Evaluation of the Smart Cape Access Pilot Project

A City of Cape Town digital divide initiative

by

Infonomics South Africa

for

City of Cape Town
Directorate: Information Technology

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Providing access to technology is necessary if the "digital divide" is not to increase, condemning the majority to increased marginalisation in the Information Age.

(Benjamin, 2001)

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1. Introduction

The Smart Cape Access Project (Smart Cape) is an initiative of the City of Cape Town's Directorate of Information Technology to provide free computer access and Internet connectivity to the citizens of Cape Town. The pilot access points, located in six city libraries, use open source software and the city's existing infrastructure and resources to minimise costs. Access is provided free of charge on a time-limited basis to registered users, who must be library members. Each access point has six Internet-enabled computers, five for public access and one for administration and library staff. The access points are regarded as an extension of the libraries' existing role as information providers.

The pilot project is an offshoot of the Smart City Initiative, a technology integration and upgrade project that aims to:

- Promote efficient e-government service delivery;
- Narrow the digital divide;
- Empower citizens in the knowledge economy; and
- Promote effective citizen involvement in e-governance.

Public access, for the purposes of this report, is taken to mean not only the physical availability of computers and connectivity but also citizens' ability to use the facilities provided effectively. Public access is "aimed at integrating technology into society in an effective, sustainable way so that people can put it to use to improve their lives" (bridges.org, www.bridges.org/spanning/summary.html).

1.1 Smart Cape Project Goals

The Smart Cape project's three primary goals, as expressed in project documentation, are:

1. To provide free public access to computers and the Internet;
2. To prove that open source software is affordable, appropriate technology for a public service digital divide initiative;
3. To increase opportunities for members of disadvantaged communities.

More detailed goals, expressed as key success factors for the project[1], were:

1. Use of the computers and the Internet for web browsing and e-mail should be at no monetary cost to the user;
2. As a consequence, the hardware, software and network management need to be installed and maintained at as low a cost as possible, and provided in such a way so as to readily attract sponsorship and donor support;
3. The physical facilities should be placed where people already go for information;
4. Personal investment by users in the time to develop the ability to make basic use of the facilities provided should have immediate personal benefits (for example, by immediately being able to send and receive e-mail); and
5. The technology solutions utilized should allow technical management – including maintenance – as far as possible to be performed remotely, and require no technical input from the facility staff.

This report provides an independent evaluation of the success of the Smart Cape pilot project, in terms of the goals listed above. Additional, implicit goals were identified in the course of the research and these are listed in the appropriate chapters.

[1] Smart City In Progress Report #1: e-Powering the People: The Smart Cape Access Project, version 0.3, 3 October 2002, p.6.

1.2 Scope of Evaluation

The ***aims*** of the evaluation are to assess, with a view to informing future rollout plans:

1. The impact of Smart Cape on users; and
2. The impact of the technology and management of the project on the City of Cape Town and its resources.

The ***required tasks*** were:

1. To assess the appropriateness of the technical infrastructure;
2. To assess the usage of the facilities;
3. To assess the project's impact on library staff roles and library management;
4. To assess the technical and process management of the project;
5. To perform a comparative analysis of the relative benefits of the service to users and the costs of providing the service;
6. To make recommendations on the suitability of the pilot project for rollout to other sites;
7. To provide a report to the Directorate: Information Technology, structured in such a way as to:
   (a) Inform a decision on the future of the project; and
   (b) Be of value to potential sponsors, collaborators and partners.

See Appendix C for an outline of the research process and phases.

1.3 Methodology

The research combined qualitative and quantitative methods, gathering data sets including:

- Desk research;
- Face-to-face interviews with:
  - The project team;
  - City of Cape Town officials;
  - Technical staff;
  - Library administrators and staff;
  - Community volunteers; and
  - Smart Cape users and non-users.
- An online user survey;
- System data;
- Black box technical assessments;
- On site technical assessments; and
- Digital images and on-site observation of users.

1.5 Structure of Report

- Chapter 2 places the Smart Cape project in the context of Cape Town's digital divide and of comparable public access projects.
- Chapters 3 to 5 set out the findings of the evaluation, dealing in turn with management, users, and technical issues. Each chapter follows a similar plan:
  (a) A summary of the project's explicit and implicit goals in the area under consideration;
  (b) A brief discussion of research methodology and a chapter outline;
  (c) Discussion of findings;
  (d) Summary of findings;
  (e) Listing of project strengths, weaknesses, opportunities and threats;
  (f) A goals achievement matrix.
- Chapter 6 briefly assesses the extent to which the Smart Cape project meets real access criteria;
- Chapter 7 presents summary findings and an overall project goals achievement matrix and makes recommendations for the way forward.

2. Smart Cape in Context

This section considers the Smart Cape project in the context first of the City of Cape Town's digital divide strategy, and second of comparable public access projects.

2.1 Cape Town and the Digital Divide

The state of the digital divide in Cape Town has recently been assessed by bridges.org, which found that a total of 67% of all respondents to its survey had never used a computer. The findings of the research, available in draft form at the time of writing, are summarised below:

Table 2.1: Summary of demographics for computer access in Cape Town, May 2002

		Used Computer Before	
		no	yes
Income Band	Unemployed	74%	26%
	Low	73%	27%
	Middle	56%	44%
	Upper	31%	69%
Gender	Female	70%	30%
	Male	62%	38%
Age	14 or younger	40%	60%
	15 – 18	69%	31%
	19 – 25	66%	34%
	26 – 35	61%	39%
	36 – 45	70%	30%
	46 – 55	68%	32%
	over 55	83%	17%
Location Type	Informal Settlement	83%	17%
	Low Income Formal Settlement	59%	41%
	Middle Income Formal Settlement	19%	81%
Education	No formal schooling	89%	11%
	Grade 1-7	99%	1%
	Grade 8-12	85%	15%
	Matriculated	56%	44%
	Some study after matric	27%	73%
	Technical diploma	27%	73%
	University degree	23%	77%
Disabled	Disabled	80%	20%
	Not disabled	69%	31%
Race	Black[2]	74%	26%
	Coloured	24%	76%
All Respondents	All Respondents	67%	33%

Source: Bridges.org and City of Cape Town, 2002.

The report recommends an emphasis on what it terms ***real access,*** a concept which goes beyond the idea of simple technology access to encompass skills and the broader enabling environment. It notes that "assessing physical access to telephones, computers, and the Internet is not sufficient to gauge whether people actually use ICT effectively or benefit from it" (2002: 4).

[2] The bridges.org and City of Cape Town draft report (2002) noted that while white respondents had participated in the study, the sample set was too small for meaningful comparative analysis.

The report goes on to recommend that:

> "In countries with more advanced technology infrastructure, ICT has proven to be an enabler for an enormous variety of social, political and economic benefits, in ways that were not even imagined initially. The same can be true in Cape Town. Yet, the potential benefits of ICT must not distract from the risks of increased inequity if the digital divide is not also addressed. ***City initiatives should take a broad approach and work to close the divide while using ICT as an enabler to improve the lives of Capetonians.*** ICT should be used as a tool to fulfil the City Council's vision in six focus areas: government processes, economic growth, entrepreneurship, living standards, interaction with people, and access to ICT."
> (Bridges.org and City of Cape Town, 2002: p.13, italics added).

Smart Cape provides a unique opportunity to test real access factors against an implemented case study. Chapter 6 sets out bridges.org's recommended real access criteria – from physical access to a supportive macroeconomic environment – in more detail, and evaluates the extent to which the Smart Cape project meets these criteria.

2.2 Comparable Public Access Projects

Research conducted for the CommUnity SA project in 2000 counted 25 telecentres (including community radio stations, kiosks, schools and multipurpose community centres) in the Western Cape, most of them in Cape Town (Development Research Africa, 2000). However, most of these were isolated projects serving only local communities, making them unsuitable for direct comparison to the Smart Cape project.

2.2.1 Previous Access Projects in Smart Cape Libraries

Two previous attempts to provide access in libraries that are now part of the Smart Cape project are worth examining in detail.

During the course of our research library staff mentioned two previous, failed projects to provide access at Westfleur Library in Atlantis and the Hector Peterson Library in Lwandle. Both were private sector commercial access projects, focused primarily on business users who paid for access to computer, email and Internet facilities.

The Lwandle case in particular is worth discussing in detail:

(a) I-Kiosk/@Kiosk

In May 1999 CyberScene, a private company, was granted permission by the local authority to install, at no cost to the library, an I-Kiosk in the Hector Petersen Library to support the Lwandle Small Business Help Desk Project and link the libraries in the Cape Metropolitan Area to SMME networks. The Cape Metropolitan Council contributed to the funding of the project, with a view to expanding the rollout to 60 libraries. Users paid for access by buying or topping up CyberScene smart cards from vending machine at the library. The library was to have received 10% of all revenues. Shortly after the launch, however, the company reallocated the kiosk to the Strand library, where there was a greater base of users who could afford to pay. A few months later the company was liquidated. Based on documentation supplied during the research and interviews, the reasons for failure included the difficulties of management on site, confusion about lines of responsibility and the resulting withdrawal of funders.

(b) NetKiosk

This project, an initiative of a private company called Abraxas, took over from CyberScene/AMNETI to continue the Cape Metropolitan Council's Library Project. In late 1999 and early 2000 the Cape Town Small

Business Centre stepped in to facilitate the roll out, intended initially for 12 libraries. A number of problems emerged, however:

- Library staff did not have time to manage the project on site and collect money from users.
- There was no firm commitment from funding partners.
- It was unclear to which local government budget spending was to be allocated.
- There was no project manager or full-time coordinator during the initial period.
- Communications between stakeholders were inadequate.
- The inclusion of tourism promotion in the project added complexity and uncertainty as to goals.
- The proliferation of goals was exacerbated by a proposal to use expansion to rural areas to network rural libraries.
- There were operational confusions: "Are these business corners simply an extension of disseminating information and related services, or are they to operate as separate, independent entities?" (Helderberg Administration, Library Services, NetKiosk File: Library Project Meeting Minutes, 27 January 2000).

NetKiosk failed when the commercial venture realised that that the initiative was not going to be profitable. The project was terminated before rollout to all 12 libraries was completed.

Key Lessons

An number of lessons emerge from these cases that have bearing on the Smart Cape project:

1. Keep public access simple: the more objectives that were added to the projects, the more unwieldy they became.
2. Paid services can be expensive and difficult to administer.
3. The introduction of training services can introduce complications.
4. The required input from and impact on librarians should be minimised as far as possible.

2.2.2 Other Access Points in Cape Town, South Africa and Internationally

While a detailed comparative study of public access projects is outside the scope of this report, the initiatives listed in Tables 2.2 to 2.4 below provide a useful background to the Smart Cape project.

Each table describes in broad outline the main features of a range of public access projects in Cape Town, South Africa and Africa and in the rest of the world

Table 2.2: Selected alternative access points in Cape Town

	Cape Gateway	Cape Town Tourism	Khayelitsha Public Library	The Shuttleworth Foundation "Linux Libraries"
Goal	To provide free public access to local and government content.	To provide Internet access to tourists and the public at the Cape Town Tourism offices.	To provide affordable public internet access to disadvantaged communities	Provide affordable public internet access to disadvantaged communities
Model	Free public access	Internet Café - outsourced	Subsidised Internet café	Mixed public access
Started	2001	2001	1998	Begin 2002
Location	Long Street, CBD	Cape Town Tourism offices, CBD and Waterfront	Khayelitsha	Athlone Public Library, Brown's Farm Public Library, Mitchell's Plain Public Library
User profile	Public	Tourists, especially international	Learners and work-seekers	Learners and work-seekers
Facilities	Cached Internet content available.	Internet and email access, priced at R10 for 15 minutes.	4 PCs running Windows. Internet and email access only, priced at R10 per hour.	Open source operating system. Internet and email access only at Athlone, remaining libraries have word processing. Priced at R12 per half-hour.
Sponsor	Cape Online – Branch: Knowledge Economy and E-Government: PGWC	Hewlett-Packard	UK Department for International Development (DFID)	The Shuttleworth Foundation
Benefit	Citizen access to e-government services.	Commercial venture focused on tourism development	Community and social development	Community and social development

Source: Interviews

Table 2.3: Selected alternative access points in South Africa and Africa

	Gaseleka Telecentre South Africa	Freedom NetCentre South Africa	Nakaseke Multipurpose Community Telecentre, Uganda	Manhiça Telecente Mozambique
Goal	To provide affordable public access, information and development support services to disadvantaged rural communities.	To provide affordable public access to disadvantaged urban communities.	To provide affordable public access, information and development support services to disadvantaged rural communities.	To provide affordable public access, information and development support services to disadvantaged urban communities.
Model	Community telecentre with pay-per-use business model.	Private "NetCentre" providing information and business services.	Community telecentre with a self-sustainable business model over six years.	Community telecentre commercially operated on a user-pay basis.
Started	1998	August 2002	March 1999	1998
Location	Gaseleka (Northern Province)	Durban (KwaZulu Natal), also planned for Mapumalanga and North West provinces.	Nakaseke, Uganda (near Kampala)	Manhiça, near Maputo.
User profile	Broad community user base	Entrepreneurs, students, post-matric, unemployed	Teachers, medical and NGO staff, business owners, students and learners.	Business owners, employed, students.
Facilities	8 Windows computers with Internet and email access, telephones and fax, photocopier, scanner and colour printer. Also provides distance learning facilities and computer training. postal services and Home Affairs services (once a week). Priced at R10 per hour or R30 per month	Each NetCentre has 60 –100 computers offering Internet and email access. Other services include: an hour of free training, copying, binding, laminating, printing, faxing and scanning. Computer usage is charged via a pre-paid card system.	8 computers, printing, video, CD-ROM, telephone, fax, email and Internet/Web access, plus other information and support services.	4 Windows computers, one for management/server purposes. Computers are mainly used for word processing, games, and CDROM as well as Internet and email access, and printers. Also available are: public phones, fax, photocopying and binding, library, TV and video, and computer training courses.
Sponsor	South African Universal Service Agency (set up costs of R250,000)	Freedom International	Jointly supported by UNESCO, IDRC, ITU, DANIDA and Ugandan government (total budget of US$396,425)	IDRC Acacia Programme and UNESCO.
Benefit	Community, economic and social development plus government services.	Entrepreneurial development	Community, economic and social development, emphasis on rural ICT development	Economic and social development.

Sources: Stones, 2002; ITWeb, 2002, Jensen and Esterhuysen, 2001, Gaster, 2001 and Benjamin, 2001..

Table 2.4: Selected international access points

	AMIC@ Paraguay	Telecottage (Teleház) Movement Hungary
Goal	To provide affordable access to disadvantaged urban communities.	To provide rural communities with low cost access to government information and services so as to enable local economic regeneration.
Model	Community learning centre	Telecottage – multipurpose telecentre
Started	January 1998	1997/1998
Location	Asunción, Paraguay	Small towns in rural Hungary
User profile	Broad community: learners, business users, NGOs.	Broad community, NGO and business users, and local government.
Facilities	Access to 4/5 computers, telecommunications, free e-mail accounts, IRC, the Internet and videoconferencing (Webcam). Computer, application and web development and design training is also provided. 12 centres have been established at the central bus station, municipal centers, schools and public parks. Users pay Gs 1,000 (US$1 = 3507.00 Paraguay Guaranis in 2001) per hour.	Access to an office, information, 5-7 computers (including computer games), printers, email, Internet, multimedia (TV, VCR, scanners) and telephone and fax, photocopy, postal and other local government services. Training is also provided. Small libraries utilised as telecottages.
Sponsor	Municipality of Asunción and USAID, implemented LearnLink project. Private funding cover 30% of telecentres.	Democracy Network (DemNet) programme, funded by USAID, with support from the Hungarian government. Capital cost and annual operating cost are in the region of US$30,000 – $40,000.
Benefit	Community, economic and social development plus e-government and e-governance services.	Community, economic and social development.

Sources: Aranda and Fontaine, 2001; Murray, 2001; and TCA, 1998.

In addition to individual access points, there are also organisations that provide the tools for access to points administered by others. Two notable examples of this in the Cape Town area are:

- **The Community IT Foundation:** This NGO, with support from the University of the Western Cape and private sector partners, provides refurbished computers, ICT services and training support to school and community based projects (see UWC, 2002).

- **Wizzy Consulting** (http://www.wizzy.com/wizzy/africa/index.html): This company has piloted the provision of affordable wireless Internet access, using open source technology, to schools in Khayelitsha.

