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Drive public innovation by reigniting civil society

NOVEMBER 2018

How not to trip up on the digital highway: Lessons from social innovators developing e-platforms.

Almost every household in South Africa has access to a mobile phone[1]. This has transformed the face of social development, with many non-governmental organisations (NGOs) embracing mobile technology to connect with their target audiences. In this learning brief, we explore the diverse opportunities – but also challenges – that come with using mobile platforms to drive social change.

Mapping out the mobile space in SA: Mobi sites, mobile apps and bypassing the high cost of data.

While both mobile sites and apps are accessed via mobile handsets, there are key differences between them. Mobi sites are websites that have been specially designed for use and viewing on a mobile phone, and like websites, they can display text, data, images, and video[2]. Apps are applications that are downloaded and installed onto a mobile device, rather than being rendered in a browser like a mobi site; they can pull content and data from the Internet, like a website, but they can also download content so that it can be accessed without an Internet connection[3]. (See appendix for a detailed breakdown of the apps and mobi sites discussed in this brief.)

Mobi sites are not necessarily better than apps, and vice versa – it depends on various factors, such as the purpose of the platform, the nature of content, and the depth and frequency of use i.e. how much and how often the platform is to be used.

Andrew Rudge, CEO of The Reach Trust, a developer of innovative and cost-effective mobile solutions, shares: "Our data has shown that in South Africa, offering an app that runs offline gets much more sustained use than a mobi site. It's not

just about the cost; half the time you don't have good signal, so it can be a very frustrating experience to try and access a service that needs to be online the whole time. If you go into rural areas, connectivity is even more problematic."

In South Africa, where data remains expensive, NGOs have long strived to make their platforms cheaply accessible by finding ways to circumvent the high cost of data. For instance, Andy du Plessis, managing director of FoodForward SA, an NGO that secures quality surplus food for those in need, says: "We were acutely aware of high data costs when we developed our [FoodShare] solution that uses virtual technology to connect retail stores and food outlets with public benefit organisations that redistribute surplus food. Firstly, we ensured that the platform costs the user nothing; secondly, that the costs were reverse billed to us; and thirdly, that we got preferential rates from the USSD[4] provider."

Andrew Tlou, director of business development at Jobstarter, a digital work-readiness learning and information platform for entry-level jobseekers and opportunity providers, points

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1   According to GSMA's 'The Mobile Economy 2017 report for Sub-Saharan Africa', South Africa has a unique mobile penetration rate of 68%, with 37.5 million unique mobile subscribers in the country. (My Broadband. 'How many unique mobile subscribers South Africa has'. 11 July 2017. Available at: https://mybroadband.co.za/news/cellular219270-how-many-unique-mobile-subscribers-south-africa-has.html

2   Human Service Solutions. 'Mobile Website vs. Mobile App: Which is Best for Your Organization'. Available at: https://www.hswsolutions.com/services/mobile-web-development/mobile-website-vs-apps/

3   Ibid.

4   USSD, or Unstructured Supplementary Service Data, is a communication technology that allows a message exchange between a mobile device and the network's operating computer.

out that a significant number of their users employ the Opera Mini Browser to help them access the site at a low cost (Opera Mini compresses the amount of data used). A number of learning mobile interventions, such as dig-it and MathsUp, often use airtime and data rewards to incentivise users to complete challenges, quizzes, etc. on their platforms.

The reality is that most people already consume data – they are just selective about what they use their data for. If a product doesn't resonate with them, they are not going to 'spend' data on it. So, how can users be encouraged to spend their precious data on a social development platform? Here we share 10 lessons from South African NGOs that are harnessing the power of mobile technology, with a few bumps along way...

Top 10 tips for mobile platform development

1. Develop your platform in conjunction with users
2. Test, evaluate, sustain
3. Balance content and technology
4. Repurpose technology
5. Find the right partner
6. Be mindful of tech illiteracy
7. Get the word out
8. Explore free models
9. Make it a habit
10. Ask yourself, "Who is holding the phone?"

