The number of mud houses with no electrification was identified as the main social problem. The average monthly household income was R2 600.

DISCUSSION
Information needs and sources

As in other villages in rural South Africa, these communities of Kgautswane and Tshidilamolomo have differing needs according to age group.

The elderly:

- Access their pension fund (R940) to support dependents (grandchildren)
- Updates on political developments via local radio stations or television.

The youth:

- Opportunities for entertainment, employment and the social services
- Concern at the level of unemployment.

In most instances, local employment opportunities are provided by government departments or outside research groups, which is communicated via the TSC or local newspapers.

A telephony system would bridge the transport gap to services needed by the community.

The combination of telephony and human language technologies makes accessing government information as easy as calling a friend.

Cultural and social factors

Rural South Africa is typically characterised by particular language dominance. The North West is predominantly Setswana; Limpopo has three dominant languages: SePedi, Xitsonga and Tshivenda. The population is usually older with dependent grandchildren whose parents visit once or twice a year. Limited economic activities make these communities dependent on government social grants.

Geographically, these communities are far from services. People either walk long distances or opt out of using 'costly' transport services. The introduction of the CDWs was seen by many community members as a bridge to government service, but CDWs have a challenge in reaching all households in their communities.

ICT projects have been successful in connecting experts in urban areas to people in rural areas in places such as India. An automated telephony system could allow citizens to leave questions about government in their local language to be answered later in the form of a voice message.

Suitability of technology

The proposed multilingual telephony system will be free of charge and designed in a way to make it the technology of choice for government departments to disseminate information.

An example in Tshidilamolomo is the police station emergency line for community members. Community members send a 'please call me' to this number; the police call them back. This demonstrates that even though community members may have cellular phones, money is not readily available to load airtime for emergency use. The police commander mentioned that this line is often abused by both the community and police officers themselves

User experience

The user experience of telephony differs between young and old. Households have at least one cell phone. Older members use it to call and receive calls from friends and children away but do not know how to send text messages. The young people are well versed with telephony.

Potential uptake

Two main areas were identified where a telephony service could be very useful:

- Supporting communication between community and government
- Facilitating internal communication among government service providers.

CDWs may need to meet community members face-to-face, whenever possible. Coordination with municipal, district, provincial or national government contacts could happen remotely and efficiently through an automated telephony service for sending audio messages to several staff members at once.

Field work revealed the effectiveness of national government programmes in connecting rural citizens to available government services. The major finding was that although particulars of communities differed, individuals in both Kgautswane and Tshidilamolomo experienced barriers to access information, which could be solved with automated telephony services. Such services would need to be toll-free and localised for language and relevant information.

CONCLUSION

The goal of this paper was to evaluate the potential role of automated telephony services in improving access to important government services. The LWAZI project will create an open platform for telephone-based services for government to provide access to information in all eleven official languages. Technology design makes accessing government information as easy as calling a friend. An automated telephony system in rural South Africa will cut down on travelling for users of information on government services and for government workers checking in with municipal offices.

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