As can be seen from the tables above, there is a range of models for public access provision, from free access to subsidised or pay-per-use access – reflecting a widespread recognition of the need to provide alternatives to private or purely commercial access. However, even pay-for-use access points rely to varying extents on public sector or donor funding.

3. Management: Findings and Interpretations

Smart Cape Management Goals

As stated in the introduction, the management goals of the pilot project were:

Explicit goals
- No technical input should be required from the library staff.
- The physical facilities should be placed where people already go for information.

Implicit goals
- To minimise costs to the Directorate: Information Technology and the library services.
- To minimise total impact on library staff

Evaluation Methodology

Two groups of key stakeholders, comprising 37 individuals in total, were interviewed to assess their experiences of and attitudes to the Smart Cape pilot project. One group consisted of project team members, city officials, councillors, technical staff and others involved in the initiation, planning and management of the project. The second consisted of library administrators and library staff involved in the day-to-day administration of the project.

Project documents and budgets were also reviewed to extract additional data.

Chapter Outline

- Section 3.1: Overview of project management structure and summary financial data.
- Section 3.2: Attitudes and experiences of central managers, councillors and project team members.
- Section 3.3: Attitudes and experiences of library administrators and staff.
- Section 3.4: Overall evaluation including summary of findings, SWOT analysis and goals achievement matrix.

3.1 Management Overview

3.1.1 Management Structure

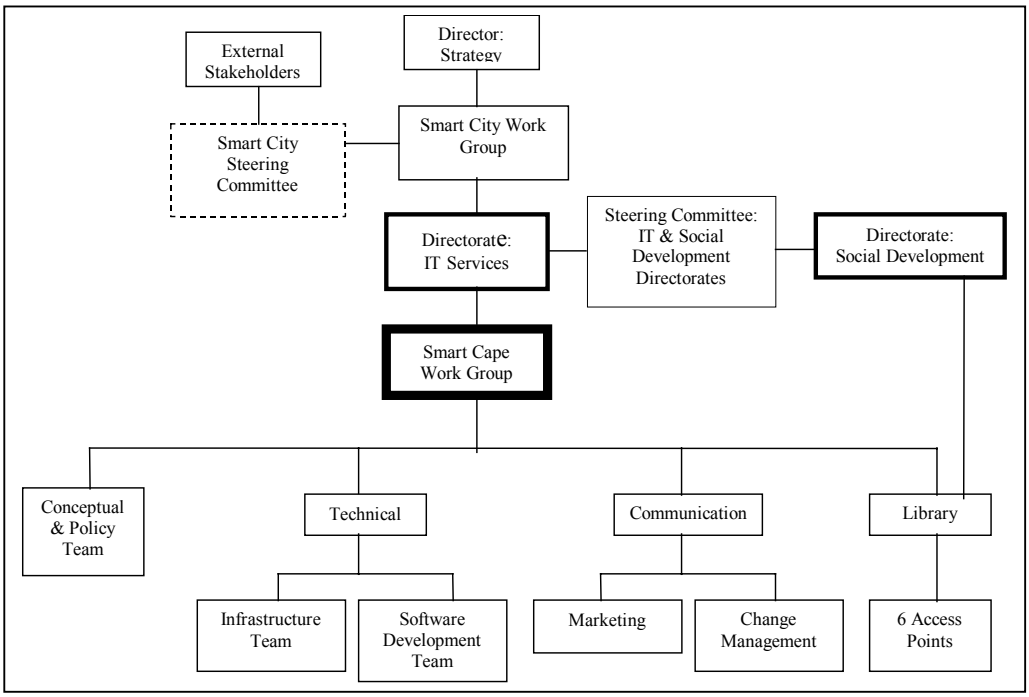


Figure 3.1: Smart Cape Management Structure

3.1.2 Project Finances

The total budgeted cost of the pilot project was R897,000: however, substantial savings were realised by using refurbished computers and by virtue of a donation of printers by Xerox (see Tables 3.1 and 3.2 below).

Table 3.1: Smart Cape Budget

	Total budgeted cost excl VAT
Capital costs	
Six libraries	429,300
Main site	32,200
Other implementation	264,900
Total capital cost	726,400
Operational costs – summary	
Per library	135,000
Main site	36,000
Total operational cost for six months	171,000
Total pilot project cost for six months	897,400

The single biggest budget line item was for marketing costs: R50,000 excl VAT. This compares to a total budgeted capital cost per library of R 71,550 excl VAT.

Table 3.2: Actual capital cost per library

		Actual Expense excl VAT
Hardware	PCs - public	0*
	PC/server - librarian	8,642
	Printer	0†
	Video Cards	3,216
Furniture & fittings	PC security locks	1,002
	Custom Furniture (including stools)	4,355
Network	Edge router - SSR520	21,842
	Switch/hub	1,121
	LAN Installation & cabling	960
	Frame Relay installation	2,500
	UPS	4,400
Marketing	Promotional items	5,793
Total		**53,831**
Total for all libraries		**322,986**

* Refurbished machines
† Donated by Xerox

The final capital cost per library of the project was substantially lower than budgeted, thanks to the donation of printers and to the use of refurbished City of Cape Town computers.

One key piece of data not available at the time of writing this report was the amount paid to Telkom for bandwidth usage. It has thus not been possible to assess the actual operational costs of the project.

The actual capital costs of the pilot project are less than R75 per user for all registered users (see Chapter 4 below for a more detailed breakdown of user numbers).

Table 3.3: Capital cost per user

	Capital cost per user
All registered users, December 4 2002: 4,398	
Budgeted cost	R 98
Actual cost	R 73.44

3.2 Attitudes and Experiences of Central Managers and Project Team Members

Ten interviews were conducted with members of the project team who were involved in the planning and implementation of the project, and with councillors who were involved in the initial selection of libraries for the pilot (see Appendix A for a list of interviewees). The individuals involved had widely differing roles in and perspectives on the project, precluding the gathering of quantitative data such as ratings of project success. The interviews did, however, yield a wealth of detailed information and comment, and clearly highlighted the areas of greatest concern.

The remainder of this section will deal in turn with each of the following areas: resource requirements, the central administration model, library issues, benefits of the project, training requirements, content issues, opportunities and threats.

3.2.1 Resource requirements

Financial resources

On the positive side, there were no reported unanticipated costs. There were, however, several areas where interviewees noted that it was unclear which budget particular items were allocated to. Items mentioned included printer consumables, transport costs and telephone costs for technical support calls. The fulfilment of ad hoc requests for additional functionality was noted as likely to represent a continuing cost.

Additional costs in the event of project expansion could arise from two sources:

- **Availability of hardware:** Substantial savings were realised in the pilot by using refurbished computers. Whether the same hardware saving could be repeated in the event of an expansion depends on the availability of suitable PCs for refurbishment, or donation of hardware.

- **Staff Requirements:** Expansion would require the appointment of a full-time staff member to ensure co-ordination and information sharing between libraries.

It was uniformly noted that a lack of funding was the greatest threat to the expansion of the project, as none of the departments involved had resources in their individual budgets. "There is no budget" was the single most frequent comment made during the interviews. Accordingly, interviewees believed the need to find a sustainable source of funding would be the most urgent issue in the event of any expansion.

It was noted that while the Directorate of Information Technology had initiated the project and could continue to fund infrastructure, it was not able to cover the cost of maintenance or ongoing technical support – and that the project would in any event be more appropriately housed in the Department of Community Development under the Directorate of Social Development.

Time resources

For project team members, time requirements were highest in the planning and roll-out phases of the pilot and subsequently dropped. The same pattern was expected to apply in the event of an expansion of the project.

3.2.2 Success of centralised administration model

It was noted that one reason for opting for a Linux-based operating system was to meet the desire of already overburdened library staff to minimise their time inputs to the project. The system was designed to remove as many technical and administrative tasks as possible from individual libraries and allow them to be conducted from a central location.

Interviewees agreed that the central administration system was appropriate and that it was working well.

Help Desk

At the time of the research the technical support help-line was receiving in the region of 30 calls a month: interviewees felt this was low and quite manageable. In addition, the need for support was expected to decrease with the implementation of an enhanced Version 2 of the software. There was, however, one comment to the effect that the City's IT help desk was not customer-oriented and that a rapid rollout could strain its resources.

3.2.3 Library issues

Several interviewees noted that library staff were overloaded - "This is a good project, but it's been put on an overloaded vehicle"- and that there was wide reluctance to take on additional duties, despite enthusiasm for the project and agreement that the libraries are the most appropriate venue. One interviewee pointed out that library budget cuts had reached the point where staffing and service levels had been reduced, with opening hours being cut.

Although the Smart Cape project team had consulted extensively with library administrators, several interviewees felt that the idea still had to be "sold" within the library services. (Note that opinions of pilot library staff themselves are dealt with separately in the following section).

It was also noted that queue management had emerged as an issue in several pilot libraries.

3.2.4 Smart Cape Benefits

The simple provision of access to ICTs and the Internet, meeting a long-standing community demand, was widely seen as a good in itself.

Additional benefits mentioned included a noticeable increase in library membership, the building of stronger relations between participating directorates, the beginning of an internal dialogue about the Smart City project and an increased internal profile for the Directorate of Information Technology.

3.2.5 Training issues

Several interviewees remained concerned that there might be a need to provide user training – either basic computer training, or more commonly guidance on proper and efficient use, expressed by one interviewee as "a physical body there to facilitate access to information, to help people discover and navigate". Few of these interviewees had seen the project in operation on site, however.

Against this, a couple of interviewees noted that it is important to distinguish between libraries and educational institutions, with the role of libraries being to provide access to information, not training.

Other interviewees noted that there is an opportunity to provide community-based training by supporting the volunteer community that has emerged in several pilot libraries.

Two interviewees were concerned that the service was competing unfairly with private-sector providers. Others pointed that this was only the case if the libraries also charged for access, and provided a paid-for level of service. It was pointed out that one initial goal of the project was to stimulate demand for computer and internet access in the hopes that this would create opportunities for private sector operators.

3.2.6 Content issues

There was a widespread view among interviewees that the Council needed to pay greater attention to the content it made available online:

> "Access is based on the assumption that there is useful content available – but what, exactly? It's unclear at present. The council website has improved vastly – but still how much information is relevant to ratepayers as opposed to officials?"

Others expressed a desire to see better directorate web pages, more information on the basics of how local administration worked, community newsletters and so on.

Some interviewees felt that proposals to develop online transaction facilities for the Unicity necessitated provision of free public access, so as not to marginalise poorer users.

On the other hand, it was pointed out that access is a good thing in itself and that e-government is a long-term project, making the need for the council to develop its own online content less urgent.

3.2.7 Opportunities

- Some interviewees suggested that the Smart Cape project should be integrated where possible with the Library Business Corners, adding value to both.

3.2.8 Threats

- There is uncertainty over who is to own the project in the long term. Several interviewees believed the primary owner should be the Community Services department of the Social Development directorate, with support from Directorate Information Technology. But Community Services has no budget for it. Failure to get sponsorship will threaten the expansion of the project.

- The service could become "too popular" and strain the abilities of libraries to cope with queues and requests for assistance.

- There is an unresolved legal question around providing access to people under 18. Filtering software is not 100% accurate and the council could be exposed to liability if minors were found to be accessing inappropriate or illegal material.

- The project has raised community expectations. There is a reputational threat to the council if the service is cut back or fails to roll out to additional libraries.

3.2.9 Summary

Managers and project team members raised a wide variety of issues, reflecting different roles in and relationships to the project. Overall, there was strong support for the primary project goal of providing free public access to basic computing facilities and the internet. Furthermore, those interviewees who were in a position to comment on the success of the pilot believed that this goal had largely been met and that the centralised administration model was successful.

The most widespread concern was that the project would not be sustainable without outside funding. There were also concerns about whether or not to provide user training, and the extent to which the success of the project depended on the provision of online content by the City of Cape Town.

3.3 Attitudes and Experiences of Library Administrators and Staff

A structured face-to-face interview survey was undertaken during the month of November 2002 and project documentation was examined. Interviews were conducted with the library managers for each municipality (barring one who was not available for comment) and 22 library staff (including six Head Librarians, 12 Librarians and Assistant Librarians, and four community volunteers at Delft Main). Interviews were focused on those library staff directly involved in the Smart Cape project. (A full list of interviewees is included in appendix A).

The aims of the survey were:

- To identify the library resource requirements of the project.
- To understand how managers perceived the impact of the project.

- To understand how well the central administration of the project had worked from the local library perspective.
- To understand local administration needs.
- To understand the costs and benefits of the project from a library perspective.
- To understand the training needs of the users and library staff and management.
- To collect the overall views and opinions of the library staff as to the success of the project.
- To solicit librarians' views on the expansion of the project.

The results are presented as follows:

- Discussion of the impact of the project on library staff.
- Consolidation of commentary on management structure and operations.
- Rating by interviewees of the overall success of the project.
- Interviewee comments on the expansion of the project.

3.3.1 Context: Challenges facing the Library Services in Cape Town

It should be noted at the outset that the library services face increasing pressures due to diminishing budgets, diminishing human resources and institutional transformation. These have created some uncertainty for long-term planning, which is exacerbated by the continuing confusion about the relationship between provincial and local governments with regard to the provision of library services[3].

Particular challenges include:

- Increasing membership: Adult membership increased by 2.8% and children's membership by 0.3% in 2000-2001.
- Increasing circulation: There are currently over 21.5 items in circulation, and there has been an increase of 4.5 million items since 1995. In 2000-2001 growth slowed to 1% for books and 4% for video recordings. There was no overall growth in circulation between the two years, attributed to staff shortages and crime.
- Increasing number of services provided, such as Library Business Corners, Smart Cape and other internet access projects.
- Education Department cuts have led a decrease in the number of school libraries, putting greater pressure on existing municipal library services.
- Future plans for the libraries include expanding their role to become community information centres. (Source: Annual Report of Western Cape Provincial Library Services, 2001)

In addition, libraries have had difficulties planning for the future due to political changes and operational restructuring, including the consolidation of several municipalities into the Unicity.

3.3.2 The impact of the project on library staff

In general, librarians saw themselves as "information providers in service to the local community" and believed that the project helped them do their jobs more effectively.

Three areas of impact are identified based on comments by library staff: additional tasks, personal development and time requirements.

[3] While the Constitution names library services as an area of exclusive provincial competence, the provinces are also empowered to delegate or assign certain functions to local authorities. The legislation providing for this is still being drafted, however, creating an area of legal and institutional uncertainty. At present the Unicity employs and pays library staff and there were comments to the effect that "the province is not playing the game" and that there was money outstanding.

Additional tasks

All noted that since the arrival of the computers there was a greater need to implement crowd control and queue management. In some libraries the impression was given that jobs had become more interesting since the inception of the project.

In particular, the following new or expanded tasks were noted:

- Queue and crowd/kid control (three respondents).
- Printing (an average of 15 requests per day mentioned in Grassy Park).
- General assistance e.g. registration & helping users to solve problems with stiffy disks (two mentioned four to five requests per day).
- Helping "mature users" (one respondent).
- Cleaning up the mess (one respondent).

There was strong appreciation of the support provided by volunteers at Atlantis, Delft and Grassy Park.

One respondent commented that it "would be nice if someone could be employed to manage the PCs" and another saw the need for "a part-time staff dedicated to Smart Cape; we need to control those waiting to use the system, especially kids. They possibly need a separate space".

It is clear that library staff do not want the hassles of technical and financial control. Asked to rate the success of the centralised administration system on a scale of 1 to 5, library staff responded as follows:

Table 3.4: Librarian ratings of success of centralised administration

Library	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Westfleur, Atlantis	**Average**
Average rating*	4	4	4	4.5	4.25	5	**4.3**

* Poor = 1, Excellent = 5.

Personal Development

While those librarians that had been trained rated the training good to excellent (see page 23 below) , there was a general cry for more advanced training, including troubleshooting, and for training of more staff.

- Four interviewees spontaneously noted that they had benefited personally through increased computing skills and through access to the world wide web.
- One respondent noted that the library was "busier but not harder, not a problem" and that the project "makes my job more interesting".
- Access Points "have helped lots in terms of knowledge access and printing capability"

Time Requirements

There was little or no time effect in terms of overall hours worked. However, the effect on individual staff depended very much on their roles and level of involvement in the project. There was a slight disparity in attitudes between libraries that had assigned staff directly to the project and those that had not, with impacts being greater where there were dedicated staff and the additional workload was not spread between several staff members (Brooklyn and Atlantis).