FEATURE- VERSUS SMARTPHONES

While feature phones used to dominate the market in South Africa – and continue to do so in sub-Saharan Africa with 62.2% of the region's overall mobile market share – the increasing affordability of low-end smartphones has seen this type of handset browser, in South Africa an estimated "51% own a smartphone that can access the internet and apps, making it the most common device" in the country.*

So what's the difference between feature and smartphones? Feature phones are the lowest entry phones available in South Africa and provide basic services; they can make and receive calls, send text messages and provide some of the advanced features found on a smartphone, such as Internet access. However, feature phones don't usually support add-on applications (apps), may have less storage capacity and lack advanced multi-media and Internet connectivity options.

"All users would like a smartphone. Barriers are the cost of the device and of the data required to operate a smartphone," observes Lauren Kotze, strategic lead for maternal health and Early Childhood Development (ECD) at Praekelt.org, an NGO working on mobile solutions to social problems.

* *Silver, L & Johnson, C. 2018. 'Majorities in subSaharan Africa own mobile phones, but smartphone adoption is modest'. Pew Research Centre. October 9, 2018. Available at: http://www.pewglobal.org/2018/10/09/majorities-in-sub-saharan africa-own-mobile-phones-but-smartphone- adoption-is-modest/*

1. Develop your platform together with users

To effect change, it is essential that you put yourself in the shoes of your users and purposefully create a feedback loop that draws information from initial users to streamline the platform. Du Plessis says that while it took nearly a year to scope the specification for FoodShare, several adjustments had to be made to the first beta version because they had not thought through all the implications, connections and needs of the various users. He explains: "When we initially developed FoodShare, we had six steps with long explanations before the user completed all the information that we needed to receive for the inventory. After speaking with users, we realised that it could be made simpler. We now have just three steps to follow."

Marcha Bekker, business development lead at Praekelt.org, adds: "Whenever you design or build any new piece of technology, start with the end user in mind. Get out of the office, speak to them and understand what kind of access to technology they have, how they use it, and what their barriers are to accessing information. Then take that into a co-design session; once the prototype is developed go back to the users to test it. See what they like and don't like, where they struggle and how they actually engage with the platform. Then build a basic product with just enough features to satisfy early users and to provide feedback for future development."

When designing platforms to support programme implementation, for example, to collect data on programme participation or service utilisation, the project should be designed so that those who collect the data – most likely be the project implementers – are first in line to receive reports from the system. Too often programme implementers are the last to get feedback that they could use to improve the quality of programmes.

> " "We are a mobile technology organisation so we love to be innovative and work on the latest tech. But you need to be very aware of the target audience and make sure that you are using the channel that the user has in their hand right now."
>
> Lauren Kotze, strategic lead for maternal health & ECD, Praekelt.org

2. Test, evaluate, sustain

It's common to test a prototype before launch, but organisations often don't use effective methods to do so. Mufaro Magidi, operations manager for Mosaic, an NGO focused on preventing women and child abuse in disadvantaged communities, notes: "We didn't test our apps (see appendix) enough and we didn't test it with the right people. We thought we had the buy-in of the community because we looked at audiences and community members familiar with Mosaic. When we tried to sell the apps to a new audience, it fell through. The test has to be done on a raw audience and we had to learn the hard way."

Erika Wiese, head of portfolio management at Innovation Edge, an innovation catalyst and impact-first investor that has several investments focused on using mobile interventions to bring about change, says evaluation is crucial when piloting an app. However, she thinks that traditional evaluation methods are not necessarily appropriate and need to be adapted to cater for the iterative design[5] cycles used to develop these products. She believes it is also important to develop a strategy for sustainability and scale right from the start: "Many apps get developed without a clear pathway to scale and consideration of who ultimately will cover the maintenance, hosting and enhancement costs to sustain and/or grow the app."

This is Somdake Vuyiswa. She lived in a remote area of the Eastern Cape called Amajingqi. As a Nal'ibali Story Sparker (literacy mentor) she runs reading clubs for children who would otherwise have very little opportunity to be exposed to books and be supported to love reading. Via her cell phone, she and everyone else in Amajingqi, can access nalibali.mobi, a mobile platform developed by the Nal'ibali reading-for-enjoyment campaign to make available a library of children's stories in various South African languages, as well as other resources for adults who are committed to cultivating literacy skills in children – skills that are critical for building a foundation for learning.