The general perception was that "there were problems in the beginning but it has got better." Five of the 22 interviewees mentioned increased workload at the start of the project, but all recognised that this reflected the fact that it was a new project. By the time of the research, all but one described the impact as "little extra work". There was one complaint that the project had doubled the interviewee's workload.

Table 3.5: Librarian ratings of time impact

Library	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Westfleur, Atlantis	**Average**
Average rating	3	3.6	4.2	5	5	3	**3.9**

Reference librarians were most positive about the time impact of the project, saying their jobs were made easier as students tended to do their own information searches.

Additional tasks might translate into additional time requirements, but there was no strong evidence for this. Printing assistance appeared to take up the most time: because of the need to ensure that users pay for their printing, the system is designed so that library staff need to manage every print job.

All respondents rated the time impact of Smart Cape as 3 or above (no impact to very positive impact). The time benefits of the project appeared to counterbalance the effect of additional tasks. The least favourable ratings were at Brooklyn and Westfleur, where individual staff members had been allocated to the project and there was least volunteer input.

3.3.3 Library Comments on Management Structure and Operations

This section consolidates observations and comments made by interviews with regard to three distinct areas:

1. The centralised management of the project;
2. The management of the project in individual libraries; and
3. The relationship between Library Services and the Smart Cape management team.

The Smart Cape project is currently managed by the Directorate: Information Technology, but implemented in geographically and politically disparate operations (libraries) which are separately managed by Library Services, a division of the Social Development Directorate (see Figure 3.1 above). Managerial, training, funding and technical functions of the project are managed centrally, while Library Services remains responsible for human resources management and overall library management.

Centralised management of the project

As noted in Table 3.4 above, library staff made very positive comment on the success of the centralised management system. Some minor criticism was picked up in respect of the response time of technical support in a very few cases: the breakdown of the printer in one library and the lack of technical support on a Saturday, for example, caused one user to fail to print out her CV and respond to a job application.

Libraries are increasingly being seen as community information centres and libraries are accordingly becoming the home of a number of different services: the traditional book, periodical and audio-visual centre, the Library Business Corners, support to local schools and now the Smart Cape project. Library managers highlighted the need to work closely and in partnership with directorates including Information Technology, Social Services, Economic Development and Education.

Interviewees noted that help desk utilisation, initially high, has been decreasing over time. The need for support was also expected to decrease with the implementation of Version 2 of the software.

Management of Smart Cape in individual libraries

Library staff interviewed were generally happy with the project's local management systems. Ratings vary from 3 (fair) to 5 (excellent):

Table 3.6: Ratings per library of the success of the local project administration.

Library	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Westfleur, Atlantis	**Average**
Average rating	3	4	3.5	5	4.25	4.6	**4**

Some interesting local management systems have evolved:

Brooklyn: The management of the project is assigned to two staff members.

Delft Main: There is a strong volunteer force of five individuals. The volunteers work to a time table covering all library opening hours, and undertake all user support, apart from taking money for printing. Library staff are very appreciative of their services.

To solve the problem of rowdiness, librarians at Delft Main ask children to leave at 4.00 pm. There is also a threat of being banned from the library. Librarians commented that this appeared to have been effective as no-one had been banned yet!

Grassy Park: A volunteer staff of two has emerged that provides very useful support. The volunteer management system remains informal.

Lwandle: No special systems have emerged here, which is interesting as this is the library that suffers from the greatest staff shortages. Some younger users with a greater level of e-literacy have been warned by librarians not to abuse the system, for example by surfing for pornography.

Gugulethu: The library keeps a register of computer usage as a means to manage users waiting for a PC. Users who need assistance raise their hands to catch the eye of a staff member.

Atlantis: This library has evolved an informal system which appears to fit comfortably with the culture of the library. Two individuals have taken on a volunteer support role.

Particular points raised related to:

Staffing

- The importance of ***volunteers*** in the management system: There were divergent opinions as to whether it is a good thing to rely on volunteers. On the one hand it was regarded as a good thing that increased the skills of local community members and made them feel needed. On the other hand, some interviewees felt that volunteers were being exploited. There were some suggestions that volunteers should be trained and managed, perhaps via the provision of a certification scheme.

- Paradoxically, the impact of the project on library staff appears to be minimised where staff are not ***assigned directly*** to the project. In these cases the impact seems to be more evenly spread between all staff, and users are more likely to volunteer their services, not being intimidated by the authority of the staff.

- Where libraries were particularly short staffed, the ***additional pressure*** introduced by the Smart Cape system was evident when staff were busy behind the counter. At these times they found it difficult to assist users without damaging their service to other library members – Smart Cape users were not regarded as priority customers. There was one suggestion that the project should employ a dedicated Smart Cape staff member.

Finances

- There appeared to be confusion as to the allocation of some ***costs***. For example, it was unclear whether the library telephone budget covered the cost of help desk calls. Libraries appear to carry the extra telephone and electricity costs generated by the project.

Training

- Library staff were specifically questioned on the training they had been offered. Comment was generally favourable (the average rating by 14 respondents was 4.5, between good and excellent). The only problem identified was that, while librarians are satisfied with the training they have received on basic operation of the system, they lack training in how to deal with problems. Comments related to the further training needs of both management and users included:

    - The need for more training in respect of both software and hardware support.
    - "There has been sufficient training regarding operations but not for troubleshooting."
    - "Training users would increase awareness of the PC's capabilities. Kids for example are mainly using them for games."
    - "The staff are available to help but not to train."
    - "Some potential users ask for training and when it is not available leave and don't come back."
    - "We need to provide training programmes with certificates for volunteers."

Location

- Staff were directly questioned about the impact on normal library activities of the central location of the computers. All agreed that the best position had been chosen as computers and users needed to be visible and monitored. In addition, the computers had benefited teenage corners and Library Business Corners. At Grassy Park there was a suggestion to allocate one or more computers solely for use by children and to place them in the children's section of the library to mitigate children's impact on adult use of the libraries.

  A negative effect of the location was the lack of privacy, but it was felt that this could be mitigated with the introduction of booths, while keeping the computers centrally placed. One respondent suggested a computer room but recognised that it would need to be supervised. No one felt that the computers had impacted negatively on other users of the library or vice versa.

Security and Privacy

- The need for better user security in some libraries was raised. In Grassy Park, for example, usernames and passwords had been compromised by crowding around the computers.

User Management

- A part time staff member suggested using a queue numbering system to manage users waiting to use the computers.

- There were several comments on the user manual:
    - "People won't read the manual".
    - "People are too lazy to read the manual and would rather call on the librarian's assistance".

Relationship between library services and the Smart Cape management team

In general, interviews with library services reflected an increased understanding that the libraries should see themselves as information providers and there was support for the Smart Cape project. However, a number of interviewees had strong views regarding the implementation process. Areas of particular concern included:

- "Decisions being made at top levels with little grassroots participation".
- A strong feeling that too much was required of the libraries without providing the necessary funding.

These comments suggest that although the Smart Cape project team consulted with library administrators from the inception of the project, there may have been some gaps in the internal consultation process within Library Services. Some interview respondents felt that turf wars, institutional uncertainty and a history of failed computer access projects within Library Services had resulted in some resistance to the Smart Cape Project (in particular in the Tygerberg library administration) and that there was a need for clear communication of the project's goals to the library staff level.

3.3.4 Overall Project Success Rating by Library Managers and Staff

Library staff were asked to evaluate the success of the project in three ways: whether it met the goal of public access, its overall costs and its benefits to the libraries.

Table 3.7: Librarian ratings of success in meeting public access goals.

Library	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Westfleur, Atlantis	**Average**
Average rating	5	4.2	3.5	4.5	4.5	3.7	**4.2**

In terms of ***meeting the goal of public access***, library staff were quite clear that the project had generally succeeded in meeting its public access goals. Ratings ranged from 3.5 to 4.5 (where 3 = moderately successful and 5 = very successful).

The only proviso related to a suggestion that, while the computers were well used and reaching a large section of the local community, librarians were not sure that all the people who needed the facility knew about it. It was suggested that with greater marketing efforts more members of the public would be reached. Some libraries took the initiative to do some simple marketing when the project started: Atlantis held a launch event, Lwandle marketed via the *District Mail* and *Big News* and also had a launch event, while Delft undertook a poster campaign.

Table 3.8: Overall Project Costs and Benefits Rating by Library Managers and Staff

Library	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Westfleur, Atlantis	**Average**
Average cost rating*	4	4.2	4.2	5	4.5	4.7	**4.4**
Average benefit rating†	5	4.2	3.5	4.5	4.5	3.6	**4.2**

* 1 = Very costly, 2 = Costly, 3 = Some cost, 4 = Little cost, 5 = No cost

† 1 = No benefit, 5 = Very beneficial

There was unanimous agreement that the benefits of the project outweighed any impact on the staff. In certain libraries staff said they were enjoying the new opportunities that the computers brought, including increased library membership, more library visitors and a greater ranger of activities. "It is good for the library's image" (Grassy Park).

General staff comments

> ”The main cost is man hours”.
>
> “There have been some problems with gangsterism.”
>
> “We get two new members a day because of Smart Cape.”
>
> “The kids are not so bored and are not destroying so many books.”
>
> “Non-fiction book usage is up since Smart Cape.”
>
> “Without Smart Cape these kids would not know what the Internet is”.

3.3.6 Attitudes to Expansion of the Project in Individual Libraries

Library staff were questioned directly as to their views on the potential expansion of the project in their own libraries. Most saw the possibility as beneficial, because the same system could service more users, decreasing the need for crowd control and queue management: “More PC’s would be a good thing”. Only two of the 22 interviewees believed expansion would increase their workload.

There were some strong views among library managers at the pilot libraries that their staff did not have the capacity to deal with an expansion of the project.

3.4 Overall Management Evaluation

The key evaluation tool is a goals achievement matrix, in which the researchers assign a quantitative score to each of the goals identified in the introduction. The management goals achievement matrix is presented below, after a summary of the main findings.

Summary Findings

Costs

- Actual capital cost per library was lower than budgeted due to the use of refurbished computers and the donation of printers.
- No significant unanticipated costs arose in the implementation.
- The City of Cape Town has no funds to support expansion of the project.

Benefits

- The centralised administration model is a success.
- The project has brought benefits to the libraries, including increased membership.
- Access provision is regarded as a good thing in itself.

Issues and Problems

- Library staff are overloaded and not in a position to take on substantial additional duties.
- Crowd control and user support are the main problems experienced in libraries. Libraries have evolved their own systems to deal with the problems of user support and crowd control, including reliance on volunteers and formal queue management.
- Library staff did not always feel they had been adequately consulted before the implementation of the project, despite extensive consultation at management level.
- Librarians are satisfied with the training they have received on basic operation of the system but lack training in how to deal with problems.
- There are divergent views on the need to provide user training.
- There are divergent views on the need for the Council to provide additional content.
- It is unclear where ownership of the project should rest in the future.

In general, despite some concerns about increased workload, library staff were overwhelmingly positive about the project and gave it a high success rating. Any negative impact was felt to be far outweighed by the benefits.

Strengths, Weaknesses, Opportunities and Threats

Strengths

- Community demand for access is being met.
- Centralised technical support has minimised impact on librarians.
- There is strong local community support.
- Reference librarians have benefited as users are able to search online for themselves.

Weaknesses

- Reliance on centralised technical support makes the project vulnerable to limited resources.
- The project has not been fully communicated and consulted with all stakeholders at individual library level.
- The roles of different directorates with regard to the project are currently not clearly defined; there are areas of overlap and ambiguity.
- The presence of increased numbers of young, occasionally rowdy users creates management challenges. This problem was not anticipated, resulting in libraries have to devise their own methods of crowd control without central support.

Opportunities

- Explicitly link Smart Cape-related training to personal development for library staff
- Create a formal queue management system for all libraries
- Systematically investigate ways that Smart Cape can help to reduce library staff workload.
- Integrate Smart Cape with Library Business Corners.

Threats

- Demand for computers could exceed capacity due to better marketing, cuts at schools and other institutions, increased population due to township development.
- Sustainable funding may not be found.
- Insufficient consultation by library administration with library managers and staff may lead to a lack of buy-in to the project.

Goals Achievement Rating by Researchers

Explicit goals	**Achievement Rating / 5**
No technical input should be required from the library staff	**4**
The physical facilities should be placed where people already go for information	**5**
Implicit goals	
To minimise costs to DITS and the library services	**4**
To minimise total impact on library staff	**4**
Total	**17 / 20**

4. Users: Findings and Interpretations

Smart Cape User Goals

As stated in the introduction, the user goals of the pilot project were:

Explicit Goals
- To provide free public access to computers and the Internet.
- To increase opportunities for members of disadvantaged communities.
- Web browsing and e-mail should involve no monetary cost to the user.
- User investment in the time to develop the ability to make basic use of the facilities provided should have immediate personal benefits.

Implicit Goals
- The public should use the access provided, i.e. the computers should not stand idle.
- The hardware and software provided should meet user demand for basic services.
- Users should be satisfied with the service provided.
- The project should narrow the digital divide.

Evaluation Methodology

Face to face interviews with users and non-users of the Smart Cape Access Points were conducted between November 4 and November 14, using a structured questionnaire administered by two interns under the supervision of the project team. These were supplemented by an online survey[4], which users were asked to complete at log-in before the start of their sessions from November 8 to December 6. A total of 1,216 data sets were gathered:

Library	Atlantis	Brooklyn	Delft	Grassy Park	Guguletu	Lwandle	Total
Online survey responses	145	139	149	149	88	85	755
User interviews	61	60	60	60	60	60	361
Non-user interviews	15	18	16	17	18	16	100
Total							**1,216**

It should be noted that many users completed both the online questionnaire and a face to face interview. The questionnaires were designed on the assumption that this would be the case, with the online survey kept as short as possible to avoid alienating users. The face to face interviews were intended to supplement the basic data provided by the online survey with more detailed information about usability, usefulness and how people found out about the system.

The total numbers of users registered on December 4, 2002 was 4,398, giving a sample size of 17% for the online survey and 8% for the face to face interviews. The samples were not random: because users were surveyed based on their actual presence in the library or logging in for a session, less frequent users were less likely to be surveyed.

[4] This was the first time any such survey was conducted by the City of Cape Town.

Chapter Outline

- Section 4.1: User profile
- Section 4.2: How access is used
- Section 4.3: Benefits of access as assessed by users
- Section 4.4: User problems, requests and comments
- Section 4.5: General points including alternatives to Smart Cape and marketing
- Section 4.6: Profile of non-users and reasons for non-use
- Section 4.7: Overall user evaluation

4.1 User Profile

Of the 4,398 users registered on December 4 2002, most had completed only one session. There is, however, a sizeable group of frequent users:

Number of sessions	Users
0	305
1	2761
2	350
3	203
4	151
5	102
6	86
7	65
8	51
9	36
10	33
More than 10	255
	4398

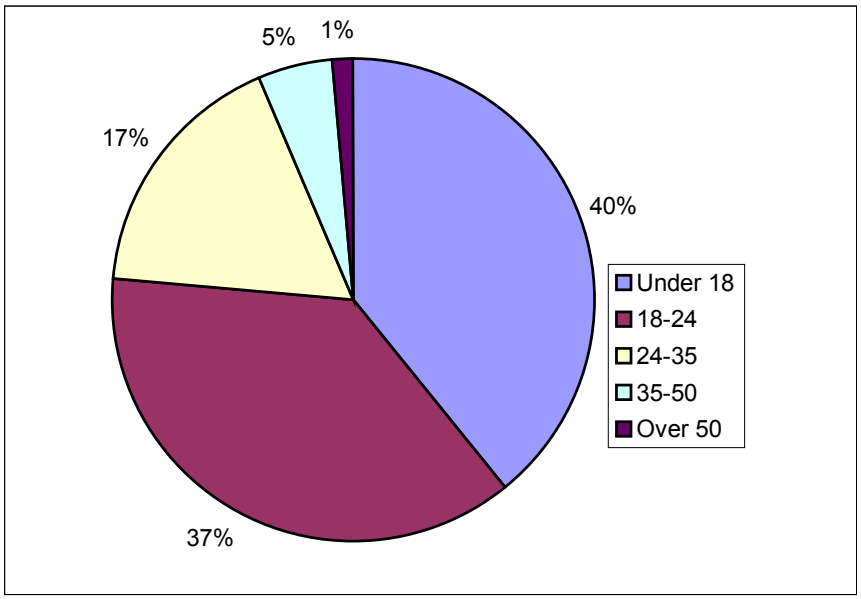
Since less frequent users were less likely to be surveyed, there are no data as to the reasons for the high number who have logged in only once. It should be noted, however, that the access points are well used despite the high drop-out rate.

On the basis of the interview data it appears that Smart Cape Access Point users are overwhelmingly young (75% under 25 – see Figure 4.1) and male (79% – see Figure 4.2).

A comparison of the interview data with system data on all users reveals an interesting discrepancy: while females accounted for only 21% of those interviewed, they accounted for 34% of all registrations. It is possible that this discrepancy is an artefact of the survey design; if not, however, it suggests that the drop-out rate is much higher among female than among male users. This may be worth further research.

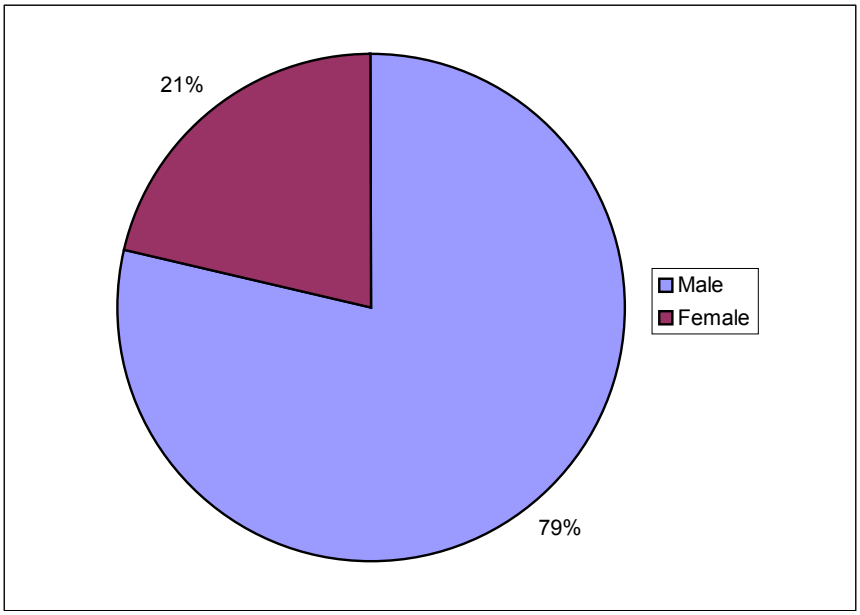
See Appendix D for additional data on user age and gender distribution.

Figure 4.1: User Age Distribution



Source: Face to face interviews. 3 “unspecified” responses excluded.

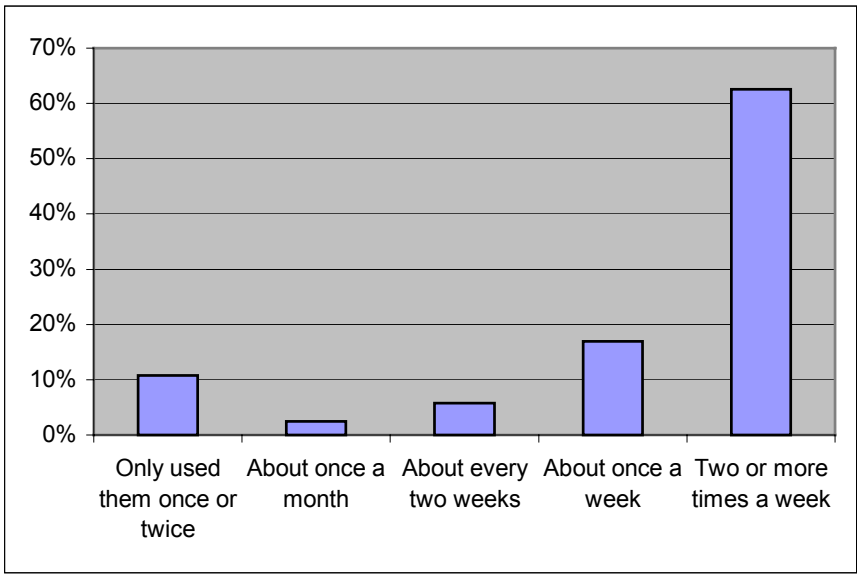
Figure 4.2: User Gender Distribution



Source: Face to face interviews. 11 “unspecified” responses excluded

Face to face interviewees were overwhelmingly regular users (see Figure 4.3), with 63% saying they used the facility two or more times a week. 467 were learners or students and 288 were employed, seeking employment or out of the employment market (e.g. housewives or pensioners).

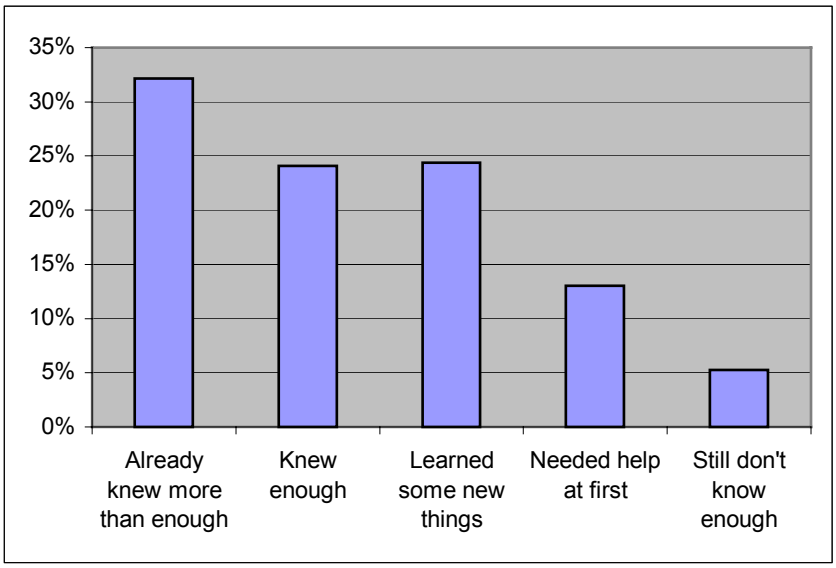
Figure 4.3: Frequency of Smart Cape use



Source: Face to face interviews. 5 “unspecified” responses excluded

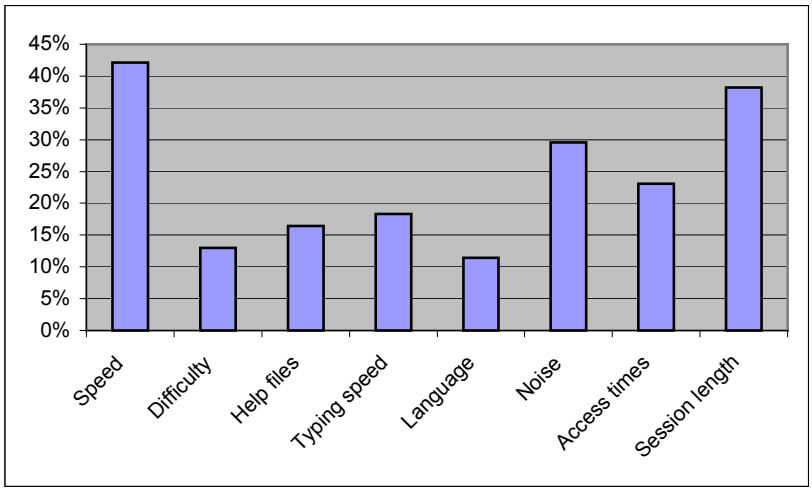
Users also tended to have some existing level of skill or familiarity with computers, with 56% saying they already knew enough or more than enough to use the system for their intended purposes (Figure 4.4). This is further supported by the finding that fewer than 15% of users reported that “the system is too difficult to use” in the online survey (see Figure 4.5) and nearly 40% reported than the system was easy enough to use that they could do everything they wanted the first time (Figure 4.6).

Figure 4.4: Existing level of skill among Smart Cape users



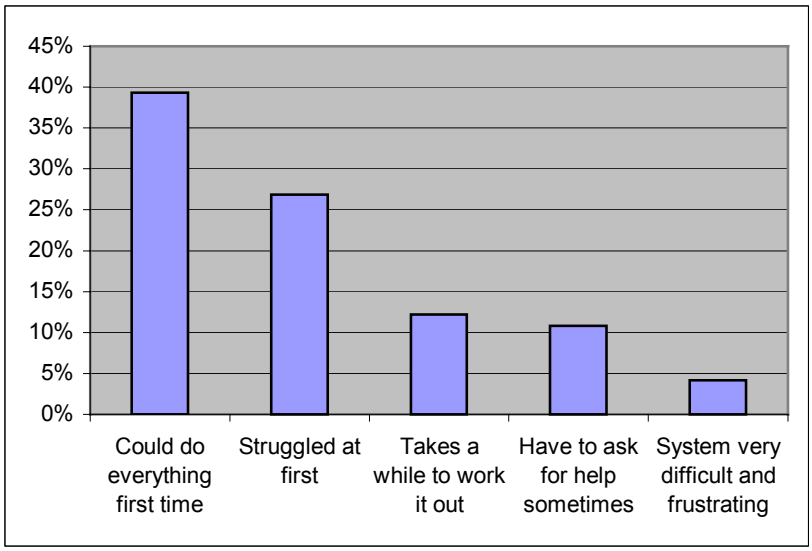
Source: Face to face interviews. 4 “unspecified” responses excluded

Figure 4.5: Issues “quite often a problem” or “definitely a big problem”



Source: Online survey

Figure 4.6: Ease of Smart Cape use

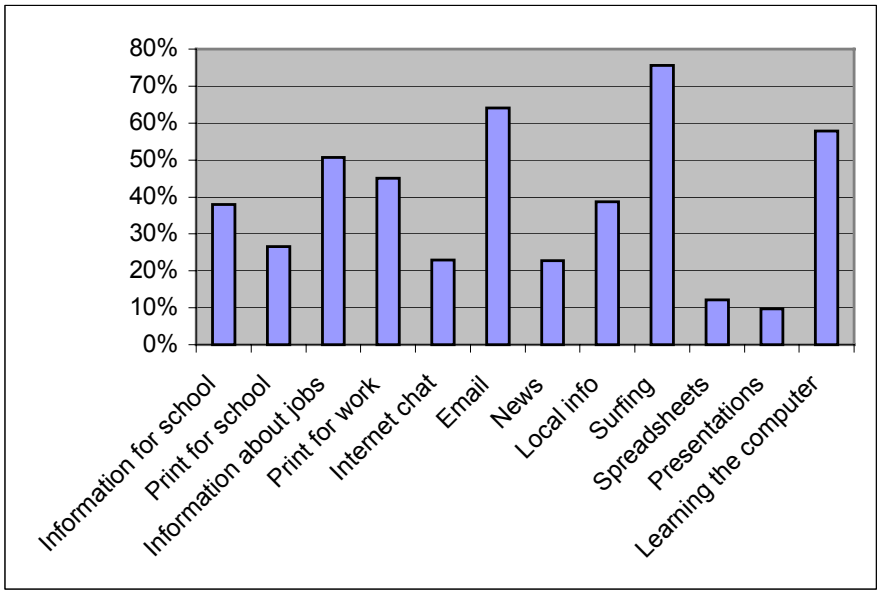


Source: Face to face interviews. 24 “unspecified” responses excluded

4.2 Uses of Access

Despite already having some degree of computer literacy, 58% of respondents use Smart Cape Access Points for learning more about computers, the third highest category of use after surfing the Internet (76%) and email (64%). 51% use the access to find job- or business-related information and 38% for educational information; 45% print work-related documents (see Figure 4.7).

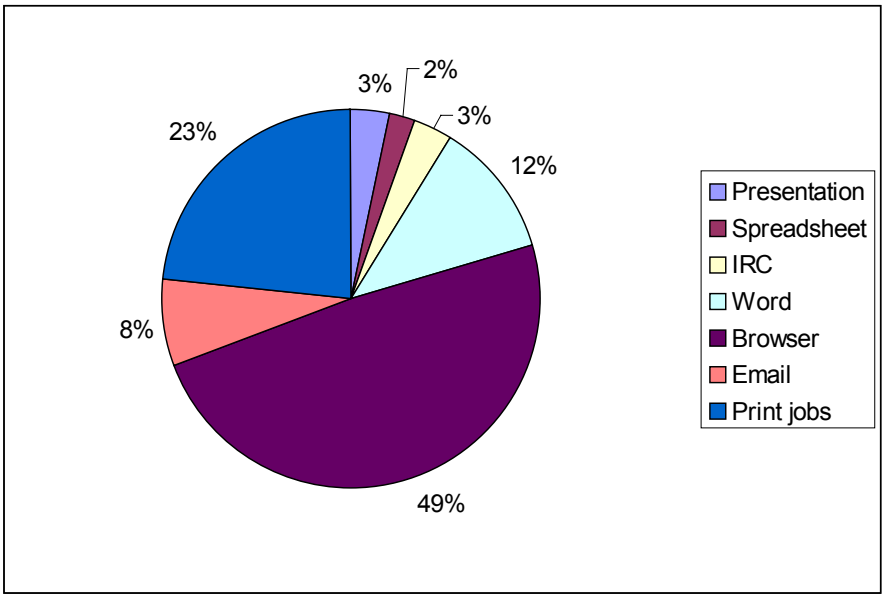
Figure 4.7: What people use Smart Cape access for



Source: Face to face interviews. Respondents could nominate more than one use.

The interview findings are mirrored by the system data on the actual use of applications, which show browser and email use at 57% of the total, followed by print jobs and word processing (Figure 4.8):

Figure 4.8: Frequency of use of applications

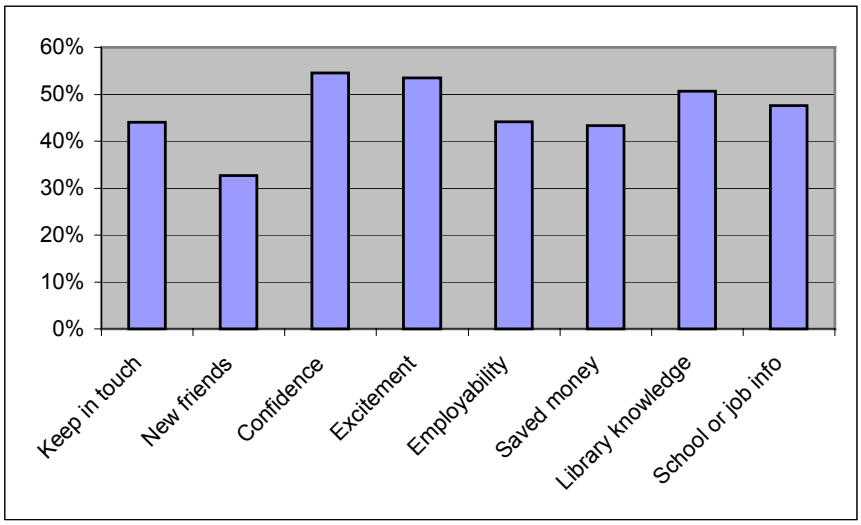


Source: System Data.

4.3 Benefits of Access

Asked to rate the benefits to themselves of the Smart Cape Access Points, most users cited increased confidence with computers (55%) and excitement about new opportunities (54%). Interestingly, 51% cited increased awareness of other library services (Figure 4.9).

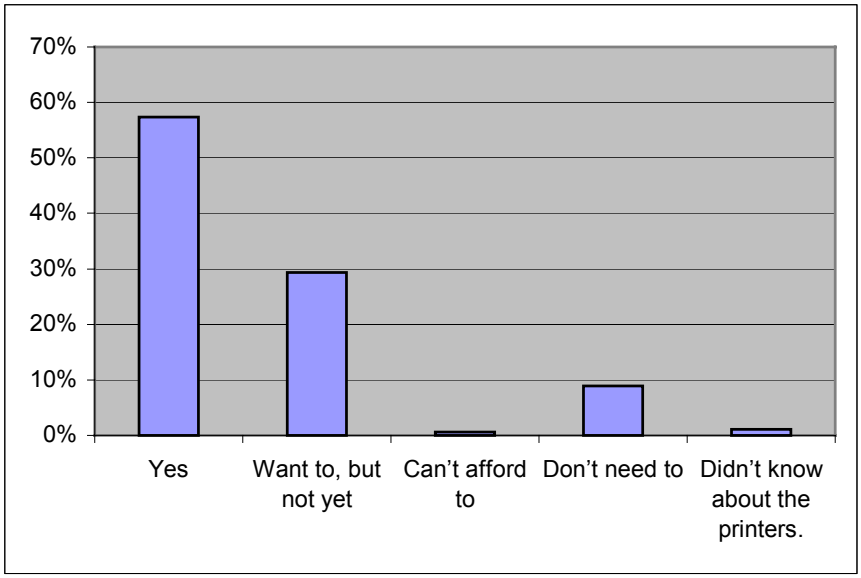
Figure 4.9: Factors rated "definitely a benefit" or "the biggest benefit"



Source: Online survey

Printer use was high (Figure 4.10): 57% of interview respondents had used the printers and a further 29% intended to do so in the future.