3. Balance content and tech

When the focus is primarily on technology, the integrity of content often suffers – both are equally important when it comes to developing an effective platform. Mignon Hardie, executive director of FunDza Literacy Trust, an organisation that delivers reading content to young people via their mobile phones as one of their strategies to promote a culture of reading in South Africa[6], says: "If you don't have the right content to put into that technology, it is never going to work. There were other apps using public domain content, such as old Shakespeare texts. But they didn't have that same appeal, because it wasn't necessarily what was going to hook people into reading. For us, the technology and content creation process works hand-in-hand."

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5   Iterative design is a continuous and cyclical process of prototyping, testing, analysing, and refining a product. Based on the results of testing the most recent iteration, or version, of a design (usually through user research), modifications are made. A new prototype is then made and the process begins all over again until the best possible design is found.

6   There are three different ways that you can access content from FunDza.mobi: via FunDza's responsive website, via its Android app or via the FunDza app on FreeBasics.com (available free of data charges to Cell C in South Africa and other mobile partners in the rest of the world).

4. Repurpose technology

The biggest cost in technology development is time (specifically, the time spent on design and software engineering). With this in mind, The Reach Trust builds apps in a modular way so they can repurpose certain elements. For example, the first version of their CareUp app was made available in three languages (English, Afrikaans and isiXhosa) and to change between them took about five steps. When MathsUp was developed, language translation was enabled with just one touch. Rudge explains: "It sounds simple, but there's a lot of complexity that goes on in the background to enable a simple switch between languages. Once we built it for MathsUp, we could then apply the same feature to CareUp. Now every app we produce that is available in multiple languages utilises the same underlying technology."

This concept evolved into the ECD Launchpad, a platform underpinned by the idea that rather than inventing the wheel every time a new app is needed, different apps can be produced at a fraction of the cost (and time) using modular architecture already developed. The apps, though connected by a shared infrastructure, can be customised to set them apart and make them independent, and by forming part of one ecosystem, organisations can enjoy several benefits such as the ability to share ideas quickly and track users over time.[7]

5. Find the right partner

Many NGOs don't have the internal engineering capacity to build a platform and struggle to find the right partner. FunDza's Hardie explains: "It's difficult to figure out who to work with and how to ensure you get the solutions you need – and at the right price – particularly when you're working in a specialist field and your own understanding of the work/technology required is limited."

Surf therapy organisation Waves For Change's (W4C's) CoachAssist app faced similar challenges. Founder Tim Conibear recalls: "Finding Cape Town developers was really hard and took a long time. We weren't sure of the best code to use, which code scales most effectively, and also became aware we needed the development of an app as well as a back-end management system – two different skill sets. We searched for about six months and fortunately found two good development teams who saw the potential of our app, but also had experience developing apps with similar goals, so the concept of social impact was familiar to them."

FoodForward SA told their service provider they were a non-profit and were granted a preferential rate. "We also made sure that we own the source code[8], so we are not beholden to only one developer," states du Plessis. Mosaic sent out calls to at least five contractors for each of their apps, which allowed them to negotiate better pricing. Kotze says dig-it was built externally and acknowledges that this was sometimes a painful process. As a result, the bulk of their engineering is now done in-house. "This allows us to do everything from initial research, to service design and engineering all within one small hyper team, working very closely and collaboratively together, and with our users, and this certainly delivers better results."

How can NGOs ensure their IP (intellectual property) is not subsequently used for profit? Rudge of The Reach Trust advises: "Be specific about the transfer of IP to the funder/NGO and ensure that code is committed to GitHub[9] so other organisations can benefit and build upon it."

Hardie believes custom solutions to specific problems may have limited application in commercial environments, so the risk of a for-profit IT company re-using the entire platform for commercial gain is probably low. However, they may be able to re-use certain parts. She offers a possible solution: "Non-profits should seek equity investment in for-profit IT concerns so that their investments for social solutions can be offset against future profits by the IT concern."

6. Be mindful of tech illiteracy

Many users don't know how to download an app or are afraid of 'hidden' costs associated with doing so. Innovation Edge has found that for their target market, continuous upgrades negatively affect user retention. "Rather try and create content that can be downloaded once-off, within a free wifi zone, for example," advises Wiese. According to The Reach Trust, Internet cafes in small towns and townships in the Western and Eastern Cape charge R10 to download and set-up WhatsApp for a client. This means people who want WhatsApp, but don't have the technical ability, pay to get what is essentially a free service.

Failure to recognise icons can also be an issue. During a pilot of the dig-it mobi maths site, it was revealed that learners didn't know what the 'burger menu' (the three horizontal lines used to signify the menu bar) meant because they were not web-literate enough. "Assumptions are dangerous and you must test these things; we ended up taking away lots of symbols and icons, and just using words," explains Praekelt's Kotze.

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7   Innovation Edge funded and co-developed the ECD Launchpad and the apps built on it: MathsUp, CareUp and The Wordworks App.

8   The form in which a computer program is originally written before it is changed into computer language. Access to source code allows modification of a programme.

9   GitHub is a web-based version-control and collaboration platform for software developers. It is used to store the source code for a project and show the history of changes to the code.

7. Get the word out

In South Africa, there is still a low demand for services via digital platforms. You can have the best app in the world, but if people don't know how and why they should be using it, take-up is going to be minimal. This presents a demand problem that needs to be solved through awareness and marketing. All participants in this learning brief said they would have like to have invested more in marketing "to get the word out". However, marketing is expensive and NGOs tend to have limited budgets. To ensure some awareness was generated around their apps during the activation phase, most of the organisations included in this brief held workshops to publicise their apps, some taking modems with them so their target audience could download the app for free.

8. Explore free models

A free-to-end-user model for data could prompt more people in under-resourced communities to sign up to mobile interventions. Zero-rating is one solution. A site is zero-rated if networks do not charge a consumer for using data to access it. Examples are Facebook's Free Basics and Google's Free Zone. Rudge from The Reach Trust explains that zero-rating an Android app is complex, however, because you need to download Free Zone from the Google Play Store (which is not zero-rated). An effective method is to get the app onto the user's phone in the cheapest way possible (at a free wifi spot or using a free file transfer app, such as SHAREit) and then fetch content from a zero-rated mobi site.

9. Make it a habit

The main advantage of mobile interventions is the vast reach they can provide. But to make a major impact, you don't just have to grab attention, you have to keep it. That can be tough, in 2017 the average mobile app retention rate across all industries was only 20% after three months[10].

There needs to be a reason for users to keep coming back, "especially in social impact type projects because it is not often that the user has gone out looking for it to begin with. It is targeted at them," warns Praekelt's Kotze. A simple, hassle-free and fun user experience encourages return visits; incentives have also proved to be effective (for example, on the dig-it mobi site, learners were given three maths questions each day from Monday to Friday; if they got 60% right, they were given an airtime reward the following week).

A useful way of thinking of users is the 'skimmer, dipper and diver' model[11], which Rudge says The Reach Trust has used in its own thinking around audience engagement:

› **The 'skimmer':** downloads the app or opens the website, has a quick look and then moves on; this type constitutes 90% of users.

› **The 'dipper':** sits on the surface of the water and sticks his/her head down now and again. This user typically spends two to five minutes on the app/site; this type constitutes 9% of users.

› **The 'diver':** goes down deep into the platform and has a good exploratory look at the app/site; this type constitutes just 1% of users.

The conclusion is that if you want your intervention to have traction, you need to produce an app or mobi site that has depth, but is easy and intuitive enough for a skimmer to use. The Reach Trust believes most people are skimmers rather than divers, and thus the ideal delivery methodology to hook and keep users is through regular but bite-sized interactions.

10   Perro, J. 2018. Mobile Apps: What's A Good Retention Rate? Localytics: Access at: http://info.localytics.com/blog/mobile-apps-whats-a-good-retention-rate

11   Hassler-Forest, D. 2016. 'Skimmers, dippers, and divers: Campfire's Steve Coulson on transmedia marketing and audience participation'. Participations: Journal of Audience & Reception Studies. Vol 13, Issue 1. Available at: http://www.participations.org/Volume%2013/Issue%201/S3/11.pdf

10. Ask yourself, "Who is holding the phone?"

If people are struggling just to survive in impoverished circumstances, will they have an interest in using apps or mobi sites, even those that are for social good? Magidi of Mosaic says: "We would develop the apps again, but for a different audience, for example the South African Police Service or the Department of Health that have access to many people. Our app is used for data capturing and tracking, and our experience is that communities are not ready or capacitated enough for this yet."