Figure 4.10: Use of printers



Source: Face to face interviews. 10 "unspecified" responses excluded

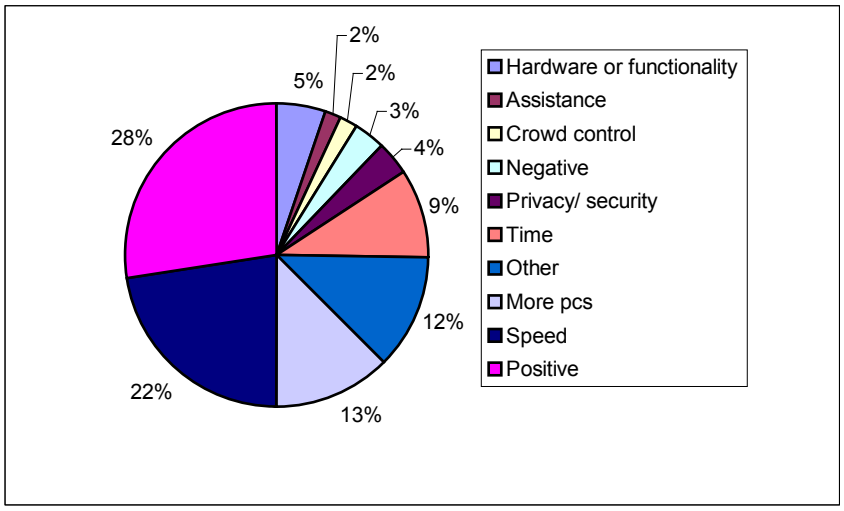
4.4 Problems, Requests and Comments

In general, next to "speed" (cited by at least 42% of users as a major problem – see Figure 4.5[5]) "too few computers" was overwhelmingly the greatest user complaint. This was not anticipated in the research design so quantitative data is not available, but users tended to mention this spontaneously whenever they were given an opportunity to comment – even if the question was about something else entirely. During face to face interviews, for example, when asked to comment on the usefulness of programs provided, 16 users complained about speed and 8 about too few PCs. Similarly, asked about ease of use, 55 users complained about speed and 9 about too few PCs.

[5] During site visits the researchers observed users getting magazines and newspapers to read while waiting for pages to download

Of 214 meaningful comments made in the online survey (Figure 4.11), 48 were complaints about speed, 27 called for more PCs and 20 called for longer sessions. These issues are inter-related, as several users noted there were be no problem with session length if access speeds were better. There were 59 positive comments, ranging from "thanks for this wonderful service" through "this is the best thing to hit the townships" to "I LOVE THIS COMPUTER".

Figure 4.11: Online survey comments



Source: Online survey

Several users also expressed concerns about privacy – not, as was anticipated, with regards to giving their personal details during the registration process (89% "didn't mind at all"), but around the physical privacy of the workstations. Particular concern was expressed about "children crowding around the computers", leading to passwords being compromised. There were also comments from users who felt uncomfortable typing personal letters or business documents in such a public environment. Some proposed setting aside one or more PCs "for people who want to do important things" or for "real work". One user even proposed that "I think we must pay R1 an hour, at least we will have privacy".

Crowd control – queuing, noise and the number of children – was a related concern, also raised by librarians (see Chapter 3).

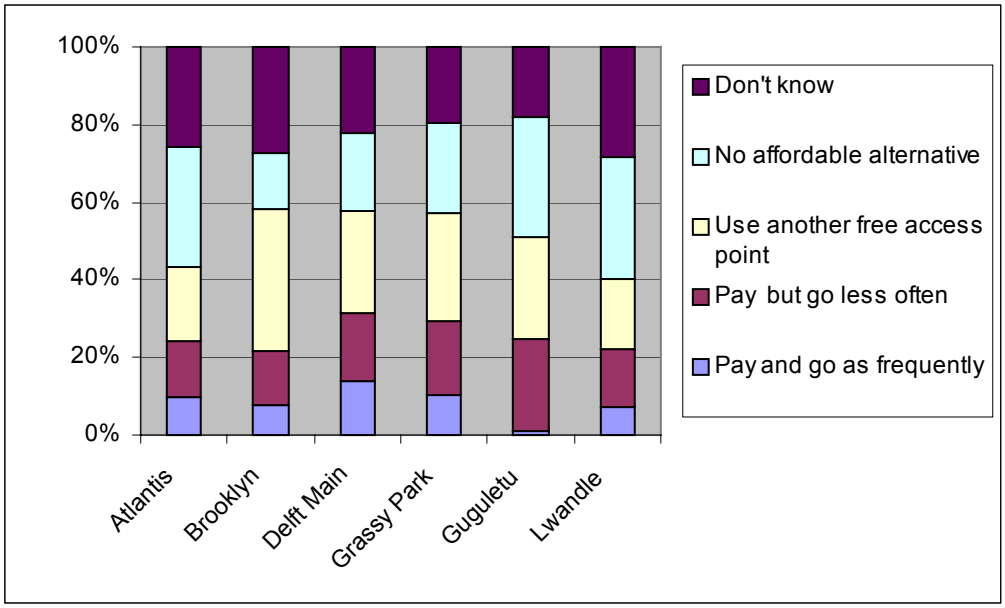
Most other comments, in both face-to-face and online surveys, were requests for added functionality (many users requested MS Office or compatible software) or additional hardware, particularly colour printers, CD-ROMs, scanners and speakers or headphones.

Relatively few users requested additional help or training, supporting the finding that skill levels are felt to be adequate.

4.5 General Points

Overall usage figures as well as requests for increased access suggest a high level of demand for the service offered by the Smart Cape Access Points. This is mirrored by the relative paucity of alternatives. Only 9% of online survey respondents said they could afford to use a paid-for service as frequently, and only 26% in total would pay at all. 24% of users had no affordable alternative and 26% said they would use another free access point, with most of these citing the homes of friends and family or educational institutions. Users in Brooklyn, Guguletu and Lwandle were particularly unwilling or unable to pay for access (Figure 4.12).

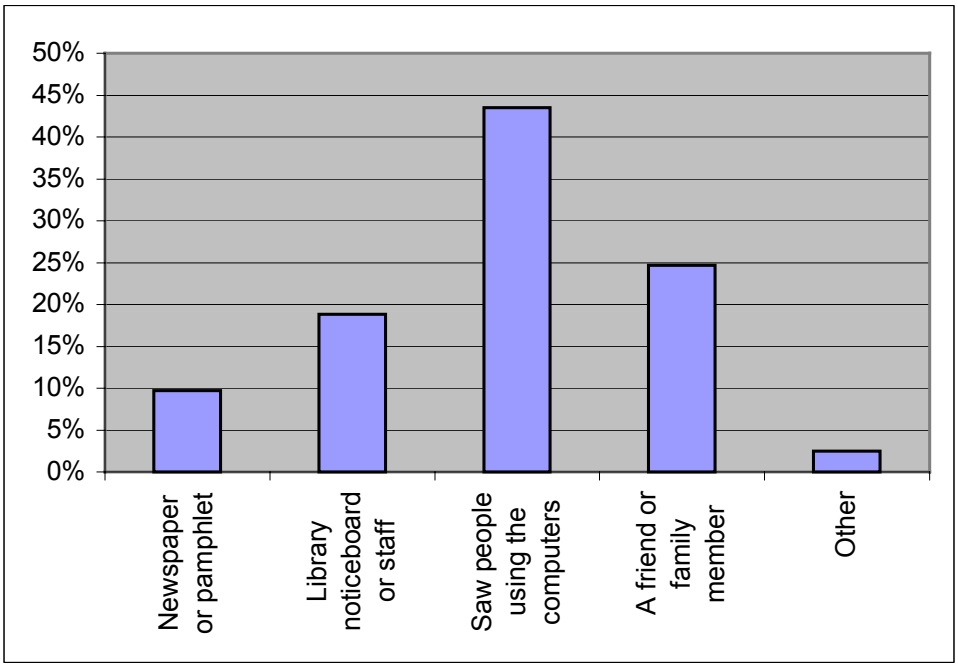
Figure 4.12: Alternatives to Smart Cape by Library



Source: Online Survey

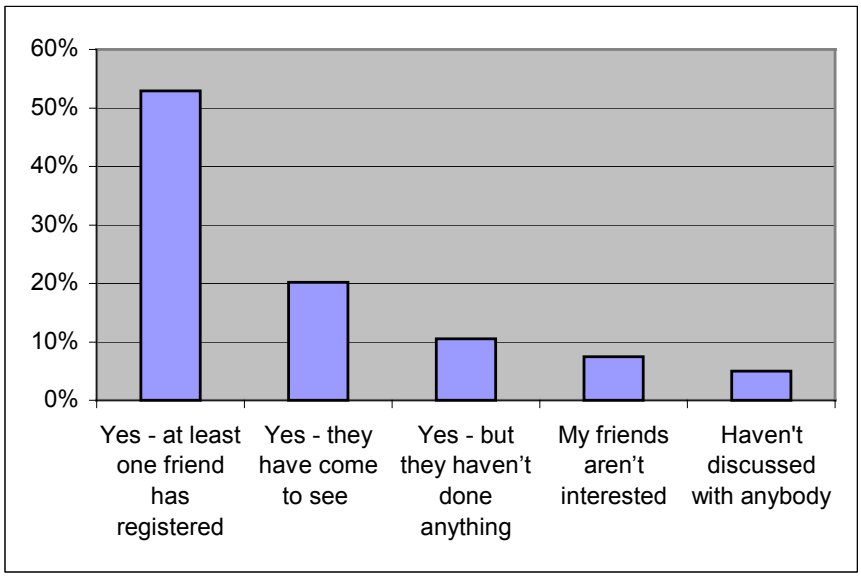
Finally, word of mouth appears to be a significant marketing channel: 25% of users interviewed had learned about Smart Cape from a friend or family member (Figure 4.13) and fully 53% had signed someone else up in turn (Figure 4.14).

Figure 4.13: How people found out about Smart Cape



Source: Face to face interviews. 3 “unspecified” responses excluded

Figure 4.14: Have users told friends and family about Smart Cape?

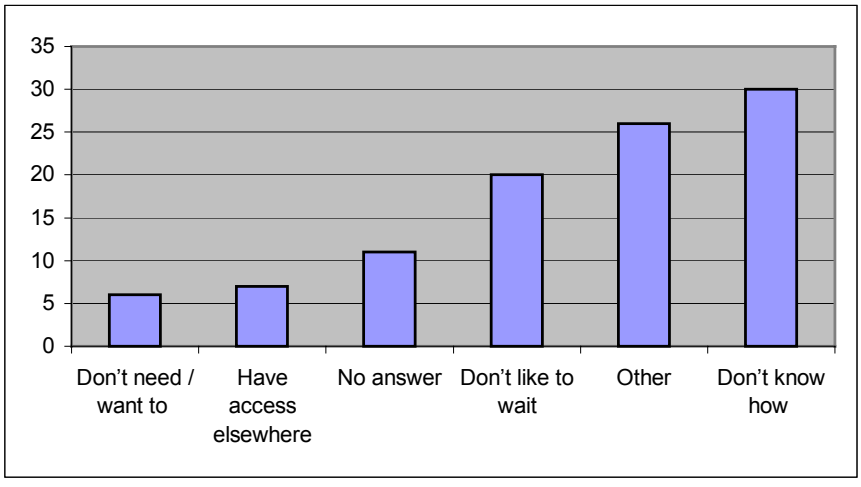


Source: Face to face interviews. 14 "unspecified" responses excluded

4.6 Non-user issues

In contrast to the relatively high level of basic computer skill reported by users, lack of skills was the most important barrier for non-users. 68 out of 100 non-users interviewed were aware of the existence of the Smart Cape Access Points, but 30 reported that their major reason for not using it was a lack of skills (Figure 4.15). Of the 26 who cited "other" reasons, 12 commented that there too few PCs or that they were too slow, and 6 cited concerns about privacy or functionality.

Figure 4.15: Reasons for not using Smart Cape



Source: Face to face interviews.

4.7 Overall User Evaluation

Summary Findings

- Most users are young males.
- Comments by users and librarians alike seem to indicate a difference in attitudes and requirements between the youth and older users, with the former more likely to use the access points for entertainment and experimentation.
- Users feel they have adequate levels of skill for their purposes.
- Most users have not found the system overly difficult to operate.
- Current users have expressed little demand for computer training.
- The speed of access (particularly log-on and internet access including email) is a major complaint.
- There is high demand for the service, as evidenced by calls for additional computers.
- Learning and internet/email are the most common uses of the system, followed by job- and school-related uses.
- Printer user among regular users is high and there is demand for colour printers.
- Increased confidence with computers and excitement about new opportunities are the most commonly cited benefits.
- Word of mouth is a significant marketing channel.
- Users are concerned about their privacy and the security of their passwords when using the computers.
- The single biggest reason for non-use is lack of skill.

Strengths, Weaknesses, Opportunities and Threats

Strengths

- The project meets user demand for basic computer and Internet access.
- Users have generally found their existing skills adequate to begin using the facilities.
- Users have gained confidence by using the facilities.
- Many users believe they are more employable as a result of the project.
- According to some comments, the project helps to keep the youth off the streets by providing them with something to do.

Weaknesses

- Users are frustrated by delays in the login process and slow Internet connectivity.
- Crowding around computers compromises privacy and security and will inhibit use of e-commerce or e-government transaction functionality.
- Older users are put off by rowdiness of the youth.

Opportunities

- Investigate the reasons for the skewed age and gender distribution of users and take steps to promote use by younger women and girls in particular.
- Link the Smart Cape Access Points more closely and explicitly to the Library Business Corners to promote business development and entrepreneurship.

Threats

- Older users or those who need access for business purposes might find themselves crowded out by the youth.

User Goals Achievement Rating by Researchers

Explicit goals	**Achievement Rating**
To provide free public access to computers and the Internet	**5**
To increase opportunities for members of disadvantaged communities	**4**
Web browsing and e-mail should involve no monetary cost to the user	**5**
User investment in the time to develop the ability to make basic use of the facilities provided should have immediate personal benefits	**3**
Implicit goals	
The public should use the access provided, i.e. computers should not stand idle	**5**
The hardware and software provided should meet user demand for basic services	**3**
Users should be satisfied with the service provided	**3**
The project should narrow the digital divide	**3**
Total	**31 / 40**

User comments

Appreciation

I am happy about the system, it's the best of its kind here in Guguletu

The programs are useful to open our businesses

It's a bit hard to believe at this stage that the service is totally free

This helps me manage my business better

Smart Cape is helping to cut crime and keep kids off the streets – so called gangsters now feel more empowered and are helping to renew their minds, gangsters are being reformed

This project is very great and we appreciate this guys keep it up

Special requests

We need at least a colour printer as we do a lot of assignments that need pictures

We want a colour printer so that we can print posters

You can put headphones so that we can listen to audio CDs e.g. maths or geography

Make a list of some fun websites like music, etc.

Problems

Speed is too slow, as sometimes you spend ten minutes logging in
Speed is the burning issue with these PCs
These are extremely slow PCs, I have waited more than 15 minutes for email to open and still nothing happened
Sometimes they have arguments about whose turn it is to use the PC
Bring 10 more computers
More computers are needed as one can wait for three hours just to use the next computer
The PCs must have a private location, when people are staring we can't write our letters
Children must be better controlled as they play too much
One PC should be set aside for people who want to do important things
A lot of people are computer literate and these programs are not up to date. When you apply for a job they normally want things in MS-Word format.
Not all sites are accessible, sometimes it tells you that need to have a 56k modem and Flash 5
I haven't told people yet as lot of people here are using these computers

What people would do without Smart Cape Access Points

I would have wasted my time and hung around on the street corners
I would sit with newspapers and physically walk around to look for a job. Email is saving me time and money on travelling, phone calls, postage, etc.
I wouldn't have done much, free service is a huge benefit as I cannot afford an internet café
I would have gone to play pool
I have a PC at home, but it can get a bit expensive for a pensioner

5. Technical: Findings and Interpretations

Smart Cape Technical Goals

The technical goals of the pilot project were:

Explicit Goals
- To prove that open source software is affordable, appropriate technology for a public service digital divide initiative.
- To keep the installation and maintenance costs of the hardware, software and network management as low as possible.
- To provide facilities in such a way as to readily attract sponsorship and donor support.
- To use technology solutions that allow technical management – including maintenance – to be performed remotely, requiring no technical input from the facility staff.