Sometimes, however, there is no requirement for the beneficiary of a mobi site or app to have a mobile phone of their own. With W4C's CoachAssist app, for example, the coach has a smartphone so that she/he can take a photo at the beginning and end of the session to log attendance. MathsUp only expects teachers to have access to a mobile phone so they can download Maths learning materials.

Other platforms use a combination of feature phones and computers. FoodForward SA says beneficiary organisations typically use a mobile phone when making collections at a store. Du Plessis expands: "We use USSD tech so there are no costs to the user, and no smartphones are required. When they log into FoodShare to record tonnage or review/update information, using a computer is better, because of the size of the screen. Donors typically use their computers for ease of use."

In conclusion: Opportunities and challenges

Mobile interventions save organisations and users time and money, but they can also generate income. FoodShare allows for another income stream because food donors pay to use the system. Similarly, CoachAssist is licensed and this allows W4C to generate a small revenue. W4C's Conibear adds that one of the most surprising outcomes of CoachAssist is that "it has challenged the way we look at NGOs because it means that many of the functions performed by management are slowly starting to be automated. It does challenge our thinking around how we structure our organisation."
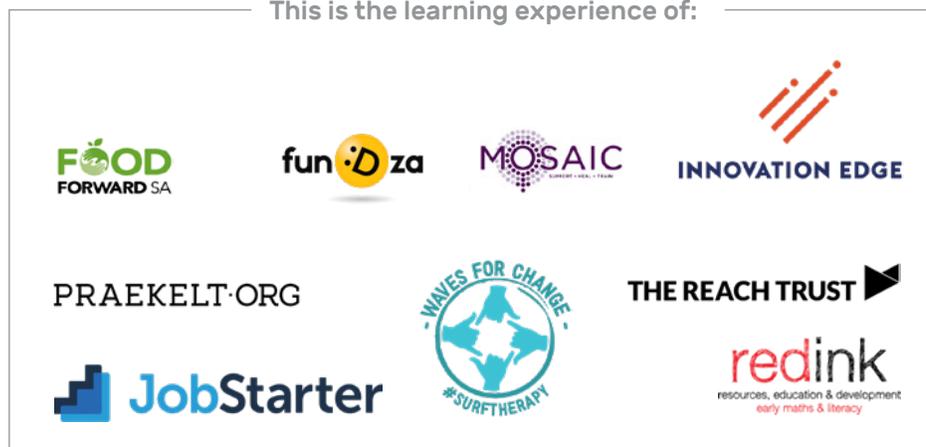
It's a challenge keeping up with the breakneck speed of technology and subsequent fragmentation of the market. As current trends already show, more users will adopt smartphones as they become cheaper, but if your platform is designed only for feature phones, it will look clunky on a new (albeit low-end) smartphone.

The Reach Trust advocates that social innovators move with the market, but also try to change people's perception of what they can use their phones for. Rudge elaborates: "The more people realise that phones are very powerful in terms of accessing educational content and all sorts of other things, the more prepared they are to invest in newer phones. It doesn't have to be a very high-end phone, but should stay with the market."

This applies also to the look and feel of the platform. Just because NGO platforms are often built on a limited budget, doesn't mean they should look or read as low-budget; they should be aspirational and fun to use. We are firmly set on the digital trajectory and perhaps the greatest advantage of mobile technology is that it challenges the status quo by giving more opportunities to those who have so few.

*Learning brief by **Daniella Horwitz**.*

This is the learning experience of:

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JobStarter

redink
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Appendix of digital platforms

Name of digital platform:	**MathsUp**
Type of platform:	Android app
Developed by:	The Reach Trust and Redink with Innovation Edge
Target audience:	Grade R teachers
What does it do?	A mobile application that provides Grade R teachers with a high-quality curriculum to support the effective teaching of mathematics in low resource settings. The content is available in English and isiXhosa.
How long has it been active?	12 months
How long did it take to develop?	Six months initially but there is ongoing iteration and refinement.
How much did it cost to develop?	± R1 million to date
Basic utilisation stats:	The project is being piloted with 250 teachers in the Eastern Cape.

Name of digital platform:	**FoodShare**
Type of platform:	Mobi site with USSD functionality
Developed by:	Leaping Rhino with FoodForward SA
Target audience:	Beneficiary organisations (BOs) and food donors
What does it do?	Virtually connects BOs to retail stores and restaurants for the regular collection of edible surplus food.
How long has it been active?	Two years
How long did it take to develop?	12-18 months
How much did it cost to develop?	The initial cost was R580 000.
Basic utilisation stats:	This mobi site is being used by 135 BOs collecting food from 151 stores nationally.

Name of digital platform:	**SEJA and Access2Justice**
Type of platform:	Android app
Developed by:	Boland Internet services with Mosaic
Target audience:	SEJA: children and adult community members; Access2Justice: general public
What does it do?	Shares information with users on their nearest child protection service provider. Allows for functioning as a panic button for persons in need of emergency protection and care. Captures data for Mosaic.
How long has it been active?	SEJA: six months; Access2Justice: two years
How long did it take to develop?	SEJA: eight months; Access2Justice: five months
How much did it cost to develop?	SEJA: R110 000; Access2Justice: R90 000
Basic utilisation stats:	Average SEJA: 25 regular visitors on average per month. Average Access2Justice: 15 regular visitors on average per month.

Name of digital platform:	**dig-it**
Type of platform:	Mobi site
Developed by:	Retro Rabbit with Praekelt
Target audience:	South African learners from low or no-fee schools, in Grades 10 to 12.
What does it do?	It provides a way for learners to practice Maths on a daily basis, providing them with access to CAPS-aligned content so they can improve their skills over time to ultimately improve their Maths results at the end of the year.
How long has it been active?	Since July 2014
How long did it take to develop?	The first version took three months to develop, but the platform is constantly being iterated and improved upon.
How much did it cost to develop?	R2 million
Basic utilisation stats:	Approximately 9 000 users per month

Name of digital platform:	**FunDza.mobi and FunDzapp**
Type of platform:	Mobi site and Android app
Developed by:	The Lateral Alternative with the FunDza Literacy Trust
Target audience:	Teens and young adults, aged 13 to 25 years. The actual readership is broader than this with approximately 20% of readers being older than 25 years.
What does it do?	Provides access to local reading material with new content featured daily. Readers can also send in their own work for publication. FunDza's in-house team edits readers' work and provides writers with feedback. This content is uploaded to FunDza.mobi as 'Fanz' content. Readers can also access a variety of open online courses to develop their language and comprehension skills.
How long has it been active?	Since 2011
How long did it take to develop?	Continuously being developed
How much did it cost to develop?	A total of ± R1 800 000 in tech spend between 2011 and 2018. This excludes the cost of content and internal staff managing the platform.
Basic utilisation stats:	An average of ± 250 000 unique users each month.

Name of digital platform:	**CoachAssist**
Type of platform:	Android app
Developed by:	Cobi Mobile and Baseline Software with Waves for Change
Target audience:	CoachAssist targets individuals delivering services in their community. At present, these are sports coaches leading various types of sport and physical activity programmes for vulnerable populations living in high-risk communities in South Africa, Liberia and USA.
What does it do?	CoachAssist helps users track their activity and log the number of individuals they are reaching and engaging through their service. The app works on and offline and is designed for use in high-risk zones far off the grid.
How long has it been active?	Six months
How long did it take to develop?	12 months
How much did it cost to develop?	± R300 000
Basic utilisation stats:	Currently being piloted with 30 users (coaches/ community volunteers) delivering services to 1 600 individuals.

Name of digital platform:	**jobstarter.co.za**
Type of platform:	Mobi site
Developed by:	Thumbtribe and Cognician with the DG Murray Trust
Target audience:	Unemployed youth (between 16 and 35 years old) who are not in education, employment or in any other form of training opportunity.
What does it do?	Provides users with easy-to-navigate, straightforward information on topics ranging from how to find a job to bursaries, apprenticeships and other education and training opportunities. It also offers mobile learning courses to help users build their workplace competencies while functioning as a mechanism to connect opportunity providers with opportunity seekers registered on the platform.
How long has it been active?	Three years
How long did it take to develop?	Two years. The plan is to keep adding new pieces of work each year, and hiring an in-house e-learning manager.
How much did it cost to develop?	To create the basic platform with core components: ± R3 000 000. Development of new components continues.
Basic utilisation stats:	23 463 registered users (meaning they've registered for e-learning); and an average of ± 17 000 active users on the platform and 20 000 visits each month.