Implicit Goals
- To provide a robust, secure facility.
- To provide the best possible quality of technical service to users given the financial constraints.
- To develop a technology platform suitable for further rollout.

Evaluation Methodology

Three data-gathering methods were used:

- Face-to-face interviews were conducted with 9 technical and technical support staff including the business, system and network architects, the development team and the training facilitator.
- On-site inspections were performed at each library to assess the physical aspects of each location.
- A black-box assessment (using the system "as is") was conducted,. The black box assessment was augmented through observing users and library staff interacting with the system.

A five scale rating system was used during interviews and onsite inspections.

Additional data were extracted from:

- The project statistics database, which contains:
    - User account information including number of logins.
    - Application usage statistics.
    - Printer usage statistics.
- A summary report from the project help desk database.

Chapter Outline

- Section 5.1: Technical background
- Section 5.2: Summary of on-site inspection of facilities,
- Section 5.3: Assessment of technology choice, access control, support, maintainability, scalability and extensibility, network optimisation, user experience and functionality, physical security, recovery from failure and the impact on library staff.
- Section 5.4: Overall technical evaluation

5.1 Introduction: Technical Environment

The technical environment comprises two main elements:

1. The local area networks servicing the immediate library needs, including booting of the operating system and non WAN/internet functions such as loading and applications.

2. The wide area network, which provides connectivity to the central server and access to Internet services such as the web and email.

Each library LAN can function autonomously and independently from the central server if necessary, including performing limited local authentication in the event that the WAN or central server is down. This allows for continued use of the facilities, for everything but Internet functions, during a network outage.

5.1.1 Version 2 Considerations

Although the technical assessment has been limited to the functionality of Smart Cape Version 1, it has been noted that Version 2 was being finalised during the course of the research. This is particularly relevant to an assessment of the software developed and provided for users. Recommendations regarding technical shortfalls have been tempered by changes made in Version 2.

Version 2 contains the following improvements in particular:

- Upgrading of server;
- Upgrading of routers;
- Increasing bandwidth to 128Kb; and
- Functional changes.

5.2 Onsite inspection of facilities

	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Atlantis
Does the library have burglar bars?	5	5	5	5	5	4*
Does the library have a security system?	5	5	5	5	5	5
Does the library have a security guard?	1	5	1	1	5	4
Is there any other security?	1	1	1	1	1	1
Is the main entrance visible from the front desk?	5	5	5	5	5	5
Are all the SCAP machines visible from the front desk?	4	4	4	4	4	4
Are the SCAP machines bolted to the desk?	5	5	5	5	5	5
Are the SCAP monitors bolted to the desk?	1	1	1	1	1	1
Can the SCAP computers be opened?	4	4	4	4	4	4
Are the SCAP cables security tied?	5	5	5	5	5	5

	Brooklyn	Delft Main	Grassy Park	Guguletu	Lwandle	Atlantis
Are the SCAP plug points accessible?	4	5	4	4	4	5
Is the network router accessible to the library staff?	5	4	4	4	4	4
Is the network router accessible to the public?	5	5	4	5	5	5
Is the admin machine directly accessible to the public?	5	5	5	5	5	5
Is the printer directly accessible to the public?	5	4	5	5	4	4
Are all the SCAP monitors visible to each other?	5	3	5	5	5	3
Are all the SCAP machines in working order?	5	5	5	5	5	5
Is the admin machine in working order?	5	5	5	5	5	5
Is the printer in working order?	5	5	5	5	5	5
Is the network in working order?	5	5	5	5	5	5
Is the admin manual accessible?	5	1	1	1	1	1
Are user manuals accessible?	5	1	5	5	5	5
Library score (as %)	**86.3**	**80**	**80.9**	**81.8**	**84.5**	**81.8**

*1 = Poor, 5 = Excellent

5.3 Technical Assessment of Version 1 Functionality

5.3.1 Choice of technology

The project used open source technology, in particular the SUSE operating system. Two main issues arise: ***total cost of ownership*** over the lifetime of the project, and ***suitability of the technology*** to the project at hand.

Cost of ownership should not be assessed only in terms of capital outlay for licensing, but must also take into consideration the resources required to develop and maintain the system.

In general, the suitability of open source technology to a project depends on the complexity of the problem at hand and whether the problem space maps easily onto an existing solution. Open source provides developers with the opportunity to customise existing solutions and draw on the knowledge of an informal support community.

The choice to use open source for the Smart Cape project has been appropriate:

- Most of the components necessary to implement the system have been available within the open source community; and
- Any customisation has been implemented without any significant problems.
- The elimination of licence fees has contributed to the low cost of the project.

5.3.2 Access control

The Smart Cape environment has three system users: the library user, the librarian and the system administrator. Access control mechanisms have different implications for each of these user groups.

For the ***library user***, privacy is the foremost consideration. Users must be comfortable that logins are secure and inaccessible to fellow users. This is not always the case in the Smart Cape environment, due primarily to the physical layout of the library facilities. Physical privacy is almost impossible as there are invariably other users standing nearby.

While the authentication processes are adequate from a system perspective, the processes for ensuring that user time allocations are fair has proven inadequate in the current environment. The ability to subscribe multiple times and the sharing of accounts between users are particular problems. Steps have been taken to limit these in Version 2.

Librarian access is limited to a single workstation that is inaccessible to library users. Physical access is limited and system controls are adequate.

In the case of ***system administrators***, including developer access, no issues regarding access control have been noted. However, it is recommended that access control procedures be formalised. This is particularly important in the case of protocols regarding access to private user data.

In addition to the physical and system access controls***, internet access*** is further restricted by a firewalling policy intended to limit web browsing and protect the network from malicious intrusion. It should be noted, however, that although such a policy may limit access to socially unacceptable web content, it does not limit access to content through email, IRC and ICQ (and potentially other channels). Stronger informal and non-technical policing strategies may be necessary.

5.3.3 Support

Support was assessed in the context of reporting and managing problems. The provincial government help desk is used as the fault-gathering portal, and reports are then forwarded to the technical team for action. Apart from occasional technical hiccups, the process of responding to and correcting problems is good. The main concern stems from recurring onsite problems such as user queries and printer issues. In some cases it has proven difficult to determine whether queries are best resolved at source, or by the help desk. For example, librarians were to have managed printer queues and functionality was provided for this – but in many cases they preferred to refer queries to the help desk, due to a lack of skills as well as being overburdened with other duties. Using a community member or volunteer with a good understanding of the system from a user perspective as a first point of contact may resolve this problem.

5.3.4 Maintainability, scalability and extensibility

In general the code has met the requirements to deliver internet access and basic desktop applications to the library communities. The delivered systems are both simple and accessible in their implementation. However, it must be noted that the ultimate responsibility for code stability, scalability and extensibility sits with the original development team. Considering that this is a small, relatively inexperienced team and that any rollout is likely to happen on a large scale, outsourcing aspects of the project may prove beneficial.

5.3.5 Network optimisation

The concern most frequently raised by users is latency and bandwidth, specifically at login and for internet access (see Chapter 4).

The Smart Cape network architecture offers a single internet access point, providing some level of library autonomy and a cost effective strategy for expanding the network to new libraries. Data is delivered along a network chain consisting of:

- Local traffic on the LAN.
- Traffic on the WAN.
- Bandwidth provided by the internet service provider.

ISP and WAN bandwidth contribute the most to poor network performance and also to running costs in the event of a bandwidth increase. However, both use well established technologies and, budget permitting, scale easily to support higher demand.

LAN traffic represents the strongest and cheapest link on the network chain. Before expanding ISP or WAN bandwidth, optimal use of the LAN should be encouraged. This could be done by:

- Caching frequently accessed web content on the local server.
- Prioritising local over central server authentication where possible.
- Using a non-web based email client to avoid network overheads (see below).

5.3.5 User experience and functionality

The suitability of the SUSE GUI paradigm to users

Users have experiences some difficulties in grasping some aspects of the SUSE OS user interface – particularly disk access and in some cases translating knowledge of the MS Windows OS to SUSE. However, these problems could be resolved by appropriate user interface development.

Suitability of web-based email interface

Smart Cape provides only one option for retrieving email, a web-based mail system. While a webmail option would be a useful supplement to a dedicated email client, it is not suitable as the only access to email:

- Web mail introduces network traffic overhead, leading to significant delays and user frustration.
- Web interfaces have severe limitations in the case of email use: for example, the ability to create folders for email storage, and to retrieve old email messages, is limited.
- Email clients tend to be more intuitive for users.

It is recommended that a dedicated email application be used for email purposes.

User customisation

Smart Cape in its current form doesn't retain any user information apart from authentication information and usage statistics. In particular, the project does not provide for any of the following:

- Storing local application settings to enable user customisation.
- Temporary storage on the local server.
- Storing of personal web browsing data, such as cookies, favourites or browsing history, to enable a consistent user experience.
- Storing desktop settings.

The current model discards all data relating to user's interaction with an application at the end of a session. This limits the user experience and does not provide a holistic interaction, as is common on most operating systems.

Although the thin client model allows for new applications to be added relatively easily, the current model may inhibit the ability to provide applications that require local, persistable storage.

5.3.6 Physical security

Physical security for Smart Cape is primarily determined by:

- Existing security in the libraries.
- Physically securing user PCs.
- Making the PCs visible to the librarian and fellow users.

In each case the security was found to be good.

5.3.7 Recovery from failure

The central server manages user accounts and provides authentication services as well as internet services. Survey data indicates that the highest demand for the computer facilities is for internet related tasks. Failure of the central server or a network failure would suspend any internet access. A backup and recovery plan has been documented indicating that a significant failure on the central server would result in a second but under-configured server being used as a replacement. The current technical team would manage the recovery process. Although the recovery documentation is detailed in its approach, outsourcing backup and recovery to a partner specialising in this function which provide a higher level of confidence.

5.3.8 Technical impact on library and library staff

Librarian training
Technical staff, who deal with the overflow of queries that cannot be addressed at library level, felt that the librarian training had been ineffectual. This was reflected in the nature of questions being asked by library staff and the lack of user understanding of the library manual. With the exception of Brooklyn, the user manual was inaccessible (onsite inspection). Frustrations were expressed by the technical team with regards to having to respond to queries that could have been addressed by better training of librarians. Delegating a person at each site to assist in dealing with problems is considered to be a viable solution, at least in addressing basic problems. A member of the community with the appropriate skills or enthusiasm may well fit this requirement.

The limitations of a web interface for intuitive user interfaces
All customised user interfaces have been implemented using a web interface; however, a rich intuitive interface is more readily implemented using a windowed environment rather than scripted web pages. Alternatively employing the skills of an expert web interface designer and making more abundant use of web browser interface features may resolve this concern.

5.4 Overall Technical Evaluation

Summary Findings

- The choice to use open source technology has been appropriate.
- Physical privacy for users is almost impossible given current design of library space.
- Access control for librarians and system administrators is adequate; problems with user access control are to be addressed in Version 2.
- Technical support has been effective, but some issues are more appropriately resolved on site and this may require some additional training.
- Outsourcing some aspects of ongoing code development may help to ensure stability, scalability and extensibility.
- Network use has not been optimised: too much functionality can be accessed only via the WAN and ISP bandwidth, which are much slower and more expensive than the library LANs.
- The user interface presents some difficulties, as does the use of web-based email.
- Physical security of the system is good.
- The recovery and backup plan is adequate but could be improved.
- Additional specialised training of librarians would reduce pressure on the technical team.

Strengths, Weaknesses, Opportunities and Threats

Strengths

- The system is simple enough for users and librarians.
- Basic user needs for internet access and common applications are met.
- The project provides a suitable platform with no capital outlay for software licensing.
- The project demonstrates that open source software provides an affordable and appropriate platform for public access points.

Weaknesses

- The system architecture may be too simple to cater for extensibility around advanced functions such as user profiling.
- The architecture has not been volume tested.
- Use of the network has not been optimised, leading to compromised user experience because of the low bandwidth supply. The use of web-based email is a particular problem.
- The chosen user interface paradigm may not be appropriate.

Opportunities

- Optimise use of the library LANs to enhance the user experience by caching frequently accessed web content on the local server, prioritising local over central server authentication where possible.
- Use a non-web based email client to reduce network overheads.
- Outsource backup and recovery to a partner specialising in this function to provide a higher level of confidence.

Threats

- Volume on WAN.
- Cost to scale network infrastructure.
- Not addressing privacy and local storage.

Technical Goals Achievement Rating by Researchers

Explicit goals	**Achievement Rating / 5**
To prove that open source software is affordable, appropriate technology for a public service digital divide initiative	**5**
To keep the installation and maintenance costs of the hardware, software and network management as low as possible	**5**
To use technology solutions that allow technical management – including maintenance – to be performed remotely, requiring no technical input from the facility staff	**4**
Implicit goals	
To provide a robust, secure facility	**3**
To provide the best possible quality of technical service to users given the financial constraints	**3**
To develop a technology platform suitable for further rollout	**3**
Total	**23/30**

6. Real Access Evaluation

As discussed in Chapter 2, the Smart Cape project provides a unique opportunity to test the concept of "real access", proposed by bridges.org, against an implemented case study.

The concept of real access has been developed to assess the extent to which technologies are *usefully* available, not just physically present: "assessing physical access to telephones, computers, and the Internet is not sufficient to gauge whether people actually use ICT effectively or benefit from it" (2002: 4). Real access thus encompasses a range of dimensions:

1. **Physical Access:** Is technology available and physically accessible?
2. **Affordability**: Is technology affordable for people to use?
3. **Capacity**: Do people understand how to use technology and its potential uses?
4. **Relevant Content**: Is there locally relevant content available, especially in terms of language?
5. **Integration**: Is technology use a burden to people's lives or does it integrate into daily routines?
6. **Socio-cultural inequality**: Are people limited in their use of technology based on gender, race, or other socio-cultural factors?
7. **Appropriateness**: Is the technology that is available appropriate to local needs and conditions? What is the appropriate technology according how people need and want to put technology to use?
8. **Trust**: Do people have confidence in and understand the implications of the technology they use, for instance in terms of privacy, security, or cybercrime?
9. **Legal Environment**: Do laws and regulations limit technology use and what changes are needed to create an environment that fosters its use?
10. **Local Economics**: Is there a local economic environment favourable to technology use? Is technology part of local economic development? If not, what is needed to make it a part?
11. **Macro-economics**: Is technology use limited by the macro economic environment, for example, in terms of transparency, deregulation, investment, and labour issues?
12. **Political Will**: Is there political will for government to do what is needed to enable the integration of technology throughout society? Is there public support for government ICT policy?

The researchers have rated the Smart Cape project in terms of these criteria in the table overleaf (Table 6.1). The project scores particularly high in terms of physical access, affordability, local economics and political will, and rated 44 out of a possible 60 overall (73%). It should be noted that several of the factors rated are environmental factors that are not under the project's control: overall the score indicates that Smart Cape has done well to maximise real access in those areas where it can make a difference.

Table 6.1: Rating Smart Cape as Real Access to ICTs

Real Access to ICTs	Smart Cape Real Access Rating / 5	
Physical Access	Yes, at public libraries. HIGH	5
Affordability	Yes, provided free with minimal cost for printing. HIGH	5
Capacity	56% of interviewed users rated their existing skill levels as adequate or more than adequate; and nearly 40% of online respondents said they could do everything they wanted at first use. MEDIUM/HIGH	4
Relevant Content	Users may register and login to the system in either Afrikaans, English or Xhosa. Local content is available from the Smart Cape website albeit only in English. MEDIUM	3
Integration	Smart Cape Access Points are placed where people already go for information. MEDIUM	3
Socio-cultural inequality	Smart Cape is successfully providing access to those in poor or disadvantaged communities who have no other affordable access. The user profile is, however, heavily skewed in terms of gender and age: 79% of users interviewed are male and 77% are 24 or younger. MEDIUM	3
Appropriateness	The choice of an open source technology platform has enabled low-cost provision of the service. The applications provided enable most users to do most of what they wanted. There is, however, demand for applications that are more compatible with commonly-used packages such as MS Office. In addition, users were limited in the achievement of their goals by the speed of the network. MEDIUM	3
Trust	Privacy of personal information was not an issue for most users. However, the physical layout of the workstations has led to security risks in that usernames and passwords were reported as stolen by onlookers. LOW/MEDIUM	2
Legal Environment	An enabling national regulatory environment is in place. However, the cost and limited availability of high-speed bandwidth are barriers to low-income households and emergent entrepreneurs. This is the gap addressed by Smart Cape. MEDIUM	3
Local Economics	Local economic development policy and industry practice promote ICT usage. HIGH	5

Real Access to ICTs	Smart Cape Real Access Rating / 5	
Macro-economics	To a large degree, macro-economic issues are linked to the legal environment and the need to foster inbound investment, good political governance and a fluctuating Rand. The ICT industry is undergoing some financial pressure at present therefore impacting on opportunities for innovation, job creation, capacity building and empowerment. MEDIUM	3
Political Will	Yes, the Smart City Initiative – within which Smart Cape falls – has political buy-in within the City of Cape Town. Users, and library staff are supportive of the Smart Cape project. HIGH	5
Total score		44 / 60

7. Conclusions

As detailed in Chapter 1, the Smart Cape project had three primary goals:

1. To provide free public access to computers and the Internet;
2. To prove that open source software is affordable, appropriate technology for a public service digital divide initiative;
3. To increase opportunities for members of disadvantaged communities.

It is evident from the research conducted for this evaluation that the pilot project has succeeded on all three counts. In addition, a range of subsidiary goals, both explicit and implicit, have been met. The conclusions of the research are summarised in Table 7.1 below:

7.1 Project Goals Achievement Rating by Researchers

	MANAGEMENT	
Explicit goals	No technical input from library staff	**4**
	The physical facilities should be placed where people already go for information	**5**
Implicit goals	To minimise costs to the Directorate: Information Technology and the library services	**4**
	To minimise total impact on library staff	**4**
		17 / 20
	USERS	
Explicit goals	To provide free public access to computers and the Internet	**5**
	To increase opportunities for members of disadvantaged communities	**4**
	Web browsing and e-mail should involve no monetary cost to the user	**5**
	User investment in the time to develop the ability to make basic use of the facilities provided should have immediate personal benefits	**3**
Implicit goals	The public should use the access provided, i.e. computers should not stand idle	**5**
	The hardware and software provided should meet user demand for basic services	**3**
	Users should be satisfied with the service provided	**3**
	The project should narrow the digital divide	**3**
		31 / 40
	TECHNICAL	
Explicit goals	To prove that open source software is affordable, appropriate technology for a public service digital divide initiative	**5**
	To keep the installation and maintenance costs of the hardware, software and network management as low as possible	**5**
	To use technology solutions that allow technical management – including maintenance – to be performed remotely, requiring no technical input from the facility staff	**4**
Implicit goals	To provide a robust, secure facility	**3**
	To provide the best possible quality of technical service to users given the financial constraints	**3**
	To develop a technology platform suitable for further rollout	**3**
		23 / 30
	Total score	**71 / 90**

Strengths

- Community demand for access to computers and the Internet is being met.
- Centralised technical support has minimised impact on librarians.
- There is strong local community support.
- Reference librarians have benefited.
- Users have generally found their existing skills adequate to begin using the facilities
- Users have gained confidence
- Many users believe they are more employable
- The project helps to keep the youth off the streets
- The system is simple enough for users and librarians.
- The project provides a suitable platform with no capital outlay for software licensing.
- Open source software provides an affordable and appropriate platform for public access points.

Weaknesses

- Reliance on centralised technical support makes the project vulnerable to limited resources.
- The project has not been fully communicated and consulted with all stakeholders at individual library level.
- The presence of increased numbers of young, occasionally rowdy users creates management challenges.
- Users are frustrated by delays in the login process and slow Internet connectivity
- Crowding around computers compromises privacy and security
- Older users are put off by rowdiness of the youth.
- The system architecture may be too simple to cater for extensibility around advanced functions such as user profiling.
- The architecture has not been volume tested.
- Use of the network has not been optimised.
- The chosen user interface paradigm may not be appropriate.

Opportunities

- Explicitly link Smart Cape-related training to personal development for library staff
- Create a formal queue management system for all libraries
- Systematically investigate ways that Smart Cape can help to reduce library staff workload.
- Integrate Smart Cape with Library Business Corners.
- Investigate the reasons for the skewed age and gender distribution of users and take steps to promote use by younger women and girls in particular.
- Optimise use of the library LANs to enhance the user experience
- Use a non-web based email client to reduce network overheads.
- Outsource backup and recovery to a specialist to provide a higher level of confidence.

Threats

- Sustainable funding may not be found.
- Demand for computers could exceed capacity due to better marketing, cuts at schools and other institutions and increased population due to township development.
- Older users or those who need access for business purposes might find themselves crowded out or put off by the youth.
- Volume of traffic on WAN could compromise network speed and user experience, leading to frustration and abandonment.
- The cost of scaling the network infrastructure may be unaffordable.
- Failure to solve privacy concerns could lead to user abandonment.
- It is unclear where ownership of the project should rest in the future.
- Insufficient consultation by library administration with library managers and staff may lead to a lack of buy-in to the project.

The pilot project has successfully delivered computer and Internet access to citizens who have some existing skills but who cannot afford to pay for access. The available capacity is being fully used by these citizens, indicating a high level of demand.

Concluding Remarks and Recommendations

A number of decisions need to be made with regards to the expansion of the project:

1. Smart Cape's customers and owners must be clearly identified

There is some ambiguity about the primary beneficiaries of the Smart Cape project. On the one hand there is a simple intention to deliver the benefits of access to citizens; on the other hand there is an intention to provide a channel via which the Unicity's e-government objectives can be met.

The implications for the future of the project differ according to which of these beneficiary groups is primary. If citizens are the primary beneficiaries then rollout can proceed according to demand in individual libraries, eliminating most of the problems associated with increasing librarians' workload. In this case it is also appropriate that ownership of the project be taken over by the Social Development directorate.

On the other hand, if the project is primarily a means to realise e-government goals including the introduction of electronic communications between the council and citizens, then rollout will have to happen in every library, regardless of obstacles encountered. It is also unclear in this case where ownership should rest.

Continuing uncertainty about the ownership of the project poses a major threat to its future success.

2. The need to provide training must be carefully assessed

The pilot project as implemented provides no-cost, simple access to computers and the Internet to people who already have some computer literacy but who cannot afford to pay for access. There is little demand for additional training **of users**.

Data from interviews with non-users suggests that there is demand by ***potential*** users who lack the necessary skills and who would like to acquire them. The provision of training to these potential users is an option for the future. However, since the available capacity is already used, expanding the target market to include currently unskilled users would also require substantially expanding the capacity available.

With regard to training of **librarians**, there appears to be a gap around training for troubleshooting. Librarians themselves currently refer most troubleshooting queries to the technical team, who feel that many of these queries would be better dealt with at library level. However, librarians feel they are already over-burdened. This problem will become more urgent as the project expands.

3. The need to provide additional content must be carefully assessed

There was a widespread view among members of the project management team that "access is based on the assumption that there is useful content available" and accordingly that future plans for the project should include expanded content delivery by the council.

The benefits of access do not, however, in fact depend on the quality of content available. Neither librarians nor users expressed any demand for additional content from the council.

While it may be to the council's ultimate benefit to ensure that its own online communication is clear and adequate, this should arguably not be a goal of the Smart Cape project in particular.

> *"In countries with more advanced technology infrastructure, ICT has proven to be an enabler for an enormous variety of social, political and economic benefits, in ways that were not even imagined initially. The same can be true in Cape Town."* – bridges.org

The Smart Cape Project has narrowed the digital divide, provided opportunities for skilled but marginalised youth, enhanced skills and offered access to job opportunities.

Appendix A: List of Interviewees

A.1 Smart Cape Project Team, Technical Team and City of Cape Town officials

Mymoena Ismail
David Gretton
Mark Neville
Ernest Sass
Demetri Qually
Montgomery Oliver
Nirvesh Sooful
Alan Levin
Carmen Holtzman
Heinrich Heymann
Marlo Golding
Nathan Momsen

A.2 Library Services

Anne-Marie Cloete	Library Manager, Helderberg Administration
Lyn Stein	South Peninsula
Ninnie Steyn	Blaauwberg

Brooklyn

Gilbert Isaac	Head Librarian
2 additional interviewees	

Delft Main

Ingrid Neethling	Head Librarian
5 additional interviewees	

Grassy Park

Anita Shaw	Head Librarian
3 additional interviewees	

Gugulethu

Mrs T Mahali	Head Librarian
2 additional interviewees	

Hector Peterson, Lwandle

Beauty Kanuka	Acting Head Librarian
2 additional interviewees	

Westfleur, Atlantis

Francis Hearn	Head Librarian
2 additional interviewees	

A.3 Other Access Points

Mariette du Toit	Waterfront, Cape Town Tourism
Nomonde Lumka	Head Librarian, Khayelitsha Library
Thomas Black	The Shuttleworth Foundation

Appendix B: User questionnaires

B.1 Online Questionnaire

Smart Cape Access Pilot Project

Online User Questionnaire

Thank you for using the City of Cape Town's Smart Cape Access Points. We would like to know if this Access Point Project is providing benefits to you, and how it can be improved. This will help us decide if we should carry on providing this service, and if we should put computers in other libraries as well. Please take some time to fill in this questionnaire to help us. It should take you about seven minutes. You will still be able to have your whole 45 minute session after you have finished.

For each question, there are five potential answers. Please click on the answer that is *closest* to the truth for you.

Page One

1. How is the **waiting time** before there is a computer free for you to use?

o More than 20 minutes	o 10-20 minutes	o 5-10 minutes	o Less than 5 minutes	5 o I don't wait at all

2. If there was **no free computer access** at the libraries, what would you do?

o Use another free access point	o Pay at an internet café or community centre but go less often	o Pay and go as often as I do now	o There is no other free access and I can't afford to pay	o Don't know

3. Have you got **more skilled** at using computers by having this library access?

o I knew everything already	o Not sure	o I have learned one or two new things	o I have learned quite a lot	o I am definitely a lot more skilled now

Page Two

4. How often do you use the following **programs** on these computers:

Word Processor

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

Internet

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

Email

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

Spreadsheet

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

Presentation

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

ICQ Chat

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

IRC Chat

o Never	o Sometimes	o About half the time	o Most of the time	o Every time

Page Three

5. Here is a list of some **benefits** that other people have gained from using the free access. How much do these benefits apply to *you*?

I can keep in touch with friends and family via email

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I have made new friends on the Internet

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I feel more confident about using computers

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I am excited about the world of information I have discovered

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I think I will find a job more easily now

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I have saved money I used to spend on computer access

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I have learned more about other things I can find in the library

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

I have found information about job or business opportunities (for employed/unemployed users only)

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

My schoolwork has improved (for learners & students only)

o Definitely not true	o A little bit	o Not sure	o Definitely a benefit	o The biggest benefit

Page 4

6. Here is a list of some **obstacles** that people have faced in using the free access. How much do these apply to *you*?

The system is very slow

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

The system is too difficult to use

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

The help files are not very helpful

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

I can't type fast enough

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

There is too much in English on the Internet

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

There is too much noise or activity around the computers

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

The library times are very inconvenient for me

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

The sessions are too short

o Not a problem at all	o It has bothered me once or twice	o About half the time	o Quite often a problem	o Definitely a big problem

Page 5

7. How would you rate this public access service overall?

o Waste of time	o Could be better	o OK	o A good thing	o Fantastic

Thank you for answering these questions for us! Your answers will help us to make this service even better.

B.2 Face to Face User Questionnaire

Smart Cape Access Pilot Project

User Questionnaire: Face to face interviews

Thank you for using the City of Cape Town's Smart Cape Access Points. We would like to know if this Access Point Project is providing benefits to you, and how it can be improved. This will help us decide if we should put computers in other libraries as well.

Date: _____ **Library:** _____

Time: _____ **Interviewer:** _____

1. Please tell us **where you live:** _____

2. Please tell us your **age**:

Under 18	18-24	24-35	35-50	Over 50

3. Your **gender**:

Male	Female

4. Apart from the computers, **why** do you use the library? (you can choose more than one)

To study or find information	To read newspapers	To use photocopiers	To take out books or videos	Other

Comment:

_____

_____

5. Did you **join the library** specially for the computers?

Yes	No

6. How **often** do you use the computers?

Only used them once or twice	About once a month	About every two weeks	About once a week	Two or more times a week

7. How did you **find out** about the free computer access at this library?

Newspaper or pamphlet	Library noticeboard or staff	Saw people using the computers	A friend or family member	Other

Comment:

_____

8. Please tell us **what** you use this system for (you can choose more than one):

To find information on the Internet for school or college	
To type and/or print out work for school or college	
To find information on the Internet about jobs or business	
To type and/or print CVs or letters looking for jobs	
To meet new people and chat on the Internet	
To send email to friends and family	
To read newspapers on the Internet	
To look up local information on the Internet	
To surf the Internet for fun	
To prepare spreadsheets	
To prepare presentations	
To learn how to use the computer	

Anything else? (please specify):

_____

_____

_____

9. At **what time** is it most convenient for you to use the computers:

During the mornings	Over lunchtime	During the afternoons	During the evening	At weekends or during school holidays

10. Tell us about how **skilled** you are at using computers:

I already knew more than I needed to use this system	I knew enough to start using this system straight away	I have learned some new things	I had to look for some help at first	I still don't know enough to use the system properly

11. How **easy** are these computers to use?

I could do everything I wanted first time	At first I struggled but now I am used to it	Sometimes it takes a while to work things out	I have to ask for help sometimes	The system is really difficult and frustrating to use

Comment:

_____

_____

12. What do you do when you need **help**? (you can choose more than one)

Ask a librarian	Ask someone else using the computers	Read the help files on the computer	Search on the Internet	Try different things and work it out for myself

Comment:

_____

_____

13. How **useful** are the programs that are provided?

I can do everything I want plus some new things	I can do everything I want	There are some things I can't do, but not too many.	The programs are quite frustrating, I can't do the things I really want to.	These programs are a waste of time

Comment:

_____

_____

14. How did you feel about giving your **personal details** when you registered?

I thought they would use the information to make the system better	I didn't mind at all	I wondered what they would do with that information	I worried that someone would take note of what I do	It made me very uncomfortable or angry

15. Have you used the **printers**?

Yes	Want to, but not yet	Can't afford to	Don't need to	Didn't know about the printers.

16. Have you told your **friends** about this computer access?

Yes, and at least one friend has also registered	Yes, and they have come to see how it works	Yes, and they are interested but they haven't done anything	My friends aren't interested	I haven't discussed it with anybody

Comment:

_____

_____

17. If you didn't have this access to the Smart Cape computers, **where would you go**?
(get name of alternative if possible)

_____

_____

18. Do you have any more **comments**?

_____

_____

19. Do you have any **suggestions** for the future?

_____

_____

Thank you!

B.3 Non-user Questionnaire

Smart Cape Access Pilot Project

Non-user Questionnaire: Face to face interviews

Date: _____ **Library:** _____

Time: _____ **Interviewer:** _____

1. Please tell us **where you live:** _____

2. Please tell us your **age**:

Under 18	18-24	24-35	35-50	Over 50

3. Your **gender**:

Male	Female

4. Are you a **library member**?

Yes	No

5. If yes, **how long** have you been a member of the library?

Less than 3 months	3 months to a year	1 – 3 years	3 –5 years	More than 5 years

6. How would you **describe** yourself?

Learner or student	Unemployed or seeking work	Employed	Retired	Other

7. **Why** do you use the library? (you can choose more than one)

To study or find information	To read newspapers	To use photocopiers	To take out books or videos	Other

8. Do you know about the **free computer access** in this library?

Yes	No

9. If yes, how did you **find out** about the free computer access at this library?

Newspaper or pamphlet	Library noticeboard or staff	Saw people using the computers	A friend or family member	Other

10. Why have you **not used** the free computer access facilities?

Already have access elsewhere	Don't know how to use the computers	Don't need or want to use computers	Don't like to wait	Other

11. Comments or suggestions:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Appendix C: Research Process

The Smart Cape Access Project evaluation was conducted during October to December 2002 and incorporated the following phases:

- Phase 1 – Finalisation of project brief (week 1)
- Phase 2 – Finalisation of research design and data collection tools (week 2)
- Phase 3 – Data collection (weeks 3 to 7)
- Phase 4 – Data analysis and report writing (weeks 7 to 11)
- Phase 5 – Presentation of findings (week 12)

There were six project areas:

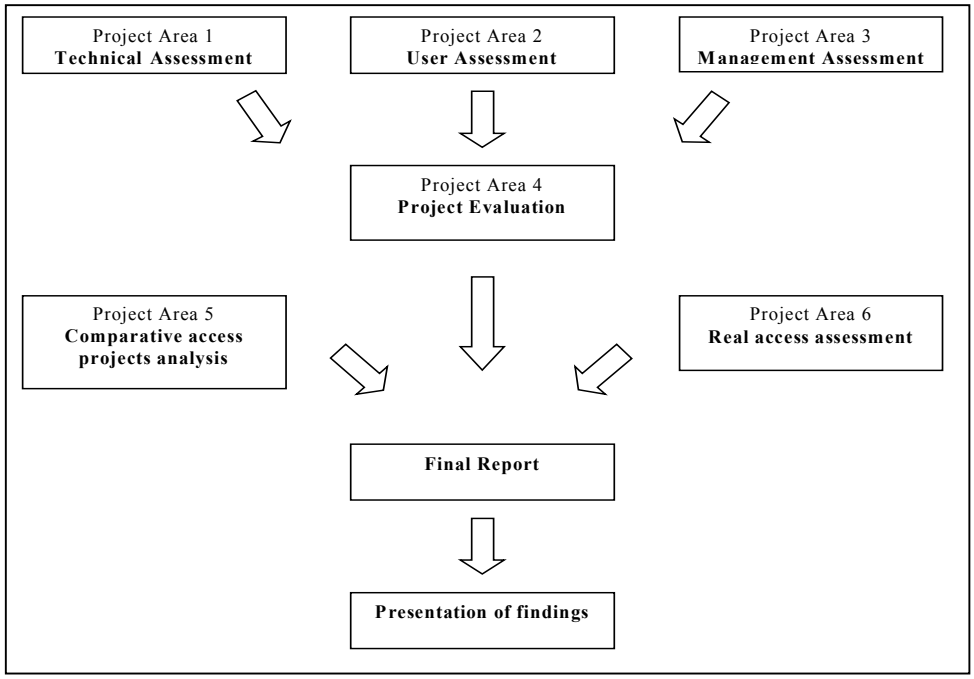
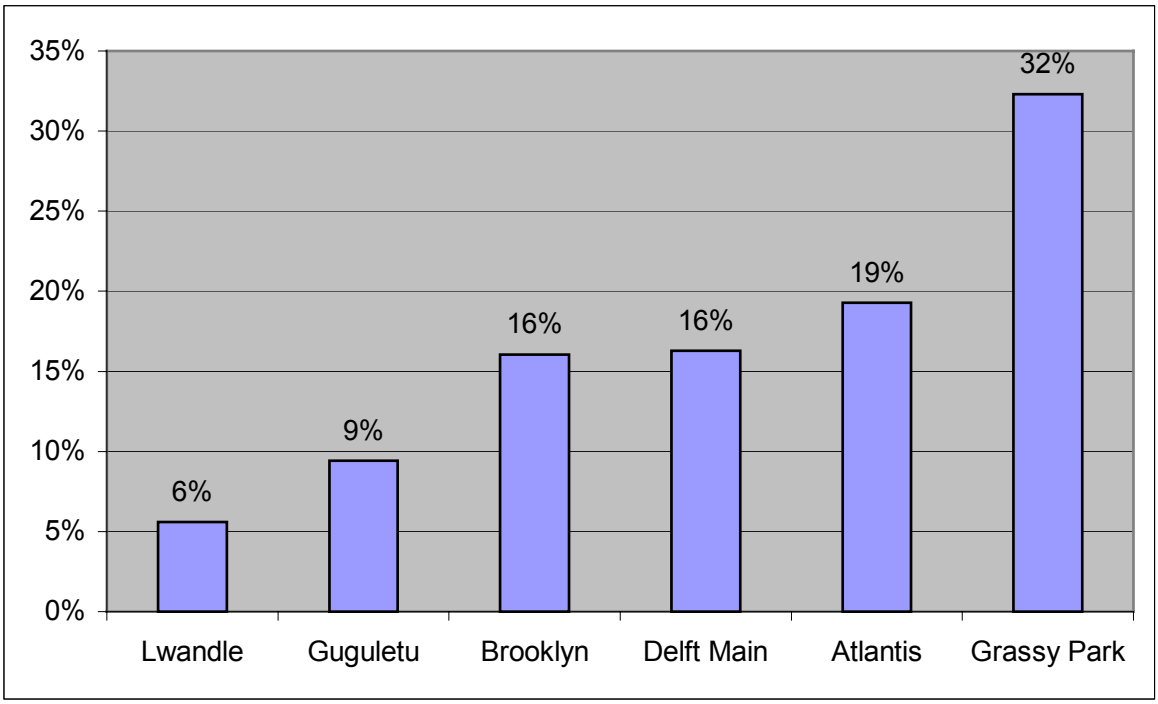


Figure 1: Project Work plan

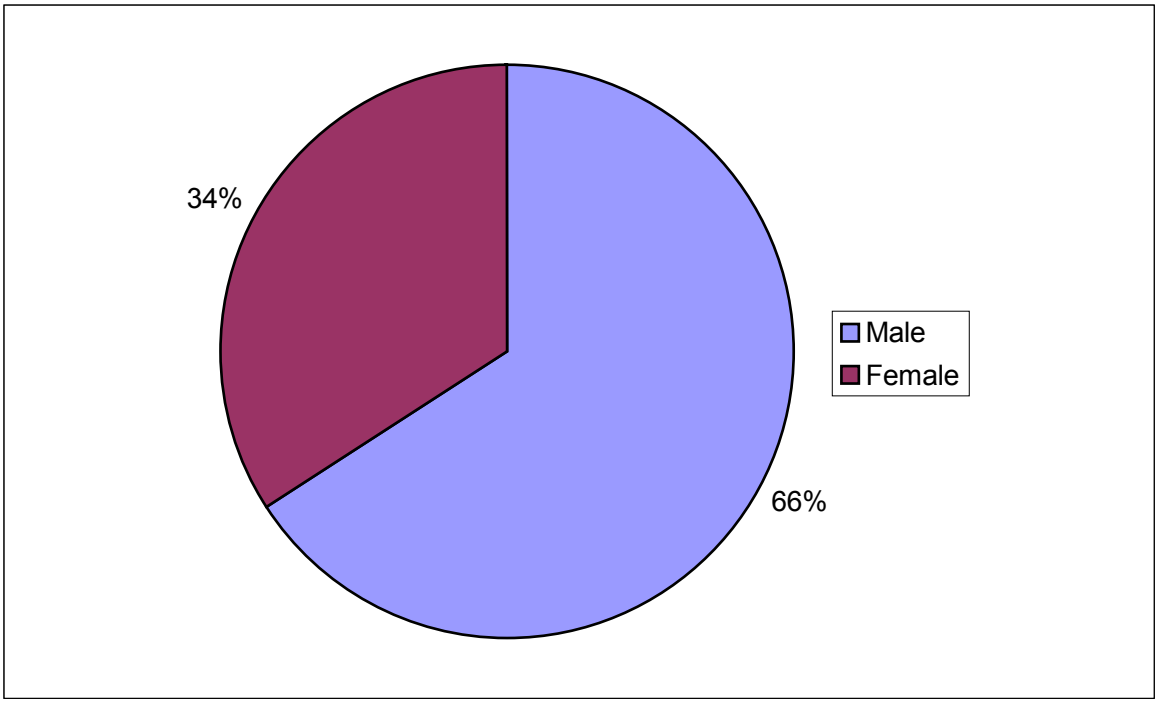
Appendix D: Additional User Data

1. User Distribution per Library: All Users



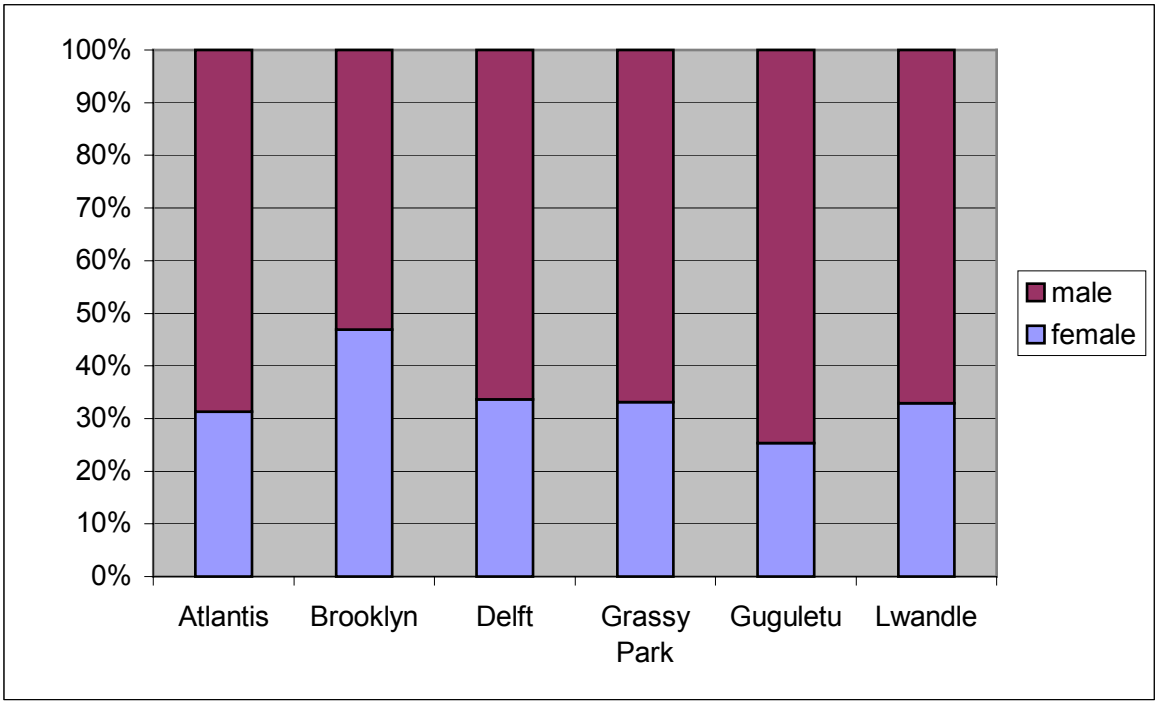
Source: System Data

2. User Gender Distribution: All Users



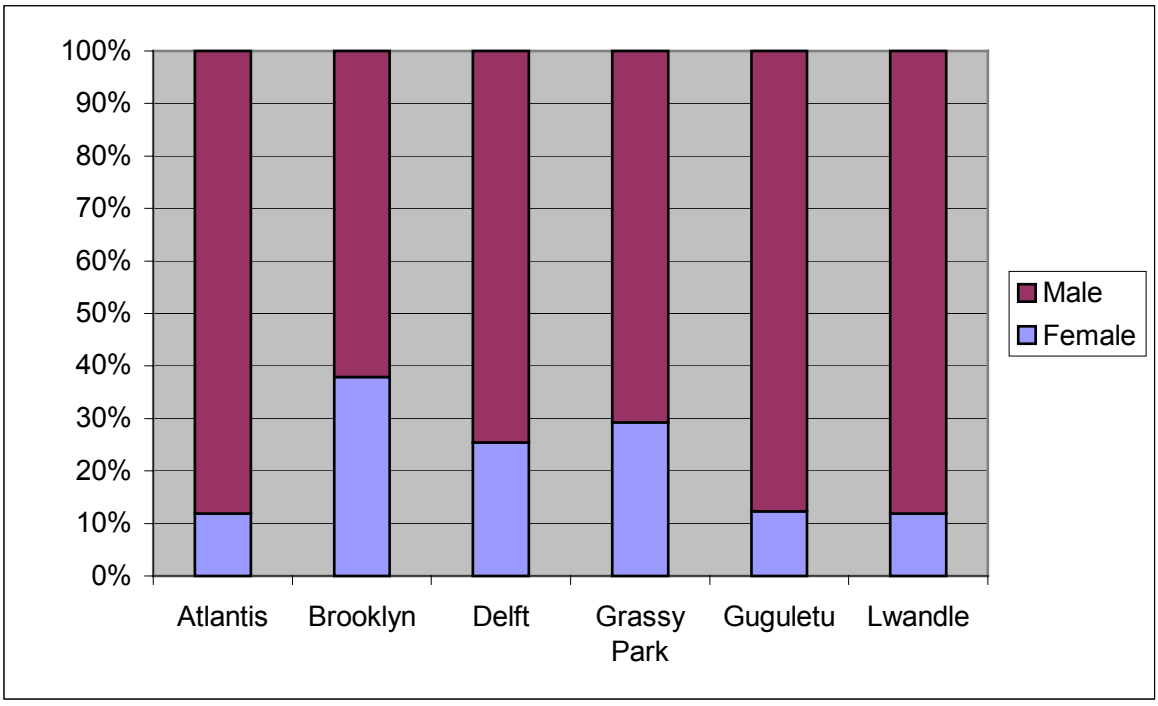
Source: System Data

3. User Gender Distribution by Library: All Users



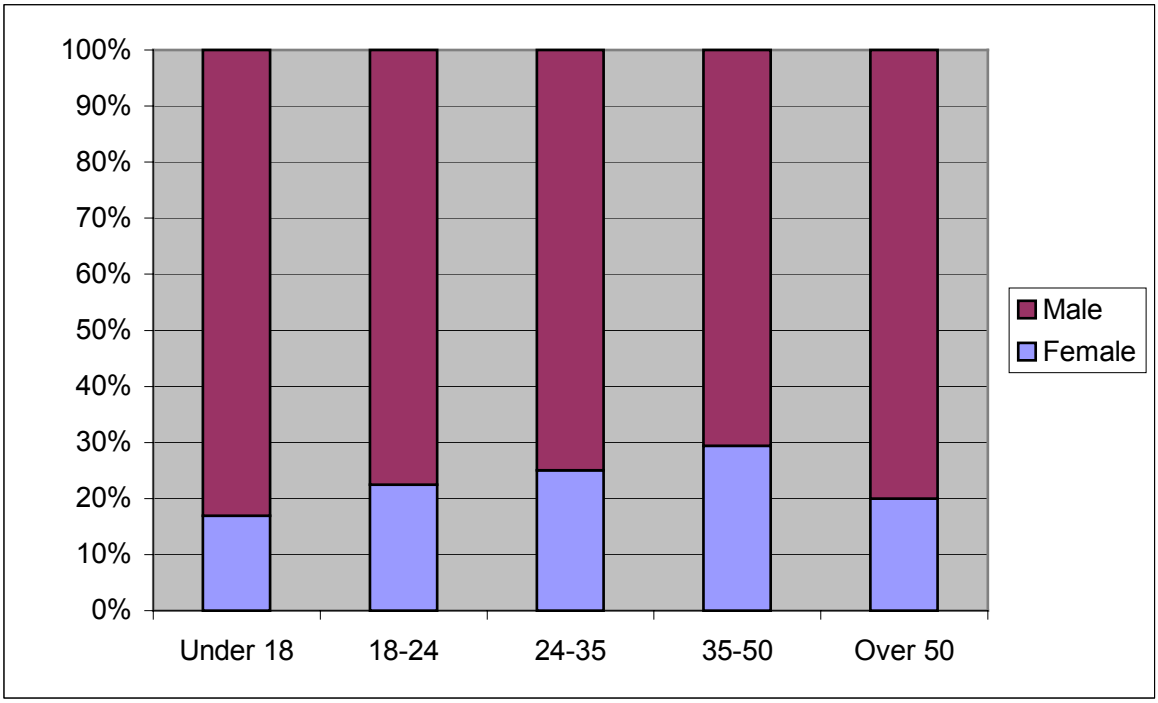
Source: System data

4. User Gender Distribution by Library: Interviews



Source: Face to face interviews

5. User Gender Distribution per Age Group: Interviews



Source: Face to face interviews.

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